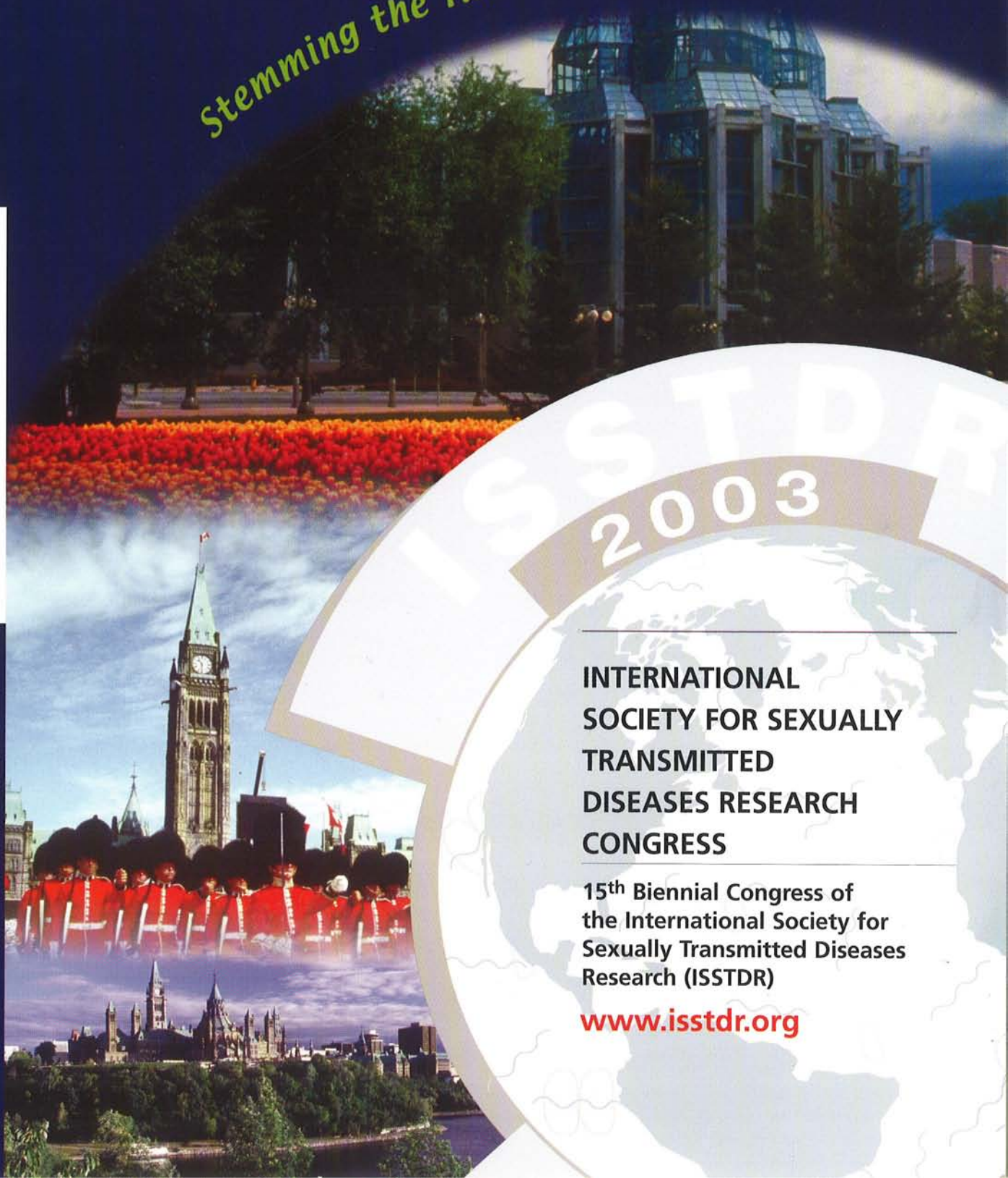
PROGRAM & BOOK OF ABSTRACTS

2003 ISSTDR CONGRESS

OTTAWA, CANADA
JULY 27-30

Stemming the Tide of STDs and HIV



2003

INTERNATIONAL SOCIETY FOR SEXUALLY TRANSMITTED DISEASES RESEARCH CONGRESS

15th Biennial Congress of the International Society for Sexually Transmitted Diseases Research (ISSTDR)

www.isstdr.org

The 16th biannual meeting of the International Society for Sexually Transmitted Diseases Research (ISSTDR)

AMSTERDAM, 10-13 JULY 2005



ISSTDR 2005
www.isstdr.org



ACKNOWLEDGEMENTS

In addition to members of the Local Organizing Committee, the Canadian Advisory Board and the International Scientific Committee, we are grateful to the following people for their many contributions to the success of the 2003 ISSTDR Congress:

Linda Huskins, CMP
Angela Schultz
Monique Trottier
Luann Woodcock

And the following Volunteers

Sudeep Archarya
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We also thank

confer*sense* planners inc.,

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To obtain updates of this and upcoming ISSTDR meetings, please visit our permanent website

www.isstdr.org



International Society of Sexually Transmitted Diseases Research
15th Biennial Congress
Ottawa Congress Centre
July 27 – 30, 2003
Ottawa, Ontario
Canada

Program and Book of Abstracts


2003
CANADA

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2003
CANADA



Dear ISSTDR 2003 Colleagues,

I am so pleased to welcome you to Ottawa, Canada's capital, for the 15th Biennial Congress of the International Society for Sexually Transmitted Diseases Research (ISSTDR). I hope that you will enjoy not only our wonderful scientific program, but that you will also have an opportunity to visit the diverse attractions that Ottawa offers.

The theme of our Congress is "Stemming the Tide of STDs and HIV". This theme is reflected in all parts of our program, which includes new developments in vaccines and therapeutics, Sexually Transmitted Diseases (STDs) and cancer, new approaches to STD prevention, novel intervention strategies and the latest information on behavioral surveillance. This meeting represents a unique opportunity to discuss these important issues with participants who reflect the multi-disciplinary, international research focus of the ISSTDR.

The ISSTDR was founded in 1975. Our goals are to promote research to all aspects of STDs; to educate members of relevant health care professions to more effectively diagnose and treat STDs; and, to disseminate research findings communicated at our meetings and elsewhere. To facilitate this multi- and inter-disciplinary dialogue between health care professionals, researchers and health care policy makers, the ISSTDR organizes an international Congress every two years. The ISSTDR encourages the participation of STD investigators and practitioners from developing countries.

So far, investigators from 56 countries have registered for ISSTDR 2003 and over 700 abstracts have been accepted for presentation at our Congress. We have also been able to offer a few "firsts" for this meeting – the establishment of a permanent web site for the organization, electronic abstract submissions and reviews, and regular electronic communications to and with our members.

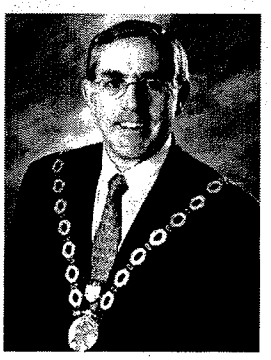
No meeting of the ISSTDR could take place without many people volunteering their time and effort. Interacting with the many members of the ISSTDR who have made this meeting possible, as well as the conscientious members of the Local Organizing Committee, the Canadian Scientific Advisory Committee, the International Scientific Committee, the ISSTDR Board and student volunteers, has been a rewarding, stimulating experience which I deeply value. I have been better able to see by standing on the shoulders of my predecessor ISSTDR Presidents. My shoulders are ready for those who follow. Finally, this meeting would not be possible without the commitment and financial assistance of our sponsors and exhibitors, many of whom have a history of sustained support to the ISSTDR.

Thank you all for your contributions to the ISSTDR 2003 Congress. Have a great meeting!

Jo-Anne Dillon

Jo-Anne Dillon, President

Bob Chiarelli
Mayor / Maire



On behalf of Members of Council and the 785, 000 residents of the City of Ottawa, it gives me great pleasure to extend a very warm welcome to all those participating in the **15th Biennial Congress of the International Society for STD Research**, taking place in the nation's Capital from **July 27th to 30th 2003.**

I would also like to take this opportunity to congratulate the Local Organizing Committee, delegates, volunteers and all of those who have committed their time and energy to the successful co-ordination of this very important meeting of international scope.

As Mayor of Canada's capital city, I invite visitors to explore some of Ottawa's most coveted national treasures, including the National Gallery of Canada, the Canadian Museum of Civilization and Parliament Hill. Allow me to wish you all a most pleasant stay.

Au nom des membres du Conseil municipal et des 785 000 résidents d'Ottawa, c'est avec plaisir que je souhaite la bienvenue à tous ceux qui participent au **15e Congrès biennal de la Société internationale de recherches sur les MTS,** et qui aura lieu dans la capitale nationale du **27 au 30 juillet 2003.**

Je tiens également à féliciter le Comité organisateur, les participants, les bénévoles et tous ceux qui ont consacré leur temps et leur énergie à l'organisation réussie de cette très importante réunion d'envergure internationale.

En tant que maire de la capitale du Canada, j'invite les visiteurs à explorer les trésors nationaux d'Ottawa les plus convoités, notamment le Musée des beaux-arts du Canada et le Musée canadien des civilisations et la Colline du Parlement. Permettez-moi de vous souhaiter à tous un séjour des plus agréables.

Bob Chiarelli
Mayor / Maire

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Minister's Greeting:

It gives me great pleasure to extend greetings to the members of the organizing committee and the international attendees at the Fifteenth Biennial Congress of the International Society for Sexually Transmitted Disease Research (ISSTDR) which will focus on "Stemming the Tides of STDs and HIV".

It is an honour to welcome to Ontario the world's leading scientists and researchers who are making such a difference in the lives of people living with HIV/AIDS and their families. I want to commend the ISSTDR for its valuable work in promoting research into all aspects of sexually transmitted diseases. The lectures, workshops, poster sessions and oral sessions planned for this congress will promote multi- and inter-disciplinary dialogue among healthcare professionals, researchers and health care policy makers.

HIV/AIDS prevention, care, treatment and support are top priorities for the Ernie Eves government. To demonstrate our commitment to those living with HIV and AIDS, our government committed close to $50 million last year on HIV/AIDS-related programs.

These investments led to the establishment of the AIDS Bureau to provide a central access point for working with all HIV/AIDS stakeholders, including physicians, researchers, community and public health workers, activists and people living with HIV/AIDS. This bureau today quickly and effectively responds to issues at a provincial level and ensures consistency in program development and delivery.

Today, I am proud of the strength of the HIV/AIDS program in Ontario, which is due in large measure to the people in this very room. I want to congratulate the organizing committee on bringing the congress to Ottawa and I wish everyone attending the congress a very successful meeting.

Yours very truly,

Tony Clement
Minister

Minister of Health | Ministre de la Santé

The Honourable/L'honorable A. Anne McLellan

Ottawa, Canada K1A 0K9

As Minister of Health, I am pleased to congratulate the International Society for Sexually Transmitted Disease Research on the occasion of its 15th Biennial Congress. This event is a valuable opportunity to bring together some of the leaders in sexually transmitted disease (STD) research.

The theme of the meeting, *Stemming the Tide of STDs and HIV*, is particularly important as the focus on public health continues to grow in Canada and around the world. At Health Canada, we are working on a wide range of initiatives aimed at reducing STD and HIV transmission, including national surveillance, outbreak investigations, and promotional activities.

In this time of health care system renewal, it is important that we work together on all fronts to improve the health of the people of Canada. Disease prevention and health promotion are integral to reaching our goal of a sustainable and effective health care system that reflects the needs of all Canadians.

Health Canada is pleased to participate in and to have been part of the planning process for this event. Please accept my best wishes for a productive and successful conference.

À titre de Ministre de la Santé, je tiens à féliciter la Société internationale pour la recherche sur les maladies transmises sexuellement à l'occasion de son 15e Congrès biennal, qui réunit des chefs de file de la recherche dans le domaine des maladies transmissibles sexuellement (MTS).

Combattre l'assaut des MTS et du VIH est un thème particulièrement bien choisi étant donné l'accent grandissant mis sur la santé publique au Canada et dans le monde entier. À Santé Canada, nous travaillons à une vaste gamme d'initiatives de lutte contre les MTS et le VIH, dont la surveillance nationale, des enquêtes épidémiologiques et des activités promotionnelles.

À l'heure du renouvellement du système de santé, il importe de travailler ensemble sur tous les fronts afin d'améliorer la santé de la population du Canada. La prévention de la maladie et la promotion de la santé font partie intégrante d'un système de santé durable et efficace qui répond aux besoins de tous les Canadiens et toutes les Canadiennes.

Santé Canada est heureux de participer à l'événement et d'avoir contribué à sa planification. Je vous souhaite une conférence fructueuse et couronnée de succès.

A. Anne McLellan

Canada

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PAST PRESIDENTS & CONGRESS LOCATIONS

Ernst Stoltz - Rotterdam 1977

Alan Lassus - Helsinki 1979

Peter Piot - Antwerp 1980

Detlef Petzoldt - Heidelberg 1981

King Holmes - Seattle 1983

J.R.W. Harris - Brighton 1985

Sam Thompson - Atlanta 1987

Inga Lind - Copenhagen 1989

Allan Ronald - Banff 1991

Jorma Paavonen - Helsinki 1993

David Martin - New Orleans 1995

Evelio Perea - Sevilla 1997

Frank Judson - Denver 1999

Peter Kohl - Berlin 2001

Jo-Anne Dillon - Ottawa 2003

SCIENTIFIC PROGRAM AT-A-GLANCE

(includes Pre/Post Congress meetings and workshops)

	Sat. Jul. 26	Sun. Jul. 27	Mon. Jul. 28
Registration (Congress Hall Foyer)		7:00 am – 7:00 pm	7:00 am – 6:00 pm
Opening Ceremony		6:30 pm – 7:15 pm	
(Congress Hall ABEF) **Keynote Lecture**		7:15 pm – 8:00 pm	
Meetings/Workshops	1:00 pm – 5:00 pm	8:00 am – 5:00 pm	12:00 pm – 1:00 pm
	ISSTDR Board meeting	Phase-Specific Strategies for the Prevention, Control and Elimination of Sexually Transmitted Diseases II	ASTDA Executive Committee Meeting
	1:00 pm – 5:00 pm Behavioural Surveillance	**8:00 am – 4:30 pm** 7th International Symposium on *Haemophilus ducreyi*	**12:30 pm – 2:00 pm** Novel Approaches to the Laboratory Diagnosis of *Chlamydia trachomatis* and *Neisseria gonorrhoeae*
	Principal Investigators' Meeting		
Plenary Session (1)			9:00 am – 9:45 am
(Congress Hall ABEF)			HPV Vaccines: Potential Impact On STD Control Programs *(Laura Koutsky)*
Plenary Session (2)			9:45 am. – 10:30 am
			Herpes Virus Vaccines When and How? *(Barry Rouse)*
Symposia (am)			11:00 am – 12:30 pm
(Congress Hall AB)			#1 Breakthroughs in Social Network Analysis and STIs
(Congress Hall EF)			#2 *Trichomonas vaginalis* of Mice and Men
Symposia (pm)			2:15 pm – 4:15 pm
(Congress Hall AB)			#3 Human Papillomavirus and Cancer: Perspective for Prevention
(Congress Hall EF)			#4 Molecular Typing Enhances the Epidemiology Typing of STIs
(Capital Hall)			#5 WHO – New Approaches to STI Prevention Control & Surveillance
Oral Sessions (am)			11:00 am – 12:30 pm
(Capital Hall)			OAP01 – *Haemophilus ducreyi* and Bacterial STDs OAP02 – Impact of an Adolescent Sexual Health Programme in Rural Tanzania OAP03 – HIV Epidemiology OAP04 – Viral STDs
Oral Sessions (pm)			2:15 pm – 4:15 pm
(Capital Hall)			OAP05 – *Chlamydia trachomatis* – Epidemiology and PID OAP06 – Adolescent Health OAP07 – STI Intervention Strategies OAP08 - Microbicides
Poster Sessions (Congress Hall CDGH)			4:15 pm – 6:15 pm
Social Events		8:00 pm – 10:00 pm Welcome Reception 4th Floor Terrace, Westin Hotel	6:30 pm – 7:15 pm Ottawa Bus Tour Organ Recital, Notre Dame Cathedral

	Tues. Jul. 29	Wed. Jul. 30	Thurs. Jul. 31
Registration (Congress Hall Foyer)	**7:00 am – 6:00 pm**	**7:00 am – 5:00 pm**	
Meetings/Workshops	**12:00 pm – 2:00 pm** ASTDA Awards Presentations	**7:00 am – 8:00 am** **12:00 pm – 1:00 pm** STD Editorial Board Meeting **12:00 pm – 1:30 pm** Clinical and Laboratory Investigations of *C. trachomatis* Treatment Failures	**9:30 am – 3:00 pm** International Collaboration on Gonorrhea (ICG)
Plenary Session (1) (Congress Hall ABEF)	**9:00 am – 9:45 am** Overcoming the Challenges of HIV Drug Resistance *(Mark Wainberg)*	**9:00 am – 9:45 am** *Neisseria gonorrhoeae* Pathogenesis: The Molecular Basis of Infection Differs in Men and Women *(Michael Apicella)*	
Plenary Session (2)	**9:45 am – 10:30** Combining Interventions for Successful HIV Control *(Geoff Garnett)*	**9:45 am – 10:30** Building Health Research Capacity in Resource Constrained Societies *(Allan Ronald)*	
Symposia (am)	**11:00 am – 12:30 pm**	**11:00 am – 12:30 pm**	
(Congress Hall AB)	#6 STI-HIV Interface: Implications for Prevention and Control	#12 Planning for Successful HIV Control #13 Improving the Clinical Management of Pelvic Inflammatory Disease	
(Congress Hall EF)	#7 Molecular Diagnosis of Bacterial STIs		
(Capital Hall 1B)	#8 Mycoplasma and STIs		
Symposia (pm)	**2:15 pm – 4:15 pm**	**2:15 pm – 4:15 pm**	
(Congress Hall AB)	#9 STIs and HIV in the People's Republic of China	#14 Contraceptive Choices and HIV #15 Chlamydia Diagnostics: How the Challenges Challenge	
(Congress Hall EF)	#10 Syphilis Outbreaks: Prevention and Control		
(Capital Hall)	#11Sex Work: Determinants, Patterns and Impact on STI Spread		
Oral Sessions (am)	**11:00 am – 12:30 pm**	**11:00 am – 12:30 pm**	
(Capital Hall)	OAP09 – Behaviour and STIs OAP10 – *Chlamydia trachomatis* - Diagnosis and Typing OAP11 – *Neisseria gonorrhoeae* - Epidemiology OAP12 – HIV Interventions	OAP17 – *Neisseria gonorrhoeae* - Diagnostic Innovations OAP18 – Herpes OAP19 – STIs - Epidemiology and Modeling OAP20 – Policy and Politics: Reconsidering Condoms and other Public Health Interventions	
Oral Sessions (pm)	**2:15 pm – 4:15 pm**	**2:15 pm – 4:15 pm**	
(Capital Hall)	OAP13 – *Neisseria gonorrhoeae* - Antimicrobial Susceptibility OAP14 – HIV OAP15 – Vaccines and Immunization OAP16 – HPV – International Implications	OAP21 – Bacterial Vaginosis OAP22 – MSM OAP23 – Syphilis OAP24 – European STI Surveillance Network	
Poster Sessions (Congress Hall CDGH)	**4:15 pm – 6:15 pm**	**12:30 pm – 2:15 pm**	
Social Events	**7:00 pm – 11:00 pm** Congress Gala Banquet Museum of Civilization		

SCIENTIFIC PROGRAM

Saturday, July 26

10:00 am	**5:00 pm**	**Behavioral Surveillance Principal Investigator's Meeting: Network Study Planning & Protocol Development Organizer: Sevgi Aral**	**Manitoba Room 2nd floor, Westin Hotel**

Sunday, July 27

7:00 am	**7:00 pm**	**Congress Registration**	**Congress Hall Foyer**
8:00 am	**4:30 pm**	**7th International Symposium on *Haemophilus ducreyi***	**Capital Hall 4B**

Organizer: Stanley M. Spinola
Chair: Stanley M. Spinola

8:00 am - 8:30 am	**CONTINENTAL BREAKFAST**	**Capital Hall 4B**
	Speakers:	
8:30 am - 8:40 am	Introductory Remarks **Stanley M. Spinola**	
8:40 am - 9:15 am	Chancroid: Clinical Aspects, Diagnosis and Treatment in the 21st Century **David Lewis**	
9:15 am - 9:50 am	Global Epidemiology of Chancroid **Ye Htun**	
9:50 am - 10:25 am	Genomic and Proteomic Analysis of *Haemophilus ducreyi* Strain 35000HP **Robert S. Munson**	
10:25 am - 10:40 am	**BREAK**	**Capital Hall 4B**
10:40 am - 11:15 am	*Haemophilus ducreyi* Gene Expression Upon Adherence to Collagen or Fibrinogen **Margaret E. Bauer**	
11:15 am - 11:50-am	A Novel Lectin from *Haemophilus ducreyi* is Involved in Serum Resistance **Isabelle Leduc**	
11:50 am - 1:00 pm	**LUNCHEON**	**Capital Hall 3B**

1:00 pm - 1:35 pm
Trafficking of T Cells to Human Skin Infected with *Haemophilus ducreyi* Involves Multiple Chemokine/ Chemokine Receptor Pathways
Tricia L. Humphreys

1:35 pm - 2:10 pm
Mutations in the *lspA1* and *lspA2* Genes Eliminate the Ability of *Haemophilus ducreyi* to Inhibit the Phagocytic Activity of Human Cell Lines
Eric J. Hansen

2:10 pm - 2:45 pm
Cytolethal Distending Toxin of *Haemophilus ducreyi* (HdCDT) in Pathogenesis of Chancroid
Teresa Lagergaard

2:45 pm - 3:00 pm
BREAK **Capital Hall 4B**

3:00 pm - 3:35 pm
Analysis of *Haemophilus ducreyi* Mutants Expressing Unique LOS Structures
Anthony Campagnari

3:35 pm - 4:10 pm
The Role of SodC in Heme Acquisition in *Haemophilus ducreyi*
Craig Lee

4:10 pm - 4:30 pm
Summary Discussion and Adjournment
Stanley M. Spinola

8:00 am - 5:00 pm

Phase-specific Strategies for the Prevention, Control and Elimination of Sexually Transmitted Diseases II

Capital Hall 1B

Organizer: Sevgi Aral

8:00 am - 9:00 am
CONTINENTAL BREAKFAST **Capital Hall 1B**

Role of Core Groups: Heterogeneity and Change

Chair: Sevgi Aral

8:55 am - 9:00 am
Welcome and Opening Remarks
Sevgi Aral

9:00 am - 9:15 am
Proportion of HIV Infections Attributable to STDs in Mwanza and Rakai – Results Based on a Simulation Model
Kate Orroth



9:15 am - 9:30 am	Interventions Aimed at Sex Workers in Cotonou, Benin (West Africa): Ongoing Decline of STDs Over a Decade **Michel Alary**	
9:30 am - 9:45 am	Male Clients of Female Sex Workers (FSW) in Cotonou, Benin (West Africa): Contribution to the HIV Epidemic and Effect of Targeted Interventions **Catherine Lowndes**	
9:45 am - 10:00 am	The Impact of Migration Patterns of Female Sex Workers on a Slow Spreading HIV Epidemic: Implications for Prevention **Marie-Claude Boily**	
10:00 am - 10:30 am	Discussion **Stephen Moses**	
10:30 am - 11:00 am	**BREAK**	**Capital Hall 1B**

Heterogeneity in Epidemics and Their Determinants

Chair: Richard Hayes

11:00 am - 11:15 am	A Tale of Two States: Differentiating Between Epidemic Phase and Transmission Dynamics in Indian States of Rajasthan and Karnataka **James Blanchard**	
11:15 am - 11:30 am	Current Evidence on the HIV-1 Epidemic in India and the Determinants of Infection **Prabhat Jha**	
11:30 am - 11:45 am	Heterogeneity in the Distribution and Determinants of Reported STIs and GUM Clinic Attendance in Britain **Kevin Fenton**	
11:45 am - 12:00 pm	The Changing Risks of STIs within the UK Population: A Modelling Analysis **Peter White**	
12:00 pm - 12:30 pm	Discussion **Sevgi Aral**	
12:30 pm - 1:30 pm	**LUNCHEON**	**Capital Hall 2B**

Evolution of Epidemic and Response to Interventions

Chair: Anne Johnson

1:30 pm - 1:45 pm	STI/HIV Surveillance in Ethiopia: National and Regional Perspective **Alberto Matteelli**
1:45 pm - 2:00 pm	Declining STD and HIV Prevalences Among Antenatal Clinic Attendees in Nairobi, Kenya, 1992 – 2002 **Stephen Moses**
2:00 pm - 2:15 pm	Changing Patterns of STDs in Botswana, 1993 – 2002 **Gabriela Paz-Bailey**
2:15 pm - 2:30 pm	Evaluation of British Columbia's Syphilis Mass Treatment Intervention **Michael Rekart**
2:30 pm - 3:00 pm	Discussion **James Blanchard**
3:00 pm - 3:30 pm	**BREAK** **Capital Hall 1B**

Evolving Theory, Evolving Practice: Where Do We Push the Envelope?

Chair: Geoff Garnett

3:30 pm - 3:45 pm	Estimating the Size and Overlap of Populations with High Rates of New Sexual Partner Acquisition and Injecting Drug Use **Sharon Weir**
3:45 pm - 4:00 pm	Large Social Networks and Sexually Transmitted Diseases **Alden Klovdahl**
4:00 pm - 4:15 pm	Reflections on the Phase-Specific Model: Is There a Missing Phase? **Susan DeLisle**
4:15 pm - 4:30 pm	Eliminating Endemic Bacterial STIs: We Need New Tactics **Michael Rekart**
4:30 pm - 5:00 pm	Discussion **Judith Wasserheit**

9:00 am **ISSTDR Board Meeting** **Saskatchewan Room 2nd floor, Westin Hotel**

SUNDAY, JULY 27

3:00 pm - 5:00 pm — **Selected Topics in STI/HIV Diagnosis Management and Control Symposium** — **Colonel By Salon**

Organizer: **Max Chernesky**
Chair: **Max Chernesky**

Sponsored by Abbott Diagnostic

Opening Remarks
Max Chernesky

HIV Drug Resistance Testing
Sue Eshleman

Accurate Quantification of Diverse HIV Subtypes and Impact on Patient Care
Philip Hay

Sample to Result with Automated Homogeneous PCR
Ron Marshall

The Challenges of Syphilis Elimination in the United States
Stuart Berman

4:45 pm – 5:00 pm — Panel Discussion

6:30 pm - 7:15 pm — **Opening Ceremony** — **Congress Hall ABEF**

Jo-Anne R. Dillon	President, ISSTDR
Peter Kohl	Past – President, ISSTDR
Roel Coutinho	President – Elect, ISSTDR
Gilles Patry	Rector, University of Ottawa

7:15 pm - 8:00 pm — **Keynote Lecture** — **Congress Hall ABEF**

STD Prevention: What Works?

King Holmes

8:00 pm - 10:00 pm — **Welcome Reception** — **4th floor Terrace**
Entertainment Featuring: — **Westin Hotel**
The Neil Sealy Jazz Quartet

MONDAY, JULY 28

7:00 am - 6:00 pm	**Congress Registration**	**Congress Hall Foyer**
7:00 am - 9:00 am	**Coffee and Tea**	**Congress Hall Foyer**
8:00 am - 8:45 am	**Discussion: STD Controversies**	**Congress Hall ABEF**

HIV Epidemiology: Does Non-Sexual Transmission Play an Important Role in the Ongoing Epidemic in Sub-Saharan Africa?

Moderator:
Matthew Golden

Discussants:
Geoff Garnett
Richard Rothenberg

9:00 am - 6:15 pm	**Exhibits**	**Congress Hall CDGH**
9:00 am - 6:15 pm	**Cyber Café**	**Congress Hall CDGH**
9:00 am - 9:45 am	**Plenary 1**	**Congress Hall ABEF**

HPV Vaccines: Potential Impact on STD Control Programs

Chair:
Eduardo Franco

Speaker:
Laura Koutsky

9:45 am - 10:30 am	**Plenary 2**	**Congress Hall ABEF**

Vaccines and Immunomodulators for Herpesvirus Infections

Sponsored by Lilly

Chair:
Eduardo Franco

Speaker:
Barry Rouse

10:30 am - 11:00 am	**BREAK**	**Congress Hall CDGH**

MONDAY, JULY 28

11:00 am - 12:30 pm — **Symposium 1** — **Congress Hall AB**

Breakthroughs in Social Network Analysis and STIs

Organizer: Ann Jolly
Chairs: Ann Jolly, Sam Friedman

0119 Considering the Social in Social Networks: Relationships of Social Interactions, Norms, Networks, Sexual Behaviours and STIs
Samuel Friedman; Carey Maslow; Pedro Mateu-Gelabert; Melissa Bolyard; Milagros Sandoval

0340 Advances in Methods for Eliciting Sexual Networks
Devon Brewer

0178 Mathematical Models of STI in the Era of Sexual Networks
Marie-Claude Boily

0168 Use of Sexual Network Analysis to Investigate STI Outbreaks
Ann Jolly; Prithwish De; Ameeta Singh; Wadieh Yacoub; Tom Wong

11:00 am - 12:30 pm — **Symposium 2** — **Congress Hall EF**

Trichomonas vaginalis of Mice and Men

Organizers: Marcia Hobbs
Chairs: Marcia Hobbs, Jane Schwebke

0484 *Trichomonas vaginalis* Infection in the Sexual Partners of Infected Women
Arlene Sena; William Miller; Jane Schwebke; Peter Leone; Douglas Taylor; Heidi Swygard; Marcia Hobbs; Myron Cohen

0522 Trichomoniasis and HIV-1 Infection: What Comes First?
A.Willem Sturm; Prashini Moodley; Patrick Sturm

0070 *Trichomonas vaginalis* Virulence, Cytoadherence and a Rapid Diagnostic
John Alderete; Ana Garcia; Te-Hung Chang; Michael Lehker; Vasanth Mundodi; Ashwini Kucknoor; John Nguyen; Marlene Benchimol; David Klumpp

0679 Of Mice and Men: Lessons from a Mouse Model of *Trichomonas vaginalis*
Gary Garber; Julie Zhu; Michelle Janes



MONDAY, JULY 28

11:00 am - 12:30 pm **Oral Presentations** **Capital Hall 1B**

OAP01 - *Haemophilus ducreyi* and Bacterial STDs

Chairs: Pat Totten, Craig Lee

0095 Trafficking of T Cells to Human Skin Infected with *Haemophilus ducreyi* Involves Multiple Chemokine/Chemokine Receptor Pathways
Author(s): Tricia Humphreys; Lee Ann Baldridge; Stanley Spinola; James Campbell

0137 A Novel Lectin from *Haemophilus ducreyi* is Involved in Serum Resistance
Author(s): Isabelle Leduc; Patricia Richards; Crystal Davis; Christopher Elkins

0162 Evaluation of Subject Effect on Outcome in a Human Model of *Haemophilus ducreyi* Infection
Author(s): Margaret Bauer; Cliffton Bong; Andrew Faber; Kate Fortney; Stacy Bennett; Carisa Townsend; Barry Katz; Stanley Spinola

0171 Two Classes of *Haemophilus ducreyi* DsrA Bind Multiple ECMS
Author(s): Catherine White; Isabelle Leduc

0218 The *Haemophilus ducreyi* LspB Protein is Involved in the Secretion of the LspA1 Protein by this Pathogen
Author(s): Christine Ward; Eric Hansen

0388 *Mycoplasma genitalium*: When to Test and Treat. Present Status in Scandinavia
Author(s): Eva Björnelius; Carin Anagrius; Gunnel Bojs; Carlberg Hans; Gunnar Johannisson; Peter Lidbrink; Harald Moi; Jørgen Jensen

0485 Performance of a New, Rapid Assay for *Trichomonas vaginalis*
Author(s): Ann Kurth; William Whittington; Matthew Golden; Kathy Thomas; King Holmes; Jane Schwebke

MONDAY, JULY 28

11:00 am - 12:30 pm — **Oral Presentations** — **Capital Hall 4B**

OAP04 - Viral STDs

Chairs: Peter Kohl, Marc Steben

0148 Seroprevalence of HSV-2 in Suburban Primary Care Offices
Author(s): Douglas T. Fleming; Peter Leone; Lei Li; Robert G. Deeter; Alicia W. Gilsenan; Scott Edward Justus

0179 Assessment of the Optimal Prime-Boost Strategy to Generate a Protective Immune Response Against HSV-2 in the Genital Tract
Author(s): Amanda Kwant; Kenneth Rosenthal

0213 Trend in Seroprevalence of HSV-2 in England Between 1991 and 2000
Author(s): Marianne Cunnington; David Brown; Jeanne Pimenta; Elizabeth Miller

0538 Impact of Infection with Multiple Human Papillomavirus Genotypes on Cervical Cytologic Abnormalities
Author(s): Anil Chaturvedi, Liisa Oakes; Tracy Beckel; Ansley Hammons; Jeanne Dumestre; Kathleen Dunlap; Karen Lenczyk; Rebecca Clark; Patricia Kissinger; Michael Hagensee

0544 The Prevalence of Human Papillomavirus (HPV) and Epstein-Barr virus (EBV) Infection in the Tonsil and Oral Region of Healthy and HIV-Positive Adults
Author(s): Aimee Kreimer; Richard Daniel; Raphael Viscidi; Patti Gravitt; Jonathan Zenilman; Keerti Shah; Maura Gillison

0579 Evaluation of the DNA Pap Test in Primary Screening for Cervical Neoplasia
Author(s): Janet Baseman; Shalini Kulasingam; Tiffany Harris; James Hughes; Nancy Kiviat; Constance Mao; Laura Koutsky

12:30 pm - 2:00 pm — **LUNCHEON – LUNCHES PROVIDED** — **Congress Hall CDGH**

12:00 pm - 1:00 pm — **ASTDA Executive Committee Meeting** — **Saskatchewan Room 2nd floor, Westin Hotel**

MONDAY, JULY 28

12:30 pm - 2:00 pm — **Satellite Symposium** — **Colonel By Salon**

Novel Approaches to the Laboratory Diagnosis of *Chlamydia trachomatis* and *Neisseria gonorrhoeae*

Sponsored by Gen-Probe (lunch provided - limited seating 500)

Specimen Collection: New Directions and Continuing Challenges

Speaker: Edward W. Hook III

Expanding Opportunities and Validating Effectiveness of Nucleic Acid Amplification Tests

Speaker: Max Chernesky

2:15 pm - 4:15 pm — **Symposium 3** — **Congress Hall AB**

Human Papillomavirus and Cancer: Perspective for Prevention

Organizer: Eduardo Franco
Chairs: Eduardo Franco, Attila Lorincz

0627	Role of HPV Infection as a Cause of Human Cancers **Eduardo Franco**
0688	Old and New Approaches for Diagnosing HPV Infection **Attila Lorincz**
0612	HPV Testing in Cervical Cancer Screening and Management **Alex Ferenczy**

2:15 pm - 4:15 pm — **Symposium 4** — **Congress Hall EF**

Molecular Typing Enhances the Epidemiology Typing of STI's

Organizer: Catherine C. Ison
Chairs: Catherine C. Ison, Helen Ward

Opening Remarks: Catherine C. Ison

0108	New Social and Molecular Tools for Addressing Sexually Transmitted Disease Epidemiology **John Wylie**

	0090	New Sex Partner Acquisition and STD Risk Among Adolescent Females **Author(s): Linda Niccolai;** Kathleen Ethier; Trace Kershaw; Jessica Lewis; Christina Meade; Jeannette Ickovics
	0138	Differences in Sexual Risk Behaviors Between Sexually Abused and Non-Abused Female Adolescents **Author(s): Matthew Hogben;** Tricia Hall; Emilia Koumans; Mary Sawyer; Lauri Markowitz; GRASP Study Group
	0237	Predictors of Parental Acceptability of STD Vaccination for their Adolescent Children **Author(s): Gregory Zimet;** Rose Mays; Lynne Sturm; Susan Perkins; Beth Juliar
	0595	Sex in Peru: Sexual Behaviors in a Nation-Wide Population-Based Survey of Urban Young Adults **Author(s): Patricia Garcia;** Cesar Carcamo; Pablo Campos; James Hughes; Geoff Garnett; Peter White; James Jones; Marinia Morris; King Holmes
2:15 pm - 4:15 pm	**Oral Presentations**	**Capital Hall 4B**
	OAP07 - STI Intervention Strategies	
	Chairs: Fabio Moherdaui, D. William Cameron	
	0024	The Experience of a Network for Action in STI in Latin America **Author(s): Fabio Moherdaui**
	0123	Condom Use in Cotonou and Porto Novo (Bénin): How Different are Self-Reports by Female Sex Workers (FSW) and by Their Clients? **Author(s): Nassirou Geraldo;** Labbé Annie-Claude; Honore Meda; Cyriaque Gnintoungbe; Michelyne Belleau; Catherine Lowndes; Michel Alary
	0183	Reducing the STD Burden in Rural Malawi: STD Screening, Case and Contact Treatment, Counselling and Condom Promotion **Author(s): Irving Hoffman;** Valerie Paz Soldan; Amy Tsui; Joseph de Graft-Johnson; Thomas Bisika; Topia Banda; Henry Feluzi; Peter Kazembe
	0311	The Development and Efficacy of an Online Intervention for Promoting Safer Sex in Steady Male Relationships – a Randomized Controlled Trial **Author(s): Udi Davidovich;** John De Wit

0394 Validity, Acceptability and Feasibility of Self-sampling for Reproductive Tract Infections in South African Women
Author(s): Lydia Altini; Heidi Jones; Janneke van de Wijgert; Taryn Young; Alana de Kock; Anwar Hoosen; Nicol Coetzee

0607 Self-Collected Vaginal Swabs as a STI Screening Approach Among Indirect Sex Workers in Cambodia
Author(s): Andrea Kim; Kimberly Page-Shafer; Penh Sun Ly; Chhorvann Chhea; Frits van Griensven; Janice Louie; Bun Leng Hor; Christina Lindan

2:15 pm - 4:15 pm **Oral Presentations** **Capital Hall 5B**

OAP08 – Microbicides

Chairs: Michel Bergeron, Derek Freedman

0092 Topical Microbicide Safety Evaluation Model: Colposcopy or Biopsy as Indicator of Toxicity
Author(s): Yvonne Cosgrove Sweeney; Dorothy Patton; Alisen Peterson; Sharon Hillier

0192 Development of a Real-Time PCR for Genital Ulcer Disease (GUD) with an Evaluation with Vaginal Microbicides
Author(s): Justin Hardick; Paul Stamper; Thomas Quinn; Steven Reynolds; Charlotte Gaydos

0269 Safety and Efficacy Evaluations for Rectal Use of BufferGel in the Macaque Model
Author(s): Dorothy Patton; Peter Cummings; Yvonne Cosgrove Sweeney; Sharon Hillier

0440 Teen and Girl Subculture: Influence on Microbicide Acceptability
Author(s): Susan Rosenthal; Mary Short; Jasmine Majkowski; Lisa Mills; Lawrence Stanberry

0277 Octylglycerol as a Topical Microbicide: Preclinical Safety Evaluations for Rectal Use of a Liposome Formulation
Author(s): Dorothy Patton; Lisa Rohan; Charles Isaacs; Peter Cummings; Yvonne Cosgrove Sweeney; Hans Hofland; Sharon Hillier

	0512	Acceptability of Microbicides to Prevent Sexually Transmitted Infections **Author(s): Arlene Sena;** William Miller; Carol Joanis; Douglas Taylor; Peter Leone; Jane Schwebke; Myron Cohen
	0586	Inhibitory Effects of Vaginal Microbicide Products on Nucleic Acid Amplification Testing of Urine for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* **Author(s): Paul Stamper;** Mellisa Theodore; Steve Reynolds; Thomas Quinn; Charlotte Gaydos
4:15 pm - 6:15 pm	**Poster Session 1** **Sponsored by Roche Diagnostics**	**Congress Hall CDGH**
6:30 pm - 7:15 pm	**Bus Tour: Highlights of the Ottawa Capital Region** **(Transportation provided from Daly Street beside Westin Hotel)**	
7:30 pm - 8:15 pm	**Organ Recital** **Organist: Rachel Laurin**	**Notre Dame Cathedral** **Corner of Sussex Drive and Guigues Ave**
8:15 pm	**Free Time**	

Notes

Tuesday, July 29

7:00 am - 6:00 pm	**Congress Registration**	Congress Hall Foyer
7:00 am - 9:00 am	**Coffee and Tea**	Congress Hall Foyer
8:00 am - 8:45 am	**Debate**	Congress Hall ABEF
	This House Believes that all Men Should be Screened for Genital Chlamydia Infection **Moderator:** **Julius Schachter** **Speakers:** **Pro: Lars Ostergaard** **Con: Walter Stamm**	
9:00 am - 6:15 pm	**Exhibits**	Congress Hall CDGH
9:00 am - 6:15 pm	**Cyber Café**	Congress Hall CDGH
9:00 am - 9:45 am	**Plenary 3**	Congress Hall ABEF
	Overcoming the Challenge of HIV Drug Resistance **Chair:** **D. William Cameron** **Speaker:** **Mark Wainberg**	
9:45 am - 10:30 am	**Plenary 4**	Congress Hall ABEF
	Combining Interventions for Successful HIV Control **Chair:** **D. William Cameron** **Speaker:** **Geoff Garnett**	
10:30 am - 11:00 am	**BREAK**	Congress Hall CDGH

TUESDAY, JULY 29

11:00 am - 12:30 pm — **Symposium 6** — **Congress Hall AB**

STI-HIV Interface: Implications for Prevention and Control

Organizer: Janice Mann
Chairs: Tom Wong, Rhonda Kropp

STIs in HIV Positive Homosexual Men: An Emerging Public Health Crisis?
Kevin Fenton

0708 — HIV and STD in Men Who Have Sex with Men, New York City, 1990-2003
An Old Connection Fuels Resurgent Epidemics
Lucia Torian; Susan Blank

0686 — Infectious Syphilis in MSM, Toronto, 2002: *Outbreak Investigation*
Shelly Sarwal; Rita Shahin; Jo-Ann Ackery; Tom Wong

0685 — Infectious Syphilis in MSM, Toronto, 2002: *Public Health Interventions*
Rita Shahin; Shelly Sarwal; Jo-Ann Ackery; Tom Wong

0672 — STD/HIV Prevention in Cyberspace
Jeffrey Klausner

11:00 am - 12:30 pm — **Symposium 7** — **Congress Hall EF**

Molecular Diagnosis of Bacterial STIs

Organizer: Lai-King Ng
Chairs: Lai-King Ng, Michelle Alfa

0078 — What Value Do Real-Time and Quantitative Amplification Assays Have for the Detection of *Chlamydia trachomatis*?
Alan Herring

0207 — Samples and Assays for *N. gonorrhoeae* Molecular Testing
Sepehr Tabrizi

0515 — Patient- and Clinician-Collected Vaginal Swabs: Performance of the Aptima® Combo 2 Assay for the Detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae*
Edward Hook, III; David Martin; Julius Schachter; Dean Willis; Max Chernesky; Paul Fine; Deanna Fuller; Jeanne Jordan; William Janda

0702 A Comparison of Snapshot and Microarray-Based Detection of *gyrA* and *parC* Mutations in Ciprofloxin-Resistant *N. gonorrhoeae*
Lai-King Ng; Irene Martin; Paul Backhouse; Allan Lau

0757 Clinical Implications of Molecular Diagnostics for Bacterial STDs
Michelle Alfa

11:00 am - 12:30 pm **Symposium 8** **Capital Hall 1B**

Mycoplasma and STIs

Organizer: Patricia Totten
Chairs: Patricia Totten, Jørgen Jensen

0682 Introduction to *Mycoplasma genitalium*
Pat Totten; Lisa Manhart

0543 *Mycoplasma genitalium* is Associated with an Inflammatory Urethral Discharge in Men
Patrick Horner; Andrew Leung; Divya Ahuja; Lisa Haddon; Kate Horn; Kirstine Eastick

0533 Diagnostic Performance of Swab Specimens Versus FVU for Detection of *Mycoplasma genitalium* and the Relationship between *M. genitalium* DNA Load and Urethritis
Jørgen Jensen; Eva Björnelius; Birthe Dohn; Peter Lidbrink

0597 Genotyping of Strains of *Mycoplasma genitalium* Detected in Men with Non-Gonocoal Urethritis
George Kenny; Patric Young; Karen Sjostrom; Patricia Totten

0360 The Role of *Mycoplasma genitalium* in Infertility
Helle Svenstrup; Jens Fedder; Svend Birkelund; Gunna Christiansen

11:00 am - 12:30 pm **Oral Presentations** **Capital Hall 2B**

OAP09 – Behaviour and STIs

Chairs: Michel Alary, Verapol Chandeying

0008 Sexual Behaviour, Sexually Transmitted Infections and HIV Risk Among Intravenous Drug Users in Manipur, India
Author(s): RaviVerma; Rangaiyan Gurumurthy; Latashori Kethelapam

	0140	Prevalence of and Risk Factors for HIV, Gonorrhea and Chlamydia Among Clients of Female Sex Workers in Benin: Results of an Integrated Behavioural and Biological Survey **Author(s): Michel Alary;** Honoré Meda; Annie-Claude Labbé; Marguerite Ndour; Georges Batona; Raphaël Bitera; Michelyne Belleau; Alphonse Gbaguidi
	0267	Predictors of Douching Behavior Among African-American Women Attending an Urban STD Clinic **Author(s): Diane Grimley;** Lucy Annang
	0272	Reasons for Not Learning Test Results Among STD Clinic Patients **Author(s): Diane Grimley;** Lucy Annang; Shannon Houser
	0539	Characteristics and Risk Behaviors of Men Identified as Having Sex with More Than One Subject Participating in a Randomized, Controlled STD/HIV Prevention Trial **Author(s): Alan Holden;** Rochelle Shain; Sondra Perdue; Jeanna Piper; Jeffrey Korte; Jane Champion
	0593	Methodology for the 2002 National Household-Based General Population Survey of Risk Behavior and Sexually Transmitted Diseases (STD) Prevalence in Peru **Author(s): Cesar Carcamo;** James Hughes; Patricia Garcia; Pablo Campos; Geoff Garnett; Peter White; Marina Chiappe; Sabina Astete; Franca Jones; Rina Meza; Nilda Gadea; James Jones; Martina Morris; Kara Richmond; King Holmes
	0632	Exploring Why Improved Management of Sexually Transmitted Infections (STIs) and Behavioural Intervention Did Not Reduce HIV Incidence in a Rural Cohort in SW Uganda **Author(s): Anatoli Kamali;** Maria Quigley; James Whitworth

11:00 am - 12:30 pm **Oral Presentations** **Capital Hall 3B**

OAP10 - *Chlamydia trachomatis* - Diagnosis and Typing

Chair: Max Chernesky, Mary Gordon

	0489	A Role for Humoral and Cellular Immunity in the Prevention of *Chlamydia trachomatis* Infection: a Prospective Human Experiment **Author(s): Craig Cohen;** Amalia Meier; Caixia Shen; Hang Lu; Ma Luo; Theresa Kinyari; Nelly Mugo; Rosemary Nguti; Robert Brunham

0302 Quantification of *Chlamydia trachomatis* in Clinical Specimens Using a Touchdown Enzyme Time Release Asymetric PCR (TETRA-PCR)
Author(s): Guillermo E. Madico; Peter A. Rice; Byron E. Batteiger; Lydia Shrier; Barbara J. Van Der Pol; John Papp; Carolyn Black; Lauri E. Markowitz; Julia Schillinger; Phillip Braslins

0488 Distribution of *Chlamydia trachomatis* Genotypes in Symptomatic Patients from Buenos Aires, Argentina
Author(s): Marcelo Rodríguez Fermepin; Diego Sauka; **Andrea Entrocassi**; Pablo Scigliano; Ramón de Torres

0504 Molecular Epidemiology and Transmission of *Chlamydia trachomatis* Infection Based on *ompl* Genotyping within Sexual Dyads
Author(s): Byron Batteiger; J. Dennis Fortenberry; Timothy Breen; Guillermo Madico; Diane Stothard

0542 Prevalence of Chlamydial Infection in the U.S.: Results from a Representative National Sample of Young Adults
Author(s): William Miller; Martina Morris; Mark Handcock; Carol Ford; John Schmitz; Marcia Hobbs; Myron Cohen; Kathleen Harris; J Richard Udry

0568 Detection of Novel Organisms Associated with Salpingitis Using 16S Ribosomal DNA PCR
Author(s): Jennifer Hebb; Craig Cohen; Sabina Astete; Patricia Totten

11:00 am - 12:30 pm **Oral Presentations** **Capital Hall 4B**

OAP11 - *Neisseria gonorrhoeae* - Epidemiology

Chairs: Craig Lee, Adele Schwartz Benzaken

0116 Social Capital, Income Inequality, Poverty, and Gonorrhea/Syphilis Rates in the 1990's in the United States
Author(s): Salaam Semaan; Akbar Zaidi

0254 Defining Areas of Core Gonorrhea Transmission in Baltimore, Maryland: The Case for Repeat Infections
Author(s): Kyle Bernstein; Frank Curriero; Jacky Jennings; Glen Olthoff; Jonathan Zenilman

0536 Prevalence of Gonorrhea in the U.S.: Results from a Representative National Sample of Young Adults
Author(s): William Miller; Martina Morris; Mark Handcock; Carol Ford; John Schmitz; Marcia Hobbs; Myron Cohen; Kathleen Harris; J. Richard Udry

0567 Spatial Heterogeneity of Gonorrhea Rates Measured at Three Levels of Geographic Specificity
Author(s): Roxanne Kerani; Matthew Golden; Mark Stenger; Mark Handcock; King Holmes

0496 Formulation of a Risk Scoring System for Detection of *Neisseria gonorrhoeae* and *Chlamydia trachomatis* Infection in Women Attending Family Planning and Sexually Transmitted Disease Clinics in Nairobi, Kenya
Author(s): Craig R. Cohen; C. Elizabeth Bukusi; Anjali Sharma; S. Haneuse

11:00 am - 12:30 pm **Oral Presentations** **Capital Hall 5B**

OAP12 - HIV – Interventions

Chairs: Donald Sutherland, Stephen Moses

0027 Monthly Azithromycin Chemoprophylaxis in Kenyan Female Sex Workers Reduces the Incidence of STIs but not HIV: a Randomized, Placebo-Controlled Trial
Author(s): Stephen Moses; Rupert Kaul; Joshua Kimani; Elizabeth Ngugi; Karoline Fonck; Nico Nagelkerke; Marleen Temmerman

0049 Cost-Effectiveness Analysis of Three HIV Prevention Interventions in Kenya
Author(s): Bridget Stirling; Frank Plummer; Elizabeth Ngugi; Stephen Moses; Joshua Kimani; Aine Costigan; Evelyn Forget

0075 Intergrating STD, Hepatitis, and HIV Services into Alternative Sentencing Drug Rehabilitation Programs 1999-2002
Author(s): Robert Gunn; David Callahan; Patricia Gonzales; Marjorie Richardson; Paula Murray; Harold Margolis

0156 Pathways to Disparity, Interventions to Enhance Equity: Incident HIV Infection Among Male STI Clients in Pune, India
Author(s): Mary Shepherd; Raman Gangakhedkar; Seema Sahay; Steven Reynolds; Manisha Ghate; Arun Risbud; Ramesh Paranjape; Robert Bollinger; Sanjay Mehendale

0329 A Randomized Controlled Trial of Male Circumcision to Reduce HIV Incidence in Kisumu, Kenya: Preliminary Results
Author(s): Stephen Moses; Robert Bailey; Kawango Agot; Corette Parker; Allan Ronald; Jeckoniah Ndinya-Achola

	0587	Youth United Through Health Education (YUTHE): A Community-Based, Peer-Led STD/HIV Prevention Education Model **Author(s): Jacqueline Siller;** Cherrie Boyer; Alonzo Gallaread; John Sieverding; Jefrrey Klausner
	0701	Maximizing the Benefit: A Tool to Prioritize the HIV Prevention Interventions using Cost-Effectiveness **Author(s): Deborah A. Cohen;** Shin-Yi Wu; Thomas Farley

12:00 pm - 2:00 pm **ASTDA AWARDS PRESENTATIONS** **Colonel By Salon**
LUNCHEON (Sit down)

Sponsored by Lilly

1. **ASTDA Achievement Award**
   (Presented to an individual in mid-career who has made significant contributions to STD control.)

   Presenter: King Holmes

   Recipient: Laura A. Koutsky

2. **Young Investigator Award**
   (Presented for a contribution in the field of STI control made within five years of completing post-doctoral training.)

   Presenter: Sheila Lukehart

   Recipient: Caroline E. Cameron

3. **Thomas Parran Award and Lecture**
   (Presented to an individual for distinguished lifetime contributions to STD control.)

   Presenter: Jonathan Zenilman

   Recipient: Willard Cates, Jr.

2:15 pm - 4:15 pm | **Symposium 9** | **Congress Hall AB**

STIs and HIV in the People's Republic of China

Organizer: Myron S. Cohen
Chair: Myron S. Cohen

STDs in China 2003: Reemergence of an Old Foe
Chen XiangSheng

HIV and STD in China
Wang Xaiochun

China Responds to AIDS: Lessons From Past Success
Myron S. Cohen

2:15 pm - 4:15 pm | **Symposium 10** | **Congress Hall EF**

Syphilis Outbreaks: Prevention and control

Organizers: Marita Van de Laar, Kevin Fenton
Chairs: Marita Van de Laar, Kevin Fenton

0649 Resurgence of Syphilis in Europe
Marita Van de Laar; Maaike Van Veen; Elisabeth Couturier; Osamah Hamouda; Kevin Fenton

0314 Resurgence of Syphilis in the United States
Stuart Berman

0390 The Transmission Dynamics of Syphilis: Can We Understand and Predict Outbreaks?
Geoff Garnett

0657 Refining Surveillance to Understand Transmission Dynamics and Target Prevention Interventions
Kevin Fenton

0707 Challenges to Clinical Management of Syphilis and HIV Co-Infection
Anne Rompalo

0040 Interventions to Prevent and Eliminate Syphilis
Michael Rekart



TUESDAY, JULY 29

2:15 pm - 4:15 pm — **Symposium 11** — **Capital Hall 3B**

Sex Work: Determinants, Patterns and Impact on STI Spread

Organizer: Sevgi Aral
Chairs: Sevgi Aral, James Blanchard

0750	Sex Work in the Former Soviet Union: Responses to Societal Collapse **Sevgi Aral**
0226	Sex Work in the UK and Europe: Changing Demographics, Changing Patterns **Helen Ward**
0220	Sex Work in India: Patterns Embedded in Societal Tradition **James Blanchard;** Ramesh Ramesh; Treena Rae Orchard; Stephen Moses; John O'Neil
0097	Quantifiable Parameters of Sex Work and Their Effects on STI Spread **Azra Ghani;** S.O. Aral
0602	Male Sex Workers in the United States: Patterns and Mobility **Mark Williams;** Anne Bowen; Sandra Timpson

2:15 pm - 4:15 pm — **Oral Presentations** — **Capital Hall 2B**

OAP13 – *Neisseria gonorrhoeae* - Antimicrobial Susceptibility

Chairs: Joan Knapp, John Tapsall

0038	Antimicrobial Susceptibilities of *Neisseria gonorrhoeae* in China, 1999-2001 **Author(s): Xiaohong Su;** Shunzhan Ye
0191	Molecular Typing of *N. gonorrhoeae* Using Clinical Specimens for PCR Diagnosis **Author(s): Allan Lau;** Irene Martin; Richard Garceau; Lai-King Ng
0224	Dramatic Increase in Ciprofloxacin Resistance in Scotland **Author(s): Hugh Young;** Helen Palmer

	0228	Rapidly Increasing Ciprofloxacin Resistance in *Neisseria gonorrhoeae* in England and Wales: Data from the National Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP) **Author(s): Mehnam Soltani;** Elizabeth Anne Rudd; Cathy Ison; Alan P. Johnson; Kevin Andrew Fenton
	0283	Molecular Epidemiology of Quinolone-Resistant *Neisseria gonorrhoeae* in California, 2000 - 2002 **Author(s): Heidi Bauer;** Paul Hannah; Douglas Moore; Julia Wolfe; Joan Knapp; David Trees; Susan Wang; Gail Bolan
	0331	Pharyngeal Gonorrhea in CSWs: Response to a Single 2g Dose Azithromycin Therapy **Author(s): Francesca Poch**, Tamar Shohat; Michael Dan
	0344	Penicillin Binding Protein 2 and Reduced Cefixime Susceptibility in *Neisseria gonorrhoeae* in Hong Kong **Author(s): Elizabeth Houang;** Kai-Man Kam; Sze-Lok Chau; Yiu-Wai Chu
		Closing Remarks **Joan Knapp**
2:15 pm - 4:15 pm	**Oral Presentations:**	**Capital Hall 4B**
	OAP14 – HIV	
	Chairs: Anne Johnson, Ameeta Singh	
	0067	Cerebral Syphilitic Gumma in an HIV Male Confirmed Using PCR Technique **Author(s): Hugh Jones;** Brian Willoughby; John Maguire; Thomas Zwimpfer; Muhammad Morshed; Michael Rekart; Richard Crawford; Shahid Gul; Carolyn Montgomery
	0201	Clinical Characteristics of Patients Diagnosed with HIV Infection in an Urban STD Clinic and the Diagnostic Impressions of Clinicians Unaware of their Sero-Status **Author(s): Khalil Ghanem;** Jonathan Zenilman; Anne Rompalo; Emily Erbelding
	0399	Immunosuppression and Anti-Retroviral Therapy as Determinants of HSV Diagnosis Among HIV-Positive Patients in a Specialized Dermatology Clinic **Author(s): Hong-Ngoc Nguyen;** Adam Mamelak; Pedro Costa Queiroz; Ciro Martins

	0410	Ensuring Phase III Microbicide Trials Against HIV Adequately Estimate Treatment Efficacy: Guidance from Dynamical Models **Author(s): Kamal Desai;** Marie-Claude Boily; Geoff Garnett
	0457	STD Infection in HIV-Infected Patients in Continuing Care in North Carolina: A Cohort Study **Author(s): Marlene Smurzynski;** William Miller; Kimberly Fox; Rheta Barnes; Kathleen Irwin; Peter Leone
	0613	Improving Access to Essential STD Services for People at Higher Risk of STD and HIV Transmission in Urban Areas in China Through Community Health Services **Author(s): Lan Zhang;** Xiaochun Wang; Anneke Van Den Hoek

2:15 - 4:15 pm **Oral Presentations** **Capital Hall 5B**

OAP15 - Vaccines and Immunization

Chairs: Jonathan Angel, Kenneth Rosenthal

	0174	Intravaginal Immunization with CpG Oligodeoxynucleotides as an Adjuvant Induces Local and Systemic Immune Responses and Protection Against Genital HSV-2 Infection **Author(s): Amanda Kwant;** Kenneth Rosenthal
	0181	Immunization Against Viral Pathogens by Antigen Presentation at the Rectal Mucosa **Author(s): Ekaterina Safroneeva;** Shunsuke Takenaka; Ken Rosenthal; Jack Gauldie
	0359	Safety and Immunology of a Prophylactic Genital Herpes (GH) Vaccine Formulated Glycoprotein D2 (gD2) and AS04 Adjuvant in Pre-Teens, Adolescents, and Adults **Author(s): Simon Dobson;** Bernard Duval; Barbara Law; Francis Diaz-Mittoma; Stephan Shafran; Francoise Collard; Gary Dubin
	0490	Estrogen Protects Against a Primary Infection With Sexually Transmitted HSV-2, but Progesterone is Important for Protection Following Immunization **Author(s): Amy Gillgrass;** Kenneth Rosenthal; Charu Kaushic
	0493	Prolonged Exposure to Progesterone Prevents Induction of Protective MucosalResponses to HSV-2 Following Intravaginal Immunization **Author(s): Amy Gillgrass;** Ali Ashkar; Kenneth Rosenthal; Charu Kaushic

0660 HPV16 Prevalence and Risk Factors for Infection among Young Women in Lima, Peru: Implications for an HPV Vaccine Trial Design
Author(s): Francisco Pancho Campos; Patricia Garcia; Cesar Carcamo; Kathrin U. Jansen; Eliav Barr; Bart E. Burington; Laura A. Koutsky; King Holmes

2:15 pm - 4:15 pm **Oral Presentations** **Capital Hall 1B**

OAP16 - HPV – International Implications

Chairs: Ellen Daley, Gary Garber

0560 Assessing the Impact of HPV-Related Diagnoses: Results from a Qualitative Study
Author(s): Ellen Daley; Karen Perrin; Robert McDermott; Sandra Naoom; Mary McFarlane; Jennifer Packing-Ebuen; Holly Rayko; Coleen Hassell; Maribeth Buie; Frances Wallace

0083 Knowledge of High-Risk HPV Positivity Among Women in Rural South Carolina
Author(s): Patricia Sharpe; Heather Brandt; Donna McCree

0305 Females' Emotional Reactions to Real and Hypothetical Diagnoses of Human Papillomavirus (HPV)
Author(s): Vicki Wyatt; Robert Hamm; Katy Smith; Michaela Park; Rilla Walker; Donna McCree

0291 Translating HPV Knowledge into Practice: Findings from Primary Care Provider Interviews
Author(s): Rheta Barnes; Katherine Hsu; Crystal Freeman

0430 Correlate of Human Papillomavirus (HPV) Infection Among Women in Rakai, Uganda
Author(s): Mahboobeh Safaeian; Mohammed Kiddugavu; David Serwadda; Noah Kiwanuka; David Musoke; Maria Wawer; Mark Sclar; Keerti Shah; Ron Gray

0638 Study of the Frequency of High-Risk HPV Types in Patients with Suggestive Diagnosis of HPV Infection Assisted at STD/AIDS Ambulatory, São Paulo, Brazil
Author(s): William Grecco; Wong Alencar; Ariane Coelho; Roberto Silva; Karina Wolffenbuttel; Valdir Pinto

0648 Prevalence and Typing of Human Papillomavirus from Matched Cervical and Vaginal Specimens from South African Women
Author(s): Bruce Allan; Lydia Altini; Janneke van de Wijgert; Heidi Jones; Nicol Coetzee; Anna-Lise Williamson

TUESDAY, JULY 29

4:15 pm - 6:15 pm	**Poster Session 2**	Congress Hall CDGH
7:00 pm - 11:00 pm	Congress Gala Banquet Entertainment featuring: Le Grand Portage (Transportation provided from Daly Street beside Westin Hotel)	Grand Hall Museum of Civilization

Notes

Wednesday, July 30

7:00 am - 5:00 pm	**Congress Registration**	Congress Hall Foyer
7:00 am - 9:00 am	**Coffee and Tea**	Congress Hall Foyer
8:00 am - 8:45 am	**Debate**	Congress Hall ABEF

This House Believes that Stage Should Not be a Consideration in Determining which Patients with Syphilis Should Undergo Lumbar Puncture

Moderator:
Sheila A. Lukehart

Speakers:
Pro: Christina M. Marra
Con: Edward Hook III

9:00 am - 5:00 pm	**Exhibits**	Congress Hall CDGH
9:00 am - 5:00 pm	**Cyber Café**	Congress Hall CDGH
9:00 am - 9:45 am	**Plenary 5**	Congress Hall ABEF

Neisseria gonorrhoeae Pathogenesis: The Molecular Basis of Infection Differs in Men and Women

Chair:
Jo-Anne R. Dillon

Speaker:
Michael A. Apicella

9:45 am - 10:30 am	**Plenary 6**	Congress Hall ABEF

Building Health Research Capacity in Resource Constrained Societies

Chair:
Jo-Anne Dillon

Speaker:
Allan Ronald

10:30 am - 11:00 am	**BREAK**	Congress Hall CDGH



WEDNESDAY, JULY 30

11:00 am - 12:30 pm — **Symposium 12** — **Congress Hall AB**

Planning for Successful HIV Control

Organizer: D. William Cameron
Chairs: Jonathan Angel, Kenneth Rosenthal

0705 Immune Correlates of Protection in HIV-Exposed but Uninfected Individuals
Mario Clerici

0749 Roadmap to HIV Vaccine: Mobilizing Innate and Adaptive Mucosal Immunity to Protect Against HIV and STIs
Kenneth Rosenthal

0684 Protecting Women Against HIV/AIDS and Other STDs with Microbicides
Michel Bergeron

0704 Evidence-Based Planning for HIV/AIDS Control Programming: Experience from India
Stephen Moses; Parinita Bhattacharjee; Reynold Washington; Srinath Maddur; James Blanchard

11:00 am - 12:30 pm — **Symposium 13** — **Congress Hall EF**

Improving the Clinical Management of Pelvic Inflammatory Disease

Organizer: Jonathan Ross
Chairs: Jonathan Ross, Roberta Ness

0029 *Mycoplasma genitalium* as a Cause of PID - a Clinician's Perspective
Jonathan Ross

0694 What's New in the Management of Pelvic Inflammatory Disease?
Roberta Ness

0762 How Can Understanding the Immune Response to Infection Help Us Manage PID?
Sharon Hillier

0466 What Can the Non-Human Primate Model Teach us About PID in Humans?
Dorothy Patton

WEDNESDAY, JULY 30

11:00 am - 12:30 pm **Oral Abstract Presentations** **Capital Hall 2B**

OAP17 - *Neisseria gonorrhoeae* - Diagnostic Innovations

Chairs: Lai-King Ng, Hugh Young

0186 Comparison of the Real-Time Multiplex PCR (M-PCR) with the Ligase Chain Reaction (LCR) Assay for the Detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in Urine Specimens
Author(s): Cheng Yen Chen; Kelly Klega; Angelica Wendt; Ronald Ballard

0199 Predicting Acquisition of *C. trachomatis, N. gonorrhoeae,* and *T. vaginalis* in a Non-Clinical National Sample of Young Military Women during their First Year of Service
Author(s): Mary-Ann Shafer, Cherrie Boyer; Julius Schachter; Jeanne Moncada; Lance Pollack; Yong Kyoo Chang; Richard Shaffer; Stephanie Brodine

0434 Expression of Gonococcal Iron Regulated Genes During Natural Gonococcal Infection
Author(s): Sarika Agarwal; Carol King; Yu Ho; Ellen Klein; Lee Wetzler; Caroline Genco

0444 Evaluation of a New Rapid Test for Gonorrhea in High Risk Populations in Johannesburg, Republic of South Africa
Author(s): Deborah Burgess; Simeon Odugwu; Dmitriy Matsyshen; Frans Radebe; Judith Wright; **Matthew Steele**; Hendrik Koornhof

0499 Cost Effectiveness of Gonorrhea Screening in Family Planning Settings
Author(s): Charlotte Kent; Janice Chaw; Jeffrey Klausner

11:00 am - 12:30 pm **Oral Presentations** **Capital Hall 3B**

OAP18 - Herpes

Chairs: Hunter Handsfield, Jim Mahony

0166 Is Circumcision Status Associated with Herpes Simplex Virus Type 2 Infection in Men? Data from The National Health and Nutrition Examination Survey, 1999-2000
Author(s): Fujie Xu; Lauri Markowitz; Maya Sternberg; Geraldine McQuillan; Benny Kottiri

0169 National Seroprevalence and Trends In Herpes Simplex Virus Type 1 and Type 2 Infection in the United States, 1988-2000
Author(s): Fujie Xu; Geraldine McQuillan; Benny Kottiri; Maya Sternberg; Francis Lee; Andre Nahmias; Lauri Markowitz

0244 Predictors of a Positive HSV 2 Antibody Test Among Young Persons with No History of Genital Herpes
Author(s): Ken Fife; David Bernstein; Gregory Zimet; Rebecca Brady; Wanzhu Tu; Katherine Stone; Lawrence Stanberry

0252 Return for Results after Type-Specific Herpes Simplex Virus (HSV) Screening
Author(s): Dennis Fortenberry; Gregory Zimet; Jingwei Wu; Wanzhu Tu; Kay Stone; Susan Rosenthal; Kenneth Fife

0398 Historical Correlates of Genital Herpes Simplex Virus 2 (HSV-2) Infection in Black American Men Attending an STD Clinic
Author(s): James Sizemore; Alfred Lakeman; Richard Whitley; AnnaLee Hughes; Edward Hook III

0479 Effect of Sex Hormones on Susceptibility of and Immune Cells in the Genital Tract, Following Infection with Herpes Simplex Virus, Type 2 in a Mouse Model
Author(s): Sherie Fernandez; Amy Gillgrass; Ken Rosenthal; Charu Kaushic

Closing Remarks
Hunter Handsfield

11:00 am - 12:30 pm **Oral Presentations** **Capital Hall 4B**

OAP19 – STIs: Epidemiology and Modeling

Chairs: Ann Jolly, Peter Kohl

0234 A Comparison of the Theoretically Predicted Distribution of Bacterial STIs and their Observed Prevalence in Urban Peru
Author(s): Peter White; Cesar Carcamo; Geoff Garnett; James Hughes; Pablo Campos; Patricia Segura; Marina Chiappe; Sabina Astete; Patricia Garcia; King Holmes

0321 Analyzing and Mapping the Spatial Distribution of Sexually Transmitted Diseases for Public Health Intervention
Author(s): Dionne Law; Marc Serre; George Christakos; Peter Leone; William Miller

	0426	Epidemiology of Reinfection: An Approach Using Mathematical Models and Empirical Data **Author(s): Katherine Turner;** Catherine Ison; Iona Martin; Geoff Garnett
	0441	Routine Surveillance of Sexually Transmitted Infections in Canada: Accomplishments and Future Directions **Author(s): Maureen Perrin;** Zheng Wang; Susanne Shields; Tom Wong
	0474	Partner Concurrency and Sexually Transmitted Diseases **Author(s): Lydia Drumright;** Pamina Gorbach; King Holmes
	0527	Prevalence of Trichomoniasis in the U.S.: Results from a Representative National Sample of Young Adults **Author(s): William Miller;** Martina Morris; Mark Handcock; Marcia Hobbs; Carol Ford; John Schmitz; Myron Cohen; Kathleen Harris; J. Richard Udry

11:00 am - 12:30 pm **Oral Presentations** **Capital Hall 5B**

OAP20 - Policy and Politics: Reconsidering Condoms and other Public Health Interventions

Organizer: Nancy Padian
Chairs: Nancy Padian, Sevgi Aral

	0534	Using Y Chromosome PCR as a Biomarker for Sexual Intercourse-Studies of Condom Efficacy **Author(s): Jonathan Zenilman;** Julie Giles; Corlina McNeil; Jeffrey Yuenger
	0713	Promoting Condoms as Part of Public Health **Author(s): Nancy Padian**
	0714	Delivering on the Evidence: Barriers to Implementation of Prevention Programmes **Author(s): Anne Johnson**
	0716	Effectiveness of Condoms In Preventing STI Transmission: What Do We Know? **Author(s): Sevgi Aral**
	0751	Bathhouse Policy During Epidemics of HIV and Syphilis **Author(s): Thomas Farley**

WEDNESDAY, JULY 30

12:00 pm - 1:00 pm — **STD Editorial Board Meeting** — **Les Saisons Room, 3rd floor, Westin Hotel**

1:00 pm - 2:00 pm — **ISSTDR Biennial General Meeting**
Everyone Invited — **Capital Hall 1B**

12:00 pm - 1:30 pm — **Workshop:** — **Colonel By Salon**

Clinical and Laboratory Investigation of *Chlamydia trachomatis* Treatment Failures

Organizers: John R. Papp, Susan A. Wang, Jim Newhall

12:30 pm - 2:15 pm — **Poster Session 3 (Lunch provided)** — **Congress Hall CDGH**

2:15 pm - 4:15 pm — **Symposium 14** — **Congress Hall AB**

Contraceptive Choices and HIV

Organizer: Ward Cates
Chairs: Ward Cates, Craig Randall Cohen

0680 — Non-Hormonal Contraception and HIV Acquisition: An Update
Willard Cates

0727 — Hormonal Contraception, Antiretroviral Therapy and Clinical Trials: Next Steps
S. Reichelderfer

0743 — Hormonal Contraception and Progression of HIV Diseases
Craig Randall Cohen

0745 — Hormonal Contraception and the Risk of HIV-1 Acquisition
Nancy Padian; Charles Morrison; Barbara Richardson; David Celentano; Tsungai Chipato; Francis Mmiro; Sungwal Rugpao; Robert Salata

2:15 pm - 4:15 pm **Symposium 15** **Congress Hall EF**

Chlamydia Diagnostics: How the Challenges Challenge

Organizer: Angelika Stary
Chairs: Angelika Stary, Walter Stamm

Opening Remarks
Walter Stamm

0696 Future Perspectives on Chlamydia Diagnostics
Julius Schachter

0689 NAA Tests for Chlamydia Diagnosis in STI Patients: From Bench to Bedside
Angelika Stary

0681 Chlamydia Diagnosis: "Do We Really Have What We Want or do We Really Want What We Have?"
Max Chernesky

Screening Approaches for *C. trachomatis* in the USA
Tom Quinn

0678 Clinical and Public Health Related Effects of Home Sampling for Population Based Screening of *Chlamydia trachomatis*
Lars Ostergaard

2:15 pm - 4:15 pm **Oral Presentations** **Capital Hall 2B**

OAP21 - Bacterial Vaginosis

Chairs: Jonathan Ross, Pat Totten

0057 Mucosal and Systemic Immune and Cytokine Levels during Bacterial Vaginosis
Author(s): Spencer Hedges; Amanda Beverly; Frank Barrientes; Nan Sadler; Jane Schwebke

0197 Risk Factors for Mucopurulent Cervicitis Among Women with Bacterial Vaginosis
Author(s): Jeanne Marrazzo; Harold Wiesenfeld; Pamela Murray; Barbara Busse; Leslie Meyn; Marijane Krohn; Sharon Hillier

0258 Relationship of Vaginal Leukocyte Counts in Women with Bacterial Vaginosis to STDs
Author(s): William Geisler; Shuying Yu; Molly Venglarik

	0288	Diagnosis of Bacterial Vaginosis Using BV Stix **Author(s): Linda Myziuk;** Barbara Romanowski; Chris Parkinson
	0361	Response to Treatment of Bacterial Vaginosis in HIV–1 Infected Women **Author(s): Prashini Moodley;** Patrick Sturm; Rabia Goga; A. Willem Sturm
	0402	Differences in Reported Cure Rates for Bacterial Vaginosis Comparing Traditional and FDA Criteria **Author(s): Richard Beigi;** Marijane Krohn; Leslie Meyn; Ingrid Macio; Sharon Hillier
	0447	The Rectum as a Reservoir for Vaginal Lactobacillus and its Association with Bacterial Vaginosis **Author(s): May Antonio;** Lorna Rabe; Sharon Hillier
	0573	Definition of Cure for Bacterial Vaginosis **Author(s): Katherine Thomas;** Sixto Sanchez; Patricia Garcia; King Holmes
2:15 pm - 4:15 pm	**Oral Presentations**	**Capital Hall 3B**

OAP22 – MSM

Chairs: Matthew Golden, Derek Freedman

	0065	Prevalence of HIV and Recent Trends in Sexual Behaviour Among a Community Sample of Men Who Have Sex With Men in London **Author(s): Julie Dodds;** Danielle Mercey; John Parry; Anne Johnson
	0131	Increase of Sexual Transmitted Diseases, but not HIV, Among Young Gay Men **Author(s): Akke van der Bij;** Nicole Dukers; Ineke Stolte; Roel Coutinho
	0159	Screening for *Neisseria gonorrhoea* and *Chlamydia trachomatis* in Men Who Have Sex with Men at Male Only Saunas **Author(s): Christopher Fairley;** Nicky Lister; Anthony Smith; Sepehr Tabrizi; Peter Hayes; Nick Medland; Suzanne Garland
	0300	Association of Methamphetamine Use with HIV Among MSM Tested for HIV in an STD Clinic **Author(s): Matthew Golden;** Devon Brewer; Robert Wood; King Holmes; Hunter Handsfield

	0693	High Prevalence of HSV-2 Infection and High Rates of Sex Partner Concurrency Among Peruvian Men Who Have Sex With Men (MSM) **Author(s): William Whittington;** Jorge Sanchez; Andrew Davis; L. Goicochea; Lourdes Kusunoki; Aldo Lucchetti; Rosa Galvan; Jerome Galea; Connie Celum
	0746	STD/HIV in MSM **Author: Hunter Handsfield;** Matthew Golden; Gary Goldbaum; Robert Wood
2:15 pm - 4:15 pm	**Oral Presentations**	**Capital Hall 4B**
	OAP23 – Syphilis	
	Chairs: Sheila Lukehart, Mary Gordon	
	0190	A Comparison of Two Syphilis Screening Protocols in the Robeson County, North Carolina Detention Facility **Author(s): Peter Moore;** Evelyn Foust; Kimberly Sessions
	0274	Gender of Sex Partners Reported by Men with Primary and Secondary Syphilis, New York City, 2000-2002 **Author(s): Ellen Klingler;** Julia Schillinger; Mary Shao; Robert Baselice; Laura Neylans; Jacques Mathieu; Steven Rubin; Susan Blank
	0289	The Changing Epidemiology of Syphilis in New York City, 1998-2002 **Author(s): Susan Blank;** Julia Schillinger; Ellen Klingler; Mary Shao; Laura Neylans; Jacques Mathieu; James Brown; Robert Baselice; Steve Rubin
	0454	Large Increases in Early Syphilis — San Francisco, 2000 - 2002 **Author(s): William Wong;** Charlotte Kent; Robert Kohn; Jeffrey Klausner
	0460	Neurosyphilis — San Francisco, 2002 **Author(s): William Wong;** Charlotte Kent; Robert Kohn; Jeffrey Klausner
	0500	Network Visualization and Ethnography Characterizes North Carolina Syphilis Outbreaks as Heterosexually-Driven **Author(s): Peter Leone;** John Potterat; Stephen Muth; Constance Jones; Janet St. Lawrence; Michael Hilton

2:15 pm - 4:15 pm | **Oral Presentations** | **Capital Hall 5B**

OAP24 - European STI Surveillance Network

Chairs: Marita van de Laar, Catherine Lowndes

0157 Comparing Apples and Oranges? – Understanding and Overcoming Heterogeneity in European STI Surveillance Systems
Author(s): Catherine Lowndes; Kevin Fenton; Jodi Cooper; ESSTI Collaborative Group

0211 Building a Sentinel Surveillance System for Sexually Transmitted Infections in Germany, 2003
Author(s): Viviane Bremer; Ulrich Marcus; Alexandra Hofmann; Osamah Hamouda

0650 Enhanced Surveillance of STI in the Netherlands
Author(s): Marita Van de Laar; Ton Coenen; Martin de Vries; Han Fennema; Arnold Bosman

0418 Recent Outbreaks of Syphilis in EU: Do We Need an Early Warning System for STI Outbreaks in Europe?
Author(s): Delia Boccia; Catherine Lowndes; Kevin Fenton; ESSTI Collaborative Group

0725 Establishing National Behavioural Surveillance In England: Early Lessons
Author(s): Christine McGarrigle

0711 Surveillance of Sexually Transmitted Infections (STIs) in Austria: Can it be Improved?
Author(s): Angelika Stary; Silvia Mayerhofer

Thursday, July 31

9:30 am- 3:00 pm | **International Collaboration on Gonorrhea (ICG)** | **D'Iorio Hall**
Chair: John Tapsall | **Room 214**
University of Ottawa

KEYNOTE AND PLENARY LECTURES

Lectures will be held in Congress Hall ABEF.

Keynote Lecture – "STD Prevention: What Works?"
King Holmes
Sunday July 27, 2003
7:15 pm

Plenary 1 – "HPV Vaccines: Potential Impact on STD Control Programs"
Laura Koutsky
Monday July 28, 2003
9:00 am

Plenary 2 – "Herpes Virus Vaccines – When and How?"
Barry Rouse
Monday July 28, 2003
9:45 am

Plenary 3 – "Overcoming the Challenge of HIV Drug Resistance"
Mark Wainberg
Tuesday July 29, 2003
9:00 am

Plenary 4 – "Combining Interventions for Successful HIV Control"
Geoff Garnett
Tuesday July 29, 2003
9:45 am

Plenary 5 – "*Neisseria gonorrhoeae* Pathogenesis: The Molecular Basis of Infection Differs in Men and Women"
Michael A. Apicella
Wednesday July 30, 2003
9:00 am

Plenary 6 – "Building Health Research Capacity in Resource Constrained Societies"
Allan Ronald
Wednesday July 30, 2003
9:45 am

DEBATES/DISCUSSIONS

Debates/Discussions will be held in Congress Hall ABEF.

Discussion: STD Controversies - **"HIV epidemiology: Does Non-Sexual Transmission Play an Important Role in the Ongoing Epidemic in Sub-Saharan Africa?"**
Geoff Garnett & Richard Rothenberg
Monday July 28, 2003, 8:00 am

Debate - **"This House Believes that all Men Should be Screened for Genital Chlamydia Infection"**
Lars Ostergaard & Walter Stamm
Tuesday July 29, 2003, 8:00 am

Debate - **"This House Believes that Stage Should not be a Consideration in Determining which Patients with Syphilis Should Undergo Lumbar Puncture"**
Christina M. Marra & Edward W. Hook III
Wednesday July 30, 2003, 8:00 am

SATELLITE SYMPOSIA

Symposium - **" 7th International Symposium on *Haemophilus ducreyi*"**
Organized by: Stanley M. Spinola
Sunday July 27, 2003, 8:00am
Capital Hall 4B

Symposium - **"Phase-specific Strategies for the Prevention, Control and Elimination of Sexually Transmitted Diseases II"**
Organized by: Sevgi Aral
Sunday July 27, 2003, 8:00am
Capital Hall 1B

Symposium - **"Selected Topics in STI/HIV Diagnosis Management and Control Symposium"**
Sponsored by Abbott Diagnostics
Organized by: Max Chernesky
Sunday July 27, 2003, 3:00pm
Colonel By Salon

Symposium - **"Novel Approaches to the Laboratory Diagnosis *of Chlamydia trachomatis* and *Neisseria gonorrheae*"**
Sponsored by Gen-Probe (Lunch provided - seating limited to 500)
Speakers: Max Chernesky & Edward W. Hook III
Monday July 28, 2003, 12:30 pm
Colonel By Salon

Workshop – **"Clinical and Laboratory Investigation of *Chlamydia trachomatis* Treatment Failures"**
Organizers: John R. Papp, Susan A. Wang, Jim Newhall
Tuesday July 29, 2003, 12:00 pm
Colonel By Salon

BUSINESS MEETINGS

Saturday July 26, 2003

- Behavioral Surveillance Principal Investigator's Meeting: Study Planning & Protocol Development – 10:00 am, Manitoba Room, 2nd floor, Westin Hotel

Sunday July 27, 2003

- ISSTDR Board Meeting – 9:00 am, Saskatchewan Room, 2nd floor, Westin Hotel

Monday July 28, 2003

- ASTDA Executive Committee Meeting, 12:00 pm, Saskatchewan Room, 2nd floor, Westin Hotel

Wednesday July 30, 2003

- STD Editorial Board Meeting, 12:00 pm, Les Saisons Room, 3rd floor, Westin Hotel,
- **ISSTDR BIENNIAL General Meeting (EVERYONE IS INVITED), 1:00 pm, Capital Hall 1B, OCC**

Thursday July 31, 2003

- International Collaboration on Gonorrhea (ICG), 9:30 am, D'Iorio Hall, Room 214, University of Ottawa



2003 ASTDA AWARDS

ASTDA Achievement Award

Presented to an individual in mid-career who has made significant contributions to STD control.

Presenter: King Homes

Recipient: Laura A. Koutsky

Young Investigator Award

Presented for a contribution in the field of STI control made within five years of completing post-doctoral training.

Presenter: Sheila Lukehart

Recipient: Caroline E. Cameron

Thomas Parran Award

Presented to an individual for distinguished lifetime contributions to STD control.

Presenter: Jonathan Zenilman

Recipient: Willard Cates Jr.

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THE CENTRE FOR INFECTIOUS DISEASE PREVENTION AND CONTROL, HEALTH CANADA IS GRATEFULLY ACKNOWLEDGED FOR THE FINANCIAL SUPPORT OF THE 2003 ISSTDR ABSTRACT PROGRAM AND BOOKLET PRINTING.
HTTP://WWW.HC-SC.GC.CA/PPHB-DGSPSP/STD-MTS/

NOUS REMERCIONS SINCÈREMENT LE CENTRE DE PRÉVENTION ET DE CONTRÔLE DES MALADIES INFECTIEUSES, SANTÉ CANADA, POUR SON AIDE FINANCIÈRE POUR L'IMPRESSION DE LA BROCHURE ET DU PROGRAMME DES RÉSUMÉS DE 2003 DE L'ISSTDR.
HTTP://WWW.HC-SC.GC.CA/PPHB-DGSPSP/STD-MTS/INDEX_F.HTML

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ASTDA
American Society for Sexually Transmitted Disease Association

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POSTERS and EXHIBITS

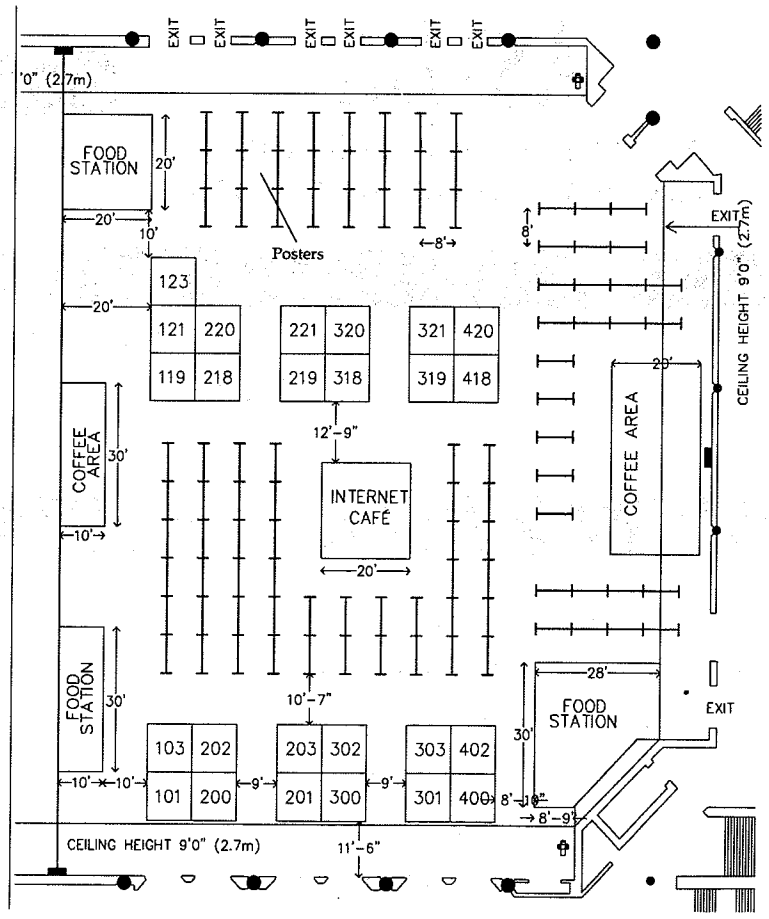
The exhibition will be held at the Ottawa Congress Centre in Congress Hall CDGH.

Exhibit Hours:

Monday, July 28	9:00 am - 6:15 pm
Tuesday, July 29	9:00 am - 6:15 pm
Wednesday, July 30	9:00 am - 5:00 pm

EXHIBITORS

Company	Booth No.
3M Canada Company	103
Abbott Laboratories	119 – 121 – 123
Becton Dickinson Canada Inc.	402
Bristol Myers – Squibb	321
Canadian Infectious Disease Society (CIDS)	303
Canadian Institutes of Health Research	200
Canadian Public Health Association	301
Digene Corporation	202
Elsevier Science	420
General Booth	300
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Health Canada	203 – 302
ISSTDR 2005	201
Lippincott Williams & Wilkins	319
Phoenix Bio-Tech Corp.	218
Presutti Laboratories	221
Roche Molecular Systems Inc.	219 – 318
The Society of Obstetricians and Gynaecologists of Canada	320
Thermo Biostar Inc.	220



SOCIAL PROGRAM

Sunday July 27, 2003

The Congress will begin with the Opening Ceremony and Keynote Lecture by Dr. King Holmes on Sunday, July 27 at 6:30 pm in the Congress Hall ABEF of the Ottawa Congress Centre (OCC), followed by a Welcome Reception, on the 4th floor Terrace of the Westin Hotel (which is connected to the OCC).

Monday July 28, 2003

6:30 pm – 7:15 pm – Bus Tour: Highlights of the Downtown Ottawa Capital Region (Transportation provided from Daly Street beside the Westin Hotel).

7:30 pm – 8:15 pm – Organ Recital at Notre Dame Cathedral on Sussex Drive (Transportation provided from Daly Street beside the Westin Hotel).

8:15 pm – Free Time – Dinner on your own.

Tuesday July 29, 2003

The Congress Banquet Gala dinner will be held at 7:00 pm – 11:00 pm at the spectacular Canadian Museum of Civilization (Transportation provided from Daly Street beside the Westin Hotel to & from the museum).

AUDIO VISUAL

All session rooms will be provided with the following audio visual equipment:

- large screen
- LCD projector
- laptop computer (PC) with CD drive
- overhead projector
- podium with microphone
- wireless lavalier
- laser pointer will be provided for your presentation by the Session Chair

Should you require a 35mm slide projector, please notify Linda Huskins immediately, who can be reached through the ISSTDR Registration Desk.

We ask that you present yourself at the Speakers' Room (Executive Suite at the Ottawa Congress Centre) thirty minutes prior to your session. This will enable you and the technicians to preview and pre-load your computer presentation.

Persons giving presentations using an LCD projector must bring overheads or 35 mm slides as a backup. Presenting authors using 35 mm slides must give their loaded carousels to the A/V technician prior to their session.

No time will be allowed for slide loading during the session.

Thank-you for your co-operation.

GENERAL INFORMATION

1. BADGES

Name badges must be worn during all congress-related activities. Badges will be distributed at the ISSTDR Registration Desk. A name badge is required for admittance to all scientific sessions, posters, exhibits and social programs.

Please do not lose your name badge! If you do, please go to the ISSTDR Registration Desk.

2. BREAKS

Coffee and tea will be available from 7:00 am – 9:00 am from Monday (July 28), Tuesday (July 29), and Wednesday (July 30) in Congress Hall CDGH.

Regular morning breaks are scheduled from 10:30 am – 11:00 am, again in the same location as above.

3. CHILDCARE

Childcare is available at most hotels if arrangements are made ahead of time. For further information, contact the Front Desk at your respective hotel.

4. CONCIERGE SERVICES

Concierge services will be available to all participants. The desk will be located near the ISSTDR Registration Desk.

5. CREDIT CARDS

All major credit cards are accepted in most hotels, stores, restaurants, etc.

6. DISABILITY & INSURANCE

The International Society for Sexually Transmitted Diseases Research (ISSTDR) is unable to accept any responsibility for injury or damage to persons or property during the Congress.

7. DRESS ATTIRE

For the most part, Ottawa attire is casual; but note that there are a few restaurants that require men to wear jackets in the evening. Meeting attire is business casual. Attire for Tuesday evening's Banquet Gala will be business casual.

8. GRATUITIES

In Ottawa, most gratuities are not included in restaurants bills, but are left to the discretion of the client. It is customary to leave a gratuity of 15% - 20% of the total cost before taxes.

9. LANGUAGE OF CONGRESS

The meeting language is English only. No simultaneous translation will be provided.

10. LOST & FOUND

Contact the ISSTDR Registration Desk.

11. MESSAGE BOARD

There is a Message Board located near the ISSTDR Registration Desk. Please check the board daily for important messages.

12. PHARMACY

There are several pharmacies located in the vicinity of the Ottawa Congress Centre and your respective hotel. There are also pharmacies located in the Rideau Centre Shopping Mall which is attached to the Ottawa Congress Centre.

If you require assistance, please contact the Front Desk at your hotel or the ISSTDR Concierge Service at the Ottawa Congress Centre.

13. PUBLIC TRANSPORTATION

Please see the Concierge Services desk to answer any questions you may have.

14. ISSTDR REGISTRATION

The Registration Desk will be situated in the Congress Hall Foyer at the Ottawa Congress Centre (OCC).

Hours of operation:

Sunday, July 27	7:00 am – 7:00 pm
Monday, July 28	7:00 am – 6:00 pm
Tuesday, July 29	7:00 am – 6:00 pm
Wednesday, July 30	7:00 am – 5:00 pm

15. RESTAURANTS

Please see the Concierge Services desk to answer any questions you may have.

16. SHOPPING

Ottawa offers every shopping experience imaginable from strolling deluxe indoor malls, to strolling quaint treelined street browsing galleries and boutiques. Top spots to shop include the Rideau Centre Mall (attached to the Ottawa Congress Centre and Westin Hotel), plus downtown along Rideau and Sussex Streets. A visit to the Byward Market and the city's Gothic architecture and stone heritage buildings is a must. The Byward Market is only a 10-15 minute walk from downtown hotels.

17. SMOKING POLICY

The Congress is a smoke-free event, Ottawa is smoke-free in all public areas, as well as bars and restaurants.

18. SPEAKERS' ROOM

The Speakers' Room (Executive Suite, OCC) will be fully equipped in order for the speakers to review their presentations. The Speakers' Room is reserved for speakers only.

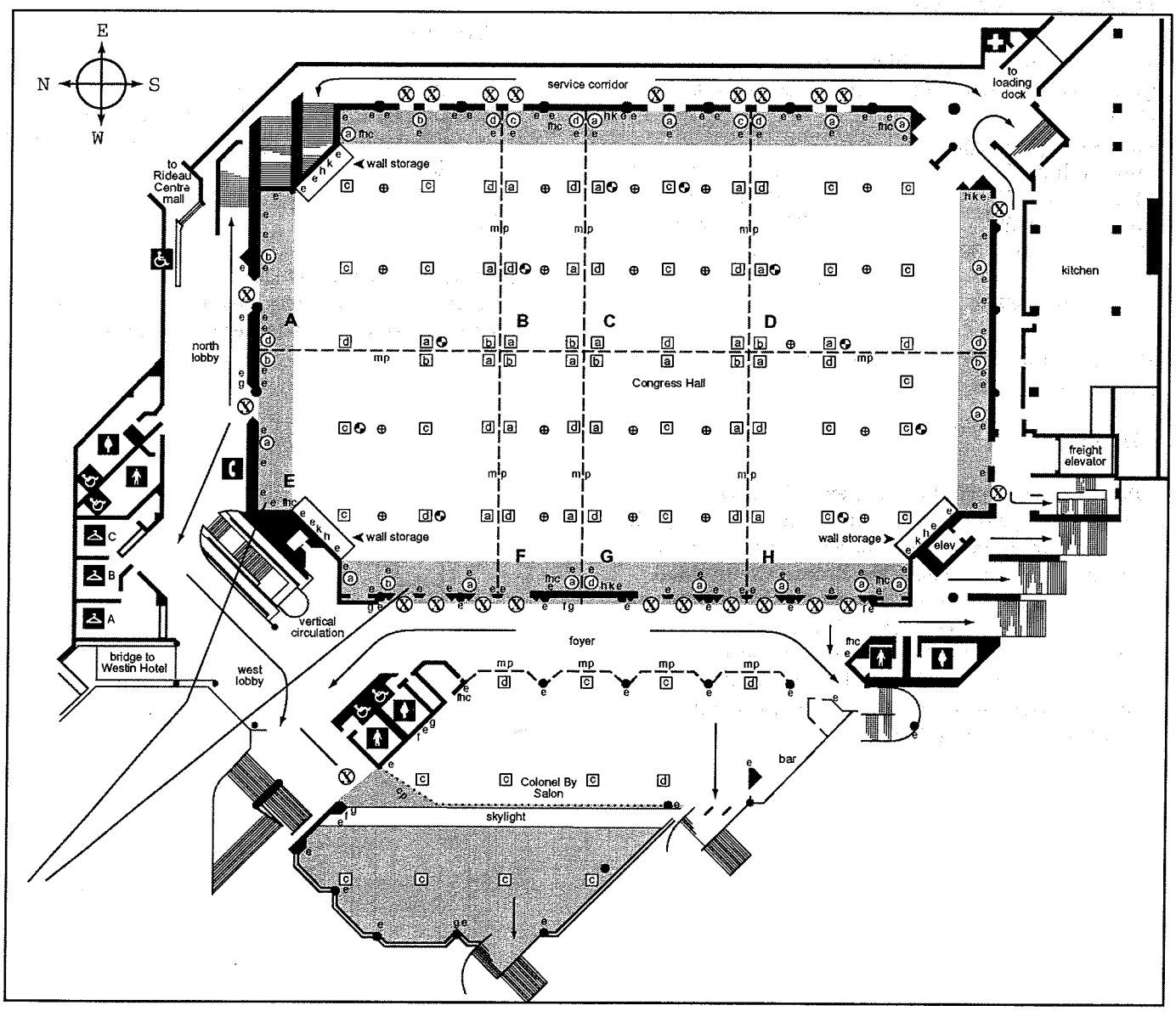
19. VOLTAGE

Electricity in Canada is 110-volt AC. All non-North American appliances require an adapter for the voltage, as well as an adapter for the plug.

FLOOR PLANS & MAPS

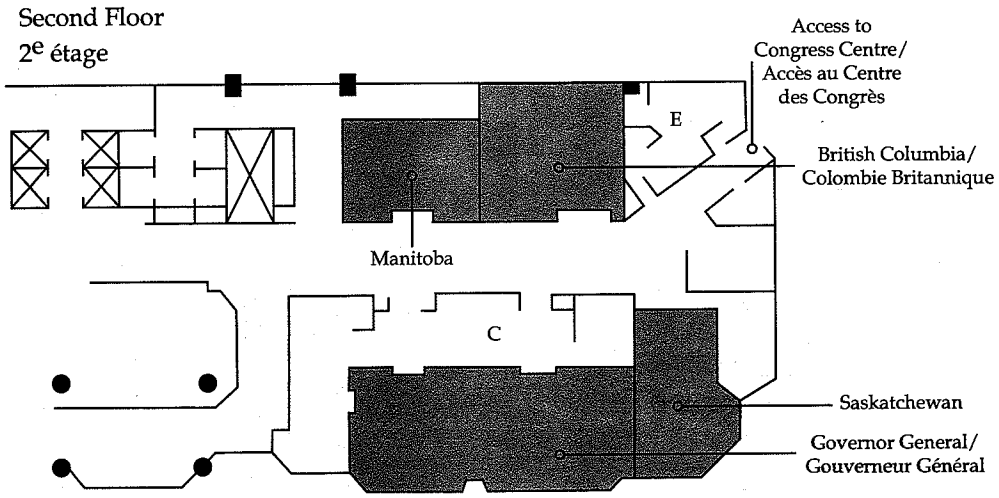
Ottawa Congress Centre

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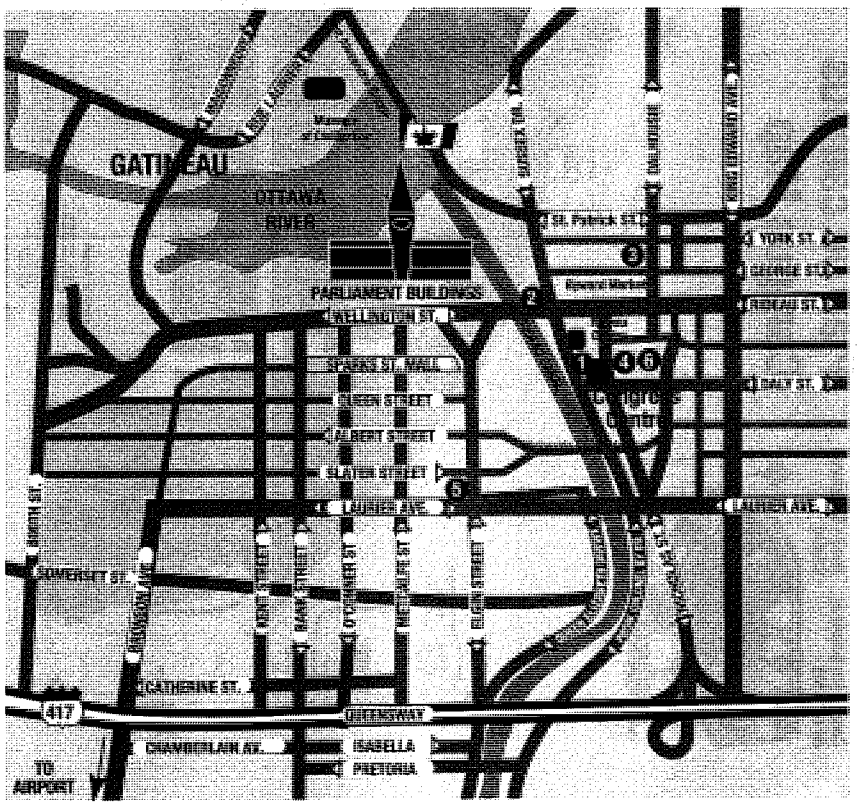


FLOOR PLANS & MAPS

MEETING ROOMS at the WESTIN HOTEL

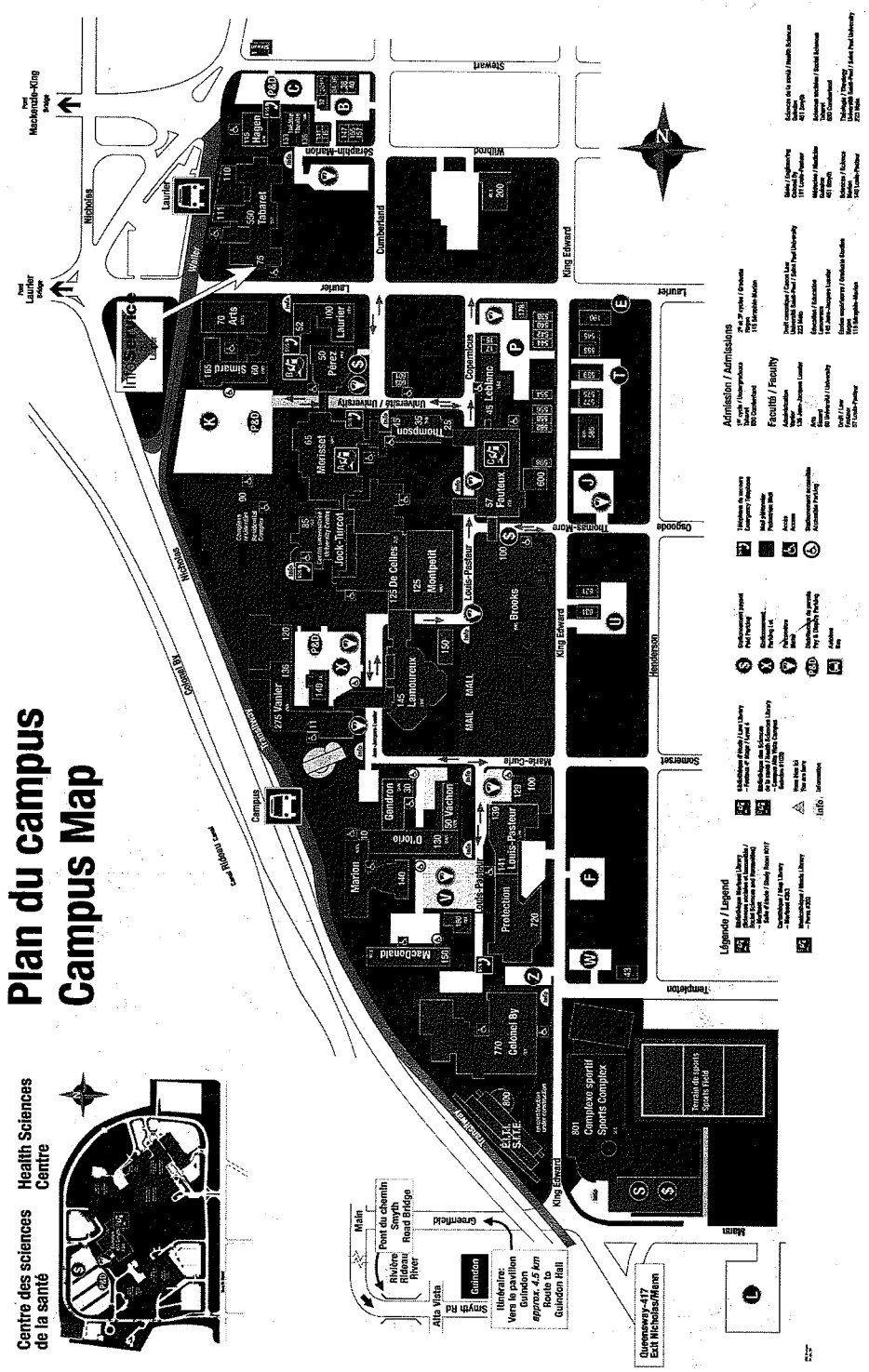


Downtown Ottawa



Downtown Ottawa

Ottawa University - South Campus - D'Iorio Hall, 10 Marie-Curie



POSTER SESSIONS

Poster sessions will be held in Congress Hall CDGH (OCC)

Monday, July 28, 2003	**Poster Session 1**	**4:15 pm – 6:15 pm**	**Cash bar available**
Tuesday, July 29, 2003	**Poster Session 2**	**4:15 pm – 6:15 pm**	**Cash bar available**
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Objective: To assess the spread of infection by venous and lymphatic pathways after different methods of inoculation.

Methods: In the canine model, [99mTc] Sulfur Colloid particles, equal in size to retroviral bodies (100-200 nm), were injected subcutaneously (SQ), intravenously (IV) or into the lymphatics (IL) at the distal part of the hind limb. Blood and lymph samples were taken at the groin from the cannulated femoral vein and a lymphatic vessel. Parameters, such as flow rates, particle arrival time, concentration, flux and accumulation, were determined for a 45-minute period by gamma counting.

Results: After SQ injection particles arrived in blood at 2.81±0.54 minutes and in the lymph at 6.0±1.47 minutes. Concentration of particles in lymph was up to 1000 times higher than in the blood. Flux values were comparable in both pathways. The accumulation of particles in blood initially rose faster than in lymph. Accumulation in lymph rose more slowly, but continued to increase for a prolonged time. Radioactive scanning revealed that about 90 per cent of the inoculum remained in loco for at least 45 minutes with gradual release into the circulation. After IL injection, particles arrived in the blood in an average of 4 seconds. The arrival time in the lymph after IV injection was 25.4±6.44 minutes. Concentration values in the venous blood after IL injection and in lymph after IV injection were comparable. Flux values depended primarily on flow conditions. IL injection increased lymph flow and enhanced particle transport. Particle accumulation in the blood after IL injection rose quickly and had high values. Particle accumulation in the lymph after IV injection was delayed, but continued to increase throughout the experiment.

Conclusions: There are extensive communications between the lymph and blood circulation at the peripheral level. These communications are functional even under normal conditions and may provide the rapid transport of particulate matter in both directions, with prevailing conveyance from the lymph to the blood pathway. This may explain the fast entry of viral inoculum into the blood, even if initial entry occurred subcutaneously or directly into the lymphatic system. After entry, lymph will carry more particles at a slower speed, while blood will transport smaller amounts more quickly. The prolonged local containment of the inoculum after SQ introduction and the slow spread of large quantities of inoculum by the lymph justifies rapid local interventions.

0002

Sero-prevalence of STD Markers in Pregnant Women

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Objective: To study the prevalence of STD pathogens in antenatal clinic attendees. The results will help plan strategies to reduce vertical transmission of these infections.

Methods: Serum was obtained from 500 pregnant women as part of routine sentinel surveillance. These were screened for HIV antibodies (Murex HIV I+II kit and HIVSPOT), Hepatitis B surface antigen (latex agglutination, Randox), and syphilis (sypha card, Murex).

Results:

RESULTS: (% seropositivity)

Age (yrs)	HIV	HBsAg	Syphilis
15-19	0.8	16.1	0.8
20-24	1.6	33.9	1.2
25-29	3.4	35.7	2.0
30-34	0.6	8.9	0.4
35-39	0.4	0	0.2
40-45	0.2	1.8	0

Conclusion: In this population, 18.2% carry HBsAg, and 6.8% and 4.6% carry antibodies to HIV and syphilis respectively. Up to 30% of these infections could be transmitted to their babies. There exists some interventions presently to reduce this risk of vertical transmission. Strategies need to be put in place to do that.

0003

Prevalence and Spontaneous Clearance of Human Papillomavirus Infection in Men who have Sex with Men Participating in a Dutch Gay-cohort

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Objective: To establish the prevalence of anal and coronal sulcus human papillomavirus (HPV) in a group of men who have sex with men (msm); to identify risk factors associated with HPV-infection; and to investigate spontaneous clearance after a median interval of twenty-one months.

Methods: Cross-sectional study of 241 HIV-negative and 17 HIV-positive msm who underwent routine venereological examinations including HIV-serology. Swabs were taken from the coronal sulcus and anus for HPV DNA testing. All subjects were asked to complete a questionnaire on sexual risk behaviour. Data concern two examinations with a median interval of twenty-one months.

Results: In anal specimens, HPV DNA was detected in 64.7% of the HIV-positive men and 32.8% of the HIV-negative men ($p = 0.015$). HPV DNA was detected at the coronal sulcus in 23.5% of the HIV-positive men and in 15.8% of the HIV-negative men (n.s.). High-risk HPV types ($p = 0.007$) and two or more different HPV genotypes ($p = 0.006$) were seen more often in anorectal specimens of HIV-positive compared to HIV-negative persons. A concomitant anal infection with Chlamydia trachomatis, gonococci or herpes simplex virus might be associated with a higher risk of anorectal HPV infection ($p = 0.059$). Analyses concerning spontaneous clearance are not completed at this moment but will be presented in July 2003.

Conclusion: In this study, HIV-positivity was associated with a higher prevalence of high-risk but not with low-risk HPV types at the anus. No association was found between HIV-positivity and presence of high-risk HPV at the coronal sulcus. No sexual behavioral de-

terminants for the presence of HPV could be identified. Concomitant anal infection might be associated with HPV infection. Conclusions concerning spontaneous clearance in this study will be presented in July 2003.

0005

Concomitant Leprosy and HIV Infection - Immunological Response

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INTRODUCTION: So far there is no conclusive evidence of any adverse impact of HIV infection on Leprosy. Here are two cases of leprosy having HIV infection.

CASE PRESENTATION: Case 1 – A 36 years old female presented with multiple erythematous lesions with raised scaly borders with hypo aesthesia on right buttock, abdomen and left forearm. Skin biopsy was consistent with borderline lerpomatous leprosy. History revealed promiscuous behavior and genital ulceration in the past. Investigation showed positive HIV status. In spite of continuous MDT treatment the patient deteriorated and went into Type II reaction. Anti retro viral HAART treatment and MDT was given and only after that improvement was noticed.

Case II - A 28 years old male presented with ill-defined hypo pigmented, hypo aesthetic macule on the left forearm. Biopsy proved tuberculoid leprosy. He also had multiple genital warts and on investigation he was found to be HIV positive. Patient was given full course MDT and also treated for his venereal disease. Slow improvement was observed.

Both the cases were investigated for viral load and CD4 count. DISCUSSION: Immune status deteriorates with both the diseases. In case I, severe immuno compromised state; high viral load and low CD4 cell count lead to worsening in leprosy. Response was noticed only after HAART treatment was instituted. In case II, good immune status resulted in slow but definitive improvement with MDT without the use of HAART treatment, because of low viral load and normal CD4 count.

0006

Lamellar Icthyosis In HIV Infection – Unusual Presentation.

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HISTORY: 34 year-old Indian married male with HIV infection presented with dry skin involving the whole body. No past or family history of atopy or preexisting skin disease.

EXAMINATION: Generalized dry scaly lesions with dark plate-like scales along with exposure keratitis secondary to ectropion with mild blepheritis.

LABORATORY STUDIES: CD4/CD8 Cell Count - 137 / 427 cell/cumm respectively. HIV Viral Load - HIV 1 RNA PCR - Ultraquant: 42456 copy/ml. Histopathology: Displayed massive, compact orthohyperkeratosis with variable degrees of parakeratosis and a markedly thick stratum corneum. The granular layer was increased.

TREATMENT: He was advised admission, but refused. HAART treatment - zidoviudine, lamiviudine and indiavir. Systemic antibiotics –ciproflaxacilin. Systemic antifungal - itraconazole. Artificial tears for eyes to prevent dryness. High protein diet with vitamin supplementation. A humidified atmosphere and bathing with oilatum soap, removal of surface scales, and application of a water barrier with moisturizers and hydrating agents. The patient improved with treatment and is under ARVT.

DISCUSSION: Ichthyosis is characterized by the presence of excessive amounts of dry surface scales. It is a disorder of keratinization or cornification, due to abnormal epidermal differentiation or metabolism. Acquired ichthyosis manifests as small, white, fishlike scales on the extremities but may be generalized. This may be associated with internal neoplasia (Hodgkin lymphoma, leukemia), systemic illness (sarcoidosis, HIV infection -with helper T cell depletion, hypothyroidism, chronic hepatitis, malabsorption), bone marrow transplantation, or the intake of certain medications that interfere with sterol synthesis in epidermal cells (nicotinic acid). Appropriate immediate management and follow up treatment is the mainstay to the better life span.

0007

Simultaneous Genotypying of Sexually Transmitted Bacterial Pathogens using MULTIGEN Technology

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MULTIGEN technology was applied to detect three of the most common organisms causing sexually transmitted disease *(Chlamydia trachomatis, Neisseria gonorrhoeae* and *Ureaplasma urealyticus)*. Signature DNA sements of *C.trachomatis, N.gonorrhoeae* and *U.urealyticus* were amplified by the multiple polymerase chainreaction (MPCR) and sequenced simultaneously unsing MULTIGEN technology producing a single electropherogram carrying signature nucleotide sequences of all three organisms. MULTIGEN technology was tested against ten clinical isolates of previously identified *N.gonorrhoeae* and also total DNA extracted from 29 urine specimens suspected of containing these organisms. Simultaneous identification of these bacterial pathogens directly from clinical specimens produces results of high specificity, at a reduced cost per test, making MULTIGEN a suitable method for routine diagnostic microbiology testing.

0008

Sexual Behaviour, Sexually Transmitted Infections and HIV Risk among Intravenous Drug Users in Manipur, India

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Research to prevent HIV transmission among injection drug user populations have traditionally focused on the risk of HIV infection associated with the drug use itself. Little is known about the sexual behaviour of injection drug users (IDUs) and about the sexual transmission of HIV between IDUs and their sexual partners. The few data that are available indicate that many IDUs are promiscuous and are often exposed to high-risk sexual ac-

tivities. An atempt has been made in this study to understand the sexual behaviour pattern, prevalence of STD symproms and treatment seeking behaviour among 500 IDUs in Manipur India in 1998. It is found that more than 40 per cent of the drug users involve in multi partner sex and condom use was very low. The prevalence of uritheral discharge and ulcers are relatively high maong this group. The treatment seeking is very low. Knowledge about various STI are almost negligible. An attempt has been made in this study to find out the context of sexual behaviour pattern and STI treatment seeking behaviour was explore by using indepth qualitative analysis. Multivariate logistic regression analysis was used to determine the associtin between various factors with sexaul behaviour, presence of STI and treatment seeking among IDUs.

0010

Urine-based Screening for Asymptomatic/Undiagnosed Genital Chlamydial Infection in Young People Visiting the Accident and Emergency (A&E) Department is Feasible, Acceptable, and can be Epidemiologically Helpful.

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Objective: To assess the acceptability and the feasibility of urine-based Chlamydia trachomatis screening in asymptomatic young people aged 16 - 35 years attending an inner city accident and emergency (A&E) department. Design: cross-sectional study.

Setting: A&E department in a large teaching hospital, in South London, UK.

Method: From July to November 2001 a urine-based chlamydia screening test was offered to 719 consecutive A&E attendees aged 16 - 35 years and their companions. Participants were given an information sheet and were asked to complete a demographic and sexual health questionnaire. Following informed consent, eligible participants provided first-pass urine specimens. Specimens were tested for Chlamydia trachomatis using nucleic acid amplification. Results: Of the A&E attendees asked, 76.5% (550/719) agreed to participate. Prevalence of genital chlamydial infection was 4.2% (18/432; 95% confidence interval [CI] 2.5 - 6.6). Twelve of the positive participants (66.7%; 95% CI 40.99 - 86.65) were women, of whom 7 were Afro-Caribbean. Nine of the Chlamydia positive participants (50%; 95% CI 26.0 - 73.9) were aged 25 years or less. Three of the positive urine specimens were from companions of whom a total of 143 were screened. All the positive participants were contactable, and were offered treatment.

Conclusion: Urine-based screening for undiagnosed genital chlamydial infection in the A&E department was acceptable and feasible. The department provides a unique site for screening young patients and companions, men and women.

0011

Evaluation of the Serodia Treponema Pallidum Particle Agglutination, the Murex Syphilis ICE and the Enzywell TP tests for serodiagnosis of syphilis

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Introduction: Syphilis is highly infectious sexually transmitted disease caused by Treponema pallidum, the causative agent which is very difficult to culture. In addition, a specimen source for direct detection is often not available in the latend and late stages of the disease, since lesions are absent. Therefore, serologic testing for treponemal antibodies is essential in the diagnosis and control of syphilis. The serologic tests which most commonly used to screen for the disease are the both nontreponemal and treponemal tests.

Objective: The aim of this study was to evaluate the suitability of the Serodia Treponema pallidum particle agglutination (TP-PA), the Murex Syphilis ICE enzymimmunoassay (EIA)and the Enzywell-TP EIA tests as replacement treponemal tests for the TPHA to use in screening for syphilis with RPR test.

Material and Methods: Between the beginning of 1997 and the end of 1998, samples that were obtained from patients were screened by the routine laboratory protocol as RPR (RPR carbon, Reactivos spinreact S.A. Gerona) followed by TPHA (MicrosyphTM_TP 200, Shield Diagnostics, U.K.). Retrospective chart review of patients who has any reactive result of screening tests was performed in attended person. Majority was having clinical or treated syphilis history. 124 sera having reactive results by RPR and/or TPHA test were included in the study. All 124 reactive sera with RPR and/or TPHA were tested by the TP-PA (Serodia TP-PA, Fuji-rebio Inc., Japan) test, the Syphilis ICE EIA (ICE Syphilis Detection Pack, Murex Biotech Limited, Dartford, UK) test and Enzywell-TP EIA (Diesse, Sienna, Italy). Additionaly, Fluorescent Treponemal Antibody Absorption (FTA-abs) (Mastflour TM_FTA-ABS, Mast Diagnostics, Bootle, Uk) test was performed. One sample couldn't performed with Enzywell TP tests because of insufficient. All Tests were performed according to the manufacturer's specifications.

Results: 124 serum samples which RPR and/or TPHA positive by the routine Laboratory protocol were studied . 17 speciments were positive only in TPHA, 84 in both RPR and TPHA tests. And 23 specimens positive only in RPR were evaluated as Biological False Positive (BFP) reaction.

The results of the comparison of the TPHA versus the TP-PA, ICE and the Enzywell tests are given below.

No. of samples with the following result (a):

TPHA test result	Sample No ICE P, Enzywell P	TP-PA P, ICE P, Enzywell P	TP-PA N, ICE N, Enzywell N	TP-PA N, ICE, N, Enzywell P	TP-PA N,
Positive	100	97	3	0	0
Negative	23	0	0	22 (b)	1 (c)
Non Specific	1	1	0	0	0

(a): P, positive; N, negative.
(b): BFP reaction.
(c): FTA-ABS was negative, so evaluated as BFP reaction.

When two treponemal tests were compared, the aggreements of the TPHA with the TP-PA test, the Murex ICE test and the Enzywell-TP test were 97.56, 100 and 100 %, respectively.

Conclusion: We conclude that every one of the Serodia TP-PA test, the Murex ICE test and the Enzywell-TP test is an appropriate substitute for the TPHA together with RPR test for serodiagnosis of syphilis.

0012

Gene Detection of Tetracycline Resistance Determinant (tetM) and Susceptibility Determination to Antimicrobial Agents in Ureaplasma Urealyticum

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There is an increasing tendency of Ureaplasma urealyticum (Uu) detection in the patients with chronic and recurrent nongonococcal urethritis (NGU) in China, which maybe related to the antimicrobial resistance. For Uu, tetracycline resistant determinant (tetM) may play an important part in antimicrobial resistance. To determine the susceptibility of U u to 7 kinds of antimicrobial agents and to compare the MICs of Uu to those antimicrobial agents with the tetM detection rate, 551 specimens of urogenital discharges from high risk populations of STD were screened for detecting tetM determinants by PCR. A 392 bp fragment corresponding to the tetM determinant was amplified and PCR products were digested by Taq-1 restrictive endonuclease. Also forty-two Uu isolates were subcultured for 3 passages and then incubated with screening agents with a series of concentrations from 64*g/ml ~ 0.06*g/ml. The MICs were determined after 72-hours. The results showed that the detection rate for tetM was higher (71.4% , 30/42) in Uu isolates than that of high risk populations (36.84%, 203/551). Most positive tetM determinants produced 3 expected fragments (190bp, 130bp and 77bp) after digested with Taq-1 endonuclease. Only 5 products of PCR did not obtain the corresponding cleaved fragments. MIC study showed the susceptibility of Uu to Tetracyclines decreased, especially to tetracycline. There were no Uu isolates resistant simultaneously to all 3 classes of antimicrobial agents including tetracyclines, macrolids and quinolones in the study. Taken together, the susceptibility of Uu isolates to the tetracyclines was low and the MIC distribution to antimicrobial agents may be related to the detection rate of tetM determinant. Uu isolates carrying tetM tetracycline- resistant determinant may have a risk of developing drug resistance and should be followed for MIC determination. The special different endonuclease digested patterns of tetM determinants may be existed in some Uu strains.

0013

Compliance Subgrouping: Where's the Risk?

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In clinical trials, the intent-to-treat population is typically the primary analysis population from which the main study conclusions are drawn. However, investigators and policy makers are frequently interested in the outcome among those participants who best complied with the protocol and who used their assigned treatments as instructed. In particular, in a trial comparing a potential microbicide to a placebo, participants are typically instructed to use their assigned study product in every coital act. In such trials, investigators may be especially interested in the outcome (e.g., time to infection) among women who followed these instructions in a majority of their coital acts, and so they may group the participants based on their self-reported level of product use and then repeat the primary analysis in the subgroups of most interest. Since the sexual behaviors being studied are inherently private, such compliance data are generally unverifiable and are prone to contain substantial measurement error due to poor participant recall or intentional exaggeration. However, even if it were possible to obtain completely accurate compliance data, any results from a compliance subgroup analysis would need to be interpreted with extreme caution. Because a participant's level of compliance with her assigned treatment is, in fact, a post-randomization response variable, the well-known benefits derived from the process of randomization will not carry over to the compliance subgroups and any resulting evidence of a treatment effect could potentially be an artifact of selection bias and should carry no more weight than would similar evidence obtained from a prospective observational study. Additional concerns with compliance subgroup analyses include the lack of a standard for collecting compliance data and the lack of a standard for forming the subgroups. Using a simple example, we demonstrate that a potential microbicide may be implicated as being harmful among perfect compliers when in fact it has no effect (protective or harmful) for any users. We will also provide some very basic statistical theory to help explain why compliance subgrouping effectively converts a controlled randomized trial into a prospective observational study.

0014

Trichomonas Vaginalis Latex Agglutination Compares Favourably with Wet Prep and Culture

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Introduction: Trichomonas vaginitis is the commonest non-viral sexually transmitted infection. It is estimated to affect 170 million people annually and has been associated with adverse pregnancy outcomes and enhancing the transmission of HIV. Its control could be very important in reducing the transmission of HIV, especially in high endemic areas. Presently, wet mount microscopy is the commonest technique used for its laboratory diagnosis worldwide. Apart from its low sensitivity, the wet prep method requires a microscope and trained and skilled microscopist to read the results. These requirements are outside the reach of many developing country health settings where the prevalence of infection is high. A less technologically-demanding method with good test performance characteristics will aid greatly in the diagnosis and control of Trichomonas vaginalis infection.

Methods: 126 pregnant women attending antenatal clinics in Kumasi, Ghana were recruited and tested for T.vaginalis infection. 3 vaginal swabs were obtained from each woman and tested using latex agglutination (LA)(Kalon Biologicals, UK), wet prep microscopy, and InPouch TV culture (BioMed Diagnostics, Ca). The LA test involves addition of vaginal swab eluates to test latex particles on a reaction slide, and manually rocking for up to 2 minutes. Results are read by eye.

Results: (see table opposite) Gold standard: Positive by culture, or wet prep or both. Negative by both culture and wet prep.

Conclusion: The latex agglutination test performs as favourably as both wet mount microscopy and InPouch culture. It is easy to perform, and no skilled personnel is required. Secondary school leavers have been trained to perform the test with satisfaction. The test has the potential for use in many health care settings in developing countries.

Abstract 14

		Culture/wet prep		
		Positive	Negative	Total
Latex	Positive	57	5	62
	Negative	1	63	64
	Total	58	68	126

		Culture/wet prep		
		Positive	Negative	Total
Wet prep				
	Positive	55	0	55
	Negative	3	68	71
	Total	58	68	126

		Culture/wet prep		
		Positive	Negative	Total
Culture				
	Positive	56	0	56
	Negative	2	68	70
	Total	58	68	126

	Sensitivity (%)	Specificity (%)	PPV	NPV
Culture	96.5	100	100	97.1
Wet prep	94.8	100	100	95.7
Latex agg	98.2	92.6	92	98.4

0015

The Relationship Between Parther Type and Partner Referral Among Men Attending a Miami STD Clinic

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Background: Voluntary partner referral is the most important notification method for STD control. While research indicates differences in sexual risk taking based on partner type exist, little is known about a patient's partner referral patterns in this regard.

Objectives: To investigate differences in intentions to tell main and casual sex partners about a gonorrhea diagnosis for men attending an urban STD clinic.

Methods: Researchers surveyed 122 men diagnosed with gonorrhea in a Miami STD clinic about sex partners and intentions to disclose diagnoses. Within-subjects repeated measures analyses looked for differences in intentions to tell main and casual partners for men reporting about both partner types (n=48). Logistic regression was performed for men with only one partner (n=74) with partner type as an independent variable.

Results: Analyses revealed no significant within-subject differences in intentions to tell partners about diagnoses between type of partner (F=1.99, p=.17). Logistic regression showed that men reporting about main partners were 9.9 times more likely to definitely tell their partners about their diagnosis than men reporting about casual partners (CI= 2.7, 36.3; p<.001).

Conclusions: Men reporting one partner are more likely to communicate diagnoses if that partner is considered a main sex partner. Men may be less likely to know how to contact casual partners, or are less concerned for their health than men with main partners. The lack of significant within subject findings may be a result of a small sample size and future studies should focus on men with multiple partners, as they are more likely to spread STDs. More research should seek information about relationship context to uncover facilitators and barriers to partner referral. Programs to prevent the spread of STDs could benefit by addressing individuals' differential choices about partner referral based on partner type.

0017

Local Networks

Objectives: STD transmission models suggest that an individual's risk for acquiring an STD is in part related to the prevalence of STDs in their local network. In the case of adolescents who reside in a high STD prevalence community, the prevalence of STDs in their local network may be related to the extent of connectedness between their local network and the broader community. The objective of this study is to determine whether the presence of either chlamydia or gonorrhea in the local networks of adolescents residing in a high prevalence community is associated with the number of sexual connections between local network and outside community.

Methods: Between June 2000 and September 2002 we recruited a household sample of African American adolescents 14-19 years old ("index adolescents") residing in census tracts with high prevalence of gonorrhea and chlamydia. We recruited one to two of their close friends. We also recruited the indexes' and friends' locatable sex partners and the sex partners' sex partners. As part of a longer interview about sexual behaviors and perceptions of sex partners' sexual behaviors, participants were asked how many other partners they thought each of their named sex partners had in the past three months. Participants' urine (males) and vaginal swabs (females) were tested for chlamydia and gonorrhea using NAATs. The unit of analysis was the local network of each index adolescent and included the index, their interviewed friends, the interviewed sex partners of the index and friends, and the interviewed sex partners' sex partners. The presence (vs. absence) of infection in the local network was computed by examining whether any of the interviewed local network members tested positive for chlamydia or gonnorhea and the number of connections to the broader community was calculated by summing the number of other partners that each local network member perceived their partners had. Total number of partners' other partners was recoded into a categorical variable: 0 (reference group), 1, 2, >3 for logistic regression analysis.

Results: The final sample consisted of 170 local networks with at least one named friend and one named sex partner (named individuals were not necessarily interviewed). The distribution of the number of people interviewed in each local network was: 1 (30%), 2 (23%), 3 (20%), 4 (9%), 5 (9%), and 6-14

(9%). Eighty percent of local networks had no chlamydia or gonorrhea present while 20% had at least one member who was infected with chlamydia or gonorrhea. Controlling for number of interviewed members of the local network, total number of perceived partners' partners was associated with greater likelihood of an infection being present in the local network (Wald Chi-Square 14.1, $p<0.05$). Compared to the reference group, local networks with 2 partners' other partners
(Odds Ratio [OR] = 4.4; 95% Confidence Interval [95%CI] = 1.5, 13.3) and local networks with ³ 3 partners' other partners (OR = 4.8; 95%CI = 1.9, 12.1) were more likely to have chlamydia or gonorrhea present. Local networks with 1 partner's other partners were not more likely to have chlamydia or gonorrhea present (OR = 1.5; 95%CI=04, 5.9).

Conclusion: The local network of African American youth residing in a community with high prevalence of chlamydia and gonorrhea is more likely to have a member who is infected with chlamydia or gonorrhea if that network is more connected to the broader community networks. To the extent that factors can be identified which protect youth from membership in these highly connected networks, targeted interventions can be developed which may reduce the risk that African American youth residing in a community with high prevalence of chlamydia and gonorrhea become infected with one of these infections.

0021

Treatment of Resistant Trichomonas vaginalis and Bacterial Vaginosis with Tinidazole

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Introduction: Although tinidazole is widely used throughout Europe for parasitic infections it is not approved for use in the United States. With apparently increasing rates of metronidazole resistant cases of trichomoniasis, there is renewed interest in making tinidazole available for use in the US. There is also some data in the literature to suggest that tinidazole may be more effective than metronidazole for the treatment of BV. We report on the use of tinidazole in a woman with resistant trichomoniasis and bacterial vaginosis (BV).

Methods: The patient was a 32 year old woman with symptomatic trichomoniasis and BV. The patient had received multiple standard courses of metronidazole, including 2g stat dose and 500 mg orally twice a day for 7 days, without cure of either infection and was intolerant to higher doses secondary to severe gastrointestinal side effects. She was treated with tinidazole per a compassionate use protocol (1 gram twice a day orally with 500 mg twice a day intravaginally for a total of 14 days).

Results: On day 4 of medication there was no evidence of T. vaginalis by wet mount or culture. At her next visit, day 15, there was again no evidence of trichomonas or of BV and she denied all vaginal symptoms. The patient denied any side effects associated with use of the medication. Susceptibility studies of the T. vaginalis isolate revealed aerobic MLCs for metronidazole and tinidazole of 200 and 12.5 mcg/ml respectively indicating moderate resistance to metronidazole and susceptibility to tinidazole.

Conclusions: Tinidazole was well tolerated and effective for the treatment of trichomoniasis and BV in this patient. Further studies examining its use for both of these infections are warranted.

0022

Asymptomatic Sexually Transmitted Infections in South Africa

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OBJECTIVES: Several studies were undertaken to determine the prevalence of asymptomatic infections especially C. trachomatis and N. gonorrhoeae in different populations. Syphilis and HIV serology were also carried out.

POPULATION AND METHODS: The studies were carried out among men presenting at the general private practice, among sex workers, among men presenting at STI clinics and among the general population living near the gold-mining communities of South Africa. Youths were also included as a subset of the general population in Gauteng. Urine, endocervical and urethral swabs were collected. Blood specimens were also collected for serological tests. Conventional methods of isolation and culture for both viral and bacterial STIs were employed. Molecular techniques such as ligase chain reaction (LCR) were employed for C. trachomatis and N. gonorrhoeae. Routine serological tests were employed for the diagnosis of syphilis and HIV.

RESULTS: Asymptomatic carriage of both C. trachomatis and N. gonorrhoeae was frequently detected in all the study populations, ranging from 4.3% to 21.4% and 1.3% to 62.6% respectively. HIV seropositivity ranged from 6% among youth to 56.9% among the sex workers. Generally, HIV infection and asymptomatic STIs were alarmingly high mostly among the sex workers. Mixed infections were common in all the study groups. Both gonococcal and chlamydial infections were common among urban youth in South Africa while in the general population, these infections were more prevalent in women than men. In the general private practice, asymptomatic infections with C. trachomatis and N. gonorrhoeae were also common.

CONCLUSION: These studies clearly indicate that asymptomatic and "inapparent" infections in both men and women are a significant factor in the epidemiology of these infections, and may present as a major problem in terms of their diagnosis and treatment especially where laboratory facilities are limited or non-existent, mostly in poorer communities. The studies indicate that the real burden of STIs and their complications were borne by women, with HIV and syphilis detected more frequently among women than among men.

0023

Estimating STI Prevalences

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Background: the STI are nowadays in Brazil and all over the world a serious public health problem. In the context of the HIV epidemic, it becomes still larger due to the interactions: the presence of an STI can increase the risk

of both acquisition and transmission of HIV. In Brazil, as in most of the countries, the case reporting is affected by the great number of asymptomatic cases and by the self medication, what leads to an enormous under reporting and the consequent ignorance about the real situation of those diseases, what is reflected in the lack of prioritization and in the inadequate planning of actions.

Methods: data for the estimation were collected by searching published and unpublished studies that somehow presented prevalence or incidence results of those infections in the general or in specific populations. Using a metanalisis method, attributing to each infection and each studied population a certain pondered value, in accordance with their magnitude and the case-reproduction ratio of the studied infections.

Results: were obtained according to the infection and the gender and is showed in the table. The prevalences of each infection respectively in women and men are: gonoccocal infection (1.2% and 0.2%), chlamydial infection (3.0% and 0.8%), trichomoniasis (6.2% and 0.5%), syphilis (2.8% and 1.3%), herpes simplex type 2 (17.0% and 8.0%) and human papilomavírus (25.0% and 5.0%).

Conclusions: those prevalences indicates the occurrence of approximately 30 million of infections, many of them probably will never notice that are infected and will maintain the transmission chain, what reinforces the need to implement programs of: 1) promotion of the recognition of symptoms and signs, 2) prevention of infections, 3) prevention of complications, 4) detection of asymptomatic infections and 5) adequate care based on the syndromic approach.

0024

The Experience of a Network for Action in STI in Latin America.

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Background: STI continue to be a major cause of acute illness, infertility, long term disability and death, with severe medical and psychological consequences for millions of men, women and infants. WHO estimates that each year 38 million new cases of the main curable STI occur in the region.

Methods: In 1998 the Pan American Health Organization conducted qualitative research on the situation of the countries with regard to the activities in the STI control; after that, some activities were recommended to the governments of the region. As, apparently, there are too much tasks to be implemented by governments that, only now, are beginning to understand the importance of STI in the context of the HIV epidemic. They were not capable to do it alone.

Results: Therefore the establishment of an STI technical network was proposed and is working with the following objectives: 1. To strengthen the advocacy process, the management of STI programs, the information and surveillance systems on STI, the education and development of human resources in STI surveillance, prevention, care and programs management 2. To develop and to strengthen a model of coordination and cooperation in each country, based in the experience of horizontal cooperation and the multilateral collaboration; a process of integration among the programs of HIV/AIDS, sexual and reproductive health and STI. 3. To support technically the STI programs in the region, international organizations, cooperation agencies, NGO and other institutions that need information and specific knowledge in STI Are natural components of the STI Net: the National STI/AIDS Programs directors, experts in STI, the Cooperation agencies, the NGO that work in STI, scientific associations and regional professionals, representatives of groups interested in the work coordinated in STI.

Conclusions: this kind of network is important to support the governments and others institutions of any region of the world in order to achieve the full integration of HIV/AIDS and STI Programs, to strengthen or to develop the STI surveillance systems, to improve the STI case management.

0026

Component Analysis and Fears of AIDS or HIV : A Two Nation Comparison

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The fears of AIDS may differ from one cultural context to another. I explored the possibility in 2300 South African young adults between 17 and 25 years of age. Responses to a standard fear of AIDS scale schedule revealed a similar factor structure to that obtained in western countries (cf. Australia). The data were used to test the ability of cultural value dimensions derived from the work of Ross and Hunter (1992) to predict the components of the Fear of AIDS in South Africa. Results were later interpreted within a cultural context, which suggested that cultures which favour inhibition and lower level of support and acceptance toward deformity and disability serve to increase the level of fear. Alternative interpretations are offered and limitations of cross-cultural research are explored.

0027

Monthly Azithromycin Chemoprophylaxis in Kenyan Female Sex Workers Reduces the Incidence of STIs but not HIV: a Randomized, Placebo-Controlled Trial

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Objective: Sexually transmitted infections (STIs) are common in female sex workers (FSWs) and are often asymptomatic. Antibiotic prophylaxis may reduce STI acquisition and thus reduce risk of HIV infection. We conducted a clinical trial to test this hypothesis.

Methods: A cohort of HIV seronegative FSWs in Nairobi were randomly assigned to receive either 1 gm of azithromycin monthly or placebo, in double-blind fashion. All women were counseled to reduce STI risk and provided with free condoms. Urine was tested monthly for STIs, and full behavioural and STI workups were performed at 6-monthly intervals.

Results: Of 466 FSWs enroled, 236 were randomized to placebo and 230 to azithromycin. Total follow-up was 969 person-years (PYs) and there were 35 incident HIV infections, for an annualized HIV incidence of 3.6 per 100 PYs. Incidences of STIs in the treatment and control groups respectively were: HIV 4.0%, 3.2% (NS); gonorrhea 5.9%, 17.7% (P<0.001); chlamydia 9.9%, 20.6% (P<0.001); trichomoniasis 11.6%, 17.7% (P=0.002); syphilis 2.1%, 1.0% (NS). Azithromycin was associated with reduced incidence of gonorrhea (Rate Ratio (RR) 0.43;

95% CI 0.29-0.63; P<0.001), chlamydia (RR 0.42; 95% CI 0.29-0.61; P<0.001) and trichomoniasis (RR 0.66; 95% CI 0.48-0.90; P=0.01), but had no effect on HIV incidence. However, HIV seroconversion was strongly associated with recent infection with either gonorrhea (RR 6.1; P=0.001) or chlamydia (RR 3.7; P=0.02).

Conclusions: HIV incidence was much lower than expected. Monthly azithromycin prophylaxis reduced the incidence of several STIs, but had no impact on incidence of HIV. However, a strong association was seen between incident HIV and a preceding STI. This may reflect the time lag to seroconversion after an HIV infection acquired coincident with an STI. The major effect of STIs in facilitating HIV transmission in this context may be increased infectivity in a sex partner co-infected with HIV and an STI.

0028

Sex, Menstruation and Bacterial Vaginosis: A Longitudinal Study in Over 4 Menstrual Cycles in Rural Gambia

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Objectives: To examine patterns of bacterial vaginosis (BV) over time in relation to stage of menstrual cycle, sexual activity, and menstrual protection method in an African setting.

Methods: Nugent scores were assigned to self-administered swabs collected every second day over 4 menstrual cycles from 30 rural Gambian women. Concurrent data was collected on sexual activity, menstruation and vaginal symptoms. Half the women replaced their traditional method of sanitary protection (old cloths) with modern sanitary pads for the first two menstruations and the other half for the last two menstruations. None were using contraception.

Results: Four women had no BV throughout the 4 cycles, 12 had BV on 1%-26% readings and the remaining 14 had BV on 52%-93% of readings. Significant variation between cycles (P<0.05) was only found for women with BV on 16%-59% of readings. Logistic regression models showed that women with BV on <27% of readings had greatly increased odds of having BV in the first six days of the menstrual cycle compared to days 14+ (Odds Ratio (OR) 9.72 P<0.001), but this pattern was not seen in women with BV on >51% of readings (OR 1.00 P=0.988). BV was significantly more common in days 7-13 than days 14+ in both groups (OR 3.55 P=0.001 and 2.36 P<0.001). There was no association between sexual intercourse in the last 4 days and BV. Among the women with BV on <27% of readings, BV was less common with traditional menstrual protection methods than modern methods (OR 0.25 P=0.017), but this pattern was not seen in those with BV on >51% of readings (OR 1.23 P=0.567).

Conclusion: Our data support hypotheses about hormonal causes for BV but not those relating to sexual activity. Traditional menstrual hygiene practices do not appear to explain the higher BV prevalences found in developing countries.

0029

Mycoplasma genitalium as a cause of PID - a clinician

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Mycoplasma genitalium is increasingly being considered to be a sexually transmitted pathogen and its isolation is strongly associated with non specific urethritis in men. The importance of *M. genitalium* in causing genital tract disease in women is less well characterised but some data are available from animal studies, serological assessment of infertile women and direct isolation of the pathogen from the genital tract.

If *M. genitalium* is a cause of pelvic inflammatory disease then what implications does this have for the investigation and management women with suspected PID?

This session will review the evidence for *M. genitalium* as a cause of pelvic inflammatory disease and discuss the implications for diagnosis, treatment and the future design of clinical trials.

0031

Mobiluncus curtisii as a Predictor of Bacterial Vaginosis Relapse after Treatment

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Background: Bacterial vaginosis (BV) is the most prevalent cause of vaginal discharge in the U.S. and has been linked to preterm birth and HIV acquisition/transmission. Mobiluncus spp are anaerobic bacteria that are highly associated with BV but its role in the etiology of BV, if any, is unknown. Of the two species, M. curtisii (Mc) appears to be the more potentially pathogenic. It has been previously shown that PCR is more sensitive for detecting Mobiluncus than is vaginal Gram stain.

Goal: To determine the correlation of persistence of M. curtisii by PCR with treatment outcome.

Study Design: Vaginal swabs from 37 women attending an STD clinic enrolled in a study of treatment for BV diagnosed by Amsel criteria were collected at 4 separate visits (baseline, 2, 6, and 10 weeks) and analyzed by Gram stain and PCR for Mobiluncus spp. All women received standard treatment at the baseline visit with metronidazole for 7 days. Comparisons were made between PCR results and treatment outcome at the follow-up visits.

Results: The prevalence of Mc by PCR was 84% (31/37) at the baseline visit. 86% (32/37) of patients had no evidence of BV by Gram stain at 2 weeks following completion of therapy. Among these patients Mc persisted in 56% (18/32). Among women with persistence of Mc at any follow-up visit, 58% (15/26) had recurrence of BV at either 6 or 10 weeks after therapy versus 18% (2/11) women without persistence of Mc (p=0.03, RR 1.6 [1.04,2.47]).

Conclusions: Mc persisted frequently among women treated for BV with metronidazole. Persistence of Mc was significantly associated with recurrence of BV. Mc may be important in the pathogenesis of BV in at least a subset of women.

0032

The Prevalence of Abnormal Pap Smears in an Urban Sexually Transmitted Diseases(STD) Clinic

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Background: Women seeking STD services are at high risk for human papillomavirus infection (HPV) and sequelae. Nevertheless, cervical cytologic screening is not consistently offered in clinical evaluation at public STD clinics.
Objectives: To assess prevalence of abnormal cervical cytology and risk factors in women screened at an STD clinic in Baltimore, Maryland.

Methods: We reviewed cervical Pap smear results on a series of 1,000 female STD clinic attendees having a Pap smear performed between July 1, 2001, and July 31, 2002. We abstracted demographics, sexual and illicit drug use behaviors, laboratory confirmed STD, and Pap smear results from the clinical record. Abnormal cytology was defined as a result of either atypical cells of undetermined significance (ASCUS), and low- or high-grade squamous intraepithelial lesion (LSIL or HSIL).

Results: A satisfactory Pap smear result was reported in 99.3% of specimens. Of these, 51 of 993 (5.31%) were abnormal. 23 (41.1%) of the abnormal cytology was ASCUS, 30 (53.6%) LSIL, and 3 (5.4%) HSIL. In the univariate analysis, younger age (OR=0.64, 95%CI:0.47, 0.86), genital warts (OR=9.25, 95%CI: 3.97, 21.55), history of an STD (OR=0.51, 95%CI:0.28, 0.93), and HIV infection (OR=3.45, 95%CI:1.25, 9.5) were associated with abnormal Pap smear. In a multivariate model omitting HIV-positive women, younger age (OR= 0.67, 95%CI: 0.47, 0.96), genital warts (OR= 7.64, 95%CI: 3.0,19.4), and chlamydia (OR=2.11, 95%CI:1.03, 4.3) remained associated with abnormal Pap smear.

Conclusions: Routine cervical Pap smear provided an adequate specimen for screening in the STD clinic population despite a high prevalence of inflammatory STDs. Incorporating Pap smear screening into STD clinical practice may be of clinical value, in particular to target younger women at high risk for cytologic abnormalities.

0033

Barrier Contraception and the Incidence of Sequelae following Pelvic Inflammatory Disease (PID).

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Background: Whether barrier methods of contraception prevent the occurrence of bacterial sexually transmitted diseases, PID, and/or PID sequelae, has been a subject of controversy.

Methods: Among 684 women with clinical signs and symptoms of mild-to-moderate PID enrolled in the PID Evaluation and Clinical Health (PEACH) Study and followed a mean of 35 months, we assessed the occurrence of PID sequelae by method of contraception. PID sequelae included self-reported recurrent PID, chronic pelvic pain (CPP) of at least six months duration, and infertility (among women with no/rare contraception). Contraceptive use was queried at baseline and each 3-4 months thereafter. Barrier contraception included condoms, diaphragms, and spermicides. Odds ratios were adjusted for age, number of livebirths, race, education, sexual monogamy, baseline gonococcal/chlamydial cervicitis, number of study visits, and other methods of contraception.

Results: Over half of women used barrier methods at baseline, the great majority of whom used condoms. Recurrent PID developed in 11.9% of barrier users (RR 0.7, 95% CI 0.4-1.0) and 8.8% of consistent (>60% of encounters) condom users (RR 0.5, 95% CI 0.3-0.9) as compared to 16.7% of barrier non-users; chronic pelvic pain developed in 28.6% of barrier users (RR 0.8, 95% CI 0.5-1.1) and 26.7% of consistent condom users (RR 0.7, 95% CI 0.5-1.2) as compared to 36.7% of barrier non-users; infertility developed in 40.9% of barrier users (RR 0.6, 95% CI 0.3-1.0) and 34.8% of consistent condom users (RR 0.4, 95% CI 0.2-0.9) as compared to 54.5% of barrier non-users. Persistent barrier use (use reported at >75% of visits) trended toward the greatest protection for chronic pelvic pain (p=0.03), infertility (p=0.09) and recurrent PID (p=0.22).

Conclusion: Among women who had experienced PID, the rates of recurrent PID, infertility, and possibly chronic pelvic pain were reduced by barrier contraceptive use, and particularly by consistent condom use.

0034

Sex Work Harm Reduction

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Objective: To discuss harm reduction in the context of sex work and to propose a health promotion model for sex work harm reduction.

Methods: Review of the literature and application of health promotion modeling techniques

Results: The concept of 'harm reduction' can be easily adapted to sex work. The harms associated with sex work include drug abuse, disease, violence, discrimination, debt, criminalization and exploitation. General strategies that can be implemented to reduce the harm associated with sex work include education, prevention, diagnosis and treatment, improved conditions, decriminalization of the victims, career alternatives and support. There are specific and feasible tactics that can be implemented to reduce some of the harms of sex work such as peer education, adequate vaginal lubrication, routine vaccinations, no kissing, being on top and facing customers during sex, working in pairs, NOT using seat belts and learning simple self-defense tactics. The Sex Work Journey Model proposed includes four stages: determinants of health, sex work harms, diminished quality of life and sex work harm reduction strategies. The Journey Model introduces factors that influence movement between the stages - despair, time, event and desire.

Conclusions: The concept of sex work harm reduction is reasonable and informative. Viewing sex work within the framework of harm reduction makes it easier to understand specific issues in the lives of individual sex workers. The Sex Work Journey Model can assist health promotion and education planning.

0035

Railway Station Porters And Their Vulnerability To STD/HIV

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Objectives: To assess the prevalence of STDs among male Porters of Howrah Railway Station in Calcutta (who are essentially migrant labourers), study high risk sexual behaviours among them and to design targeted sexual health interventions accordingly.

Methods: In-depth interviews (250), Focused group discussions (20). Sample(7%): 430

Results: 95% were under the age of 45 years. 43% of the respondents were ill-literate and had very poor economic status. While 88% were married only 22% of those married lived with their spouses. 79% reported having occasional sexual contacts with sex workers or young homeless girls dwelling in and around the railway station. Sexual activity in and around the station was common and so was the case of rape and sexual abuse. Many porters are reported to be having sex among themselves as with young homeless boys and girls. 17 % said that they enjoyed anal sex the most. Only 33% of the respondents have ever used condoms. 17% of the respondents reported incidence of genital ulcers and 5% reported discharge from penis in the last 6 months. Interviews with local doctors, including quacks revealed that porters commonly suffer from STDs. Most of the porters visit local quacks who are reported to be administering steroids with a cocktail of indigenous medicines and common antibiotics.

Conclusion: The study has established the vulnerability of railway porters to STD/HIV and the need for undertaking sexual health intervention, which would include 1. Behaviour Change Communication through peer education, 2. Putting up AIDS messages on station hoarding, coaches, 3. Clinics for STD diagnosis and treatment and counselling within the station premises, 7. Condom programming through clinic, peer educators and local outlets, 8. Training local doctors, particularly quacks on syndromic management of STD

0036

Socio-economic and Cultural Determinants Of High Risk Sexual Behaviours Among Street Children

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Objective: Assessing the vulnerability of Street and Working Children with respect to STD/HIV, by exploring the complex of socio-economic and cultural determinants of high risk sexual behaviours.

Methods: The study was undertaken for 8 months covering 120 street children (72 boys and 48 girls - about 10% of the universe) in Calcutta. The methodology included In-depth interviews, Counselling sessions, Case studies, Focused group discussions, Role plays and Diagramming/Body Mapping.

Results: 7% of the girls were raped by their fathers, uncles or brothers. 19% of the girls supplemented their income through prostitution. Lack of toilet facilities compel girls to seek secluded places for defecation, where they are raped. Mentally deranged children are raped by adult men. Street boys are picked up by older women for sexual services. Children also have sex for comfort. Street children have violent initiation ceremonies for gaining entry into the street "gangs", wherein new entrants are raped by 4-5 older boys. Myths like : "forced sex with virgins or young boys increases vigour and cures an adult of STDs", "discharge of menstrual blood results in cleansing of the body of STDs" promote high risk behaviour. 76% of children (age group of 8-16) reported penetrative sexual activity while 61% reported sexual abuse. Anal sex is very common amongst boys (46%). 12 % of the girls and 10 % of the boys reported genital discharge and ulcers.

Conclusion: Sexual activity and abuse, associated with coercion and violence are common among street children. Hence many children suffer from tearage of anal and vaginal membrane and bleeding during forced sex. Risk behaviours are governed by complex of survival pressures, environmental factors, economic constraints, shared beliefs, cultural perceptions and power relations. An assessment of these determinants will help in developing appropriate STD/HIV prevention programmes.

0037

Patient Satisfaction in a Publicly Funded STD Clinic

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Objectives: Patient satisfaction with health care is associated with patient retention, adherence, and health outcome. Assessment of satisfaction in STD clinics is rare despite its possible contribution to success of prevention outcomes. We assessed factors associated with patient satisfaction in a public STD clinic.

Methods: Survey of STD clinic clients, 10/02-2/03. Clinic visit was rated Poor (P), Fair (F), Good (G), Very Good (VG), Excellent (E). Clinicians were rated '1' (worst) to '10' (best). Analysis outcomes were: (1) clinic visit rated 'P, F, or G' (versus 'VG or E'); (2) clinician rating < '10'. Independent variables were demographics, pain score (1 – 10), perceived technical skill of clinician, clinic environment, and service delivery. Statistical analysis was multivariate logistic regression (MVLR).
Results: 266/355 (75%) patients approached were enrolled. Patients were: mean age 30.4 yrs, 57% male, 96% Black, 81% with STD history, and 69% previous visit to clinic. Clinic visit was rated: 49% Excellent, 29% Very Good, 18% Good, 4% Fair, 0.4% Poor. Clinicians were rated: 57% '10', 16% '9', 15% '8', 12% '=7'. In MVLR (N=259), lower clinic visit rating was associated with: clinician rated < '10' (OR=2.91, p=0.014), cleanliness/ comfortableness of clinic rated 'P, F, or G' (OR=4.12, p=0.002), TV/video in waiting room rated 'P, F, or G' (OR=8.96, p=0.001), clinician technical skills rated 'P, F, or G' (OR=15.0, p<0.001). In MVLR (N=193), lower clinician rating was associated with: pain score > 1 (OR=2.84, p=0.004), received medications at visit (OR=0.40, p=0.026), received written materials (OR=0.47, p=0.043), and clinician's skill rating (reference category 'Poor'; OR = 0.28, p<0.001).

Conclusion: Modifiable aspects of clinic and health care delivery were associated with patient satisfaction in a public STD clinic. Interpretation is complicated by ceiling effect. Future research should examine the

association between patient satisfaction, subsequent clinic visits and STD reinfection rates.

0038

ANTIMICROBIAL SUSCEPTIBILITIES of NEISSERIA GONORRHOEAE IN CHINA, 1999-2001

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Introduction: Gonorrhoea continues to be one of the most frequently reported STDs in China. Surveillance of gonococcal resistance has been conducted since 1987. This work has been jointed WHO Western Pacific Regional Gonococcal Antimicrobial Surveillance Programme (GASP) in 1992. Findings concerning gonococcal resistance during 1993-1998 were published previously. Here we report the data obtained from 1999 to 2001.

Materials and Methods: Gonococcal isolates were collected from symptomatic patients with gonorrhea in eight STD clinics. Minimum inhibitory concentrations(MICs) for penicillin, ceftriaxone, tetracycline, ciprofloxacin and spectinomycin were determined by an agar plate dilution method. The production of b-lactamase was determined by paper acidometric testing. Susceptibilities were interpreted according to criteria recommended by WHO Western Pacific Regional Resistance Surveillance Programme.

Results: The number of gonococcal strains examined annually during 1999 to 2001 was 783, 1007 and 1078 respectively. The total rate of penicillin-resistant (MICs ¡Ý 1 mg/l) isolates remained high, 80.5% in 1999, 80.2% in 2000, and 89.8% in 2001. During this period, an increased plasmid-mediated resistance was observed in several cities. The rate of PPNG was 16.9% in 1999 , 34.4% in 2000 and 31.9% in 2001; The rate of TRNG was 11.5% in 1999, 25.8% in 2000, and 29% in 2001. Plasmid-mediated resistance was particularly high in Chengdu city, 65.1%PPNG and 63.8% TRNG in 2001. The rate of ciprofloxacin resistant strains was 78.2% in 1999, 85.2% in 2000, and 89.8% in 2001. A few spectinomycin resistant strains were detected both in 2000 and 2001(0.4%). The rate of strains less susceptibe to ceftriaxone was 14.65% in 1999, 19.9% in 2000, and 27.2% in 2001.

Conclusions: Penicillin and quinolone resistance are widespread in China. Plasmid-mediated resistance is increasing. Spectinomycin resistance is rare. The rate of strains less susceptible to ceftriaxone is increasing.

0039

African American Adolescents

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Objectives: To determine whether the presence of either chlamydia or gonorrhea in the local networks of adolescents residing in a high prevalence community is associated with the number of sexual connections between local networks and outside community.

Methods: Between 6/00-9/02 June 2000 and September 2002 we recruited a household sample of African American adolescents 14-19 years old ("index adolescents") residing in census tracts with high prevalence of gonorrhea and chlamydia. We recruited one to two of their close friends. We recruited the indexes' and friends' locatable sex partners and the sex partners' sex partners. Participants were asked how many other partners they thought each of their named sex partners had in the past three months. Participants were tested for chlamydia and gonorrhea using NAATs. The unit of analysis was the local network of each index adolescent and included the index, their interviewed friends, the interviewed sex partners of the index and friends, and the interviewed sex partners' sex partners. The number of connections to the broader community was calculated by summing the number of other partners that each local network member perceived their partners had.

Results: The final sample consisted of 170 local networks. Twenty percent had at least on one member who was infected with chlamydia or gonorrhea. Controlling for number of interviewed members of the network, total number of perceived partners' partners was associated with greater likelihood of an infection being present in the network. Compared to the reference group (0 partners' other partners), networks with 2 (OR = 4.4; 95%CI = 1.5, 13.3) and ³ 3 partners' other partners (OR = 4.8; 95%CI = 1.9, 12.1) were more likely to have chlamydia or gonorrhea present.

Conclusion: To the extent that factors can be identified which protect youth from membership in these highly connected networks, targeted interventions can be developed which may reduce the STD risk of African American youth residing in high prevalence communities.

0040

Interventions to prevent and eliminate syphilis

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Objective: To discuss syphilis outbreaks in developed countries, to propose new strategies to control these outbreaks and to review British Columbia's targeted syphilis mass treatment intervention

Methods: Literature review, discussion with experts and personal experience

Results: Syphilis outbreaks in developed countries generally occur during periods of low incidence and affect marginal populations. These outbreaks do not respond promptly to the standard STD control measures such as public awareness, condom promotion, outreach programming, mass or targeted screening and contact tracing. New and innovative STI control strategies have been proposed that include social network analysis, paid-peer interventions, mathematical modeling, molecular epidemiology, rapid point-of-care testing, pre- and post-exposure prophylaxis, client-initiated partner treatment, geographic information systems (GIS), internet interventions, expanded use of azithromycin and mass testing and/or treatment. In 2000, British Columbia, Canada, delivered a targeted syphilis mass treatment intervention to 4384 persons at risk in an effort to terminate a serious outbreak that was heterosexually transmitted and highly associated with the sex trade. The intervention was delivered safely and syphilis decreased significantly for 6 months but rebounded in 2001 to levels significantly higher than would have been predicted. The intervention failed in the longterm probably because not enough of those at highest risk were treated.

Conclusion: Syphilis outbreaks in developed countries, and longterm syphilis elimination in these same countries, requires new and innovative STI strategies. Mass treatment should not be one of these.

0041

Screening for Chlamydia Among Sexually Active Females Attending Pediatric Urgent Care Visits in an HMO Setting

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Objective: Chlamydia trachomatis (CT) is a significant health problem among adolescent females. Despite recommendations for annual CT screening of sexually active adolescent girls, less than 20% in HMOs are screened. Our prior systems intervention significantly improved screening rates during well-care. However, 2/3 of adolescents only use urgent care. The current study evaluates the effectiveness of a modified intervention to increase CT screening among 14-18-yo sexually active girls attending pediatric urgent care in an HMO setting.

Design/Methods: As part of a larger, randomized control trial, the intervention was extended to two pediatric urgent-care practices. A team was formed at each clinic (provider, manager, medical assistant, facilitator) to establish mechanisms for confidential identification of sexually active adolescents, urine collection/transport to the laboratory. Teams met monthly, reviewed protocols, screening rates and problem-solved barriers. Anonymous/aggregate data was tracked centrally (duplicates removed). A short anonymous teen survey was administered to estimate sexual activity rates. Screening rates were analyzed over a six-month pre-post intervention period. The proportion screened = Number tested/(Number seen x Clinic sexual activity rate).

Results: Compared to those attending well-care, those utilizing pediatric urgent care may be at higher STD risk: higher sexual activity rate (42% vs 26%; $P<0.01$), older (15.6 vs 15.4; $P<0.05$) and more ethnically diverse (proportion of White/Asian to other race-ethnicity was: 2:1 vs 1.3:1; $P<0.05$). At baseline, 92/1072 (9%) girls were tested for CT and 11/92 (12%) were positive. At post-test, 472/1248 (38%) were tested with 33/472 (7%) positive. The intervention resulted in a 4-fold increase in screening and 3 times as many CT infected girls were identified.

Conclusion: Adolescent females attending urgent care appear to be at the same or greater risk for CT compared to those attending well care. CT screening in sexually active adolescent females is feasible, and the high rate of positive tests, shows testing to be necessary in the urgent care setting to reach the majority of at-risk girls who are not being screened.

0042

Global Survey of Patient Perceptions On Genital Herpes Management

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Objective: This study was developed to describe patient experiences and views regarding genital herpes (GH) management.

Methods: Between Nov 2001 and Oct 2002, people living with genital herpes were recruited via the International Herpes Alliance website and through banners on additional health related sites. Surveys were available in English, French, Spanish, Italian and German and assessed views on access to care, diagnosis, related emotional experiences, educational resources, counselling, pharmacotherapy and satisfaction with care.

Results: 2075 patient responses from 78 countries were analyzed. 75% of respondents were female and 65% from the USA. 49% reported their diagnosis was by culture (or other direct detection) and 9% by antibody test, while 34% reported they had been diagnosed by exam alone. 51% expressed some dissatisfaction with answers and attention about physical symtpoms. Satisfaction correlated with time spent during the initial visit ($p<0.01$). 65% used a prescription antiviral, 18% a topical and 17% an alternative therapy modality. Of 901 people with GH who reported on frequency of antiviral use, only 30% reported a frequency consistent with a suppressive regimen. 59% of respondents said they would be likely to take daily therapy if it reduced the frequency of outbreaks.

Conclusions: There may be room for improvement in key areas of GH management, including the use of confirmatory laboratory testing, use of the full range of antiviral therapy options, and quality of post-diagnosis counselling/education.

0043

Bacterial Vaginal Flora in Relation to Changing Hormone Levels

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Objective: Factors determining onset and clearance of bacterial vaginosis are not known but hormonal changes have been implicated. We therefore studied the vaginal flora of women undergoing different hormonal manipulation as part of an oocyte maturation study.

Methods: Vaginal smears and hormone levels were taken at screening visit, and during the 2 month period of hormonal treatment.

Results: 55 women entered the study. Vaginal flora results were as follows:

Vaginal flora	Baseline (%)	End of study (%)
Normal	38 (69.1)	50 (90.9)
Intermediate	6 (10.9)	1 (1.8)
BV	11 (20)	4 (7.3)

There were no cases where vaginal flora changed from normal to BV. 40 women had stable flora, all the 38 women with normal flora at baseline, plus 2 women with BV at baseline. In 13 it improved, 4 from intermediate to normal and 8 from BV to normal. In 2 it worsened from intermediate to BV. Smokers had a 3-fold increased risk of BV at one of their visits, OR 3.07 (1.20-7.92).

The mean oestradiol level with BV was 52.56ng/L compared with 174.27ng/L with normal flora (p=0.002). There was a non-significant trend towards increased progesterone levels with BV. No association was found with FSH, LH or prolactin levels.

In response to the hormonal manipulation all women had a rise in oestradiol levels throughout the study. The mean rise for all women was 145.54ng/l, but improvement in vaginal flora was associated with a mean rise of 352.5ng/L.

Conclusions: We have found an association between BV and lower oestradiol levels. A rise in oestradiol levels is associated with reversion from BV to normal vaginal flora. This study supports a possible hormonal influence in the natural history of BV.

0044

Randomised Double-blind Placebo-controlled Study to Assess Response to Sertraline in men with Chronic Pelvic Pain Syndrome (CPPS)

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Objective: Male CPPS is a difficult condition to manage. Antidepressants are frequently used in clinical practice but no interventional study has been published. We therefore investigated men with CPPS to assess their response to the SSRI antidepressant, sertraline.

Methods: Men with symptoms suggestive of CPPS underwent Lower Urinary Tract Localisation procedure to exclude infective causes. They were randomised to sertraline 50 mg daily or matching placebo for 13 weeks after which their treatment was unblinded. They were then allowed to either continue sertraline or crossover to active treatment for another 13 weeks. Prostatic symptom severity (PSS) and frequency (PSF) scores, Hospital Anxiety and Depression Scale, and a psychosexual questionnaire were completed at 0, 6, 13 and 26 weeks. Statistical analysis was by t test.

Results: 16 men have enrolled. There were no significant differences in baseline scores between active and placebo groups. At week 13 there was a mean reduction in PSS scores of 6.1 in active and 1.6 in placebo group, and in PSF scores of 3.6 and 0.7. These changes are not statistically significant because of the small numbers. However, there was a significant reduction in PSS (12.4; p=0.006) and PSF (6.0; p=0.02) from baseline when those switching onto active drug at week 13 were combined with those randomised to active drug. There were no significant changes in any other measurements.

Conclusions: Sertraline gives a significant improvement in prostatic symptom severity and frequency from baseline. This analysis does not exclude placebo effect but the randomised placebo controlled findings show a trend to improvement. We plan to continue enrolling to achieve the numbers needed in the power calculation.

0045

Prevalence of Bacterial Vaginosis in Lesbians and Heterosexual Women in a Community Setting

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Introduction: UK and US studies based in sexually transmitted infection (STI) clinics have reported unusually high rates of BV in lesbians (33-53%). However, since lesbians have lower rates of STIs than heterosexual women this sample may not be representative of lesbians in general. We therefore aimed to determine and compare the prevalence of BV in lesbians and heterosexual women in a community setting.

Methods: We identified lesbian women through community groups, events, clubs and bars. Heterosexual women were recruited from a community family planning clinic. They were instructed on how to take their own vaginal swab and create a numbered slide smear. They completed an accompanying questionnaire regarding demography, BV risk factors and complications, and sexual/hygiene behaviours.

Results: 318 women were included, 167 lesbians and 151 heterosexuals. BV was identified in 43 (25.7%) lesbians and 24 (15.9%) heterosexuals (OR 1.95; 95%CI 1.07-3.56 p=0.02). Smoking was positively associated with BV (OR 2.45; 95%CI 1.35-4.46 p=0.001). Women in 23 of 30 (76.7%) lesbian partnerships had concordant vaginal flora, 18 both normal, 5 both BV.

No association was seen between receptive oral intercourse (ROI) and sexuality, ROI and BV or ROI frequency and BV. Interestingly, in genital hygiene practice, use of bubble bath was protective against BV (OR 0.52; 95%CI 0.28-0.95 p=0.02). Full results of the multivariate analysis will be presented.

Conclusions: This study clearly demonstrates that women who identify themselves as lesbians have a 2-fold risk of BV. Our prevalence of 26% is lower than previously published rates, but our figure may be more representative of the lesbian population.

0046

Using Peer Outreach Workers to Target Street Involved Populations at High Risk for Contracting Syphilis

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Issues: Since 1997, the rates of infections syphilis have risen steadily in British Columbia. Most of the cases have been concentrated in sex workers in Vancouver's downtown east side and their sexual partners. Providing sexual health services to this population presents many challenges. In order to do effective follow up in cases of infectious syphilis, an in-depth client interview that requires the clients' disclosure of intimate sexual information is beneficial. While in mainstream populations this would be uncomfortable, in marginalized populations it can be impossible. Many live on the extreme margins of society, and are cocaine or heroin addicted. Most lack familiarity with or any trust in the mainstream health system, and so typically do not use it.

Description: In early 2002 the BC Centre For Disease Control began investigating using social network analysis to gain a better working understanding of syphilis transmission and prevention within infected population groups. One key component of this approach is the employment of peers from within the impacted community. In the fall of 2002 the Street Nurses hired two peers in order to improve contact, and enhance syphilis surveillance, testing and treatment with these hard to serve clients. In this session we will explore the benefits of professionals and peers working together and the impact of this arrangement on our work with the targeted population group.

Conclusions: While syphilis rates continue to rise in BC, there are early indications that the street nurse programs work with marginalized populations using peers has borne fruits. Trust is hard won with this population, and confidences carefully kept. Working with peers from the community facilitates trust and relationship building greatly, while breaking down the hierarchical relationships that traditionally exists between service provider and client. As a result, we are gaining a better understanding of the social dynamics of the hard core street involved community, our relationship with clients in the community has greatly improved, and consequently, our response time following active syphilis cases and their contacts has shortened.

0047

HIV/AIDS Education for the Churches: A Timely Option to Reduce the Spread.

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Objectives: Our aim is to sensitize Churches and other Faith-based organizations to embrace HIV/AIDS program for their members. This is needed to prevent future cases of the disease, and also opens an avenue of comfort for those infected and affected by the virus.

Methods: In Nigeria today, AIDS is gaining more attention than in the past. This is as a result of the large-scale efforts of the present Government who made a public declaration to prevent the spread of AIDS by mobilizing all stakeholders, including churches.

It was observed by our organization, [MAIDS], that some of the churches (those we reached out to) are not willing to talk about AIDS. Most of them see AIDS as a disease that affects sinners, and that they are covered by divine power; hence, some of them pay little or no attention to the well being of People Living with HIV/AIDS (PLWHA), in fact they fear to meet them.

In order to reverse this attitude, we decided to organize a Grassroot AIDS Intervention Network [GAIN] program for about 60 church leaders and about 30,000 members in Ibadan between October 2002 and now (the program is on-going). The workshops were interactive in nature, with distribution of relevant IEC materials like books, posters, billboards; which was followed with film shows and question and answer session.

Results: The program, till date, has recorded several success stories, which include: (i) acceptability of (PLWHA), thus stigmatization reduces. (ii) In some churches, few people with HIV voluntary showed up themselves, when it was cleared to them that they are safe, and communities are ready to accept them.

Conclusion: This type of program will go a long way (given the availability of funds) to prevent (PLWHA) to spread the virus to innocent people out of retaliation. Lastly, the clergymen would also use Bible principles which supports faithfulness in marriage, prohibits adultery/fornication, and which promotes abstinence from blood and blood products; all these to prevent the spread of the virus.

0048

The Future Face of Co-Infection: Prevalence and Incidence of HIV and Hepatitis C Co-infection Among Young Injection Drug Users

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Objectives: To determine the prevalence and incidence of HIV and Hepatitis C co-infection among young (aged 29 and under) injection drug users (IDUs) and to compare socio-demographic and risk characteristics between co-infected, mono-infected or negative youth.

Methods: Data were collected through the Vancouver Injection Drug Users Study (VIDUS). To date over 1400 IDU have been enrolled and followed, 479 were aged 29 years and younger. Semi-annually, participants have completed an interviewer-administered questionnaire and have undergone serologic testing for HIV and HCV. Univariate and multivariate logistic regression analyses were undertaken to investigate predictors of baseline co-infection. Cox regression models with time dependant covariates were used to identify predictors of seroconversion for a secondary infection. A Cochran-Armitage Trend Test was used to determine risk associations across three categories; no infection, mono-infection and co-infection.

Results: Of the 479 young injectors, 78 (16%) were co-infected with HIV and HCV at baseline and a further 45 (15%) with follow-up data became co-infected during the study period. Baseline positivity was independently associated with being female, Aboriginal, older age, greater number of years injecting, and living in the IDU epi-centre. Factors independently associated with secondary infection seroconversion were borrowing needles, greater than once daily cocaine injection and accessing methadone maintenance therapy in the previous six months was protective. There were clear trends across the three categories for increasing proportions of females, Aboriginals, older age, greater number of years injecting, living in the IDU epi-centre, and daily cocaine use.

Interpretation: There were a shocking number of youth living with co-infection, particularly female and Aboriginal youth. The median number of years injecting for youth seroconverting to a secondary infection was 3 years suggesting that for high-risk youth the window of opportunity to prevent infection is exceedingly small.

0049

Cost-Effectiveness Analysis of Three HIV Prevention Interventions in Kenya

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Objective: Although many HIV prevention interventions have been implemented in Africa, there is limited information on their effec-

tiveness and cost. We assessed the incremental cost per case of HIV averted and the cost per disability-adjusted life year (DALY) saved for three HIV prevention programs in Nairobi, Kenya.

Methods: The interventions examined were peer-mediated education for female sex workers (FSWs); syndromic management of sexually transmitted infections (STIs); and occupationally-focused programs involving high-risk men (OFIM). These programs directly reached approximately 5,000, 6,600 and 3,000 persons respectively. They had been underway in Nairobi for several years through an STI/HIV control project implemented by the University of Nairobi. Program costs were collected, and a compartmental model was constructed using Modelmaker software to simulate the sexual behaviour of sexually active persons living in Nairobi. Input parameters were entered into the model for the general population and for specific risk groups according to HIV status (compartments); partner contact rates; condom use and effectiveness; STI prevalence and STI effect on HIV transmission dynamics; and movement between compartments. The model was run at baseline to estimate the number of new HIV infections in the year 2000. It was then re-run, simulating each of the interventions, and impact was ascertained by subtracting HIV infections in the intervention scenarios from baseline. A sensitivity analysis was performed which showed the model to be robust.

Results: The annual number of HIV cases averted, cost per HIV case averted (in USD) and cost per DALY saved for the FSW, STI and OFIM programs respectively were: 983, $59.79 and $3.69; 726, $97.00 and $5.99; 369, $142.82 and $8.82.

Conclusions: All three HIV programs were highly cost-effective compared to prevention interventions in other contexts and should be replicated on much larger scale.

0050

Prevalence investigation of sexually transmitted diseases among female sex workers and truck drivers

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Objective: To study the epidemic situation and tendency of sexually transmitted diseases (STD) and establish the preventive and treatment plan for STD control in China .

Methods: STD prevalence was investigated in the special populations of female sex workers and truck drivers of long distance transportation. The demographic, behavioral and clinical data were collected. The specimens from genital tracts were detected for gonococcus (NG), Chlamydia trachomatis (Ct) and Trichomonas vaginalis by PCR method. Syphilis serology was performed by RPR and TPPA. HIV testing was performed by using ELISA and Western Blot analysis.

Results: Five hundred and five female sex workers in Kunming city and 550 truck drivers in Tongling were studied. The prevalence of STD among female sex worker was higher than that of truck drivers. The sex workers also had higher risk sexual behavior, among whom 50% did not use condoms and 58% had the history of drug abuse. Among female sex workers, the rate of trichomonas vaginalis, Ct and NG, Ct or NG only, Ct, and NG were 43.2%, 24.6%, 71.9%, 58.6% and 37.8%, respectively. The rate of positive antibody reaction to T.P. (syphilis) and HIV infection was 9.5% and 10.3%, respectively. Among truck drivers, the rates of Ct and NG, Ct or NG only, Ct, NG, syphilis antibody and HIV antibody were 2.0%, 16.0%, 10.2% and 7.8%, There was no positive for HIV infection and treponemal seroreactivity was detected in 0.7% truck driver.

Conclusions: There is a relatively higher rate of bacterial STD. The female sex workers investigated experienced higher risk sexual behavior and there will be high risk for spreading HIV in this population.

0052

Does douching elevate the risk for incident gonococcal/ chlamydial cervicitis and pelvic inflammatory disease (PID)?

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Background: Douching has been a risk factor for PID in retrospective studies but prospective data have not previously been available.

Methods: The Gyn Follow-Through (GIFT) Study assembled a multicenter cohort of 1200 women at high risk for acquiring sexually transmitted infections and followed them for a mean of 3.5 years. At baseline and every 6-12 months thereafter, interviews were conducted and swabs obtained for cervical N. gonorrhea and C. trachomatis (GC/CT) by Strand Displacement Amplification. The main outcome of clinical PID was defined as having either endometritis on biopsy or pelvic pain and tenderness plus one of the following: oral temperature > 38.8oC, leukorrhea or mucopus, ESR >15, WBC>10,000, or GC/CT cervicitis. Self-reported PID, not verified by endometritis or clinical PID, was also assessed.

Results: Women were predominantly aged 13-19, black, and unmarried. At baseline, 44% douched, 14% had GC/CT and 14% had a history of self-reported PID. Forty (7.8%) women who douched at baseline and 50 (7.7%) women who did not douche developed clinical PID. After adjusting for baseline race, education, marital status, cigarette smoking, number of partners, bacterial vaginosis, and GC/CT, douching did not affect the risk of developing PID (adj OR 1.0, 95% CI 0.6-1.6). Douching also did not elevate the occurrence of GC/CT during follow-up (adj OR 1.0, 95% CI 0.7-1.6). However douching was associated with an increased risk for self-reported but unverified PID (adj OR 2.0, 95% CI 1.0-4.1).

Conclusions: These prospective data do not support previous retrospective observations. Douching was neither associated with incident GC/CT nor the development of verifiable PID.

0053

A comparison of Internet to traditional, paper and pencil, data collection in a sexual risk assessment of gay and bisexual men

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Objectives: This study compared reports by gay and bisexual men of their sexual risk behavior between two data collection methods: an Internet survey and a traditional paper-and-pencil survey.

Methods: Paper and pencil-based survey participates (n= 244) were recruited from gay parties or bars. Internet participants (n= 307) were recruited in gay chat rooms. Identical items concerning background demographics, attitudes towards condoms, HIV communication and risk perceptions, selected sexual behaviors, sexually transmitted infections, substance use, and use of sex venues in the past 60 days in home communities and in a gay resort community were compared between the two samples using statistical tests appropriate to data level and type.

Results: Internet respondents were significantly more like to report bisexual identity, non-metropolitan residences, unprotected anal intercourse with "other" (than main) partners, and less alcohol use than did paper and pencil respondents.

Conclusions: Internet surveys generally result in disclosure of more sensitive information than do traditional methods. The Internet yielded higher reports of unsafe anal intercourse but lower reports of substance use. Different yields may be a function of the focus of the data collection methods or may indicate that each method accesses different subpopulations of gay and bisexual men. Further research is needed to determine the effects of these modes of data collection. Assessing and reporting biases in different data collection methods can help ensure that known biases of the methodology, survey designs, measures and the interpretation of data are considered.

0056

Sexually Transmitted Disease Situation In Khanh Hoa Province-Viet nam From 1998 to 2002

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Objectives: Evaluating sexually transmitted disease situation in Khanh Hoa Province for 5 years from 1998 – 2002

Methods: Researching statistic data of STDs in state health agencies in the whole province year by year from 1998 – 2002.

Result: We realized that the number of new STDs patients increasing annually (in 1998: 255 cases ; in 1999 : 216 cases ; in 2000 : 433 cases ; in 2001 : 356 cases ; in 2002 : 517 cases). Compare with 1998, in 2002 increasing 102,74%. Among STDs patients, Gonorrhea has a tendency to increase annually (in 1998 : 41 cases ; in 1999 : 54 cases ; in 2000 : 73 cases ; in 2001 ; 122 cases ; in 2002 : 103 cases). Among Gonorrhea patients, the number of farmer occupying 21,12%, worker : 20,61%, of which age from 15-49 occupying 82,18% and female : 44,02%. Syphilis for 5 years (in 1998: 21 cases; in 2002: 18 cases), compare with 1998 decreasing 14,3%, of which farmers occupying 9,67%, workers: 10,75%. Age from 15-49 occupying 75,26%, female: 45/93: 48,38%.In 2002, Vagina Candida Albicans infection and Genital wart increased 190,47% and 23,80% comparing with 1998. Vagina Chlamydia Trachoma infection has been increasing (in 1998: 0; in 2002: 60 cases). Proportion of HIV (+) among of STDs patients are 1.1% in 1998 and 2.94% in 2002.

Conclusion: Sexually transmitted disease situation in Khanh Hoa has been increasing for 5 years, especially in farmers, workers and age from 15-49 occupying the high proportion. Increasing in STDs is able to increase quickly in a number of HIV infected patients.

0057

Mucosal And Systemic Immune And Cytokine Levels During Bacterial Vaginosis

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Objectives: Bacterial vaginosis (BV) has a complex etiology that includes the decline or loss of lactobacilli from the vaginal flora and the growth of anaerobic micro-organisms. Very little is known about the host immune and cytokine responses during bacterial vaginosis. Therefore our goal was to determine the levels of mucosal and systemic cytokines and antibodies to BV-relevant micro-organisms in relation to the severity of BV.

Methods: Women attendees at the Jefferson County STD Clinic were evaluated for their BV-status and their Nugent score was recorded. Vaginal wash was collected and the levels of antibodies (IgM, IgA, and IgG) to whole bacteria (M. curtisii, G. vaginalis, lactobacilli) and cytokines (IL-1b, IL-6, IL-8, TNFa) were measured by ELISA. The Kruskal-Wallis test and Mann-Whitney U test were used (as appropriate) for all comparisons.

Results: IL-1b and IL-6 levels in vaginal wash were higher in women with BV compared to women with normal flora (IL-1b median = 644 pg/ml vs 405 pg/ml respectively, p=.03; IL-6 median = 86 pg/ml vs 172 pg/ml respectively, p=.05). In contrast, TNFa levels in vaginal wash were lower in women with BV compared to women with normal flora (median = 0 pg/ml vs 184 pg/ml respectively, p=.013). The levels of antibodies (of all isotypes) to M. curtisii, G. vaginalis, and lactobacilli were very low in vaginal wash and there was no difference in the levels present in women with normal flora and those with BV. There was no significant difference in the serum antibody or cytokine levels in women with BV compared to women with normal flora.

Conclusion: These results suggest that BV is associated with higher levels of mucosal IL-1b and IL-6 and lower TNFa but there is neither evidence of a mucosal immune response to flora associated with BV nor evidence of any systemic immune activation.

0059

Quality of Life Over the Continuum of Childbearing in a Cohort of Hepatitis C Infected Women in British Columbia, Canada

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Objective: We describe the quality-of-life(QOL) of women infected with hepatitis C virus(HCV) during pregnancy and the postpartum period.

Methods: SF36v2 questionnaires were completed during each trimester and at six weeks and three, six, and 12 months postpartum. The SF36v2 measures eight QOL domains including physical function, role-physical, pain, general health, vitality, social function, role-emotional, and mental health, all scored between 0-100(0 indicates poorest health). Sociodemographic data was collected by interview. The Kruskal-Wallis test was used to compare mean domain scores over time. Vari-

ables achieving significance below 0.05 in bivariate analyses were included in mixed effects linear regression models to determine association with domain scores.

Results: Between 05/01-12/02, 66/86(77%) invited women participated, completing 129 questionnaires. Most(77%) were Caucasian, had history of injection drug use(IDU)(56%), reported sex with IDU partner(56%), had no pre-pregnancy counselling(88%), and 30% were on social assistance(SA). Mean time since first HCV+ test was 6.5 years(range 1-9). Significant decreases in mean physical function and physical role were observed as pregnancy progressed, both of which returned to above baseline by six weeks postpartum. When adjusted for time and other associated variables, SA was strongly associated with lower QOL scores in all domains, with regression coefficients ranging from -14(mental health) to -37(bodily pain). Also adjusting for time and other variables, having any pregnancy complications was associated with lower general health(-18), and having at least high school education was associated with higher social function(+19).

Conclusions: We present the first longitudinal evaluation of QOL in HCV-infected women over the continuum of childbearing. Similar to other studies in non-complicated pregnancies, physical scores transiently decreased during pregnancy. Low socioeconomic status(SES) had a negative impact on all domains of QOL. These findings highlight the need to further explore relationships between low SES, poor health, and pregnancy and health outcomes in women living with HCV.

0060

STD Partner Notification and Condom Use Attitudes among African American- and Caribbean- Identified Patients with C trachomatis or N gonorrhoeae

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Objectives. To examine factors associated with patient-delivered STD partner notification intentions among an urban, minority population.

Methods. Between 12/19/01 and 12/27/02, 107 men and 94 women were enrolled through STD clinics in Brooklyn, NY as part of a study investigating strategies to promote STD partner notification. Enrollees were diagnosed with C trachomatis or N gonorrhoeae and were at least 18 years old. Participants reported on factors related to the perceived likelihood of informing their most recent sexual partner of potential STD exposure.

Results. Patients were primarily African American (37%) or Caribbean (62%). In the last year, 34% had received a previous STD diagnosis, and 50% reported 2 or more partners in the last 90 days; 95% of the most recently reported partners were of the opposite sex, and 40% of patients reported never using condoms with this most recent partner. In multiple logistic regression analysis, after controlling for age, those who were extremely likely to notify their most recent partner were more likely to be male (OR = 2.4; 95% CI = 1.1 - 5.5), to report one sexual partner in the last 90 days (versus 2 or more; OR = 2.4; 95% CI = 1.02 - 5.8), and to report that they do not generally feel in danger of physical abuse from their partner (OR = 2.8; 95% CI = 1.1 - 7.2) than were those who reported a lower likelihood of notification. In this model, perceived likelihood of notification was unrelated to partner type (regular versus casual/one-time) and whether they believed that they would have sex with this partner again.

Conclusions. Women, those with multiple partners, and those who feel physically unsafe in their relationships have a lower perceived probability of notifying their most recent sex partners of potential disease exposure. Health promotion messages targeting effective STD partner notification should be tailored to meet the unique needs of these groups.

0061

Risk perception, risk behaviour, and risk reduction strategies: Evidence from the British National Survey of Sexual Attitudes and Lifestyles 2000 ('Natsal 2000')

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Objectives: There has been a significant increase in self-perceived HIV risk and risk behaviour between 1990 and 2000 in Britain. We examine the concordance between risk perception and risk behaviour, and the association between risk and sexual behaviour change.

Methods: Probability sample-survey of 11,161 men and women aged 16-44 years resident in Britain in 2000. Data collected by face-to face and computer-assisted self-interviewing.

Results: Among those sexually active in the past 5 years, 4.8% (95% CI 4.2%-5.6%) of men and 2.6% (2.2%-3.1%) of women described themselves as 'greatly' or 'quite a lot' at risk of HIV. Significant ($p<.01$) variations in high-risk perception observed by marital status and ethnicity, and significant inverse association with age and education. Controlling for socio-demographics, significant association between high-risk perception and sexual behaviour, e.g. adjusted odds ratios (OR) for men and women (respectively) for reporting same-sex partner(s) 3.31 (1.78-6.18), 3.98 (1.99-7.95); sex partner(s) from abroad 2.38 (1.60-3.52), 3.00 (1.75-5.17); 2+ new partners in past year 4.41 (2.86-6.80), 6.69 (4.17-10.74). Men more likely to report changing sexual lifestyle because of STI/HIV concern if high-risk perception (OR 1.70, 1.17-2.47) but not women. Using condoms most commonly reported risk-reduction-strategy: 70.6% (67.5%-73.5%) of men reporting change; 65.5%

(62.3%-68.6%) of women reporting change. Risk perception factors not however associated with experience of STI screening or care, e.g. attending GUM clinic 1.27 (0.80-2.03), 1.62 (0.95-2.78); STI diagnosis 0.96 (0.45-2.07), 1.32 (0.60-2.91).

Conclusions: Our population-based findings indicate awareness of what constitutes high-risk behaviour, but high-risk sexual behaviours continue. High-risk men are more likely to report changing their sexual lifestyle because of STI/HIV concern, typically by using condoms. However, the lack of association between risk perception and GUM/STI exposure suggest that safer-sex messages, particularly those related to secondary prevention, are only partly getting through. These findings are consistent with recent increases in STI incidence.

0062

Sequence Diversity amongTrichomonas vaginalis virus RNA-dependent RNA Polymerase Genes

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Objective: Approximately 50 – 70% of clinical *T. vaginalis* isolates are infected with double-stranded RNA viruses known collectively as TVV. In a simple dichotomous typing scheme, isolates lacking the virus are type I, and TVV positive isolates are type II. Expression of the phenotypically variable P270 protein and cysteine proteinases are different in type I and type II isolates. Thus, TVV infection may influence *T. vaginalis* virulence. However, not all TVVs are the same. To describe the diversity of viruses infecting recent clinical *T. vaginalis* isolates, we sequenced viral RNA-dependent RNA polymerase (RDRP) genes.

Methods: *T. vaginalis* isolates were established from vaginal swab cultures obtained from women attending the Durham and Wake County Health Department STD clinics in central North Carolina. TVV infection was determined by visualization of the characteristic ~5kb dsRNA band in ethidium bromide-stained agarose gels containing total nucleic acid (TNA) extracts and by RT-PCR amplification from TNA extracts of a 380 bp product from the viral RDRP gene. cDNAs were sequenced in a model 373A DNA sequencer from Applied Biosystems using the Taq DyeDeoxy Terminator Cycle Sequencing kit.

Results: Among 258 recent clinical *T. vaginalis* isolates, 134 (52%) contained a TVV as evidenced by the dsRNA band in agarose gels. In addition, RT-PCR detected viral nucleic acids in 17 isolates from which a dsRNA band was not clearly visible in agarose gels. Thus, 151 of 258 (59%) of *T. vaginalis* isolates in this study were type II. Sequence analysis of TVVs from 24 independent isolates revealed 5 viral RDRP groups. Similarities ranged from 80 to 96% within groups and from 50 to 80% between groups.

Conclusions: TVV RDRP sequences may provide the basis for distinguishing among type II *T. vaginalis* isolates. Whether viral types are associated with different clinical presentation remains to be determined.

0063

Sensitivity And Specificity Of Culture Vs Gram Stain For The Identification Of Lactobacilli In Vaginal Secretions

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Objective: Lactobacilli appear to be protective against STD pathogens and may also protect against BV and its complications. The presence of lactobacilli is used in analyses linking vaginal "health" to BV complications. The two detection methods widely used in these studies are gram staining and bacterial culture. We compared results of gram stain to culture from 3,594 women enrolled in a study of vaginal flora to compare the sensitivity and specificity of these methods.

Methods: Data was analyzed from the enrollment visit of women participating in a longitudinal study of vaginal flora. Gram stains were scored by the Nugent method, which grades the amount of lactobacilli from 0-4+. Vaginal culture specimens were transported via anaerobic transport medium. A 1:10 dilution was inoculated onto MRS agar and incubated anaerobically. Lactobacilli were identified by colonial morphology, gram stain and catalase production and confirmed by gas chromatography.

Results: Lactobacillus morphotypes were detected by gram stain from 80.2% of women (2881/3594) vs detection of lactobacilli by culture in 48% (1723/3591). The sensitivity and specificity of culture vs gram stain as gold standard was 54.2% and 77.0% respectively. With culture as the gold standard, gram stain had a sensitivity and specificity of 90.5% and 29.4% respectively. The ability to isolate lactobacilli was significantly associated with increased quantity of lactobacillus morphotypes on gram stain ($p<0.001$).

Conclusions: Neither gram stain nor culture are adequate indicators of the presence of lactobacilli in vaginal secretions. As gram stain detects morphotypes of bacteria, it is possible that it overestimates the number of lactobacilli present. Conversely, culture may underestimate the amount of lactobacilli due to technical issues inherent in growing and isolating bacteria. Consideration should be given to utilizing more precise methods for the identification of lactobacilli for use in analysis of the relationships of vaginal flora to complications of BV.

0064

Surrogate Markers and their association with HIV-1 among Female Sex Workers of East Godavari District

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Background: A baseline study of 400 Commercial Sex Workers (CSWs) from East Godavari District was done after getting Informed consent in Jan2002,upto December2002.

In this study stress was given to the relationship between abnormal Vaginal Flora,other ,genital ulcers,multiple partners and the risk of acquisition of HIV and effect of good nutrition with dahi(curd),vegetables like leafy greens,tomatoes,bananas etc

Methods: STD screening was done by vaginal wet preparation , potassium hydroxide and saline mount microscopy and culture for *T.vaginalis (Whittington media (HIMEDIA,Mumbai), Candida* species ,and clue cells. Endocervical secretions were cul-

tured for N.gonorrhoea on Modified Thayer Martin Medium(HIMEDIA) and Probe Assay Chemiluminescent test(PACE 2 GC and 2CT,Gen probe was done for detection of Chlamydia and gonorrhoea antigen .Syphilis serologic testing was conducted by rapid plasma regain Treponema pallidum haemagglutination assay (TPHA) HIV serology was done by unlinked anonymous testing by double ELISA Any sample testing positive by first ELISA was confirmed by a second ELISA Vaginal swabs and washings were taken and smears were stained by Gram's Stain and scores were assigned on the basis of standardized criteria, with 0 representing a Lactobacillus –predominant flora and 10 a flora dominated by *Gardnerella, Bacterioides* and *Mobilincus* like organisms(small gram negative or variable or curved rods).Scores of 0-3 were considered normal,4-6 border line for BV,and 7 –10 diagnostic of BV. A score of ≥ 4was used to define abnormal flora.

Results: Results of this study shows the Gram's stain score among HIV positive CSWs to be 0 – 3 (23%) , 4 – 6 (21%) and 7 – 10 (36%) of cases.HIV seroprevalence in Kakinada was 42% and in Peddapuram 33.8% . Lactobacillus was isolated in 11% of cases(without genital ulcers,trichomoniasis,Bacterial vaginosis) and only 3% (with genital ulcers ,multiple partners,bad personal hygiene etc) The correlation between Lactobacillus culture and abnormal flora (Gram's stain ≥ 7) was- 0.14 and Lactobacillus culture and BV was - 0.14. A significant association was found between absence of lactobacillus and HIV positive status. All cases were HIV –1 Positive. A significant association was also found between absence of Lactobacillus and Gonorrhoea,Trichomonas vaginalis and BV.For Trichomoniasis the ratio of abnormal flora was 2:1.FSWs with wholesome diet did not convert to seropositivity compared with FSWs who were unhygienic,had multiple partners ,with or without BV,Trichomoniasis.

Discussion: This study demonstrates the significant relationship between vaginal colonization with Lactobacillus species and risk of acquisition of HIV-1,Trichomoniasis and BV.It has been also observed that where Lactobacillus was high the women were found to be negative for Trichomoniasis mgonorrhoea and chlamydia and in those CSWs whose vaginal smear was almost scanty for Lactobacillus ,had symptomatic discharge and culture positive for trichomonas.

Conclusions: This study is an indicator which shows the possible role of vaginal colonization with Lactobacilli and reduction in HIV infection due to microbicidal properties of Lactobacillus to HIV and acidic pH of vagina.

0065

Prevalence of HIV and Recent Trends in Sexual Behaviour among a Community Sample of Men who have Sex with Men in London

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Objectives: To examine changes in sexual behaviour and HIV prevalence over time in a community sample of men who have sex with men (MSM) in London and to explore links between sexual behaviour and HIV status (self-reported and actual).

Methods: A repeat cross-sectional survey of MSM attending selected social venues or GUM (Genito-Urinary Medicine) clinics across London between 1996 and 2002. The survey was enhanced in 2000, with the introduction of unlinked anonymous saliva testing for anti-HIV antibody in the social venues.

Results: 15,155 men were recruited between 1996 and 2002 (approximately 2000 annually), with an overall response rate of 76%. In the last six years there has been a significant increase in the proportion of men reporting any unprotected anal intercourse (UAI) [32% in 1996 to 46% in 2001] and UAI with partners of an unknown or discordant HIV status [17% in 1996 to 24% in 2001]. In 2000, 10.9% of the men were anti-HIV antibody positive compared to 11.5% in 2001. The anti-HIV antibody positive men were more likely to reported a sexually transmitted infection (STI) in the last year [OR=2.04 95% CI 1.40-2.97] and to have had UAI with one or more partners of an unknown or discordant HIV status [OR=2.13 95%CI 1.46-3.12]. Full results from the 2002 survey and comparisons will be presented.

Conclusions: Since 1996 there has been a significant increase in the proportion of MSM reporting UAI with partners of an unknown or discordant HIV status. HIV positive and negative men continue to report high risk sexual behaviour. The high HIV prevalence among MSM, increasing STIs and high risk sexual behaviour indicate the potential for the continuing spread of the HIV epidemic among MSM.

0066

Diagnosis of Pelvic Inflammatory Disease: Time for a Re-think

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Objective: To investigate the relationship between signs and symptoms and the presence of laparoscopically diagnosed PID using the dataset that is the primary evidence base for the formulation of PID diagnostic guidelines.

Methods: Data collected by Lund University were used to compare clinical presentation with the results of laparoscopic investigation. Three techniques were used; sensitivity and specificity: likelihood ratios based on pre- and post-test probabilities: and discriminant analysis.

Results: The analysis included 623 patients: 494 were laparoscopically confirmed as having PID, 129 were not. None of the variables (abnormal vaginal discharge, fever >38°C, vomiting, menstrual irregularity, ongoing bleeding, symptoms of urethritis, rectal temperature >38°C, marked tenderness of pelvic organs on bimanual examination, adnexal mass and erythrocyte sedimentation rate (ESR) ³15mm per hour) had both high specificity and sensitivity. The pre-test probability of having PID based on the presence of lower abdominal pain was 79% (95% CI = 76% to 82%). There was little variation in either the likelihood ratios or the post-test probabilities: the lowest likelihood ratio (0.97) produced a post-test probability of 78% (95% CI 74% to 81%) whereas the highest (1.73) had a post-test probability of 84% (95% CI 81% to 87%). The discriminant analysis indicated that 3 variables significantly influenced the prediction of the presence of PID: ESR ($p<0.0001$), fever ($p<0.0001$) and adnexal tenderness

($p<0.0001$). These variables correctly classified 65% of patients with laparoscopically diagnosed PID (95% CI = 61% to 69%).

Conclusions: *'Lower abdominal pain plus 2 or more symptoms and signs'* and *lower abdominal pain, adnexal tenderness and cervical motion tenderness'* are widely recommended diagnostic criteria for PID, but are not supported by the evidence base. A new evidence base is urgently needed and will require either a new investigation of the association between clinical presentation and PID, or the development of new diagnostic techniques.

0067

Cerebral Syphilitic Gumma in an HIV Male Confirmed Using PCR Technnique

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Clinical history: An HIV positive homosexual male in his mid 40's presented with a two week history of headache of increasing severity, a heavy feeling in his left eye and decreased night vision. Two months previously he had a generalised body rash that cleared with Fucidin, but reappeared nine weeks later. He had a latent syphilitic infection 16 years previously, treated. RPR three years prior to presentation was nonreactive.

Investigations: CD4 count was 340. Biopsy of the skin rash showed reactive perivascular inflammation. CT Scan showed a frontal dural-based tumour. Stereotactic brain biopsy revealed atypical lymphoproliferative infiltrates predominantly T cell, with many plasma cells and B-cells. The pathologic features and clonal studies did not confirm the preoperative diagnosis of lymphoma. Subsequent CSF VDRL was positive (1/8), RPR (1/2048) and the MHA-TP were reactive. Polymerase Chain Reaction (PCR) using polA gene primers on the brain tissue confirmed T pallidum and spirochetes were demonstrated in the modified-Steiner stain. Both tests were negative for T pallidum on the skin biopsy.

Outcome: Treatment with IV penicillin G 24 mu/day for 14 days resulted in a gradual disappearance of the rash and headache.

Conclusions: PCR may be valuable in the investigation of individuals at risk with unusual brain lesions. Serologic and CSF screening for syphilis remain important and essential diagnostic investigations. In this HIV positive male it is likely that secondary and tertiary syphilis coexisted.

0068

From Clinical Trials to Clinical Practice: Outcome of Patients not Participating in a Randomised Trial with First Generation Protease Inhibitors (FGPI)

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Objectives: Reducing sources of variability, which may affect effectiveness, may cause discordance between the results of highly active (HA) antiretroviral therapy (ART) in clinical trials and in non-selected cohorts. From 11/97 to 3/98 we performed a randomized comparison of 3 FGPI in an unselected group of patients. Now we ascertained the outcome of those patients who did not participate.

Methods: We reviewed the medical records of those patients attending during the same period any of the participating clinics, to whom HAART was recommended but who did not enter the trial. The same case report form was completed for them. Baseline characteristics and outcome variables (change in plasma viral load (VL) and in CD4+ cells from baseline and proportion of patients with undetectable VL after 1 year) were compared between participating and non-participating subjects.

Results: 137 subjects participated in the trial, whereas 104 did not. 85 charts were available for review. Main reasons for not participating were: unwillingness to initiate treatment, to change from a non-HAART regimen or to participate in a trial, or preference for a FGPI schedule. Patients not participating were less frequently naive (20% vs 31%; $p=0.05$), had a longer history of ART (17.5 months vs 13; $p=0.08$) and had a lower VL (3.39 vs 3.95; $p= 0.005$). Change from baseline in CD4+ counts was not different (64 vs 73; $p=0.73$) and the proportion of patients with an undetectable VL after 1 year was similar between groups (53% vs 50%), but change in VL was lower for non-participants ($0.79 \log_{10}$ vs 1.21; $p=0.028$). However, when baselineVL was controlled for in a regression model, the difference was no longer significant.

Conclusions: Stable patients on ART were reluctant to participate in a clinical trial with FGPI. Otherwise, outcome of patients did not differ whether they did or did not participate

0069

A Cross-sectional Study on the Epidemiological and Clinical Characteristics of HIV Infection in Gypsies in Biscay, Northern Spain

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Background: Racial and ethnic differences, can be the cause of inequality in health care and in health outcomes. Although gypsies constitute the largest ethnic minority in Spain and are also present in most countries across Europe, their health status and needs have been insufficiently studied.

Methods: with a cross-sectional design we studied the sociodemographic and clinicoepidemiological characteristics of all HIV-1 infected patients appointed to our in-

fectious diseases clinic in a tertiary care center in Bilbao, Spain, between November 2000 and March 2001, and those admitted to our ward during 1999. Patients were classified according to their ethnic origin as "gypsies", "payos" (Caucasian non-gypsy Spanish natives) or "immigrants".

Results: In the period studied, 674 patients received an appointment to visit our clinic. Thirty-one gypsies represented 5% , while 23 subjects from other foreign ethnic groups meant an additional 3%. Median viral load, CD4+ cells counts and distribution per CDC-classification groups were not different between groups. Overall, 563 patients attended their appointments (83%). Payos fulfilled their appointments more frequently (86%) than gypsies (68%) (OR for the latter not attending: 2.87, 95% CI: 1.31 to 6.30). Among attendants, intravenous drug use (IVDU) had been the HIV acquisition mechanism acquisition in 95% of the gypsy subjects and in 70% of payos (OR:8.5; 95% CI: 1.1 to 63.9). Forty-four payos (10% of those who started treatment) and 3 gypsies (19%) had interrupted it and an additional group of 10 payos (2%) were considered poor compliers. Attendance to clinic was considered to be regular for 467 (89%) of the attending payos, for 10 (48%) of the gypsies (OR for gypsies being considered irregular was 8.56 , 95% CI 3.49 to 21.00).

Conclusions: IVDU as an HIV transmission mechanism and lower clinic attendance rates were the most relevant differences observed between gypsy and payo subjects in this cross-sectional study.

0070

Trichomonas vaginalis Virulence, Cytoadherence and a Rapid Diagnostic

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Objectives: *Trichomonas vaginalis* is the causative agent of the number one, non-viral sexually transmitted disease worldwide. The objectives are to present an overview of the virulence factors and properties of *T. vaginalis* that are involved in disease pathogenesis, to provide an analysis of recent findings on the molecules and mechanisms of cytoadherence, a key first step in infection, and to describe a diagnostic test based on capillary flow technology for field diagnosis of trichomonosis.

Methods: The past literature will be reviewed to summarize the virulence factors. More recent published data will be presented on the property of cytoadherence. Information will be provided on the Xenostrip™ antigen-detection diagnostic.

Results: The parasite survives in a constantly-changing and adverse environment of the female urogenital tract. Among the virulence factors for *T. vaginalis* success in host infection are: 1) the receptor-mediated acquisition of nutrients, 2) evasion of immune surveillance, 3) regulation of gene expression by free-iron, heme-iron and calcium, and adherence to vaginal epithelial cells. The property of adherence is mediated by four surface proteins with identity to metabolic enzymes. Initial data showing silencing of adhesin genes reaffirms a role of the surface proteins in cytoadherence. A knowledge base of the stable antigens in patients' secretions permits generation of antibodies for a simple, rapid and inexpensive diagnostic based on capillary flow technology.

Conclusion: *Trichomonas vaginalis* possesses numerous virulence factors for successful host infection and survival in an adverse environment. The biology of the parasite-host interrelationship is exceedingly complex, showing the highly evolved and sophisticated nature of this ancient protist.

0071

DIAGNOSTIC ACCURACY OF SELF OBTAINED HPV CERVICOVAGINAL SAMPLES VS CLINICIAN OBTAINED SAMPLES: A SYSTEMATIC REVIEW

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Objectives: To determine a summary estimate of sensitivity (Sn), specificity (Sp), diagnostic odds ratio (DOR) and summary ROC (SROC) for self obtained cervicovaginal HPV samples compared to clinician obtained samples.

Methods: Standardized methods for identifying diagnostic studies for systematic reviews in electronic databases were employed. Studies where patients were consecutively or randomly recruited, had a reference standard applied uniformly, and used PCR or HC-II for sample analysis were included. Two reviewers (GO, DP) identified studies to be included. Q test was conducted to determine presence of heterogeneity, and Spearman's r was calculated to establish the presence of a threshold effect. Meta-test software was used to determine summary Sn, Sp, DOR and summary ROC. A random effects model was employed. Subgroups evaluated were: Dacron (D), cytobrush (Cy) or cotton (Ct) swabs; HC-II; PCR; abnormal Pap smears; studies conducted < five years and at colposcopy clinics.

Results: Of 821 studies identified, 106 were reviewed. Agreement on inclusion/exclusion was k=0.98 (95% CI: 0.96-1.00). Thirteen

of 15 eligible studies had raw data available and were combined. Q-tests overall and for each subgroup were significant ($p<0.01$) except in studies enrolling women with abnormal Pap smears and conducted at colposcopy clinics. Overall Spearman's r was −0.1, and summary DOR was 16.22 (95%CI:16.21-16.23). Forest plot and an SROC for each subgroup will be presented.

Studies (n)	Range (Sn)	Range (Sp)	Sn (95%CI)	Sp (95%CI)
Overall (13)	0.56-1.00	0.79-1.00	0.82 (0.73-0.89)	0.89 (0.85-0.92)
D/Ct/Cy (8)	0.56-0.97	0.79-1.00	0.80 (0.68-0.89)	0.91 (0.86-0.94)
HC-II (6)	0.56-0.97	0.79-1.00	0.84 (0.66-0.94)	0.90 (0.83-0.95)
PCR (7)	0.63-1.00	0.8-1.00	0.79 (0.66-0.88)	0.88 (0.81-0.93)
Abnormal Pap (4)	0.71-0.9	0.79-1.00	0.83 (0.73-0.9)	0.89 (0.78-0.95)
Colposcopy (5)	0.67-0.9	0.79-1.00	0.81 (0.70-0.88)	0.87 (0.80-0.93)

Conclusions: In women with abnormal Pap smears and in women attending colposcopy clinics, self obtained HPV samples have an overall Sn of 0.83, 0.81 and a Sp of 0.89, 0.87 respectively compared to clinician obtained samples.

0072

Oral Syphilis: Case Presentations

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A male in his early 40's presented with a rash on one leg for 2 weeks and a sore on the side of his tongue for 10 days. His RPR was reactive 1/64, the MHA-TP was reactive and his HIV EIA was non-reactive. He gave a history of unprotected receptive rectal sex four months previously and his RPR was negative around that time. On examination, there was a healing anal lesion consistent with a primary chancre and a rash consistent with secondary syphilis on the left leg. On the side of his tongue there was a whitish lesion that resembled oral hairy leukoplakia. This lesion was negative for darkfield and DFA-TP, but the PCR was positive for *T. pallidum*. These findings are consistent with a mucous patch.

A second case was a heterosexual male in his 30's who presented with a lip lesion and a two week history of cervical adenopathy. The RPR was reactive 1/16 and the MHA-TP was reactive. There was no previous serology. On examination there was a 1 cm indurated lesion on his lip. The darkfield test for *T. pallidum* was negative, but a monoclonal DFA-TP test from the lesion was positive and PCR for T pallidum was positive. He denied oral sex with anyone for 6-9 months. However, he admitted to frequently sharing a "crack pipe" with a number of individuals prior to the development of the lesion. "Crack pipe" etiquette requires that the pipe be passed very quickly from person to person.

A third case was a woman in her late 20's who presented to her physician as a contact to early syphilis . On examination she was noted to have a 1 cm slightly indurated lesion on the breast involving the nipple. Her RPR was reactive 1/32, the MHA-TP was reactive 1 plus, and the FTA-ABS was reactive 3 plus. 4 years previously the RPR was nonreactve. She complained of no genital symptoms but would not allow a genital exam. The lesion on the breast was consistent with a primary chancre.

0073

Oral Manifestations and Transmission of Primary and Secondary Syphilis

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Background: Since summer 1997, there has been a sustained outbreak of infectious syphilis in Vancouver which has been concentrated in the "Downtown East Side" a disadvantaged socioeconomic area . Most cases are sex trade workers and their partners. Several cases have been associated with oral lesions and oral sex has been the most likely mode of transmission in around 15% of cases. It is generally thought by the lay public that syphilis is not spread by oral sex.

Objective: To quantify the prevalence of oral manifestations and oral transmission of infectious syphilis.

Methods: A retrospective review of all cases of infectious syphilis presenting to STD/AIDS Control of the BCCDC (British Columbia Center for Disease Control) between August 1/2002 and March 15/2003 was undertaken. Cases with oral lesions and a history of possible transmission by oral contact were identified.

Results: During this time period there were 32 primary syphilis, 31 secondary syphilis, and 57 syphilis early latent.

Of these, 4 had oral lesions consistent with primary syphilis and 4 had oral lesions consistent with secondary syphilis. 10 patients had primary syphilis of the penis where the only risk in the 3 months prior was fellatio. Three interesting cases will be presented in a separate abstract".

Conclusion: Early infectious syphilis often has oral manifestations and oral sex is an effective way of transmitting syphilis. It is important for the public and physicians to be aware of this.

0074

Recurrent Non-Gonococcal Urethritis (NGU): Rate Reduced with Azithromycin to Treat Initial Episode

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Background: The usual treatment for NGU in BC is doxycycline 100mg po bid x 7 days. However, due to a surplus of azithromycin from a mass treatment program for syphilis, azithromycin 1.2gm po stat was used to treat NGU from July 2000 to May 2001. During this period the incidence of recurrent NGU appeared to be less.

Objectives: To compare the rate of recurrent NGU in patients initially treated with azithromycin to those patients initially treated with doxycycline.

Methods: A retrospective chart review was undertaken to review the number of cases of NGU and recurrent NGU for 5 time periods of approximately one year each. Four of these time periods contained patients who were initially treated with doxycycline (i.e. periods I, II, III and V) and the other time period had patients who were initially treated with azithromycin (i.e. period IV).

Results:

PERIOD	NGU DATES	RECURRENT CASES	% RECURRENT NGU CASES	NGU
I	Jan-Dec '98	482	56	11.6%
II	Jan-Dec '99	495	54	10.9%
III	Jan-June '00 plus June-Dec '01	297	30	10.1%
IV	July '00-May '01 inc.	403	30	7.4%
V	Jan-Oct '02	308	34	11.03%

In the doxycycline treated patients the percentage return for recurrent NGU ranged from 10.1% to 11.6%, whereas in the azithromycin treated patients it was 7.4% (OR=1.5; CI=1.0 to 2.3).

Conclusion: There was a significant reduction in the rate of recurrent NGU in the azithromycin treated patients as compared to the doxycycline treated patients. A possible explanation for these findings is that there is/are an infectious agent(s) involved in NGU and recurrent NGU that respond(s) better to azithromycin than doxycycline. One of the organisms recently implicated in NGU is Mycoplasma genitalium. Azithromycin could be more effective at eliminating this organism hence reducing the rate of recurrent NGU. The cost of azithromycin is approximately 4.5 times the cost of doxycycline which would negate any cost saving benefits in using azithromycin as the initial treatment for NGU. However, there would be additional savings related to reduction in follow-up visits, re-treatment, re-testing, morbidity and perhaps PID and its complications, e.g. infertility and ectopic pregnancy, in the female partners.

0075

Intergrating STD, Hepatitis, and HIV Services into Alternative Sentencing Drug Rehabilitation Programs 1999-2002

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Objective: Considering the difficulties in providing screening and vaccination services for inmates in short-stay incarceration facilities (i.e. jails), we evaluated the integration of prevention services in an alternative sentencing drug rehabilitation program (program participation in lieu of incarceration) in San Diego, CA, USA.

Methods: Clients received information about services (about 300 new clients/yr) and were asked to complete a risk-assessment questionnaire. Hepatitis B vaccination (beginning April 1999), serologic testing (beginning December 1999) for hepatitis B virus (HBV) and hepatitis C virus (HCV) infection, nucleic acid amplified urine-based chlamydia (CT) and gonorrhea (GC) screening (beginning Jan 2000), and HIV counseling and testing were offered.

Results: From April 1999 to December 2002, 971 clients completed a risk assessment. Most clients were male (64%), were >30 years old (64%), and few (2%) reported prior hepatitis B vaccination. Of clients eligible for hepatitis B vaccination (N = 948), 91% received the first dose, 64% the second dose, and 39% completed the series. Serologic testing showed that 11% (60/544) of clients had a prior HBV infection (0.4% chronic infection) and 14.8% (82/553) had a confirmed positive HCV antibody test. For HBV and HCV infections, positivity was highest among those with a history of injecting drug use – HBV, 19% (28/147) and HCV, 38% (58/151). Of those with an HCV positive test, only 25% (19/76) could be located ^{3} 6 months after testing positive (10 had received a medical evaluation). HIV infection was rare (prevalence, 0.3%) and STDs were uncommon (CT prevalence, 2%, and GC prevalence, 0.6%). The annual cost of services was $34,620 (staff 44%, hepatitis B vaccine 33%, laboratory tests 23%).

Conclusion: Integrating services into drug rehabilitation programs provided an efficient venue for hepatitis service delivery, whereas, the utility of STD screening was minimal. A system for follow-up of HCV infected clients is needed.

0076

Increasing Syphilis Knowledge and Awareness among Men who have Sex with Men in Metropolitan Chicago, 2000 – 2002

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Objectives: In recent years, outbreaks of syphilis in men who have sex with men (MSM) have been reported in many U.S. cities. Lack of awareness and knowledge of syphilis may be contributing to these outbreaks, delaying medical care and treatment. In response to an increasing number of MSM with syphilis, Chicago initiated a series of syphilis awareness campaigns targeted to MSM, focusing on symptom recognition, in 2000.

Methods: Attendees at the International Mr. Leather competition, a circuit party for MSM held in Chicago, were asked to complete a

self-administered survey on syphilis in 2000 and 2002. Surveys from respondents residing in the metropolitan Chicago area were analyzed.

Results: There were 260 respondents from metropolitan Chicago in 2000 and 135 in 2002. In 2000, 62% (162) of the respondents incorrectly identified urethral discharge as a syphilis symptom compared to 58% (78) in 2002 ($p>.05$), and the proportion identifying rash as a sign increased from 23% (61) in 2000 to 51% (69) in 2002 ($p<.05$). Awareness of syphilis reports in the MSM community and concern about acquiring syphilis increased from 41% (106) in 2000 to 67% (90) and 63% (85), respectively, in 2002 ($p<.05$). Knowledge that syphilis facilitates HIV transmission rose from 57% (148) in 2000 to 75% (101) in 2002 ($p<.05$).

Conclusions: Recognition of the signs and symptoms of syphilis may be particularly important as early detection and treatment of the chancre are crucial for prevention and control of syphilis outbreaks. These data suggest that, between 2000 and 2002, knowledge and awareness of syphilis increased among this group of MSM residing in metropolitan Chicago, possibly related, at least in part, to awareness campaigns. As awareness and education are crucial to prevention efforts, there is an urgent need for ongoing syphilis education appropriately tailored to the MSM community.

0077

Syphilis in Transition, Chicago, 1998-2002

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Objectives: Since 1998, Chicago has reported the highest number of primary and secondary (P&S) syphilis cases among U.S. cities, and has experienced dramatic changes in P&S syphilis epidemiology. Our objectives were to characterize the changing patterns of P&S syphilis transmission during the past 5 years.

Methods: P&S syphilis cases reported in Chicago between 1998 and 2002 were analyzed for demographics, clinical and behavioral risk factors. Rates (cases per 100,000 population) were calculated from 2000 U.S. census data. Data from 2002 are provisional.

Results: (see table above)

Rates (Year)	Overall	Males	Females	White	Black	Hispanic	White Males	Black Males	Hispanic Males
1998	11.78	14.67	9.15	2.63	24.97	1.27	4.75	31.56	1.9
2002	11.26	20.57	2.55	14.85	12.86	5.30	30.35	20.84	9.67
Rate Change	-4.4%	+40.2%	-72.1%	+464.6	-48.5%	+317.3%	+538.9%	-34.0%	+408.9%

For females, rates declined in blacks (68.2%), Hispanics (3.0%), and whites (100%). Increases in whites and Hispanics are due entirely to the increase in men who have sex with men (MSM). MSM represented 14.7% of P&S syphilis between 1998-2000, increasing to 55.8% in 2001 and 63.3% in 2002. HIV seropositivity among P&S syphilis cases averaged 6.4% between 1998 and 2000, 27.7% in 2001, and 35.9% in 2002. HIV seropositivity in females averaged 3.7%, 4.7% in heterosexual men, and 53.3% in MSM.

Conclusions: While P&S syphilis morbidity remained relatively stable in Chicago throughout the 5 year period, patterns of transmission changed substantially. Rates among whites now exceed rates among Blacks, reversing a decades-old pattern. The decline in syphilis among racial/ethnic minority heterosexuals and the reemergence in MSM mirrors trends nationwide. The increasing HIV seropositivity rate among P&S syphilis cases is worrisome and has important implications for both HIV and STD prevention programs. Rapid response to the changing epidemiology of P&S syphilis transmission is crucial for syphilis elimination efforts.

0078

What value do real-time and quantitative amplification assays have for the detection of Chlamydia trachomatis?

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In the UK, recent screening initiatives using nucleic acid amplification tests have led to high estimates of the prevalence of infection and consequently we are now beginning to 'roll out' screening to the wider population. The adoption of large-scale screening produces problems for the laboratory since all the current platforms are limited in their throughput unless 'fed' by sample preparation robots. Moreover, high specimen throughput exacerbates the danger of contamination.

Real-time quantitative PCR has been developed for research in many laboratories; it has advantages also for routine diagnosis. In particular, it minimizes the risk of amplicon contamination. It allows the recognition of low load positives. Since contamination is likely to produce such positives, monitoring the distribution of specimen load allows a useful check on quality.

In the research area, we have used quantitative PCR to investigate target load in female specimens. The results indicate that, for two of the main amplification assays, vulvo-vaginal swabs will give lower number of low target specimens than first catch urine. We have also investigated the relationship between DNA load and the presence of symptoms. In the future, the use of specimens with known levels of chlamydial DNA may well provide a much more rational basis for assay development and evaluation. It should also provide much needed information about pathogen shedding through infection.

0079

Home-based Chlamydia Screening with Self-selection, in Antwerp, Belgium. Target Group: Male and Female Students (1)

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Objective: To perform a field evaluation of a *Chlamydia trachomatis* (CT) screening approach with self-selection among school youth.

Methods: In 1997 a chlamydia prevalence study was performed in Antwerp among schoolgirls of levels 5-6. (Sex Transm Inf 1999;75:152-155). CT-prevalence was 0.7 %. Using a risk-profile, a subgroup of girls with a CT-prevalence of 4% could be defined, containing 90 % of cases.

In 2001 the use of this risk-profile was tested. School youth (levels 5-6) got chlamydia-lessons. All students were invited to sent

samples, if they recognised themselves in the chlamydia risk-profile. Samples were sent by mail (vaginal swabs for girls; meatal swabs for boys). Chlamydia-PCR was performed. Objectives were to reach a subgroup with >= 4% CT-prevalence, reaching >=90% of expected CT-cases. (Subgroup = 24% of total population).

Results: 1222 girls and 1237 boys attended chlamydia-lessons.
13.5 % of women (n = 158; mean age 18.7y) and 5 % of men (n = 63; mean age 19.0 y) sent a sample.

50 % of women sending swabs, belonged to the risk-subgroup.

Chlamydia prevalence was 4.4 % (95% CI: 1.4-7.4 %) in women and 1.6 % (95% CI: 0-4.6 %) in men.

7 women and 1 man had a positive CT-test. Based on the 1997-data, at least 15 CT-cases were expected among women in 2001.

Conclusions: This is the first attempt to test a CT-screening approach with self-selection. We found a subgroup of women with an almost sevenfold chlamydia prevalence compared to the 1997-prevalence. A very limited number of chlamydia cases were however found. The cost-effectiveness of the programme should be evaluated.

0080

Home-based Chlamydia Screening with Self-selection, in Antwerp, Belgium. Target Group: Male and Female Students (2)

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Objective: To evaluate students opinions on a selective chlamydia trachomatis (CT) screening programme.

Methods: 178 chlamydia-lessons were held among secondary school students (levels 5-6; 1222 girls and 1237 boys were reached). Students were instructed about a home-based selective CT-screening approach. After each chlamydia-lesson, school medical staff carried out a structured evaluation. They registered the most frequent opinion of the students on a 22-item questionnaire.

Students received sampling material: vaginal swabs for women and meatal swabs for men. Students were invited to sent samples, if they recognised themselves in the chlamydia risk-profile. Samples were sent to the lab by mail. Chlamydia-PCR was performed on samples.
4 focus group discussions with students were held at the end of the project.

Quantitative results: In 52% of classes women intended to talk with their friends about the chlamydia lesson afterwards (44% in men).

In 73% of classes women would consider their own STI-risk after the chlamydia lesson (57% in men).

In 68% of classes women intended to sent samples if they recognised themselves in the risk-profile (59% in men).

In 52% of classes women said the risk-profile situations were recognisable for people aged 17-18 years (53% in men).

Qualitative results: focus groups:
A mismatch existed between the epidemiological concept of risk-profile and their personal view on their own risk-situation. Students had to put themselves in a kind of observatory position to evaluate their own STI-risk.
Students wanted more lessons on STI and sexual health.

Conclusions:
Many students seemed to intend to perform a chlamydia-test.Intensification of STI&Sexual-health lessons are scheduled.

0081

Changing the way STIs are treated in Russia

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Background: Due to historical patterns of care, decades of isolation from the rest of the world and vested interests of the medical authorities, the present Russian system of STI control is significantly different from the approaches effectively used worldwide. The major strategies are large screening programs and provision of clinical services through a verticle system of dermato-venereological dispensaries. Negligible resources are allocated to primary prevention. Sgnificant proportion of syphilis cases are still treated on in-patient basis. Treatment for Chlamidia Trachomatis infection often includes multiple sessions of antibiotics and fancy adjuvants like immunodulators and low-energy lazers.

Intervention: Taking into account a rise in STI/HIV in Russia, several projects in this area have been initiated by the Open Society Institute (OSI) and by the Open Health Institute (OHI), the successor of OSI-Russia's Public Health Program. Since 2002 technical and financial assistance has been provided to the Central Venereological Institute to develop locally-appropriate, evidence-based standards for STI diagnosis and treatment. Another project was initiated to overcome traditional biomedical orientation and isolation of the venereological service. In close collaboration with the Ministry of Health, a big STI regional clinic has been identified to introduce an innovative model of targeted intervention. Its personnel was trained in interactive counseling and a referral system was established with the regional AIDS center. The project also includes the development of outreach work and free anonymous medical STI care for vulnerable populations. The basic elements of STI/HIV prevention are also incorporated in many other OHI programs, like condom provision and safe-sex education in 57 civilian and prison harm reduction projects.

Expected results: All these activities aim to ensure effective STI control, best practice in patient care and the integrated public health response to STI/HIV.

0082

The Changing Epidemiology of Syphilis In The United States

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Background and Objectives: Although rates of primary and secondary (P&S) syphilis in the United States declined every year during 1991-2000, rates began to increase in 2001. We analyzed surveillance data collected during 2000-2002 to evaluate syphilis trends during this period of increasing incidence of infectious syphilis.

Methods: Data from P&S syphilis cases reported by state and local health departments during 2000-2002 were analyzed. Results: During 2000-2002, the rate of P&S syphilis in the U.S. increased 15%, from 2.1 cases per 100,000 population in 2000 to 2.4 cases per 100,000 population in 2002. The rate increased 42% among men and decreased 35% among women. In 2000, the rate was 1.5 times higher for men than women; in 2002, it was 3.3 times higher. Increases in male-to-female rate ratios occurred among all racial/ethnic groups. In 2000, the rate of P&S syphilis among African-Americans was 21 times that among whites; it was 9 times higher in 2002. African-Americans accounted for 71% of cases in 2000, 62% in 2001, and 48% in 2002; the rate of syphilis increased 100% among whites during this period.

Conclusions: The nationally reported rate of P&S syphilis increased for the first time in a decade in 2001 and continued to increase in 2002. The continuing decline in syphilis rates among women and the increasing male-to-female case ratio suggests that the rate of syphilis is increasing among men who have sex with men (MSM) while decreasing among heterosexuals. National efforts are under way to improve monitoring of syphilis trends among MSM and heterosexuals, better understand factors associated with the observed increases, and strengthen efforts to prevent and treat syphilis.

0083

Knowledge of High-Risk HPV Positivity Among Women in Rural South Carolina

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Objective: An estimated 25 million Americans have active human papillomavirus (HPV) infection at any time: 5.5 million new infections occur each year. High-risk types of HPV (HR-HPV) have been identified as necessary, but not sufficient, causes of cervical cancer. The objective of this qualitative study was to explore women's knowledge and understanding of HPV to guide future quantitative research efforts and development of educational messages. This study employed in-depth interviews to explore this new area of inquiry and to identify key themes for further study.

Methods: Forty audiotaped in-depth, in-person interviews were conducted with low-income, HR-HPV positive women (ages 18-64) who attended four primary health care clinics in a rural region of South Carolina. Upon consent, women were asked sociodemographics and open-ended questions addressing their knowledge and experiences related to HPV and abnormal Pap tests and sources of health and medical information. The interviews were transcribed verbatim and coded for key themes using NVivo software.

Results: Key findings were that women knew very little about HPV and how HPV related to abnormal Pap tests. Areas of concern for women included: What is HPV?; How do I get HPV?; Where does "it" come from?; Will I always have HPV?; and Will HPV affect pregnancy?. Women did not understand why they had abnormal Pap tests. Women with HPV learned about health and medical information from several sources, including friends and family members, but trusted the information they received from their health care providers the most. Women were interested in learning more about HPV and abnormal Pap tests.

Conclusions: Women with HR-HPV do not understand the relationship between HR-HPV, abnormal Pap tests, and cervical cancer and have many unanswered questions about HPV. Meaningful HPV educational messages are needed to supplement patient-provider interaction and promote adherence to follow-up care plans.

0084

Analysis of Syphilis Epicemic Among STD Clinical Patients and Commercial Sexual Workers in Shanghai: 1986-2001

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Objective: To understand and summarize the syphilis epidemic among STD patients and commercial sex workers from 1986-2001 in Shanghai, so as to provide decision makers with the scientific evidence to formulate and modify strategies for STD prevention and control.

Methods: Sera were obtained from the Hospital STD clinic patients who were suspected of syphilis or other STDs. Samples also includes sera of commercial sex workers (CSW) who were sent to the hospital for STD screening. General clinical and demographic data of the subjects were collected and analyzed. All the sera were screened for syphilis by RPR and RPR positive samples were confirmed by TPHA or FTA-ABS. Individuals with active local lesions were examined with dark field microscopy.

Results: Case number of syphilis diagnosed in this hospital accounts for more than 80% of the total cases in Shanghai. 20,335 STD patients and CSWs were tested for syphilis. 58.63% subjects were found syphilis positive. The data were further analyzed by stratifying by STD patients and CSWs, age, sex, and year. Since 1995, syphilis case number has increased annually, and congenital and infant syphilis have emerged in Shanghai.

Conclusion: In the past 15 years, syphilis increased rapidly and continued to be a social and medical problem in the coming years.

0085

Interactions of Haemophilus ducreyi with Human Monocyte-Derived-Dendritic cells and Macrophages in Vitro: Phagocytosis, Cytokine Production and T-cell Activating Capacity

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Aim: To elucidate the role of antigen presenting cells (APC) in chancroid, we investigated the interactions of H. ducreyi with monocyte-derived dendritic cell and macrophages in vitro.

Methods: Dendritic cells (DC) and macrophages (MQ, were obtained from peripheral blood mononuclear cells. Phagocytic activity and cytokine secretion by the APCs after exposure to gentamycin killed H. ducreyi bacteria and its purified antigens, lipoologosaccharide (LOS) and the cytolethal distending toxin (HdCDT) were analysed by Flow Cytometry and by ELISA, repectively. Furtheremore, T-cell proliferation and cytokine release were examined after co-culturing isolated autologous CD4+ T-cells with antigen-pulsed APCs.

Results: Both the DC and the MQ phagocytosed different H. ducreyi strains, as well as the H. influenza and E. coli strains, used as Gram-negative bacterial controls. Between 6 and 27 % of APCs ingested bacteria. All H. ducreyi strains induced strong secretion of pro-inflammatory cytokines, such as TNF-á, Il-6, IL-8 and IL-12, by the APCs. High levels of TNF-á, IL-6 and IL-8 were induced already after 6 h, whereas IL-1â was induced after 20 h. The HdCDT did not induce significant levels of any cytokine. High levels of Interferon-ã (IFN-ã) were secreted by T-cells after being activated by either DCs or MQ pre-exposed to H. ducreyi bacteria. HdCDT treated DC or MQ were not able to induce T-cell proliferation and also blocked TT-specific T-cell response. This anti-T-cell activating capacity of HdCDT was dose dependent manner.

Conclusion: 1) H. ducreyi strains induce the production of proinflamatory cytokines such as IL-6, IL-8 and TNF-á. 2) DCs present H. ducreyi antigens to T-cells resulting in a specific T-cell proliferation. 3) The HdCDT hamper induction of cytokine production as well as the ability of eliciting T-cell activation following exposure to APCs, and 4) H. ducreyi can differentially regulate the T-cell-stimulatory ability of APC and favour a Th1-type response.

0086

Mycoplasma genitalium Among Women with Pelvic Inflammatory Disease

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Objectives: Pelvic Inflammatory Disease (PID) is a frequent and morbid condition of young women, often resulting in reproductive morbidity. Although *Neisseria gonorrhoeae* and/or *Chlamydia trachomatis* are recovered from approximately a third to a half of women with PID, the etiologic agent is often unidentified. Several studies have linked *Mycoplasma genitalium* with urethritis in men, but the role of *M. genitalium* in reproductive disease in women is understudied. Our objective was to determine the prevalence of *M. genitalium* in the cervix and endometrium of women with non-gonococcal, non-chlamydial PID.

Methods: A pilot sample of 50 women with non-gonococcal, non-chlamydial endometritis was studied as part of the PID Evaluation and Clinical Health (PEACH) Study. All participants had pelvic pain; pelvic organ tenderness; and leukorrhea, mucopurulent cervicitis (MPC), or untreated cervicitis. Endometritis was defined as $^{3}5$ surface epithelium neutrophils per ´400 field absent of menstrual endometrium (acute inflammation) and/or $^{3}2$ stromal plasma cells per ´120 field (chronic inflammation). Endometrial and cervical specimens were tested for *M. genitalium* using PCR.

Results: We detected *M. genitalium* in 7 (14%) of the women tested: 6 (12%) in cervical specimens and 4 (8%) in endometrial specimens. Infection of the cervix and endometrium were highly correlated (Pearson's correlation 0.57, p=0.0001), with 75% of endometrial positive cases also positive at the cervix and 50% of cervical positive cases also positive in the endometrium. MPC was present in 3 (60%) of 5 women with cervical *M. genitalium* versus 17 (49%) of 35 women without cervical *M. genitalium*. Chronic endometritis was identified in 3 (75%) of the 4 women with endometrial *M. genitalium* compared to 18 (42%) of 43 women without *M. genitalium* in the endometrium.

Conclusions: *M. genitalium* is prevalent among women with non-gonococcal, non-chlamydial PID.

0087

STD Screening at Bathhouses, Sex Clubs and other MSM Venues, Los Angeles

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Objectives: Los Angeles bathhouses, sex clubs and other community sex venues are sites at which unprotected sexual encounters among men who have sex with men are commonplace. STD testing at these sites was evaluated as a surveillance tool for disease and behavioral screening in areas with rising STD rates in MSM.

Methods: Free HIV and STD screening is offered by the Los Angeles county STD program in collaboration with community based organizations at or near multiple commercial sex venues as on site testing or using mobile van units.

Results: Data was collected from 19 different venues frequented by MSM in Los Angeles. Between November 2001 and February 2002, 385 men presenting to

community outreach testing sites were screened for syphilis and other STDs. Seven percent of these reported themselves as HIV positive. Participants reported a median of 10 (range 0-300) sexual partners in the previous 12 months and a median of 2 partners with whom they did not use a condom (range 0-300) during this same time period. Sixty percent of men reported engaging in anonymous sexual activity with one or more persons during the preceding 12 months. Forty-six percent of men screened reported engaging in sexual activity with one or more persons of unknown HIV status during the preceding 12 months. The most frequently named venues for meeting sexual partners included bars/clubs (47%), sex clubs (23%), bathhouses (20%), internet (17%), and fitness gyms (16%). Drug use was fairly common, including marijuana (19%), cocaine (8%), methamphetamines (8%), ecstasy (8%), nitrates/poppers (7%), and sildenafil (5%). Nine cases of syphilis were diagnosed out of 322 tests. Three of these cases reported previous treatment. Two of these were early cases. Six cases of chlamydia were diagnosed out of 305 tests.

Conclusions: Commercial sex venues are one of the few sites available to interface with these MSM populations whom are at immediate risk of transmitting or acquiring STDs and/or HIV

0088

Comparison of Data Collection Methods for Previous STD Diagnosis

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Objective: A past STD diagnosis is an important measure in STD research, though the utility of self-report for this measure is often questioned. The purpose of this study was to compare three different data collection methods for completeness and accuracy for past chlamydia (CT) and gonorrhea (NG) diagnoses.

Methods: Data collection in a cohort of adolescent females included: (1) face-to-face interviews; (2) computerized and paper medical record reviews; and (3) CT and NG reports to the state health department.

Results: The prevalence of diagnosed CT during the 2-year study period was 20.5%, 23.0%, and 19.7% by self-report, medical records, and state health department reports, respectively; the prevalence of NG was 4.7%, 6.9%, and 5.5%, respectively. Differences between methods were not statistically significant ($p>.05$ for both CT and NG). Considering all three methods simultaneously, the additive prevalence of CT was 28.8%, and for NG the additive prevalence was 8.9% ($p<.001$ for difference from self-report alone for both CT and NG). Kappa statistics ranged from .5 to .7, sensitivities from 40% to 70%, and percent agreement from 83% to 96%.

Conclusions: No single data collection method provided significantly greater case ascertainment than any other method. These data suggest that the feasibility and low-cost of obtaining self-reported data make this a viable option for researchers when faced with resource constraints. However, the substantially greater case ascertainment that is achieved when multiple sources are used suggests that this strategy is preferable when time and money permit.

0089

Communication of Partner Treatment for STDs

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Objective: The purpose of this study was to explore the role of communication around partner treatment for STDs in reducing repeat infections.

Methods: Sexually active adolescent females reported their history of chlamydia and gonorrhea diagnoses in structured, face-to-face interviews. At the time of the interview, adolescents were also tested for chlamydia and gonorrhea infections using urine-based LCR testing.

Results: Among 411 adolescent females, 104 (25%) reported ever being diagnosed with chlamydia or gonorrhea. The median time since diagnosis was 6.8 months. Ninety-five percent of those with a past diagnosis reported that their provider recommended partner treatment, 83% reported telling their partner of their diagnosis, but only 66% reported knowing that their partner was treated. Of those who knew their partner was treated for the past infection, 11% were currently STD-positive, compared to 30% of those who did not know that their partner was treated . In a multivariate model adjusted for confounding, those who did not know their partner was treated for past infection were 3.4 times more likely to be currently STD-positive compared to those who did know their partner was treated (95% CI=[1.0,11.5], $p=.05$).

Conclusions: Patients' lack of follow-up on partner treatment for STD infections is an independent risk factor for subsequent infection. More aggressive partner treatment strategies and follow-up that involve the STD patients themselves may reduce the frequency of STDs in this population.

0090

New Sex Partner Acquisition and STD Risk Among Adolescent Females

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Objectives: Little is known about the nature of new sex partnerships that may increase risk for STD infections. The goal of this study was to determine the association between new sex partner acquisition and incident STDs, to describe predictors of acquiring a new sex partner, and to compare new and established sex partnerships among adolescent females.

Methods: Sexually active adolescent females (n=411) were enrolled in a longitudinal study with visits at baseline, 6 and 12 months. Structured, face-to-face interviews were conducted in which adolescents reported if their current sex partner was the same partner from their last visit. Adolescents were also tested for chlamydia and gonorrhea infections at each visit using urine-based LCR testing.

Results: Acquisition of a new sex partner during the 12-month follow-up period was common (24%) and significantly associated with an incident STD infection (OR=3.0, 95% CI=1.6,5.7). Predictors of new sex partner acquisition were younger age, younger age at first intercourse, and alcohol or drug use before sex in past 30 days. Being in a new partnership was significantly associated with greater uncertainty about the partners' STD history and recent sex with others.

Conclusions: Partnership-level interventions such as joint STD testing, enhanced communication, and reducing the rate of partner change should be emphasized in STD prevention efforts aimed at sexually active adolescents. Youth-development approaches that address a constellation of related risks will also be important.

0091

Lower Quality of Life Among Women with Chronic Pelvic Pain Following Pelvic Inflammatory Disease

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Objective: Chronic pain is associated with reductions in physical and mental functioning. Our objective was to determine the morbidity from chronic pelvic pain (CPP) following pelvic inflammatory disease (PID).

Methods: 548 women were studied as part of the PID Evaluation and Clinical Health (PEACH) Study. Chronic pelvic pain was defined as pelvic pain reported at 2 or more consecutive interviews conducted every 3-4 months through 32 months and was graded: Grade 0 = No CPP; Grade 1 = CPP, low pain intensity; Grade 2 = CPP, high pain intensity. Mean SF-36 scores at 32 months were compared by chronic pelvic pain categories.

Results: The mean ± standard deviation Physical Health Composite Scores (PHCS) and Mental Health Composite Scores (MHCS) from the SF-36 were progressively lower among women with increasing grade of chronic pelvic pain. (PHCS: Grade 0 = 87.3 ± 10.7, Grade 1 = 79.1 ± 14.6, Grade 2 = 73.6 ± 16.0, $p < .01$; MHCS: Grade 0 = 78.7 ± 13.6, Grade 1 = 69.1 ± 15.8, Grade 2 = 67.5 ± 17.1, $p < .01$). Individual physical function, bodily pain, general health, vitality, social function, and mental health scores were also significantly lower among women with chronic pelvic pain and by increasing grade of pain intensity.

Conclusions: Chronic pelvic pain following PID is associated with reduced physical and mental health.

0092

Topical Microbicide Safety Evaluation Model: Colposcopy or Biopsy as Indicator of Toxicity

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Background: Controversy exists amongst clinicians and scientists as to whether colposcopy or tissue biopsy is a better approach to evaluate safety of potential topical microbicide (TM) products. Using the non-human primate (NHP) model for safety evaluations of vaginally applied topical microbicides, we compared these techniques for their usefulness in evaluating tissue toxicity, while weighing the benefit of the non-invasive nature of colposcopy against the breach in epithelium resulting from biopsy collection, in topical microbicide safety evaluation studies.

Methods: In the NHP model, animals undergo colposcopic exam 24-hours after the final of four daily applications of a candidate TM product. A colposcopically-guided cervical biopsy is then collected for routine histologic assessment by H&E stain. When adverse findings are noted by colposcopy, the affected area of tissue is biopsied. For these studies, adverse colposcopic findings are defined as epithelial disruption and/or friability of cervical tissues. Histologic assessment for these studies is conducted by counting inflammatory cell populations (PMNs, lymphocytes, plasma cells) in 5 non-adjacent high power fields, making notation of cellular foci present anywhere in the tissue section, and reporting number of epithelial cell layers. To further evaluate the potential contribution of biopsy assessment for TM safety studies, five biopsies collected from sites with serious adverse colposcopic findings (epithelial disruption and/or ulceration) were serially sectioned (80 X 4mm) and assessed for presence of inflammatory cells/foci and layers of epithelium.

Results: Of 174 colpo-histo comparisons (CHC: colposcopic exam and histology of biopsy), 139 (80%) were found to have no evidence of toxicity by either technique. Seven (4%) CHC revealed adverse colposcopic findings and increased inflammatory response (defined as higher than previously defined "normal cell population" of any cell type) by histology. The remaining 28 CHC were determined to have unacceptable safety profiles by one technique or the other: 19 by colposcopy, 9 by histologic exam of biopsy. Alternatively, when histologic tissue assessment was recorded as presence or absence of distinct foci of inflammatory infiltrate noted anywhere in the tissue section, a total of 13 specimens were identified as having such foci. Of these, 2 were noted as having adverse colposcopic findings, yet none were among the 5 biopsies selected for serial sectioning. Of note, 2 of the 5 serially sectioned biopsies did reveal foci indicative of inflammatory infiltrate in subsequent tissue sections. Actual cell counts (determined exclusive of foci) from each of the 5 serially sectioned biopsies showed some variability across sections, but were generally comparable.

Discussion: This study indicates that a single biopsy, representing a small area of a relatively large anatomic site, collected at a single time point, does not reliably support colposcopic evaluation, particularly when an adverse finding is noted. Additionally, histologic evaluations of serial tissue sections indicate potentially significant variability in identification of inflammatory cell foci. Given the obvious undesired effect of breaking the protective epithelial layer in order to collect a biopsy, these studies suggest that the cost of biopsy collection outweighs the benefit of its potential as an indicator of toxicity. Continued efforts toward evaluating techniques used to identify inflammatory tissue responses to topically applied agents are ongoing.

0093

Non-human Primate Models-Topical Microbicide Safety and Efficacy Evaluations: Vaginal and Rectal Product Use

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The development of a successful topical microbicide product will require data indicating the product's safety to mucosal tissues after repeated application, and efficacy in preventing STIs including HIV. Pre-clinical studies of topical microbicide products, using appropriate animal models for assessing the safety of repeated use, as well as efficacy in preventing transmission of sexually transmitted infections are essential. The pig-tailed macaque (*Macaca nemestrina*) model has been used for assessing the safety of vaginally and rectally applied topical microbicide products. This model is also being used to assess candidate products' efficacy in preventing cervical and rectal infections with *Chlamydia trachomatis*.

The potential toxicity of a vaginally applied topical microbicide product is assessed by colposcopy, microbiology, histology and pH measurements. Animals undergo 4 daily applications of a test product, with measurements collected daily (prior to product application), 24-hours after the final application (when biopsies are collected) and 3 days later to document recovery. Tissue toxicity after repeated rectal application is assessed similarly. Rather than colposcopy or histology, a rectal lavage is collected and assessed pre- and 15 minutes post- each product application. Criteria for acceptable vs. unacceptable safety profiles are based primarily on mucosal tissue damage noted by colposcopy or lavage examination, significant shifts in microflora and/or significant influx of inflammatory infiltrate. Products graded as having an acceptable safety profile are recommended for further product testing to include efficacy studies for prevention of chlamydial infection, while those with unacceptable safety profiles are recommended to undergo reformulation.

Efficacy studies conducted in the pig-tailed macaque model are designed to assess a topical microbicide product's ability to prevent infection following a single challenge with *Chlamydia trachomatis*. Rectal studies are conducted in male and female animals. Animals do not undergo hormone pretreatment, and all studies are carried out regardless of an animal's phase of menstrual cycle. A clinical isolate (cervical or rectal) is used for direct inoculation in animals, 15-30 minutes after a single application of the test compound. Status of chlamydial infection in each animal is determined by weekly sampling for culture (detection of active infection), NAAT (detection of chlamydial RNA) and serology (detection of circulating antibody to *Chlamydia trachomatis*), for 5 weeks after inoculation.

These four variations of use of the pig-tailed macaque model for topical microbicide evaluations are well established and standardized in practice in this laboratory. These studies provide important preclinical data that can be used to help direct the progress of promising topical microbicide products into clinical trials.

0094

Sexually Trasmitted Infections and Pelvic Inflammatory Diseases

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The problem of Sexually Transmitted Infections is very topical today. Most of STIs are asymptomatic in women. High incidence of lower genital tract infections and sexually transmitted diseases continues to increase, and represent a major public health problem. In addition to their direct impact upon public health, these infections increase the risk of acquiring HIV infection, and may lead to severe sequelae including salpingitis, infertility, and ectopic pregnancy.

189 women with pelvic inflammatory diseases (PID) were examined in our clinic in 2000-2002. The age of patients was 18-40. We performed ethyological investigations such as PSR, culture (incl.LLC-MK2+BHK-21+L929 for C.trachomatis), direct fluorescent antibody(DFA) tests, determination of IgM, IgA, IgG and others.

The following microorganisms was found:

Chlamydia	135	71,4%
E.Coli	45	23,8%
Mycoplasma	12	6,4%
Ureaplasma	8	4,2%
Trichomonada	15	7,9%
Gardnerella	24	12,7%
N.Gonorrheae	7	3,7%
Candida	35	18,5%
Herpes	7	3,7%
Cytomegalovirus	3	1,6%

Conclusion: The main factor of pelvic inflammatory diseases is microbial factor. 86,8% women with pelvic inflammatory diseases had STI;

C.Trachomatis is a leading microbe in ethyology of PID. 71,4% women had C.Trochomatis;
the best of the Chlamydia screening tests are PCR and culture(but LLC-MK2+BHK-21+L929 is too difficult and expensive and can to be used for scientific investigations);
determined Chlamydia screening recommendations:
annual screening of sexually active women <25 yrs,
screening adolescents every 6 months,
annual screening of sexually active women >25 yrs with risk factors,
sexual risk assessment may indicate more frequent screening for some women,
re-screening women 3-4 months after treatment due to high prevalence of repeat infection.

Proposed (after culture LLC-MK2+BHK-21+L929 investigations) are following variants of the Chlamydia treatment:
recommended regimens:
Azithromycin 1gm single dose or
Doxycycline 100mg bid * 7days;
alternative regimens:
Erythromycin base 500 mg qid 7 days or
Ofloxacin 300mg twice daily for 7 days or
Levofloxacin 500mg for 7 days.

0095

Trafficking of T cells to human skin infected with Haemophilus ducreyi involves multiple chemokine/chemokine receptor pathways

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Mechanisms of T cell homing to tissues infected with sexually transmitted pathogens are not well studied in humans. *Haemophilus ducreyi* is the etiologic agent of chancroid and primarily infects human skin. Trafficking of T cells from the peripheral blood to a site of infection involves a series of receptor/ligand interactions. In a human model of infection with *H. ducreyi*, we examined skin biopsy

specimens for the presence of receptors and ligands involved in cutaneous homing of T cells.

In this study, we demonstrated by immunohistochemistry the presence of E-selectin on endothelial cells in skin lesions, the ligand for cutaneous lymphocyte antigen (CLA). Infected skin lacked peripheral node addressin, the ligand for L-selectin, a lymph node homing receptor. Additionally, we identified CTACK/CCL27, the ligand for CCR10, in the epidermis and endothelium of both infected and uninfected skin. Interestingly, we found that 6CKine/CCL21 was expressed on the endothelium of infected sites. The receptor for CCL21, CCR7, is thought to be involved in homing of central memory and naïve cells to the lymph nodes and not to peripheral sites. Previous studies in the model have shown that about 75% of CD4+ T cells in infected skin express CLA and the chemokine receptor CCR4, while a smaller percentage express CCR10.

Approximately half of the CD4+ T cells in experimental lesions express CCR7 and CD27, a central memory phenotype. We demonstrate here that fewer CD4+ T cells expressed L-selectin in lesions compared to peripheral blood. We conclude that CCR4, CCR7 and CCR10 represent multiple independent pathways for T cells to traffic to skin, offering redundant pathways by which subsets of T cells to home to the skin under homeostatic or diseased conditions.

0096

Young Women Trafficked into Sex Work: The Patterns and Implications for STD Prevention

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Objectives: Young women who are trafficked into sex work are at high risk for STDs; condom use is infrequent for fear of job loss or violence from pimps or clients. Turnover in sex worker populations also increases STD transmission. We aim to (a) characterize sex trafficking routes into the US, especially as they originate from war-torn or poverty-stricken countries, as well as routes within the US, and (b) suggest an STD prevention focus for young women forced into sex work.

Methods: Data were culled from: the US Departments of Justice and State, the Center for the Study of Youth Policy at the University of Pennsylvania, and the American Bar Association.

Results: Each year, up to 50,000 women and children are trafficked into the US illegally mostly from southeast Asia (30,000), Latin America (10,000), and Eastern Europe (1,000). About one-third or 17,000 are 17-years-old or younger. Of these, an estimated 50% are forced into sex work. Major ports of entry into the US are Los Angeles, New York City, Chicago and San Francisco with emerging ports in Atlanta, Cleveland, Houston, Orlando, and Washington, DC. Once in the US, trafficking continues as women and girls are moved between cities to ensure availability of "fresh faces" for clientele, and to prevent the formation of meaningful relationships between sex workers and their clients. Runaway youth in the US get similarly recruited into the sex worker population; in 1999, almost 1.2 million (71%) of runaway youth were at-risk of being forced into sex work.

Conclusions: Women and youth trafficked into sex work should be an important focus of STD prevention efforts. During this era of expanding societal disruption, structural interventions targeting this issue increasingly demand consideration.

0097

Quantifiable Parameters Of Sex Work And Their Effects On STI Spread

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Objectives: To evaluate how quantifiable parameters of sex work influence the persistence of STIs.

Methods: An individual-based simulation model was developed which explicitly models contacts between sex workers, their clients and the general population. This was used to explore how variation in the number of client contacts a sex-worker (SW) makes, whether clients repeatedly visit the same SW or visit many different SWs, and the relative size of the SW and client populations influence the establishment and endemic prevalence of two STIs – gonorrhoea and HSV-2. Results: For both STIs, infection was more likely to persist if clients visited many different SWs, regardless of the variation in frequency of SW-client contacts. This scenario also resulted in a higher endemic prevalence in the SW and client populations, and was more likely to result in the persistence of infection at lower levels in the general population. Variation in the frequency of client contacts also influenced persistence, with infection more likely to persist when there was substantial variation, but was much less likely to generate wide variation in prevalence in the SW and client populations. The size of the SW population (relative to the total population) had greatest impact on the overall prevalence of infection, with larger SW populations resulting in higher overall prevalence.

Conclusions: Short and long duration infections are more likely to persist if there are substantial links between sex workers and their clients. Denser networks are more likely to be generated if clients visit many different sex workers rather than repeatedly visit the same or few sex workers.

0098

Transactional sex is the Driving Force in the Dynamics of HIV in Accra, Ghana

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Objective: to delineate the epidemiology of HIV infection among clients of sex workers (SW) in Accra, Ghana, in order to improve the effectiveness of an intervention program.

Methods: The study was designed as a cross-sectional survey of clients of SW, their boyfriends and male personnel working in prostitution venues. Clients were enrolled as they came to visit a SW. Consenting men were administered a short questionnaire and urine was obtained for detection of anti-HIV antibodies. Boyfriends of SW and personnel of prostitution sites were enrolled when possible.

Results: The prevalence of HIV infection was 4.9% (8/162) among clients of roamers, 15.8% (53/335) among clients of seaters, 17.5% (10/57) among personnel and 32.1%

(9/28) among boyfriends. Among clients, HIV infection was independently associated with older age of the client, older age of the SW with whom the last intercourse occurred, and a past history of urethritis. A condom was used in 90% of intercourses, according to the clients. Non-use of a condom was clustered in selected locations, and was independently associated with older age of the client, frequency of intercourse with any SW in the last year, and current symptoms of urethritis.

Conclusions: A comprehensive intervention providing education, condoms and STI treatment to SW and their clients can have a major impact on the spread of HIVin Accra, and presumably in other large cities of West Africa.

0099

Surveillance of Antibiotic Susceptibility of Neisseria gonorrhoeae in Shanghai: 1988-2002

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Objective: To observe the antibiotic susceptibility and resistance trends of *Neisseria gonorrhoeae* (NG) in Shanghai, so as to provide information for guiding gonorrhoeae antibiotic treatment.

Methods: Samples were randomly selected from clinical isolates obtained from patients with gonorrhoeae in the hospital from 1988-2002. Between 100 and 200 strains were tested each year for the susceptibility to 5 antibiotics: penicillin, tetracycline, ceftriaxone, spectinomycin, ciprofloxacin. Minimal inhibitory concentrations (MIC) were measured by the agar dilution method based on the guidelines of the NCCLS. WHO strains A/B/C/D/E were used as quality control in each test. Based on the criteria set by China National Surveillance Group of NG Susceptibility to Antibiotics, criteria for resistance was MIC >1.0 *ug*/ml for penicillin, cetriaxone, ciprofloxacin, and >128 *ug*/ml for spectinomycin. MIC > 16 *ug*/ml for tetracycline indicated plasmid-mediated TRNG. Acidimetric b-lactamase test was used detect PPNG.

Results:
1. Penicillin: Only 11.20% strains were sensitive to penicillin in 1988, and no strains were sensitive to penicillin since 2000. MIC_{50} and MIC_{90} increased rapidly to 16 *ug*/ml and 32 *ug*/ml respectively in 2002. MIC range was 0.03-8.0 *ug*/ml in 1988 and 0.25-16 *ug*/ml in 2002.

2. Tetracycline: About 20-25% strains were sensitive in 1995-1997. Since 1997, only TRNG was observed and TRNG isolate rate increased from 0% in 1995 to 20.95% in 2002. MIC range was 0.008-4 ug/ml in 1995 to 8-16 ug/ml in 1998 and kept high in the following years.

3. Ceftriaxone: Sensitive rate decreased yearly, from 100% in 1995 to 23.80% in 2002. Although no resistant strains were detected, about 70% isolates were at low-sensitive edge. The MIC_{50}/MIC_{90} rose continuously, from 0.008/0.015 ug/ml in 1995 to 0.125/0.5 ug/ml in 2002.

4. Spectinomycin: Almost all isolates were highly sensitive to the agent and MIC range kept low and unchanged during the survey.

5. Ciprofloxacin: Sensitive rate decreased from 62.39% in 1995 to 0 in 2002. MIC_{50}/MIC_{90} increased accordingly from 0.06/1.0 ug/ml in 1995 to 8/32 ug/ml in 2002, and so as MIC range, from 0.002-16 ug/ml in 1995 to 0.5-32 ug/ml in 2002. PPNG positive rate was less than 10% before 1999, but rapidly increased since then and reached up to 50% in 2002.

Conclusion: The results indicated that penicillin, cirprofloxacin and tetracycline are no longer appropriate for the treatment of gonorrhoeae at least in Shanghai area. Spectinomycin is the drug of choice at present based on the susceptibility survey. Although Neisseria gonorrhoeae is still sensitive to ceftriaxone, the agent should be carefully observed because the lowered sensitivity of the bacteria to the antibiotic.

0100

Prevalence of HSV, HBV and HCV in STD patients and HIV positive individuals in Shanghai

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Objective: To investigate the serum positive rates of HSV, HCB, HBV in STD patients and HIV positive individuals in Shanghai, so as to provide information for preventive strategy development and modification.

Methods: 76 sera from STD patients were randomly selected from the serum bank collected duting 2001-2002 which was set up for storing serum from patients infected with syphilis, gonorrhoeae and *Chlamydia trachomatis* infection. 14 HIV ELISA positive sera were further confirmed by West-Blot for HIV infection and 13 of them were positive. The other serum was HIV P24 positive. All samples were tested at the same time using ELISA with commercial kits for antibodies HSV2-IgM, HSV2-IgG, and HCV-IgG. HBV infection was examined by the presence of HBsAg in serum.

Results: 1. The positive rate for all 90 sera was 33.33% for HSV2-IgG, 6.67% for HSV2-IgM, 17.78% for HBV, and 4.44% for HCV, respectively. 2. The positive rate in 76 STD patients was 31.58% for HSV2-IgG, 1.32% for HSV2-IgM, 10.53% for HBV, and 1.32% for HCV, respectively. 3. The positive rate in 14 HIV infected patients was 46.15% for HSV2-IgG, 38.46% for HSV2-IgM, 61.54% for HBV, and 23.08% for HCV, respectively. 2 sera from AIDS patients were positive for all antibodies tested and HBsAg. 4. The serum positive rates were high in HIV and STD patients, particularly HSV2-IgG and HBV. The co-positive rate was significantly higher in HIV than in STD patients, and the high HSV2-IgM positive rate indicated current HSV2 infection which may cause genital ulcerative infection which may facilitate HIV infection and transmission.

0101

A Community-Based, Peer-Led, STD Prevention Intervention For Adolescents Residing in a High STD Incidence Community: Evaluation of the YUTHE Intervention

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Objective: To determine the effectiveness of the Youth United Through Health Education (YUTHE) program, a community-based, peer-led STD prevention intervention to increase STD screening among adolescents residing in a high STD incidence community.

Methods: Guided by the AIDS Risk Reduction Model (ARRM) and a street- and venue-based approach, peer outreach educators implemented the YUTHE intervention using a 15-minute standardized protocol, consisting of a brief risk assessment and STD prevention messages. A 42-item structured interview that focused on sociodemographic risk markers and constructs from the ARRM, including Labeling (e.g., STD knowledge, perceived risk), Commitment (e.g., behavioral intentions), and Action (STD screening) was conducted at sites where youth congregate, including points of transits, eateries, gymnasiums, and job-training programs. To evaluate the effectiveness of the YUTHE intervention, ARRM constructs and STD rates were compared between the intervention community and a comparable control community.

Results: Study participants were 1,487 adolescents between ages 12-22 (mean= 18.1 years) who were predominately African American (82%) and male (59%). Almost half of the interviews were conducted in the intervention community (49%). Participants from the intervention community were significantly more likely than participants from the control community to know that STDs can be detected through urine tests ($X2= 5.23$, $p<.05$) and were more likely to perceive themselves to be at risk for STDs based on their sexual behaviors ($X2= 6.42$, $p<.05$). Comparisons of pre-intervention and 18-month post-intervention chlamydia rates revealed significantly lower rates in females in the intervention community (5.5% vs. 3.5%, $p<.01$) than the control community (1.6% vs 1.4%, $p>.05$). No other differences on ARRM constructs or STD rates were detected.

Conclusions: This peer-led, street- and venue-based outreach intervention holds promise for increasing STD knowledge and decreasing chlamydia in adolescent females who share the highest burden of this infection than males or any other female age group.

0102

Preventing STDs And Unplanned Pregnancy in a National, Non-Clinical Sample Of Young Women: A Cognitive-Behavioral, Group, Randomized Controlled Intervention Trial For Military Recruits

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Objective: To evaluate the effectiveness of a cognitive-behavioral intervention to prevent sexually transmitted diseases (STDs) and unplanned pregnancies (UPs) in young women from all 50 US states and territories enrolled in military recruit training between June 1999 and June 2000.

Methods: 2157 (94%) women were randomly assigned by platoons to experimental and control interventions. Participants completed a self-administered questionnaire and were screened for pregnancy, C. trachomatis, N. gonorrhoeae, and T. vaginalis at baseline, 2-4 weeks, and 9-12 months post- intervention. Guided by the Information, Motivation, and Behavioral Skills Model, the experimental intervention consisted of four, two-hour interactive and didactic small-group sessions that focused on reproductive anatomy, contraceptive methods, alcohol/other substances, peer norms, self-efficacy, and communication/problem-solving skills. The control intervention was conducted in a similar format and focused on promoting healthier food choices and preventing physical training injuries. Logistic regression analyses regressed post-intervention STDs, UP, and sexual behaviors on intervention group, pre-intervention sexual history ('not sexually experienced', 'safe-no history', 'unsafe-no history', 'STD/pregnancy history'), and latency clustered by platoon.

Results: The participants were primarily young, (mean age=19.2 years), single (92%), diverse (44% non-Caucasian), and sexually experienced (85%). At baseline, 14% were diagnosed with STDs (11% C. trachomatis, 2%, N. gonorrhoeae, 2% T. vaginalis). Participants in the control intervention were significantly more likely to have an STD or UP post-intervention (AOR =1.41, CI =1.01-1.98). Significant sub-group differences were also found; control intervention participants who were 'unsafe' were more likely to acquire an STD (AOR =3.24, CI=1.74 - 6.03) post-intervention. Additionally, control intervention participants who were 'not sexually experienced' were more likely to have multiple sexual partners (AOR=1.87, CI=1.01-3.47) and casual sexual partners (AOR=2.05, CI=1.09 - 4.08) post-intervention.

Conclusions: This randomized controlled trial indicates that small-group, multiple-session, cognitive-behavioral interventions are effective strategies for preventing STDs, UPs, and reducing sexual risk in young, at-risk women.

0103

Trends in Aids Epidemic in the Municipality of São Paulo, 1985-2000

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Objective: To analyze trends in incidence, mortality and prevalence on Aids in the Municipality of São Paulo, in adults and youngs, from 1985 to 2000, by sex, age and exposure category.

Methods: Study performed with data from reported cases of Aids and deaths to the National Aids Surveillance System (SINAN) and stratified by age, sex and transmission group and by year of diagnosis. Trends were estimated using linear regression models for time series, with depending variable (Y) the number of cases and the independent variable (X) the year.

Results: In the period 44.558 cases of Aids were analyzed, with 27.055 deaths. The models obtained for incidence and mortality were parabolic and for prevalence was linear. Increasing incidence was observed until 1992, stable between 1993 and 1997 and decreasing after then. Trends in mortality were rising until 1995 and decreasing after this year. Linearly increasing prevalence was found. Trends in incidence and mortality by sex, age and transmission group was obtained.

Conclusions: Trends in incidence and mortality are decreasing and trends in prevalence are rising. Trends in heterosexual female incidence older than 30 are increasing linearly. There was a rising incidence trends in unknown transmission group for both sex. Decreasing mortality trends was found for both sex and all transmission groups, except unknown witch is rising linearly.

0104

Trends in Aids Epidemic in the Municipality of São Paulo, 1985-2000

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0105

Typing of Chlamydia trachomatis Isolated from Men who have Sex with Men (MSM)

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Objectives: To investigate the current resurgence of sexually transmissible infections (STI) in MSM, the objectives of this project include (1) to conduct molecular typing of *C. trachomatis* recovered from MSM who use commercial sex venues, and (2) investigate the epidemiology of *C. trachomatis* by (a) linking molecular typing data with behavioural data collected at the same time of specimen collection, and (b) comparison with *C. trachomatis* from other populations.

Methods: Sequence analysis of the *omp1* gene was conducted according to previously described methods with minor modifications. Each *omp1*PCR product was sequenced twice (sense and antisense). Sequence information was first analysed by comparison with sequences of reference serotypes in GenBank. Genotyping analyses was conducted to assess the nucleotide/codon differences and relatedness of samples.

Results: A total of 63 *C. trachomatis* positive samples from 52 individuals have been collected for analysis (anal swabs = 47, throat swabs = 5, urine = 11). The *omp1* serotypes have been determined for 35 individuals (D=18, G=9, J=4, B=1, H=1, E=1 and one individual with both F and J serotypes). The most frequent serotype of anal samples is D, and the most frequent serotype of urine samples is type G.

Conclusions: This is the first *C. trachomatis* sequencing study to date in Australia. So far the serotypes most frequently found in this study differ from studies in other developed countries. The variety of serotypes suggests that the introduction of new individuals into core group(s) in sex venues has restricted one strain from becoming abundant in this population. However, the frequency of types D and G possibly indicates a sub-group of MSM in venues who are sustaining transmission, and possibly that these isolates have tropism for different anatomical sites.

0106

Sexual Risk Profile of Young Men who have Sex with Men and Inject Drugs

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Objective: To compare sexual risk behaviors and HIV prevalence among young gay and bisexual men who had injected illicit drugs in the previous year (MSM/IDU) with those who had not (MSM).

Methods: Since 1995, young gay and bisexual men were recruited into a prospective study of HIV incidence and risk behaviors in Vancouver. Self-administered questionnaires assessed sociodemographics, and sexual and substance use behaviors. Contingency table and non-parametric methods identified risk factors associated with injection drug use.

Results: Of 910 Vanguard participants, 106 (12%) had injected drugs in the previous year and 804 (88%) had not. The median age of MSM/IDU was younger than MSM. MSM/IDU were more likely to be Aboriginal or Black, unemployed, have lower education, live in unstable housing and to have earned less than $10,000/year (all $p<0.05$). MSM/IDUs

were less likely than MSM to have reported regular sex partners (p<0.001). Those MSM/IDU with regular partners were less likely to have engaged in receptive anal sex (58% vs. 75%, p=0.005). However, MSM/IDUs were more likely to have reported more casual sexual partners (10 (3-50) vs. 5(2-12), p=0.028), and to have engaged in unprotected receptive (52% vs. 30%; p=0.004) or insertive (54% vs. 34%; p=0.016) anal sex with a casual partner. MSM/IDU were also more likely to have had sex with women (69% vs 13%; p<0.001) and to have been paid for sex in the previous year (72% vs. 14%; p<0.001). MSM/IDUs were more likely to be HIV-positive at baseline (8.5% vs. 2.0%; p=0.001). Among men with multiple HIV tests the incidence rate for MSM/IDU was 5.7 per 100 person-years (95% C.I.: 1.1-10.3 per 100 person-years) compared with 1.0 per 100 person-years (95% C.I.: 0.5-1.5 per 100 person-years) among MSM.

Conclusions: Unsafe sex may be a primary risk factor for HIV infection among MSM/IDU. In addition to current efforts aimed at reducing needle sharing, HIV-prevention efforts should promote safer sex and examine the interplay between drug use and sexual behaviour.

0107

Statistical analysis of chlamydia prevalence in the UK

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Objective: To obtain robust estimates of genital *Chlamydia trachomatis* prevalence in various populations in the United Kingdom through statistical analysis, and to explore which factors are the most important determinants of infection.

Methods: A systematic search of electronic databases for studies published from 1966 to August 2002 was done. The keywords searched were 'chlamydia' and either: 'England', 'Wales', 'UK', 'Scotland', 'Ireland' or 'Britain'. Additional unpublished data and references were solicited. The studies that met inclusion criteria and reported *C. trachomatis* prevalence were accepted. Nine variables were extracted from each study and were analysed using logistic regression techniques.

Results: Ninety studies were included in the statistical analysis. The most influential variables on prevalence were age group and setting. In general practice, the <20 year olds had an estimated prevalence of 7.9% (95%CI 6.4% - 9.6%), 20-24 year olds 5.1% (95% CI 4.2% - 6.1%), 25-29 year olds 2.7% (95% CI 2.2% - 3.5%) and 1.7% (95% CI 1.3% - 2.1%) in the 30+ year olds. Other health care settings (genitourinary medicine, termination of pregnancy, youth, family planning, and antenatal clinics) all had higher prevalence estimates than general practice. Population-based studies had the lowest prevalence. The test and specimen used, date when testing done and gender were relatively insignificant compared to age group and setting.

Conclusions: The model estimates of chlamydia prevalence by age and setting may be used to advise on screening strategies. The systematic review revealed much heterogeneity in the studies identified, but with clear patterns of prevalence.

0108

New Social and Molecular Tools for Addressing Sexually Transmitted Disease Epidemiology

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Despite consistent control efforts, the incidence of several sexually transmitted infections have begun to increase. New approaches may be necessary to reverse these trends and understand the changing epidemiology of these diseases. Sexually transmitted infections are behavioural diseases whose transmission often involves complex social interactions between individuals. Yet, epidemiological techniques used for research of these diseases typically focuses on the behaviours of people as individuals. In contrast, social network analysis centres on the interactions between people, making this approach especially well suited for infectious disease investigations.

An enhancement of this technique arises by combining it with the molecular typing of infectious agents. This approach allows individual strains of a bacterial or viral agent to be traced within networks, producing a detailed molecular epidemiology for a given agent. This talk highlights some recent research results obtained using these approaches. The presentation focuses primarily on *Chlamydia trachomatis* and *Neisseria gonorrheae*, but the techniques and approaches are applicable to other sexually transmitted and bloodborne pathogens. Discussed are the types of sexual networks seen in populations and the refinement of our understanding of sexual network patterns by the inclusion of molecular genotype data.

The results are based on data gathered in Manitoba, Canada. At the time the study was conducted, networks ranging in size from 2 to 82 people were identified. "Linear" network types resemble the theoretical structure of STI core groups. Geographically isolated areas show a high level of interconnectedness as a result of the numerous network connections between communities. The incorporation of molecular genotype data illustrates that networks constructed from routinely collected partner notification data frequently do follow the transmission routes of individual strains of an STI. Additionally, molecular data can refine our understanding of a large sexual network and identify transmission routes not otherwise readily apparent.

0109

Dual Infection with Chlamydia trachomatis and Neisseria gonorrhoea: Impact of Network Structure and Relative Effectiveness of Screening and Routine Cotreatment

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Objective: Diagnoses of Neisseria gonorrhoea (NG) and Chlamydia trachomatis (CT) infections continue to rise in the UK. Both these sexually transmitted bacteria cause significant morbidity, notably infertility in women. The risk factors for GC or CT infection are similar and coinfection is common. This study aims to assess the relative impact of different interventions on the epidemiology of these infections, under a variety of network scenarios and to examine the epidemiological characteristics of patients infected with CT, NG or both.

Method: A mathematical model of NG, CT and dual infection was developed for a population stratified by partner change rate, sex and symptomatic or asymptomatic infection. Parameterisation of the model was through an extensive literature review.

Results: In the absence of specific interventions, with partially assortative mixing, the overall prevalence of NG was 6.5% and of CT, 16.1%. Of those with GC, 55% were coinfected with CT. With a high prevalence and a deterministic model, high rates of coinfection are predicted. In the highest and lowest activity groups, 38.9% vs 0.1% were infected with GC, 47% vs 2% with CT and 21% vs 0.0% were coinfected. Under different mixing patterns, cotreatment of men and women reduces the prevalence of CT by , 4.3% (fully assortative), 8.5% (partially assortative), 1.1% (almost random). However, incident infections increased due to resupply and reinfection of susceptibles.

Conclusions: The impact of an intervention in this model is sensitive to the network structure assumed and also to the transmission dynamics of coinfection, but the relationship is not straightforward. Coinfections are concentrated in the highest activity individuals, therefore cotreatment may prevent proportionately more transmission, however the high rates of asymptomatic infection as a source of reinfection negate these benefits. There is a need for more data on the natural history of coinfections with GC and CT.

0110

High Risk Sexual Behavior in Crack Cocaine Using Women: Does Knowledge of HIV Positive Serostatus Modify Behavior?

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Objective: Although most HIV HIV positive (HIV+) individuals attempt to decrease risky sex behaviors after learning of their serostatus, Ccrack cocaine use has been i associated with continuing high-risk sexual behaviors. To determine if knowledge of HIV + status is associated with less risky sexual behavior among crack cocaine users, Wwe compared sexual behaviors and STD prevalence of HIV+ and HIV- women who use crack of sexually transmitted diseases to determine if knowledge of HIV + status is associated with decreased sexual risk behavior among crack cocaine users.

Methods: W: Street outreach was used to , recruitment and enroll interview ofomen crack smokers were recruited via street outreach andwoman received serologic testeding for HIV, and syphilis, as well as testing for gonorrhea, chlamydia, and trichomonas.

Results: A total of 61 HIV+ crack users and 150 HIV- crack users were enrolled. HIV+ and HIV- women were equally likely to have had main (48 or 79 % of HIV+ vs. 117 or 78 % of HIV-, median of 1 partner, both groups), casual (14 or 23% of HIV+ vs. 48 or 32 % of HIV-, median of 2 partners, both groups) and paying sex partners (33 or 54.1% vs. 90 or 60%, median of 5 for HIV+ and 6 for HIV-) over the past two months. HIV+ women were significantly more likely to report condom use at last vaginal sex with their main sex partner (OR 2.4, 95% CI 1.2-4.9). However, HIV+ women were also more likely to exchange sex for drugs (33 or 54.1% vs. 62 or 43.7%, OR 1.8, 95% CI .9-3.3) and were not more likely to use condoms with paying partners (23 or 69.7% vs. 53 or 67.7%). There were no significant differences in STD diagnoses between HIV+ and HIV- women (gonorrhea 2 (3.3%) vs.13 (8.7%), chlamydia 2 (3.3%) vs. 7 (4.6%), trichomonas 15 (29.5%) vs. 49 (32.7%) , infectious syphilis 0 vs. 4 (1.9%)) respectively.

Conclusions: In a street outreach sample, HIV+ drug abusing women are more likely than their HIV- counterparts to use condoms with main sex partners, but not with paying partners. Intervention strategies to reduce sexual risk behaviors among HIV+ drug users with paying partners partner are needed.

0111

The Direct Medical Costs of Epididymitis and Orchitis: Evidence from an Analysis of Insurance Claims

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Objective: To estimate the cost per case of epididymitis and orchitis (EO), which are potential sequelae of urethral infection with *Chlamydia trachomatis, Neisseria gonorrhoeae, Mycoplasma hominis*, and other sexually transmitted organisms in men. Estimates of the cost of EO are used to calculate the overall burden and evaluate the cost-effectiveness of STD programs. The most recent estimates were based on data from 1983-1985 and 1993; adjusted for inflation to 2002 dollars, they are each over US$700 per case. No recent studies of the cost of EO have been published, despite changes in management practices.

Methods: We calculated the direct medical costs of EO from medical claims data for 1998-1999. We included costs for outpatient visits, inpatient care, and pharmacy claims for CDC-recommended treatments for chlamydia, gonorrhea, and epididymitis incurred up to 7 days before and 14 days after outpatient visits. We analyzed records of men aged 13-39 years who had ICD-9-based diagnoses of EO for outpatient care. For those with multiple outpatient visits, we defined subsequent visits to be part of the same episode of EO if they occurred within 60 days of the preceding visit.

Results: 2997 patients met the inclusion criteria and experienced 3442 episodes of EO. The mean number of outpatient visits per episode was 1.5, and the mean number of episodes per patient was 1.1. The mean outpatient claim per episode was US$225. Overall, 33% of men with any claims for EO care had multiple visits and 13% had multiple episodes. For those with pharmacy claims, the average was US$38. Seventeen episodes (0.5%) included inpatient care; the average inpatient payment was $6068. The overall average claim per episode was US$273.

Conclusions: EO costs are relatively modest and are lower than previously-published inflation-adjusted estimates. However, the claims data show that repeat visits and repeat episodes frequently occur.

0112

Laboratory Tests Used in U.S. Public Health Laboratories for Syphilis, HSV, HPV, Bacterial Vaginosis, and Trichomoniasis, 2000

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Objectives: To describe the types and volume of laboratory tests for syphilis, herpes simplex virus (HSV), trichomoniasis, bacterial

vaginosis (BV), and human papillomavirus (HPV) performed in U.S. public health laboratories in 2000.

Methods: A self-administered survey was mailed to 123 city, county, and state public health laboratories to collect information about the volume and type of testing for STDs.

Results: Eighty-one percent (100) of public health laboratories responded; of responders 58% were state laboratories, 38% county laboratories, and 4% city laboratories. Ninety-eight percent of laboratories performed syphilis testing. Fifty-six percent of laboratories performed RPR tests and 55% performed VDRL tests; the number of RPR tests performed was twice that of VDRL tests (1,388,258 versus 648,839). Treponemal tests were performed in 79% of laboratories; almost twice as many EIA tests were performed compared to all other treponemal tests combined (194,481 EIA versus 108,281 other treponemal tests). Direct detection tests for syphilis were performed in 26% of laboratories. HSV testing was done by 57% of laboratories; 54% of laboratories performed cultures, 16% performed direct detection methods, and 18% performed serologic tests. Of those laboratories doing serologic testing for herpes, only 47% used a type-specific test. Trichomonas testing was available in six laboratories; the majority of tests were culture. Ten laboratories reported using the Gram stain to test for BV. Five laboratories reported they performed Pap smears. No laboratories performed HPV tests.

Conclusions: This survey documents for the first time those tests for syphilis, herpes, HPV, bacterial vaginosis, and trichomoniasis performed in public health laboratories in the U.S.

0113

Sexual Health of Gay and Bisexual Men in England: Where should Prevention be Targeted?

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Objective: In the context of rapidly evolving HIV/STI epidemics in England, to determine where future prevention efforts aimed at improving the sexual health of men who have sex with men (MSM) should be targeted.

Methods: Key indicators from existing national HIV, STI and behavioural surveillance programmes and ad-hoc research studies were collated to track trends in disease incidence, prevalence, health care utilisation and sexual behaviour.

Results: Recent surveillance data highlight worrying trends in STI transmission among MSM. Following consistent declines in the early 1990s, annual HIV and STI diagnoses in MSM have increased continuously in England since 1996. By 2001, gonorrhoea reports had risen by 104%; syphilis, 1605%; and HIV, 9%. Increasing diagnoses of syphilis and other STIs among HIV positive men are of concern. Of the estimated 19,300 MSM living with HIV in the UK in 2001, 22% remained undiagnosed. Sentinel surveillance of HIV incidence in MSM suggests HIV incidence has remained the same over the period at approximately 2.5% per year. Evidence of an increase in HIV testing, GUM clinic attendance, and declining numbers of individuals with AIDS at first HIV diagnosis are encouraging and represent areas for continued focus. Wider contextual changes in MSM sexual behaviour: increasing partnerships, unprotected anal sex, and in the distribution and utilisation of STI treatment and care services, also influence observed STI trends

Conclusions: Although further information is needed to understand the driving factors and contexts in which risk behaviour and STI transmission are occurring, the available surveillance data suggest clear priorities for prevention at national and regional levels. There is no magic bullet, however key areas include; continued information and awareness raising, HIV testing promotion, working with HIV positive MSM, and MSM aged 25-44 years, STI screening in non-traditional settings, and working with commercial venues (e.g. saunas, internet sites) which may be facilitating STI transmission.

0114

Sentinel Surveillance of Trends in HIV Testing in England and Wales

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Objectives: To describe the trends and determinants of HIV testing at genitourinary medicine (GUM) clinics and in general practice (GP) in England and Wales between 1990 and 2000.

Methods: Data on all first HIV positive specimens from GUM and GP clinics tested at seven sentinel laboratories were related to key demographic, clinical and behavioural variables.

Results: During the period, 202,892 eligible first HIV tests were reported. Ninety percent (182,746) of specimens were from GUM clinics of which 55% were from heterosexuals, 12% from men who have sex with men (MSM), and 3% were in injecting drug users (IDU). The total number of first HIV tests increased 3-fold between 1990 and 2000. Overall 1.6% of GUM and 0.9% of GP first testers were diagnosed HIV positive. In GUM clinics, HIV positivity was highest among heterosexuals who have lived in Africa (11.7%), MSM (6.9%), and IDUs (2.8%) and lowest among heterosexuals with no other specified risk (0.3%). Consistently lower prevalences were observed in GP settings. HIV prevalence among GUM first testers declined in MSM from 13.6% in 1990 to 5.2% in 2000 ($p<0.01$), and in IDUs, from 7.5% in 1990 to 2.0% in 2000 ($p=0.03$). Prevalence remained constant in the groups heterosexually exposed to HIV infection.

Conclusions: HIV testing in GUM settings increased over the decade, with a concomitant reduction in HIV positivity among MSM and IDUs. The increased testing among heterosexual first testers overall has not been associated with declining positivity.

0115

Sexually transmitted disease services in U.S. colleges and universities

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Objectives: Most college students are sexually active; we describe prevention, screening, and treatment practices for STD/HIV among U.S. colleges and universities.

Methods: A self-administered questionnaire was mailed to a stratified random sample of U.S. 2-year and 4-year colleges and universities, to determine extent of health care insurance coverage, prevention education, extent of screening, type of treatment, and referral practices.

Results: Of the 910 schools selected and sent a questionnaire, 736 (81%) responded. Fifty-nine percent were public, 58% were > 4 year schools, 60% provided housing, and 64% had a health center. Schools with a health center were more likely to have more than 4,000 students, be privately funded, and provide >4 years of education (all $p<0.05$). Less than 33% of schools provided STD/HIV education at orientation. Schools with a health center were more likely to provide HIV/STD education (71% with a health center had a health fair, compared to 46% without a health center [$p<0.05$]). Overall, 57% of schools made condoms available to students — availability was higher in larger schools, schools with a health center, in public, and four-year schools (all $p<0.05$). Health centers were open a mean of 5.2 days and 37.3 hours per week, 68% provided STD services, 56% obstetrical/gynecologic care, and 54% contraceptive services. Diagnostic testing for STD was more commonly available at 4-year than 2-year schools ($p<0.05$). In contrast to symptomatic women (99%) and men (97%), fewer women (76%, 72%) and still fewer men (56%, 52%) who are sexually active are screened for *C. trachomatis* (CT) and *N. gonorrhoeae* (NG) infection, respectively.

Conclusions: Diverse services are available at U.S. colleges; their availability depends on presence of a health center and type of school. Schools with health centers, more common among large, >4 year, and public schools were more likely to provide a larger variety of STD/HIV prevention services, including educational materials, condoms, screening, and partner services.

0116

Social Capital, Income Inequality, Poverty, and Gonorrhea/Syphilus Rates in the 1990s in The United States

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Objective: To examine the state-level relationships among social capital, income inequality, and poverty as correlates of gonorrhea and syphilis rates in the United States for the years 1990, 1995, 1997, 1998, 1999, and 2000. We hypothesize that the independent variables are associated with STD rates through norms and policies for risk reduction, communal responsibility and trust, and availability of and accessibility to health care services.

Methods: State-level, public-use data were obtained and analyzed: social capital from Putnam's dataset, income inequality (ratio of family mean income for the top one-fifth to the bottom one-fifth) and poverty (proportion of people in a state living in poverty) from the Bureau of the Census, and gonorrhea and syphilis rates per 100,000 population from the Centers for Disease Control and Prevention surveillance dataset. For each year, we conducted state-level correlation analysis and forward stepwise linear multiple regression analysis with each of the two STD (gonorrhea and syphilis) rates as dependent variables.

Results: In correlation analyses, income inequality and poverty were significantly correlated with STD rates for most of the years analyzed and social capital was always significantly correlated with STD rates. In the regression analysis, social capital was the only significant independent variable correlated with STD rates for each year that was analyzed. Higher social capital was associated with lower STD rates. The variation explained by social capital for gonorrhea and syphilis rates was 45% and 35% respectively and was consistent throughout the 1990s.

Conclusions: Social capital is significantly correlated with gonorrhea and syphilis rates at the state level in the 1990s. Structural interventions designed to increase social capital might reduce gonorrhea and syphilis rates.

0117

Correlates of Age Discrepancies Between US Adolescents and Their Sex Partners

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Objectives: Controversy exists about the nature of relationships between adolescents and older sex partners; we examined sexual risk behaviors, emotional correlates, and positive expectations adolescents have about such relationships.

Methods: Using face-to-face interviews, adolescent females at a high risk adolescent clinic were asked about all sexual partnerships within the previous 90 days; the age discrepancy was calculated by subtracting each participant's age from the age of her oldest partner. Adolescents also responded to questions about emotional well-being (conduct problems, home-related problems, and depression), self-esteem, sexual abuse, risk behaviors, and material expectations from relationships.

Results: Of 383 girls interviewed (mean age 16, range 12-19 years), 337 (88%) had at least one older partner older (maximum = 43 years older). Conduct problems, depression, sexual abuse history, low self-esteem ($b = .15$, $p<0.05$), and home-related problems ($b = .11$, $p< 0.05$) were associated with larger age discrepancies. Larger age discrepancy was also associated with expecting to be taken care of, having sex to "get things," receiving gifts or money (all $p< 0.05$), having more sex partners in the past 90 days ($r = .41$, $p < .001$), having more unprotected sex ($r = .15$, $p < .01$), and more vaginal, anal, and oral sex, ($rs = .16$ - $.29$, all $ps < .01$).

Conclusions: Adolescent females with older partners have increased material expectations and to some extent these are met. However, because they also have lower self-

esteem, difficulties at home, and higher risk sex behaviors, they are at higher risk for sexually transmitted diseases and pregnancy.

0118

HIV Seropositive in STD Patients

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Objectives: Data from 38 Referral Centers for Sexually Transmitted Diseases (STD) were analyzed in order to get the epidemiological characteristics of STD in the state of São Paulo, Brazil.

Methods: Based on notifications reported from August 1998 to October 2002 and using the software ËPINFO 6.04B"and "STATA".

Results: A total of 10,964 patients, 47.0% were male and 52.1% female, mean ages were about 20-29 years, 82,2% were heterosexuals and 13.6% men who have sex with men, 38.6% of the patients referred use of condom in all sexual relations. Observed 29.7% of uretral discharge, 22.7% of warts and 7% of genital ulcers. The etiological diagnoses were defined with a higher proportion of Human Papilomavirus infection (32.8%) and 6.95% of HIV infection ; Hepatitis B with 3.8% and Hepatitis C with 3.3% .

Conclusions: Considering STD as an important factor facilitating the HIV infection , the HIV testing must be offered for all STD patients and a systematic notification of all STD/HIV/AID must be considered.

0119

Considering the social in social networks: Relationships of social interactions, norms, networks, sexual behaviors and STIs

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0120

High Rates of STIs, HIV and Risky Behaviors Among Female Street Sex Workers and Detainees in Moscow, Russia - Potential Impact on Further Spread of HIV

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Objectives: HIV and STIs are increasing dramatically in Russia. In Moscow intravenous drug use (IVDU) and sex work are major factors in STI/HIV spread. The study objective was to assess the prevalence of STIs, HIV, drug use, sexual risk behaviors, and health care seeking among women suspected of exchanging sex (ES) and detained at a pre-jail center in Moscow.

Methods: A cross-sectional study was conducted among 18-45 year old female detainees using a survey questionnaire and laboratory testing of urine (gonorrhea and chlamydia by BDProbeTech; Rapid Drug Screen) and blood (syphilis by RPR-TPPA; HSV-2 by POCkit; HIV by ELISA-Wes tern Blot).

Results: Of 202 female detainees, 160 (79.2%) reported ES. Of these 86.2% were not registered Moscow residents. The mean number of male sex partners in the last year for women reporting ES was 219 (vs. 2 for those not reporting ES [nES], $p<0.01$) of which 212 were new partners. In ES women the prevalence rates were: HIV - 2.7%; HSV-2 - 25.8%; syphilis - 29.8% (vs. 21.1% in nES; $p<0.05$); gonorrhea - 31.8%; chlamydia - 27.0%; any bacterial STI – 44.9%. In ES women 5.5% reported IVDU in the last year, and urine drug screening revealed the evidence of opiates (0.6%), metamphetamines (0.6%), tetrahydrocannabinol (5.2%). The rate of regular condom use among ES was 51% (vs. 0% in nES). They were more likely than nES women to practice oral (49% vs. 7% in nES, $p<0.01$) and anal sex (2% vs. 0% in nES). Over 27% of ES had not received health care in the last two years. Only 30.8% of ES perceived themselves to be sex workers.

Conclusions: Rates of STIs and risky sexual behaviors are high among female detainees ES in Moscow. This suggests that they are especially vulnerable to acquisition and transmission of HIV. STI services, risk reduction counseling and condom promotion are presently being implemented.

0121

Syphilis: Pre-natal Screening and Pregnancy Outcome in British Columbia

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Objectives: A wide range of estimates for both the prevalence of maternal syphilis (MS) and rate of infection in the exposed neonates have been previously reported. This study was conducted to better quantify the rate of MS and the rate of congenital syphilis (CS) in the neonates born to these women.

Methods: A retrospective chart review was undertaken for women found to have maternal syphilis between 1994-1998. The stage of syphilis, the time of treatment (if any) and the corresponding neonatal outcome (based on examination and serology) was noted.

Results: 90 (0.05%) of 169,973 screened women were diagnosed with syphilis: 1 primary, 1 secondary, 7 early latent (SEL){< 1yr duration and/or RPR >1:8} , 42 late latent (SLL){> 1yr or unknown duration, RPR <1:8} and 39 previously treated. 33 (36.7%) of mothers were treated before pregnancy, 36 (40.0%) during pregnancy, and 16 (17..8%) before and during pregnancy. Four mothers only received treatment postnatally. Stage of pregnancy for treatment was: 1st trimester: 22 (42.9%); 2nd trimester: 19 (36.5%) 3rd trimester: 5 (9.6%) 1st and 3rd trimester: 1 (1.9%) unknown: 5 (9.6%) . No mothers were treated in the last month of pregnancy. Of the four mothers treated postnatally, one pregnancy was ectopic, two (one with SEL and another with SLL) had normal unaffected babies and one mother, diagnosed with SEL, (RPR 1:64) had a neonate with congenital syphilis. One baby adopted from Eastern Europe represented the second case of CS in this time period.

Conclusion: Between 1994-1998, the prevalence of MS among pre-natally screened women in BC was 0.05%. There were no cases of CS in neonates born to women who received treatment for syphilis either before or during pregnancy. Two cases of congenital syphilis occurred: one in which the mother received treatment postnatally.

0122

Partner Evaluation for Genital Herpes

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Objective: To define characteristics associated with evaluation of sex partners of persons with incident genital herpes.

Methods: Patients with clinically and virologically documented incident genital herpes presenting to Seattle's STD clinic or Virology Research Clinic completed a demographic, and partner-specific sexual history questionnaire and were asked to refer their partners for evaluation.

Results: A total of 240 index patients reported 319 sex partners in the month prior to HSV transmission, of whom 126 (39%) were successfully evaluated. A total of 122 index patients (51%) referred at least 1 partner for evaluation. Of 79 partners referred by persons diagnosed with HSV-2, 70 (89%) were found to be HSV-2 positive. Using generalized estimating equations, factors associated with failure to refer a partner for evaluation on multivariate analysis were: African American race (OR 18.6; 95% CI 2.8, 122.4) and other minority race (OR 4.6; 95% CI 2.3, 9.5) versus white; casual (OR 3.1; 95% CI 1.4, 6.9) versus steady relationships; 2 sex partners (OR 1.4; 95% CI 0.6, 3.2) and >2 partners (OR 15.5; 95% CI 3.1, 76.4) versus 1 in the month prior to acquiring genital herpes; and last sex with partner >14 days prior to infection (OR 8.6 95% CI, 2.9, 25.5) and 4-14 days prior (OR 4.2; 95% CI 1.7, 10.0) versus <4 days. Of 126 unique partners evaluated, 45 (36%) were evaluated on the same day as the index patient.

Conclusion: Most persons diagnosed with initial genital herpes will refer at least one partner for evaluation. Partner evaluation is less successful in definable subgroups. Evaluating partners who are accompanying the index patient at the visit may be an efficient method for partner notification.

0123

Condom use in Cotonou and Porto Novo (Bénin): how different are self-reports by female sex workers (FSW) and by their clients?

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Objectives: To examine the degree of concordance between reported condom use by FSW and their clients in a context where interventions have strongly promoted consistent condom use to prevent HIV infection.

Methods: As part of a trial of periodic presumptive treatment (PPT) for gonorrhoea and chlamydia infections among FSW, two cross-sectional surveys with clients of FSW were conducted before and at the end of the intervention in FSW. Clients were interviewed directly on-site at prostitution venues, after having sex with a FSW. After the client had left, information on condom use was obtained (where possible) from the FSW just visited. For FSW agreeing to participate in the PPT trial, enrollment interviews were conducted at one of 2 clinics.

Results: In the first survey, 53% (167/315) of clients said they had used a condom with the FSW just visited, while this proportion increased to 67% (386/574) in the second survey ($p<0.001$). In 62% (338/549) of intercourses, clients and FSW said that a condom had been used. There was agreement between FSW and clients that 15% of the time a condom was not used. In 17% of occasions, the FSW said they had used a condom while clients said they had not, and in 6% of cases the converse situation was observed.

During the first survey, 39% (123/315) of clients said they always used condoms with FSW. Among FSW working in the same prostitution venues, 49% (118/241) reported consistent condom use with their clients.

Conclusion: A relatively high degree of concordance was observed between self-reported condom use in FSW and their clients. A tendency towards higher reported condom use rates was observed in FSW in comparison to clients, which could be due to social desirability bias affecting self-reports of condom use in both genders in this study.

0124

Population Level Consumption of Antivirals for Herpes Virus Infections: Is Increasing Use A Problem?

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Objectives: Population-based antiviral consumption is rarely described. This study evaluated trends in consumption of antivirals indicated for herpes simplex and zoster in British Columbia (BC) 1996-2000.

Methods: The Pharmanet program captures data on all prescription drug use in BC. Antiviral data were moved to SAS, classified using the ATC system, and defined daily dose (DDD) conversions were performed using the 2001 standards of the WHO collaborating group on antimicrobial resistance. DDD factors adopted internationally for anti-herpes drugs represent doses used for zoster rather than genital herpes (GH) at 3gm of valaciclovir, 0.75 gm of famciclovir and 4 gm of aciclovir.

Results: Between 1996-2000, the rate of use of aciclovir, valaciclovir and famciclovir increased 89% from 0.18 to 0.34 DDD per 1000 inhabitant-days. Antibiotic use declined from 19.5 to 17.9 DDD/1000 inh-days over the same period. Use of aciclovir declined while use of newer agents increased. During 2000: female use was higher than male at 0.38 vs 0.28 DDD/1000 inh-days; use in metropolitan Vancouver was 0.44 DDD/1000 inh-days; and peak consumption for both genders occurred at age 40-59 (0.42 and 0.53 DDD/1000 inh-days respectively for males and females). BC females aged 15-44 have an HSV2 seroprevalence of 17.3%. Were all anti-herpes drugs used in this group prescribed at appropriate dose for chronic suppressive therapy of GH (unlikely given widespread zoster and episodic therapy), a maximum of 1.08% of women living with HSV-2 could have received a one-year chronic suppressive regimen during 2000.

Conclusions: Consumption of anti-herpes drugs is increasing but remains well below that of antibiotics. Further study is needed to determine whether current rates of use in populations with high prevalence of GH reflect appropriate case by case management for GH and zoster, realistic cost containment or lack of knowledge about the expanded indications for the drugs.

0125

Prevalence and Risk Factors for Herpes Simplex Virus Type 2 among Zimbabwean Women

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Objective: HSV-2 is an excellent indicator of sexual risk behavior and is an important facilitating factor for HIV transmission. Despite being very common, few HSV-2 data are available among Zimbabwean women. The objective of this analysis was to measure the prevalence and risk factors for Herpes Simplex Virus type 2 among women in Zimbabwe.

Methods: We enrolled 1,768 HIV-negative women aged 18-35 years into a prospective study of hormonal contraception and HIV. Women were recruited from family planning clinics in Harare and Chitungwiza, Zimbabwe from 1999 through 2002. At baseline and quarterly follow-up visits for 18 - 24 months, we used a standardized questionnaire to collect socio-demographics, sexual behavior characteristics, and contraceptive history, and performed a physical (including pelvic) exam, and blood draw. Participants' sera were screened for HSV-2 antibodies at baseline using the Focus HSV-2 IgG ELISA. Multivariate logistic regression was used to predict HSV-2 serostatus.

Results: Overall HSV-2 prevalence was high; 31% of women aged 18 and 71% of women aged 35 were HSV-2 positive at baseline. Only 5% of women testing positive for HSV-2 reported a history of genital ulcers. Women were more likely to be HSV-2 positive if they were age 15 or younger at first sexual intercourse (OR=1.5, 95%C.I.= 1.1,2.3), had less education (OR=1.5, 95%C.I.=1.2,1.8), had > 1 lifetime sexual partner (OR=2.2, (95%C.I.=1.6,2.9), or currently had an older sexual partner (OR=1.4, 95% C.I.=1.1, 1.9) or a partner with other sexual partners (OR=1.5, 95% C.I.=1.1, 2.1). Marital status, partner's circumcision status, previous condom use, history of hormonal contraceptive use and smoking were not significantly associated with HSV-2 serostatus.

Conclusions: In this population, HSV-2 disease is largely unrecognized.HSV-2 seroprevalence is independently associated with risky sexual behavior and low education but not with history of condom or hormonal contraceptive use. Subsequent analysis of prospective data will allow us to examine predictors of incident HSV-2 infections in this population.

0126

Youth United Through Health Education: Evaluating The Impact Of Peer Education On The Utilization Of STD-Related Screening Services

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Objective: The Youth United Through Health Education (YUTHE) program is a peer-led, community-based HIV/STD prevention program. Beginning in January 2001, YUTHE outreach educators conducted brief 15-minute interventions to increase STD screening in a high STD incidence community. The purpose of this study is to assess the impact of this intervention on the utilization of STD screening services.

Methods: A structured interview, which included items pertaining to past and future STD testing, was conducted by peer outreach workers, recruited from the community, at street- and venue-based sites where youth congregated between the hours of 2-6 pm. Self-reported contact with the YUTHE program required having talked to a YUTHE peer educator on one or more occasions.

Results: Participants included 738 sexually active youth between the ages of 12-22 (mean = 18.1 years) who were predominantly African American (82%) and male (57%). A single contact with the YUTHE program was reported by 47% of youth, and 24% reported multiple contacts. Youth who reported one or more contacts with the YUTHE program were more likely to report knowing where to get an STD test (OR = 2.02, $p<0.01$), greater intention to have an STD test (OR = 1.36, $p<0.01$), and to have been screened for STDs (OR = 2.21, $p<0.01$) compared to youth who did not report contact with the YUTHE program. Youth who reported multiple contacts were more likely to intend to be tested (OR = 1.78, $p<0.01$), compared to youth with one or no contacts, which suggests a peer education dose effect.

Conclusions: Results to date suggest that community-based programs such as the YUTHE program, which utilize peer educators for health outreach, are an effective strategy for promoting the utilization of STD screening services, particularly for youth residing in a high STD incidence community.

0127

Validation of Syndromic Algorithms to the Management of Sexually Transmitted Diseases

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Objective: To validate syndromic algorithms to the management of STDs which adopted from WHO recommendation.

Methods: Patients with diffrent syndromes were selected in their first visits to two STD clinics in China. They were managed syndromically according to our revised flowcharts. The etiology of the syndromes was determined by standard laboratory testing.

Results: (1) There were 104 (35.7%) patients with gonorrhea, 79 (27.2%) with chlamydial infection, and 58 (20.0%) with both infections in 290 males with urethral discharge. Syndromic diagnosis had a sensitivity of 90.0% and specificity of 93.0% for gonococcal infection. The sensitivity for chlamydial infection was 100%. The total positive predictive value (PPV) was 83.1%. (2) The prevalence of gonorrhea and/or chlamydial infection was 30.6% in 334 women with vaginal discharge. The sensitivity was 70.6%, specificity 54.7%, and PPV 40.7% for the diagnosis of gonorrhea and/or chlamydial infection by syndromic approach. (3) Seventy-eight (34.7%) patients with syphilis, 43 (19.1%) with genital herpes, and 28 (12.4%) with both infections were found in 227 patients with genital ulcer. The sensitivities were 88.7% and 69.0%, specificities 95.0% and 50.0%, and PPVs 94.0% and 38.6% for the diagnosis of syphilis and genital herpes by syndromic approach, respectively.

Conclusion: The syndromic management of urethral discharge is relatively effective and suited to clinical application. The specificity and PPV for syndromic management of vaginal discharge are not satisfied. No chancroid is found in genital ulcer, suggesting revised flowchart of genital ulcer syndrome could be fit for use in clinical settings.

0128

Seroprevalence of HIV, Hepatitis B Virus and Syphilis in Women at Their First Visit to Antenatal Clinics and Results of Pap smear at Their Perinatal Visit in Incheon, Korea.

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Objective: To determine the seroprevalence of hepatitis B virus and syphilis among pregnant women, and Pap smear result profiles during antenatal or puerperal period in Korea.

Methods: Pregnant women attending antenatal clinics of Inha University Hospital from January 2000 to December 2002 were included in this study after giving written informed consent. The women were systematically interviewed. During the interview, their demographic characteristics were explored. A blood sample was collected for testing HIV, hepatitis B virus, and syphilis. Pap smear was obtained at their first visit or during the puerperal period.

Results: The participants for the seroprevalence tests were 3,361 pregnant women. Their mean age was 31.06(SD; 4.09). The prevalence of HIV infection was 0.00%, hepatitis B surface Antigen (HBs Ag) positive 3.51%, and syphilis 0.48%. Those who underwent Pap smear tests were 430. Their mean age was 30.89(SD; 3.87). Among them, the prevalence of Trichomonas was 2.79%, ASCUS and CIN1 5.58%, and Chlamydia 0.23%.

Conclusion: These results show the profiles of STD related with pregnancy in Korea. The seroprevalence of HBs Ag seems to be relatively high. However, the seroprevalences of syphilis and the Pap results which might imply the evidences of STD, such as Trichomonas, Human Papilloma Virus and Chlamydia seem to be low in Korea. Nobody tested had positive result of HIV.

0129

A Cluster of Culture-positive, but PCR False Negative, Infections with Neisseria gonorrhoeae

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Objective: To describe the characteristics of 8 *Neisseria gonorrhoeae* grown from the urine of 8 patients negative in a *cppB* gene nucleic-acid amplification assay (NAA).

Methods: Suspensions of 8 gonococci (GC), cultured from urine which failed to test positive in a *cppB* gene-based NAA performed on the same urine, were re-examined in the original NAA and by the AMPLICOR, LCx and BDProbeTec NAA. The auxotype, serotype and MICs of the 8 GC, originally cultured to provide GC isolates for susceptibility surveillance, were determined by standard methods to establish their extended phenotype. The urine samples were also re-examined in a second laboratory by the original NAA.

Results: All 8 GC were phenotypically indistinguishable, proline requiring (Pro^-), of serovar IBrpyut and with identical MICs to 5 antibiotics. The original urine samples and suspensions of cultured GC were all negative on repeat testing in the *cppB* gene-based assay, but positive in all 3 commercial NAAs.

Conclusions: Suspensions of known PAU^- auxotrophic GC were previously reported to yield negative *cppB* gene-based NAAs. The *cppB* gene is usually located on a cryptic plasmid, but this plasmid is often absent in PAU^- GC. This study documents false-negative *cppB* gene-based NAA both in clinical samples and from culture suspensions of the same non-PAU^- GC. NAAs amplifying targets other than the *cppB* gene were positive when organism suspensions were tested. Problems with NAA for confirmation of gonorrhoea include a high false positive rate for the AMPLICOR NAA compared with the *cppB* gene-based NAA. This study suggests that some additional positive results in the AMPLICOR NAA were actually due to false-negative results in the *cppB* gene-based NAA. These observations, and the requirement for cultures for susceptibility testing as a public health measure, mean that culture-based systems for obtaining viable gonococci should continue to be maintained.

0130

The impact of automation on the testing for Chlamydia trachomatis and Neisseria gonorrhoeae by PCR

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Objectives: This study was conducted to determine the influence of automation on the testing for Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (NG) in clinical specimens, using the Roche Amplicor® and Roche Amplicor Cobas® systems.

Methods: Cervical swab specimens were collected from female volunteers and screened for CT and NG as follows: 1113 swabs were tested with the Roche Amplicor amplification kit, of which 834 included manual washing of the detection plates and in 279, the detection plates were washed with an automatic washer; a further 636 swabs were tested with the automated Roche Amplicor Cobas system. All the tests included internal controls. The four technologists that performed the tests, were all trained and evaluated by Roche, South Africa. Specimens in which invalid results (the internal control did not amplify) were obtained, were washed, and repeated. Tests with equivocal results (OD values of CT specimens in gray zone) were repeated in duplicate.

Results: Invalid results were obtained in 13,2% of manually washed, in 9% of automated washed and in 6,8% Cobas tested specimens. After re-testing, 18% of the manually washed, 32% of the machine washed and 49% of the Cobas tested specimens were still invalid. Equivocal results were found in 4,7%, 2,2% and 0,3% of the tests respectively. CT was detected in 12,4%, 9,7% and 10,7% and NG in 6,9%, 5% and 5,5% of the above mentioned tests respectively.

Conclusion: There was no significant difference ($p>0,05$) in the prevalence of CT and NG when each of the methods was used. However, there were significant differences ($p=0,001$) for the methods for invalid and equivocal results. This suggests that the two ST pathogens have no influence on the outcome of the test. With the increased number of repeats in the Amplicor test, the slight increased cost of the Cobas test, still makes it cost effective. Although the machine washed Amplicor test is cheaper, it requires more hands-on time, making it less appealing to use in laboratories such as ours with high work loads.

0131

Increase of Sexual Transmitted Diseases, but not HIV, Among Young Gay Men

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Objectives: HIV incidence recently increased among older homosexual men (^{3} 34 years) in Amsterdam. We wanted to study whether this increase of HIV, and possibly other STD's, is also evident among younger homosexual men.

Methods: From July 1995 onward, 603 young (age<=30) gay men with at least one follow-up visit enrolled in an ongoing cohort-study on HIV. Participants returned every six months for a questionnaire (including self-reported gonorrhea episodes) and laboratory tests for syphilis and HIV. Yearly trends in STD incidence were analyzed using Poisson-regression.

Results: Mean age at enrollment was 25 years. The majority (87%) was of Dutch origin and 61% had at least a college degree. The median follow-up time was 3.6 years and the mean number of visits was 6. From 1995 through 2002 there was a significant ($p<0.05$) increase in syphilis (0 to 1.3/100 person-years(PY)) and gonorrhea incidence (2.2 to 5.0/100PY), but no change in HIV incidence (0 and 0.6/100PY). History of STD was not a risk factor for recent HIV infection.

Conclusions: A rising trend was noticeable in syphilis and gonorrhea incidence, but not in HIV incidence, among young gay cohort participants. The fact that HIV incidence recently increased among older homosexual men, but not among younger ones, suggests different sexual networks for younger and older homosexual men. Furthermore, the fact that HIV incidence neither rises among young gay men, nor is associated with STD history might point to a relatively HIV-free, but not

STD-free, sexual network among younger homosexual men. Prevention strategies in young homosexual men should therefore incorporate STD, alongside HIV, transmission and prevention. However, the well known relation between HIV and STD still warrant monitoring HIV incidence as a rising STD incidence might possibly forecast an HIV epidemic in young homosexual men.

0132

Migrant Prostitution In Greece, The Greek Legal Position And Public Health

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In the early 1990s due to the move of economic refugees radical changes were noticed in sex industry. Women from the countries of Eastern Europe and Balkan countries flooded sex industry, changing the traditional manner in which prostitution was operated in Greece. These women were usually new entrants (no professional) to the sex industry and they functioned under a regime of violence and exploitation.

Over a period of five years the number of Greek sex workers has dropped by 23% and the number of foreign sex workers has increased by 600%.

The act No 2734, which came in effect on August of 1999, for the first time the Greek legislation system makes reference to migrant sex workers. According to the new act, the basic requirement for a migrant sex worker to practice prostitution in Greece is the permit to stay in the country. A health book is issued to every migrant worker who has obtained a work permit. Medical tests regarding infectious or sexually transmitted diseases are obligatory every fortnight for all migrant sex workers at the STD clinic.

Migrant sex workers practice prostitution in bars, streets, brothels, hotels, hot lines etc. It is important to note that almost all migrant women are controlled by men from their own country, forcing them to accept a large number of clients having unprotected sex – without the use of condom- and be exposed to infectious diseases and STDs. This leads in danger the public health and their own due to the fact that the migrant sex workers do not undergo regular medical test at the STD clinics.

Our aim is that the activities of the migrant sex workers to be dressed by the legal status and finally to have a better information about AIDS and STD as well as and obligatory medical tests.

0133

Asymptomatic Sexually Transmitted Infections in South Africa.

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OBJECTIVES: Studies were undertaken to determine the prevalence of asymptomatic STI infections, especially caused by *C. trachomatis* and *N. gonorrhoeae* in different populations in south Africa. Syphilis and HIV serology were also carried out.

STUDY POPULATIONS AND METHODS: Study populations included men presenting at a private practice in Johannesburg, female sex workers, and males presenting at STI clinics and inhabitants of a village near a gold-mine. Youths were also included as a subset of the general population in Gauteng. Urine, endocervical and urethral swabs were collected from participants. Conventional methods of isolation and culture for HSV-2 and bacterial STIs were used while the ligase chain reaction (LCR) was employed for the detection of *C. trachomatis* and *N. gonorrhoeae*. Routine serological tests were employed for the diagnosis of syphilis and HIV1 & 2.

RESULTS: Asymptomatic carriage of both *C. trachomatis* and *N. gonorrhoeae* was frequently detected in all the study populations, ranging from 4.3% to 21.4% and 1.3% to 62.6% respectively. HIV seropositivity ranged from 6% among youth to 56.9% among the sex workers. HIV infection and asymptomatic STIs were alarmingly high among the sex workers. Mixed infections were common in all the study groups. Both gonococcal and chlamydial infections were common among female urban youth in South Africa (6.6 % and 21.4 % respectively) while in the general population, these infections were more prevalent in women than men (8.2 % and 8.2 % respectively) In private practice patients, asymptomatic infections with *C. trachomatis* and *N. gonorrhoeae* were also common (12.7 % and 7.3 % respectively)

CONCLUSION: Asymptomatic infections in both men and women are significant reservoirs of STIs in South Africa and present major problems in terms of diagnosis and treatment especially where laboratory facilities are limited or non-existent. The studies indicate that the major burden is borne by women, and this also applies to HIV and syphilis which are more frequently detected in women than in men.

0134

Volume and Type of Testing for Chlamydia and Gonorrhea in the United States, 2000-2001

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Objectives: To estimate the volume and type of chlamydia and gonorrhea testing performed in public and private laboratories in the United States in 2000-2001.

Methods: A self-administered survey was mailed to 132 APHL members and 8 private laboratories to collect information about the volume and type of testing for chlamydia and gonorrhea in 2000. Representatives from five major manufacturers of chlamydia and gonorrhea tests were contacted and asked to provide the total number of tests sold in the U.S. and the percent of those sold to public health laboratories in 2001.

Results: Completed questionnaires were returned by 109 laboratories (78% response rate); 93% of responders were public health laboratories and 7% were private laboratories. Chlamydia testing was done in 108 laboratories and gonorrhea testing in 106. A total of 3,877,703 chlamydia tests and 3,540,965 gonorrhea tests were performed. The most frequently performed tests were DNA probes (57% of all chlamydia tests, 60% of all gonorrhea tests). Overall, 61% of the laboratories reported doing at least one nucleic acid amplification test (NAAT) for chlamydia (1,182,422 tests); 41% of the laboratories reported doing at least one NAAT for gonorrhea (624,114 tests). Chlamydia non-NAATs (i.e., DNA probes, EIA, and DFA) were done by 77% of laboratories. While 75% of the responding laboratories reported they performed gonorrhea cultures, only 16%

of all gonorrhea tests were culture. Using data from the test manufacturers, we estimated that 24.0 million tests for chlamydia and 24.8 million tests for gonorrhea were sold in the U.S. in 2001. Approximately 23% of chlamydia tests and 24% of gonorrhea tests were sold to public health laboratories.

Conclusions: As technology changes, continued monitoring of the volume and types of chlamydia and gonorrhea tests done and the capacity of public and private laboratories to perform those tests will become increasingly important.

0135

The Molecular Epidemiology of N. Gonorrhoeae Isolates of an Unusual Serotype Occurring in Scotland 1992-2002

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Objective: To investigate the heterogeneity of isolates with the unusual serotype AvBx which occur globally at a low frequency, and to elucidate possible epidemiological groupings.

Methods: Isolates submitted to the Scottish *Neisseria gonorrhoeae* Reference Laboratory (SNGRL) were serotyped using the Pharmacia monoclonal antibody panel, as is routine. Isolates of the serotype AvBx were further investigated using opa-typing. Groupings suggested by opa-typing were compared with demographic and epidemiological data.

Results: During 1992-2002 23/6901 (0.33%) episodes of *N. gonorrhoeae* infection in Scotland were of the serotype AvBx. These unusual isolates were obtained from 12 male and 11 female patients and most episodes of infection (16, 69.6%) occurred during 2001-2. Opa-typing revealed seven different profiles. A group of isolates from 11 patients shared one opa profile; these patients all attended clinics in the south east of Scotland during 2001-2 and five were known sexual contacts. Four pairs of isolates, each from one male and one female patient, had four different opa profiles (these pairs were obtained in 1992, 1996, 1998 and 2001). Three isolates (obtained in 2002) shared another opa profile and the remaining isolate (obtained in 2002) had a unique opa profile.

Conclusions: The AvBx serotype occurs rarely, possibly due to a selective disadvantage. Using opa-typing we have demonstrated that seven unrelated groups of gonococci of the AvBx serotype have occurred during a 10 year period. Demographic data suggests that transmission was heterosexual. Of the seven groups, only one appears to have undergone clonal expansion and established within a sexual network. This strain, although not present in large numbers, persisted in one area of Scotland for over a year. Epidemiological factors may contribute to the observed differences in successful onwards transmission amongst these groups of AvBx isolates.

0136

Integrated Behavioural and Biological Survey in Benin: Prevalence of and Risk Factors for HIV, gonorrhea and chlamydia among Female Sex Workers in Benin

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Objectives: To assess the prevalence of HIV, *Neisseria gonorrhoeae* (NG) and *Chlamydia trachomatis* (CT) and associated risk factors among female sex workers (FSWs) in Benin.

Methods: After mapping prostitution sites in four cities of Benin, recruitment of FSWs was carried out in March 2002. Prostitution sites were selected at random in each city, with a probability of selection proportional to the number of FSWs in each site. After informed consent, a questionnaire was administered to all women present at a site when visited. In a random sub-sample, dry blood spots were collected and tested for HIV, whereas self-administered vaginal swabs were used for NG and CT testing with the Roche Amplicor NG/CT PCR.

Results: 774 participants were recruited, including 325 for the prevalence study. 100% condom use with all partners in the last week was reported by 69.9% of the FSWs. Condom use with the last client was 89.7% compared to 30.2% at the last intercourse with a boyfriend. Prevalences were: HIV, 46.1%; NG, 20.4%, CT, 6.0%. In a multivariate logistic regression analysis, factors associated with HIV infection were: older age (Odds ratio [OR]: 1.05 per year increase, p=0.015); being of Nigerian origin (OR: 0.49, p=0.024); having more than 10 clients per week (OR: 2.38, p=0.012); and current NG infection (OR: 2.99, p=0.003). In another logistic regression model, 100% condom use with all partners in the last week was protective of infection by either NG or CT (OR: 0.48, p=0.026) whereas such cervical infections were more frequent among HIV-infected women (OR: 2.22, p=0.007).

Conclusions: In such a cross-sectional study, the protective effect of condoms was more likely to be identified for relatively short-duration STIs than for HIV. It is difficult to identify the direction of the NG-HIV association in these data. Promotion of condom use with boyfriends is a priority.

0137

A Novel Lectin from Haemophilus ducreyi is Involved in Serum Resistance

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Objective: Define the role of DltA (Ducreyi lectin A) in *Haemophilus ducreyi* pathogenesis.

Methods: *dltA* was amplified by PCR from *H. ducreyi* strain 35000HP, cloned, sequenced, and an isogenic mutant was constructed. The role of DltA in serum resistance was determined by testing the survival of *dltA* mutants, or *H. influenzae* strains expressing *dltA*, in bactericidal assays containing 5, 10 and 50% normal human serum (NHS).

Results: Although primary BLAST analysis of the *dltA* ORF revealed no close homolog, it did uncover similarity to the b-chain of ricin, a lectin that binds host cell receptors containing galactose residues. Indeed, key residues present in this R-type lectin, such

as the "QXW" lectin repeat, were conserved in DltA. Several lines of evidence indicate that DltA is a lectin. In ligands blots, N-glycosylated proteins including fibronectin (FN), transferrin and factor H, but not non-glycosylated albumin, bound strongly to DltA. Conversely, after glycosidase treatment, these glycoproteins failed to bind DltA. Furthermore, incubation of FN in the presence of lactose or skim milk abrogated binding to DltA. We have also accumulated evidence that DltA is involved in serum resistance. First, an isogenic *dltA* mutant of 35000HP was more susceptible to 50% NHS (23% survival) than the parent strain (98% survival, p=0.001). Second, a double mutant in both *dsrA* and *dltA* was more susceptible to 10% NHS (35% survival) than the single *dsrA* mutant (69% survival, p=0.006). Third, *Haemophilus influenzae* Rd expressing *dltA* rendered this highly susceptible strain partially resistant to 5% NHS (51% survival) compared to a vector-control strain (10% survival, p=0.01). Although DltA was expressed by all strains studied (n=36), Western blot analysis suggests two different isoforms based on electrophoretic mobility.

Conclusion: DltA is a lectin involved in serum resistance.

0138

Differences in Sexual Risk Behaviors Between Sexually Abused and Non-Abused Female Adolescents

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Objectives: Because previous sexual abuse may be associated with sexual risk behaviors, we evaluated associations between condom use, demographic and social variables among abused and non-abused African American adolescent girls.

Methods: Using attitudes, intentions, and subjective norms as they pertained to condom use collected during a face-to-face interview, we constructed a model for factor analysis with the number of adolescents' sex acts in the past 90 days and the number of acts were not condom-protected as outcomes.

Results: Of 422 female adolescents (mean age 16 years) interviewed from one adolescent clinic, 26% had been sexually assaulted or abused. Factor analysis showed that abused girls did not differ from non-abused girls in believing that condom use indicates responsible behavior or in their condom use intentions. However, abused girls were more likely to believe that condom use impacts sexual pleasure, $p < .01$, and less likely to believe that their partners would view condoms as a breach of trust, $p < .05$. Abused girls had more sex in the previous 90 days, 20 versus 15 acts, of which 11 versus 5 were not condom-protected. When corrected for skew, the latter difference was statistically significant, $p < .05$. Believing that condoms interfered with sexual pleasure correlated with more unprotected vaginal sex, $r = .26$, $p < .05$.

Conclusions: Previously sexually abused adolescent girls had more unprotected sex. This was not related to adolescents' perceptions of partner norms, but to perceiving that condoms made sex less pleasurable.

0139

Use of Integrated Behavioural and Biological Surveys to Monitor the Impact of HIV/STI Preventive Interventions in Benin

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Objectives: To examine time trends in HIV, gonorrhea and chlamydia prevalences among female sex workers (FSWs) and their clients (CL) in Cotonou between 2002 and preceding time periods, in the context of an ongoing intervention (started in 1993 for FSWs and in 1999 for CL); to compare the 2002 situation in Cotonou to baseline data from other cities of Benin where interventions have just been initiated..

Methods: An integrated behavioural and biological survey was carried out among FSWs (n=774) and CL (n=901) in four cities of Benin in early 2002. Data from Cotonou were compared to both those of previous surveys in the same city and those collected at the same time outside Cotonou.

Results: In Cotonou among FSWs, the prevalence of gonorrhea was: 43% in 1993, 31% in 1996, 21% in 1999 and 14.0% in 2002 ($p<0.001$). After declining between 1993 and 1999, the prevalence of HIV (39% in 2002 vs 41% in 1999) and chlamydia (5% in both surveys) remained stable. Reported 100% condom use with clients in the last month increased from 39% in 1999 to 81% in 2002 ($p<0.001$), when it was higher than the corresponding figure outside Cotonou (56%, $p<0.001$). Both HIV (59%) and gonorrhea (31%) were significantly more frequent among FSWs outside Cotonou in 2002. Among CL in Cotonou, there was a decrease in gonorrhea prevalence from 5.4% in 1998 to 2.0% in 2002 ($p=0.004$) and an increase in reported condom use with the FSW just seen (from 56% to 71%, $p<0.001$). The corresponding figure was also lower among CL outside Cotonou in 2002 (49%, $p<0.001$).

Conclusions: Integrated behavioural and biological surveys can be very useful to monitor the impact of preventive interventions. The intervention targeting CL may have been of particular importance in significantly increasing condom use in commercial sexual encounters in Cotonou.

0140

Prevalence of and Risk Factors for for HIV, Gonorrhea and Chlamydia among Clients of Female Sex Workers in Benin: Results of an Integrated Behavioural and Biological Survey

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Objectives: To assess the prevalence of HIV, *Neisseria gonorrhoeae* (NG) and *Chlamydia trachomatis* (CT) and associated risk factors among clients (CL) of female sex workers (FSWs) in Benin.

Methods: In January-February 2002, CL were recruited during the night at prostitution sites in Cotonou and 3 smaller Beninese cities. They were approached before entering a FSW's room. After informed consent, they provided a urine sample. A questionnaire was administered after they came out of the FSW's room. Urine samples were tested for HIV using the Calypte EIA, followed by Western Blot confirmation, and for NG and CT using the Roche Amplicor NG/CT PCR assay.

Results: The mean age of the 901 participants was 25.5 years. The prevalences did not vary significantly between the cities and were: HIV, 7.2%; NG, 2.8%; CT, 4.2%. In a logistic regression model, factors associated with HIV infection were: older age (Odds ratio [OR]: 1.1 per year increase, p<0.001); history of previous STI (OR: 1.8, p=0.033); and having seen >5 different FSWs in the last year (OR: 1.8, p=0.038). Independent risk factors for NG were: age group 25-29 years (OR: 4.3, p=0.001); education less than high school (OR: 3.0, p=0.052); history of previous STI (OR: 2.7, p=0.036); use of antibiotic prophylaxis to protect against STIs (OR: 5.5, p<0.001); and last visit to a FSW less than 1 month ago (OR: 2.2, p=0.064). The only factor associated with CT was to have been recruited in Jonquet (OR: 2.6, p=0.018), a prostitution area in downtown Cotonou where FSWs are younger and have a higher CT prevalence than elsewhere.

Conclusions: Counselling of men who are diagnosed with an STI appears of particular importance for the prevention of both HIV and subsequent STIs. Prevention campaigns should, in addition to promoting condom use, discourage the use of antibiotic prophylaxis.

0141

Psychological Mediating Factors in an Intervention Promoting Adolescent Health Care-Seeking Behaviors

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Objectives: Many adolescents in the United States do not seek routine health care and, of those who do, few discuss a full sexual history with their providers. The Gonorrhea Community Action Project's goal was to increase the likelihood of adolescents seeking health care on a regular basis through interactive, content-tailored interventions. We were guided by the Theory of Reasoned Action, in which changes in beliefs and norms should lead to changes in attitudes and intentions, followed by behavioral change.

Methods: 313 adolescents (81% Black, 88% in school, 96% living with a parent or guardian) were randomly assigned to intervention or control groups run by community-based organizations. The 3-session intervention involved didactic, skills-building, role-playing, strategy planning, interaction with a doctor, and homework assignments (talking to a friend and parent, scheduling a health care check-up). Analyses tested for changes in health care-related attitudes, norms, efficacy, and intentions and health care-related beliefs that correlated with attitudes.

Results: Analyses revealed that individuals in the intervention groups changed more on psychosocial variables than did individuals in the control groups, $F(5, 222) = 4.31$, $p < .01$. There were effects for attitudes, $F(1, 226) = 10.11$, $p < .01$, and for intentions, $F(1, 226) = 13.06$, $p < .001$ (but not for norms or efficacy). We also found that adolescents' beliefs became more positive over time with respect to health care seeking, $F(7, 228) = 2.95$, $p < .01$. Shared variances (R2) for attitudes and beliefs rose from 23% to 37%, and, for intentions and beliefs, from 22% to 30%, both ps <.01. For females, the intervention resulted in health care visits, OR = 2.75, and in talking to others about the importance of health care, OR = 4.50.

Conclusions: A theoretically-based, interactive intervention can change adolescents' perceptions about health care seeking. The stronger effects for females suggest the precise content of the intervention tested could be further tailored in future implementations for male adolescents.

0142

Self-administered Vaginal Swabs for Detection of Sexually Transmitted Infections (STI): Acceptance Rates in the National Health and Nutrition Examination Survey (NHANES, 2001-2002)

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Objective: Self-collection of vaginal swabs for STI testing has been successful in clinical settings and community sample surveys. Feasibility of self-administered vaginal swabs in population-based national surveys has not been determined. We report on acceptance rates of self-administered vaginal swabs for testing of Trichomonas vaginalis, human papillomavirus (HPV), and bacterial vaginosis (BV) in the United States National Health and Nutrition Examination Survey (NHANES, 2001-2002).

Methods: The NHANES is a stratified, multistage probability sample survey of the non-institutionalized U.S. population that collects data on a broad range of health issues through household interviews and health examinations in mobile examination centers

(MEC). For female participants 14-49 years, the examining physician provided pretest counseling, obtained consent for STI testing, explained specimen collection procedures, and gave written instructions for collecting vaginal swabs. The participants self-administered three vaginal swabs (two swabs in 2001) in a mobile examination center bathroom.

Results: Among 2,917 eligible sample females 14-49 years, 2,384 (81.7%) participated both in the household interview and the MEC examination; 2,265 (95.0%) of these examinees participated in the physician's examination component that included collection of vaginal swab specimens. Of those who participated in the physician's examination, 2001 (88.3%) provided self-administered vaginal swab specimens. Pregnant women were significantly less likely than others to provide vaginal swab specimens. While acceptance rates increased steadily and significantly with age, rates did not vary significantly by race/ethnicity. Over 98% of all swab specimens (97% for trichomonas; 98% for HPV; 99% for BV) were of adequate quality for laboratory testing.

Conclusion: Collection of self-administered vaginal swabs for STI testing is feasible and acceptable in a population-representative national health survey

0143

Sexually Transmitted Infections Frequently Differ Between Partners In Sexual Dyads

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Objectives: To describe differences in the presence, number and type of sexually transmitted infections (STI) detected in individual members of sexual partnerships (dyads).
Methods: Index subjects were randomly recruited from an STD clinic regardless of infection status. Partners of both infected and uninfected index subjects were enrolled from the clinic or through contact tracing. Nucleic acid amplification tests (NAAT) for *Chlamydia trachomatis, Neisseria gonorrhoeae* and *Trichomonas vaginalis* were done on specimens collected from both dyad members (index subjects and their partners).

Results: Among the 156 dyads studied, 112 (72%) contained at least one infected dyad member. In 58 (52%) of these dyads only one dyad member was infected: 47/58 (81%) having a single STI and 11/58 (19%) having multiple STI (mSTI). In 14 of 47 (30%) dyads with a single STI and only one infected dyad member, the index member was found to be negative for any STI. Among the 112 dyads with infection, both dyad members were infected in 54 (48%) dyads. In 27/54 (50%) dyads both dyad members had a single identical STI. In 2 dyads each dyad member had a single but different STI. There were 25/54 (46%) dyads with at least one dyad member having mSTI. In 18 of these 25 dyads one dyad member had the same STI as their partner as well as additional infections. For 14/25 (56%) dyads with mSTI the index person had fewer STIs than were later found in their partners.

Overall, in 31/112 (28%) dyads the index person was either uninfected, had fewer or different STI than were subsequently found in their partners.

Conclusions: STIs diagnosed in index subjects may not accurately represent the infection status of their partners. Partner tracing, testing and treatment are crucial to reduce transmission.

0144

Chlamydia care practice patterns among primary care providers: results from a California survey

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Objectives: There has been a nationwide effort to increase chlamydia screening and treatment in young women, but few evaluations of provider practice. In order to design effective provider training interventions, we sought to determine the current chlamydia care practices and the barriers to quality chlamydia care among primary care providers in California.

Methods: From December 2001-November 2002, we surveyed a random stratified sample of 2068 primary care physicians in California and all 1815 primary care nurse practitioners registered as members of the California Coalition of Nurse Practitioners. The self-administered survey addressed sexual history taking; availability of STD services; chlamydia screening frequency; STD diagnosis, treatment, and reporting; and attitudes towards chlamydia screening recommendations and towards patient delivered partner therapy for chlamydia.

Results: The overall response rate of eligible providers was 49% for physicians and 63% for nurse practitioners. More than two-thirds of MDs (69%) and NPs (77%) reported usually taking a sexual history from a young adult aged 15-25 at a routine new patient visit. Less than half of MDs (45%) and 73% of NPs regularly screened women aged 25 or less for chlamydia. More than 40% of MDs and NPs reported routinely ordering a test of cure one month after treating a non-pregnant patient for chlamydia while only 26% of MDs and 23% of NPs ordered a test of re-infection 2-6 months after a chlamydia treatment. Concern regarding lack of reimbursement was the most frequently cited barrier to chlamydia screening. Providers reimbursed by public funding reported fewer barriers to quality STD care.

Conclusions: Chlamydia care practices among California providers who routinely care for young sexually active patients are not consistent with current national guidelines for quality chlamydia care. Targeted education regarding chlamydia screening and care as well as increased reimbursement are potential strategies for improvement.

0145

Gender Differences in Care-Seeking Behaviors and Response to STI Symptoms

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Objectives: Understand gender differences in care-seeking behaviors and in responses to STI symptoms.

Methods: 241 female and 234 male subjects were enrolled at an STD clinic regardless of infection or symptom status. Subjects completed a 30-day calendar recall of genital symptoms, coital activity, sexual partners and condom use. Symptoms for women included pelvic/abdominal pain, vaginal discharge or dysuria; men's symptoms included urethral discharge or dysuria. Genito-urinary infections were diagnosed by PCR (Gonorrhea, Chlamydia, Trichomonas) or wet mount (Bacterial Vaginosis or Candidiasis). Predictor variables included education, race, marital status, lifetime STI history and symptom status. Primary outcome variables were coitus on any given day and condom use (if coitus occurred). Data analysis was conducted by multivariable logistic regression using a random subject intercept to control for multiple within-person observations.

Results: 159/241 (66%) women and 100/234 (43%) men reported symptoms. 166/241 (69%) women were diagnosed with an STI, BV or candida vaginitis; 130/234 (55%) men had an STI. STI prevalence was about 72% and 75% for symptomatic women and men, respectively, compared to 63% and 42% among the asymptomatic women and men. For women, the probability of coitus was decreased in the presence of a vaginal discharge but increased in the presence of abdominal/pelvic pain. Coitus was not associated with dysuria in women. The presence of vaginal discharge did increase the likelihood of condom use, if coitus occurred. Symptom status was not associated with likelihood of coitus among men. However, the presence of dysuria was associated with increased likelihood of condom use, if coitus occurred.

Conclusions: In the presence of STI-associated symptoms, women may alter both sexual and condom use behaviors. Symptoms may be associated with increased condom use among men. These changes in sexual and condom use behaviors may alter risk of STI transmission prior to care-seeking, diagnosis and treatment.

0146

Screening in Jails is Associated with a Decrease in Community Prevalence of Chlamydia: San Francisco, 1997-2002

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Objectives: STD screening programs in correctional settings detect a high number of infections and may play an instrumental role in reducing transmission of STDs in the community. To evaluate the impact of our jail-based, chlamydia screening program, we examined: 1) the number of screening tests performed; 2) the number of infections detected; 3) the demographic and geographic characteristics of persons screened in jail; and 4) trends in female chlamydia positivity in the community.

Methods: In September, 1996 we implemented urine-based, amplified chlamydia screening for incarcerated men (18-30 years old) and women (18-35 years old) in San Francisco. We characterized people screened in jail using available demographic data, including neigborhood of residence. Trends in female chlamydia positivity at five sentinel surveillance sites were compared over time.

Results: Between 1997 and 2002, 37,894 screening tests for chlamydia were conducted in the jails; 70% of these were performed on men. Each year, this screening program detected between 205 and 287 chlamydial infections, accounting for 7 to 10 percent of all reported chlamydial infections in San Francisco. The overall prevalence of chlamydia was 6.0%, 6.4% (701/11,037) in women and 5.8% (1,565/26,857) in men. Geocoding data showed that a high proportion of males screened in the jails were from neighborhoods that had the highest female chlamydia rates. Female chlamydia positivity at the sentinel health center that served these neighborhoods decreased over 50% (from 8.2% to 4.4%) since the jail screening program began, but similar trends were not observed at the other sentinel sites.

Conclusions: STD screening in the jails has been very effective in identifying a high number of asymptomatic chlamydial infections that may otherwise have gone undetected. Our data also suggest that screening males in jails for chlamydia is associated with a decrease in female chlamydia positivity in the community.

0147

Physicians' STD Diagnosis and Screening Practices in the Southern USA

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Objectives: The southern USA has some of the highest bacterial STD rates in the developed world. We assessed southern physicians' STD diagnosis, treatment, and screening behaviors, comparing these to physicians from other regions of the USA.

Methods: 4,088 physicians (1,306 from the South, 71% male, 81% White, mean age = 46 years) from five AMA specialties (ER medicine, obstetrics/gynecology, pediatrics, general/family practice, internal medicine) responded to a mailed questionnaire. Diagnosis history was assessed by asking how many cases of each STD the physicians had diagnosed in the last 12 months; treatment methods by listing alternatives and asking how often physicians used each one; and STD screening practices by asking if physicians screened males, females, or pregnant females.

Results: Statistics for non-Southern physicians are presented in parentheses. Southern physicians spent an average of 45 (41) hours per week in direct patient care and saw an average of 106 (96) patients per week, both ps < .001. They diagnosed yearly averages of 6.7 (5.0) cases of gonorrhea, $p < .05$, and 10.8 (9.4) cases of chlamydia, ns. Southern physicians used culture and urine testing more frequently than other physicians, and DNA Probe less frequently, all ps < .001. How-

ever, urine tests were infrequently used (<5% for both groups). Only 9-10% (10-12%) ever screened males for either STD; 27-30% (32-37%) screened non-pregnant females; and 29% (33%) screened pregnant females, all ps < .05, except for male screening for gonorrhea. Across physicians, ER physicians and pediatricians screened the least, while ER physicians diagnosed the most cases.

Conclusions: Southern physicians diagnose more bacterial STDs than physicians from other regions, but slightly fewer screen patients. The high diagnosis numbers for ER physicians speaks to the possibility of screening in (especially southern) ER facilities, although the question of symptomatic versus asymptomatic infection would have to be considered.

0148

Seroprevalence of HSV-2 in Suburban Primary Care Offices

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Background: Studies have shown that herpes simplex virus type 2 (HSV-2) seroprevalence is high nationwide, and that most persons with HSV-2 antibody experience unrecognized genital herpes outbreaks and/or shed virus. Nevertheless, many primary care physicians (PCPs) relate that genital herpes is infrequent among their patients.

Objectives: To provide HSV-2 seroprevalence estimates from a weighted sample of adults attending 36 PCP offices for routine visits.

Methods: Six PCP offices in relatively affluent areas in each of six cities (Atlanta, Baltimore, Boston, Chicago, Dallas, Denver) were recruited from a database of PCP offices. At each site, field interviewers selected approximately 150 patients aged 18-59, based on random sampling design with 8 age-group/gender cells. The field interviewers obtained informed consent, administered a risk assessment questionnaire via ACASI, and recorded patient volumes continuously for two weeks in each office for the purpose of sample weighting. A central laboratory used the FOCUS HerpeSelect 2 ELISA IgG kit to detect type-specific HSV-2 antibody.

Results: 5,732 patients were screened; 5,452 (95%) provided an analyzable blood sample and 5,433 completed a questionnaire. The final sample was 75% white, 14% African American, and 4% Hispanic; 44.9% of patients had household income $60,000 (US) and 73.5% had some college or higher education. The overall weighted HSV-2 seroprevalence was 25.5% (95% confidence interval = 20.2% to 30.8%). Seroprevalence increased from 13.4% in the 18-29-year age group, to 25.2% (30-39 years), to 31.2% (40-49 years) and 28.0% (50-59 years). Seroprevalence among women (28.3%) was greater than that among men (22.0%), and was consistently higher across all age groups. Only 4% of patients reported a history of genital herpes.

Conclusions: HSV-2 seroprevalence was high in this relatively affluent suburban population, emphasizing the need for a high index of suspicion for genital herpes even among patients considered by many to be at low risk.

0149

Variations in Inclusion Forming Units of Chlamydia Trachomatis in Commonly Used Cell Lines

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Objective: To determine the number of C. trachomatis (CT) organisms (EB) required to produce an inclusion in cell lines commonly used for in vitro studies and compare the results across both cell lines and serovars.

Methods: CT strains were expanded in HeLa cells. Subsequent to harvesting, aliquots were stored at -70oC for enumeration experiments. For each cell line, portions of a single aliquot were used to infect cells grown in shell vials on glass coverslips and for EB counting via direct staining. The number of EB/inclusion were calculated and compared among serovars in a single cell line and for each serovar in multiple cell lines.

Results: Serovar J required approximately 1-2 logs more EB/inclusion than any other serovar regardless of cell line, with ratios as high as 2.3 x 106. The LGV serovars consistently had the lowest EB/inclusion ratios (always <300) and the least variation based on cell line. E, D, and I, commonly isolated genital serovars, were usually the next lowest ratio group while K, G, H and F had generally higher EB/inclusion ratios. HaK cells required anywhere from .7-2.5 logs more EB/inclusion than HeLa cells, which required .4-1 logs more EB/inclusion than McCoy cells.

Conclusions: Inclusion forming units are the standard quantitation measure for CT and should consist of EB/inclusion. However, little empirical data are available regarding either the number of organisms required to form an inclusion or the variability of that number among serovars or commonly used cell lines. We have found that the number of EB/inclusion is variable among both serovars and cell lines. This may be important comparison of experimental data between labs using various serovars and growth systems.

0150

A Simulation Model for Syphilis Transmission and Control

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Objectives: Build a simulation model for the transmission of infectious syphilis and use this model to formulate control strategies.

Methods: A simulation model based on the transmission dynamics of syphilis is formulated. In this model three stages of infectious syphilis are considered. Susceptible persons acquire syphilis infection (with a certain probability), through sexual contact with an infectious individual. After the incubating period of the disease, these patients enter into primary stage, and after certain period move to secondary and then to early latent stage of the disease. It is assumed that the distribution of time spent in primary stage is 2 weeks to 3 months, secondary stage 6 weeks to 6 months and early latent stage up to 12 months. It is also assumed that during this time period population remains constant and a patient, on the average, has one sexual contact per month, and the probability of transmitting the infection to a susceptible person is 0.5.

Results: According to this model, syphilis patients who progress to the secondary and early latent stages of the disease are the ones who influence the spread of infectious syphilis. It is shown that interventions in the secondary and early latent stages of the disease do not reduce the incidence of infectious

syphilis significantly. Interventions instituted in the primary stage of syphilis significantly reduce the transmission of the disease.

Conclusions: Simulation model based on transmission dynamics of syphilis suggest that, in order to control infectious syphilis, interventions should be instituted in the primary stage of the disease. Epidemiological studies should be conducted to identify the risk factors for patients who progress to secondary and early latent stages of the disease.

0151

Postpartum Permanent Sterilization Choices in HIV Infected Women, 1993-2002: A Retrospective Cohort Study

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Objective: To determine if HIV-infected women's choices for postpartum permanent sterilization changed as a result of decreased vertical transmission of HIV after implementation of the ACTG 076 protocol (November 1 1994).

Methods: This was a retrospective time-series cohort study at Parkland Health & Hospital System (PHHS) in Dallas, Texas. Medical records were reviewed to obtain demographic, obstetric and HIV-related data. Group A comprised HIV-infected women who delivered their lattermost infant at PHHS from January 1, 1993 through October 31, 1994, so were not exposed to knowledge of the beneficial effects of zidovudine use during pregnancy. Group B comprised HIV-infected pregnant women 14 weeks gestational age or less November 1, 1994 through December 31, 2002 who received counseling of decreased HIV vertical transmission with the use of zidovudine and antiretroviral therapy during pregnancy. The primary outcome was permanent sterilization by postpartum tubal ligation.

Results: 302 women with complete data sets were identified. There were not significant differences in the maternal demographic characteristics of Group A and B. 28 of the 39 women in Group A (72%) and 123 of 263 women (47%) in Group B chose permanent sterilization (unadjusted OR 0.34; 95% CI 0.15-0.75). When stratified for parity 64% of primiparas who delivered prior to 11/94 chose sterilization, compared to 33% after 11/94 (P=0.00016). When stratified for age, significantly fewer women 21 years old or younger chose permanent sterilization after November 1994 (P=0.0025). Women who delivered after 11/94 were also more likely to have repeat pregnancies (OR 9.1; 95% CI 1.46-377.6) in the future.

Conclusions: Since the implementation of ACTG 076 protocol in November 1994, fewer women are choosing postpartum tubal ligation in our obstetric population. The availability of ART to prevent perinatal HIV transmission changed the typical women choosing postpartum sterilization to a puerpera of older age and of higher parity. We believe that these results indicate that effective ART changed women's attitude about selecting permanent sterilization and permitted women to choose to continue fertility and consider repeat pregnancies.

0152

Ensuring Access to Quality STD Clinical Services: The Critical Key for STD Prevention and Control

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Objectives: In 2000, DSTDP instituted a comprehensive program assessment process to review local syphilis elimination efforts in the areas of: 1) enhanced surveillance; 2) community involvement and organizational partnerships; and 3) biomedical and behavioral interventions. Findings from these systematic assessments were used to improve and sustain STD prevention and control activities in general, and enhance syphilis elimination activities in particular.

Methods: Using a structured assessment instrument, a team of STD trained and experienced clinicians conducted a thorough review of the STD clinical services in 34 syphilis high morbidity areas comprising >50% of reported infectious syphilis in the United States. The clinic services assessment examined: 1) clinic access; 2) clinic staffing, training and operations; 3) provider-patient interactions; 4) medical protocols and procedures; 5) medical records systems; 6) patient education; and 7) clinic services provided in key settings external to the health department STD clinic.

Results: Based on assessment findings, approximately 200 priority clinical recommendations were made to 34 local STD programs. Items affecting timely access to clinical service such as patient wait times, number turned away, staffing and physical environment comprised the majority of recommendations (40.3%). Quality of medical services such as completion of a thorough physical examination, completeness and access to medical records and accurate medical protocols received 28.3% of recommendations. Other significant categories of recommendations include Training to enhance skills and Team integration, 12.4%; Patient education, 10.9%, and expanded clinical services in key settings, 8.9%.

Conclusions: Timely access to quality clinical services remains a critical element of syphilis elimination. Supporting local STD clinics in high morbidity areas through technical assistance, additional resources, and training will be required if decreases in syphilis seen in the majority of high morbidity areas are to be sustained.

0153

Effects of Introducing a Walkin Triage Service (WITS)

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Objectives: To determine the effect of introducing a walk-in triage system (WITS) at Melbourne Sexual Health Centre in August 2001. Prior to this the center had operated on an appointment only basis.

Methodology: From 6th August 2001, all new clients were triaged using a symptom based triage protocol by a registered nurse trained in sexual health. No appointments were available for new clients. New clients presenting in the first five months of the WITS (6.8.01-31.12.01) and those seen in the 12 months

prior to the WITS (1.8.00-5.8.01) were compared on available demographic, behavioural and morbidity characteristics.

Results: There were 27,609 clinic attendances for 12, 896 clients at MSHC during the study period (Table 1). New clients increased by 33% (p=0.004) following WITS. The clinic attracted younger clients (p=0.008) who reported similar numbers of sexual partners (p=0.61) but were less likely to use condoms (p=0.0001). Overall the number of tests for genital herpes and Chlamydia increased substantially as did the diagnosis of Genital herpes (p=0.001) in both men and women and Chlamydia in men (p=0.04). Medical and nursing staff and the number of clinical hours were identical during both periods.

Conclusion: The WITS system was associated with greater access for higher risk clients and more diagnoses for no change in clinic resources

0154

Predictors of Adherence to Antiretroviral Therapy

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Objectives: To determine the risk factors for non adherence to antiretroviral therapy in a clinic setting and to use this to develop a tool for assessing those at high risk of non adherence in the future.

Methodology: A cross sectional study of clients attending the HIV service. After consent, clients were given a questionnaire, which asked about individual factors previously found to be associated with non adherence. These included life style factors, self efficacy, depression, drug or alcohol use, social support, and attitudes to health care. These were derived from previously used questionnaires. Self reported adherence (SRA), measured by missed doses in the last 4, 7 and 28 days are recorded for every visit at the clinic.

Results: 200 of 260 eligible clients were recruited (participation rate 77%) between 9th October 2002 and 6th February 2003. The clients viral load (VL) was most strongly associated with adherence in the last 28 days (P=0.006). After assessing the association between VL and different cut offs for SRA we used a cut off of 98.2% SRA because this strongly demarcated between high and low VL and included 25% of the population. SRA was most strongly associated with daily routines and self efficacy (P<0.002). When individual or composite scores of questions were used to develop a tool for screening for non adherence, the sensitivity to predict non adherence was as high as 81% with a specificity of 61%.

Conclusions: Our study showed that a simple 10 minute questionnaire could predict clients at risk of non adherence to therapy. Adherence to therapy is one of the most powerful predictors of its long term effectiveness. Therefore predicting non adherence and intervening before starting antiretroviral therapy is an important therapeutic strategy.

0155

Partner Notification: Preference of Melbourne Clients and the Estimated Proportion of Sexual Partners they can Contact

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Objectives: To determine the estimated proportion of contactable sexual partners, the most common types of partner contact information available and the most acceptable strategies of partner notification for clients attending the Melbourne Sexual Health Centre.

Methods: 500 'walk in' clients (of 961 eligible, ~52% participation rate) completed a self-answer questionnaire and were asked about their total number of sexual partners in the previous six months, the proportion of partners they could contact and the type of contact information available.

Results: Women had the highest estimated number of contactable partners (89 – 94%), MSM had the lowest (51 – 73%). The preferred strategy of contact tracing was to give partners a website address (76%) and the least preferred strategy was provider referral (33%). There was a significant difference in the type of information available to clients for contacting sexual partners (P<0.001), most commonly they reported they could contact partners by phone (home or mobile) or face to face and least commonly through a third person.

Conclusions: The current contact tracing method used (contact slip) is not the preferred choice of these clients and more innovative methods using recent technology may prove more effective.

0156

Pathways to Disparity, Interventions to Enhance Equity: Incident HIV Infection Among Male STI Clients in Pune, India

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Objectives: To investigate systematic disparities in HIV incidence among male STI clients by socioeconomic status; identify mediating factors in the behavioral, biological, and social pathways between incident HIV and SES.

Methods: From 1993 to 2000, HIV-seronegative clients attending 3 public STI clinics in Pune, India were enrolled in a cohort study of risks for incident HIV infection. Following informed consent, participants were administered a structured questionnaire and physical examination at each quarterly visit. HIV incidence rates were calculated as number of seroconversions divided by person-years of follow-up, with Poisson confidence intervals. Kaplan-Meier curves of risk factors for HIV seroconversion were stratified by level of education, and tested by the log-rank test. Cox proportional hazards regression models with time-dependent covariates were constructed with variables representing social position, exposure factors, and susceptibility factors.

Results: HIV incidence among the 2260 enrolled men was 5.1/100py; among illiterate men 10.5/100py(95%CI 7.1-15.0) and among high school graduates 3.5/100py(95%CI 2.7-4.5). No gradient in HIV incidence was found by income or broad occupational categories. Lack of AIDS knowledge, multiple sex partners, unprotected sex with sex workers, and concurrent STIs were significantly more frequent among the least educated. Among illiterates, the adjusted hazard ratio for those with genital ulcer disease was 7.0(95%CI 3.9-12.7), while among high school graduates it was 3.0(95%CI 1.8-5.1).

Conclusions: Education campaigns need to be tailored to illiterates and those with minimal formal education. Interventions that improve access to and quality of treatment for genital ulcer disease will have the greatest impact on HIV incidence among the least educated.

0157

Comparing Apples and Oranges? – Understanding and Overcoming Heterogeneity in European STI Surveillance Systems

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Objectives: To characterise the nature, range and content of existing STI surveillance systems in Western Europe, in order to inform the collection of comparable data across Europe. Methods: A cross-sectional survey of STI surveillance systems in 14 European Union (EU) countries and Norway using a structured questionnaire, as part of a European Commission-funded project on European Surveillance of STIs (ESSTI).

Results: Case reporting from clinicians and/or laboratories is the mainstay of EU surveillance systems for syphilis, gonococcal and chlamydial infections. However, systems are highly heterogeneous. Coverage of case reporting varies from less than 10% to over 75%. Considerable variations also exist in STI care sites, the populations who use these services, and in partner notification practices, STI screening practices and STI laboratory diagnostic tests employed. These affect the representativeness of reported data and the sensitivity of surveillance systems for detecting the true number of STI cases. Heterogeneity in case definitions, notably the requirement for laboratory confirmation for reporting, affects the relative specificity of different systems. Finally, timeliness, and therefore usefulness in terms of informing public health action, varies greatly between countries, with the average reporting delay to the national surveillance centre ranging from weeks to years. Respondents identified possible areas for improvement to existing systems, including: improving the coverage of mandatory physician reporting; improving the amount and quality of data reported; introducing laboratory reporting systems; and implementing sentinel and enhanced surveillance programmes.

Conclusions: The heterogeneity of current surveillance systems complicates direct comparison of STI incidence rates across Europe. ESSTI's aim is to act as a stimulus for improvements to country systems where necessary, so enabling more meaningful data comparisons. Additional data from sentinel and enhanced surveillance systems could be used to supplement universal reporting data, and to improve our understanding of the distribution and determinants of STIs across Europe.

0158

Surveillance and Treatment Outcome of Indoor Tuberculosis Patients with HIV Infection

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Objective:- Tuberculosis is highly prevalent in India and HIV infection is a major factor in global resurgence. We conducted this study with objectives (1) to determine pattern and prevalence of HIV infection among indoor tuberculosis patients, (2) to investigate the clinical and radiological presentation in HIV-TB co-infected patients, and (3) to evaluate efficacy of short course anti tubercular chemotherapy.

Method:- All indoor tuberculosis patients, more 12 years of age, admitted to department of TB and chest disease from june-95 to june-00 were included in this study. They were examined investigated for tuberculosis and HIV, & treated for tuberculosis.

Results:-Out of 2152 cases, 82 patients were HIV positive. HIV was suspected clinically in 48 (58.54%) patients, where as 34 (41.46%) patients were found HIV positive on screening. Sixty (73.13%) patients were male and 22(26.83%) patients were female. Maximum prevalence was seen in both sexes between 21-30 years of age. Commonest mode of transmission was heterosexual. None of the patient has IV drug abuse, as a risk factor. In 8 patients no apparent cause was found as a mode of HIV transmission. Cough in 65(79.27%) patients was main presentation followed by fever in 57(69.51%) & breathlessness in 48(48.54%) patients. Pulmonary tuberculosis was found in most of cases. Twelve (14.64%) patients had extra pulmonary involvement. X-ray chest showed diffuse infiltration in 38(46.34%) patients and cavity in 29(35.36%) patients.
All patients were given 2HREZ / 7HR.Short course chemotherapy was found to be effective in most (60) patients. Four patients failed to respond,8 defaulted and 10 patients expired.

Conclusion:- Prevalence of HIV(3.81%) is remarkable in tuberculosis patients and it stresses screening of tuberculosis patients for HIV infection, as screening for HIV only on clinical suspicion may miss a considerable number of HIV positive cases. Short course chemotherapy is highly effective in HIV-TB co-infected patients.

0159

Screening for Neisseria Gonorrhoea and Chlamydia Trachomatis in Men who have Sex with Men at Male Only Saunas

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Objectives: To determine the participation rate, proportion of men who returned for results and the proportion with gonorrhoea and chlamydia in throat, rectal and urine specimens of gay men approached for anonymous testing at a male-only sauna.

Methods: In this cross-sectional study men were approached by a nurse and offered anonymous testing for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* by PCR and completed a short self answer questionnaire. Results were available through a free call phone number.

Results: Of 2,140 men approached, 521 (24%) agreed to participate. The proportion of participants with PCR-detected gonorrhoea and/or chlamydia infection was 10.7% (95% CI: 8.1% to 13.4%). Of the 511 urine samples, chlamydia was detected in nine samples (1.8%, 95% CI: 0.8% to 3.3%) and gonorrhoea in one (0.2%, 95% CI: 0 to 1%). Of the 507 rectal swabs chlamydia was detected in 30 (5.9%, 95% CI: 4% to 8%), and gonorrhoea in 11 (2.2%, 95% CI: 1% to 4%). Of the 521 throat swabs chlamydia was detected in three (0.6%, 95% CI 0.1 to 1.7%), and gonorrhoea in 13 (2.5%, 95% CI 1.3 to 4.2). Local symptoms were associated with infection for rectal and urine samples but not throat samples. Behaviour in the last month did not predict infection. Only 365 (70%) participants obtained their test results.

Conclusion: Patrons approached at SOPV for anonymous screening had a high prevalence of asymptomatic infection that was commonly rectal.

0160

Randomised Trial of an Adherence Program for Clients with HIV

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Objectives: Our aim was to determine if a comprehensive adherence package improved self reported adherence to anti retro viral therapy.

Methods: The adherence package included an education program, individualised planning of regimens, and the opportunity for a patient to choose from a number of adherence aids and reminder devices. A randomised step wedge design was used.

Results: Forty-three individuals were randomised to begin the intervention over a 5-month period. There was a substantial fall in the number of missed doses reported for the last 4 days (0.76 to 0.38, p=0.03) and last 7 days (1.5 to 0.74, p=0.005) but not for the last 28 days (2.5 to 2.5, p= 0.63). There was no statistical difference in the viral load or CD4 lymphocyte count in the period before or after the intervention. The Morisky score during the pre and post intervention periods was significantly different (p=0.006), 2.9 (SD 0.9) and 3.3 (SD 0.8) respectively.

Conclusions: This adherence package improved self reported adherence during the last 4 and 7 days. We gratefully acknowledge, Assistant Professor Lori Esch, Ross Hewitt and co-workers from the Departments of Pharmacy Practice and Medicine, State University of New York at Buffalo, and Immunodeficiency Services, Erie County Medical Centre, 1Buffalo, NY, USA for kindly providing their adherence educational material for use in this study. Melbourne Adherence Group included, Dr Jonathan Anderson, Dr Norm Roth, and Dr Nick Medland. Financial support from GlaxoSmithKline Pty Ltd is gratefully acknowledged.

0161

An Evaluation of the Quality of STI Case Management Within a Research Setting

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Objective(s): We evaluated the use of syndromic management for detecting and treating Reproductive Tract Infections (RTIs), within a study to assess the validity, acceptability, and feasibility of self-sampling for RTIs in Gugulethu, Cape Town.

Methods: We conducted a cross sectional study among 450 sexually active women [150 from the STI clinic (group A) and 300 from general clinics (group B)] attending the NY1 Community Health Center between January and September 2002. Nurse clinicians performed detailed pelvic examinations on each participant, a detailed RTI management protocol was in place and daily supervision took place.

Results: Forty three percent of the participants had any RTI [excluding asymptomatic Bacterial Vaginosis (BV) and Candida (C)], 15% had cervical infections and 35% had vaginal infections. The sensitivity of the clinician's presumptive diagnosis ranged from 11% for cervical infections to 72% for vaginal infections. Forty five percent of laboratory confirmed cervical infections and 24% of treatable vaginal (TV&/symptomatic BV&/C) infections were missed. The clinical assessment of vaginal discharge as normal was consistent amongst women not diagnosed as having vaginitis, cervicitis or PID. However, judging vaginal discharge as abnormal varied considerably.

Conclusions: Within this controlled setting there was still a high proportion of missed infections. Clear definitions of abnormal vaginal discharge and rapid, point of care, diagnostic tests are needed to improve the quality of case management. However, improved case management has a low public health impact and increased attention should be given to screening programmes for increased detection and treatment of asymptomatic Sexually Transmitted Infections.

0162

Evaluation of Subject Effect on Outcome in a Human Model of Haemophilus Ducreyi Infection

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In the human model of *Haemophilus ducreyi* infection, 30% of infected volunteers resolve disease at all inoculated sites, while 70%

form pustules at one or more inoculated site. Pustule formation is dependent on dose and gender. Surprisingly, subjects in whom all sites resolve are found throughout the dose range. We hypothesized that some individuals are prone to pustule formation (Pustule-formers) while others are prone to resolution of disease (Resolvers). To test this hypothesis, we performed a reinfection trial with gender-matched Resolvers and Pustule-formers. The trial had an 80% power to detect a difference between an 80% resolution rate among pustule-formers and a 20% resolution rate among Resolvers. Twenty-one volunteers participated in the study. The papule formation rate was similar in the two groups. Two of 11 Pustule-formers (18%, 95% CI; 2.3 to 51.8%) resolved disease at all infected sites. In contrast, 6 of 10 Resolvers (60%, 95% CI; 26.2 to 87.8%) resolved all disease (P=0.06, one-tailed Fisher's exact test). Adjusting for the effect of infecting groups of subjects at 6 different times, the difference between the Resolvers and Pustule-formers was statistically significant (P=0.029, one-tailed Mantel-Haenszel test). Sera from volunteers who resolved disease both times they were inoculated (Double Resolvers) were no more effective at killing *H. ducreyi* than were sera from volunteers who formed pustules both times they were inoculated (Double Pustule-formers) (mean percent survival, 69.0 ± 15.1% versus 57.4 ± 25.2%). *H. ducreyi* demonstrated antiphagocytic activity for both primary neutrophils and macrophages when compared with the antiphagocytic control strain *Yersinia pseudotuberculosis* YPIIIpYV and its nonantiphagocytic derivative YPIII. There was no difference in the ability of neutrophils or macrophages from Double Pustule-formers and Double Resolvers to phagocytose *H. ducreyi*, suggesting that the local environment of the lesion contributes to outcome.

0163

The Caribbean HIV/AIDS Crisis: Addressing Prevention

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Objective: The purpose of the study was to assess effects of a prevention tool on reducing HIV/AIDS risk behaviors among female adolescents in the Caribbean.

Methods: This randomized study assigned 100 female adolescents (n=100) to a 1-session control (drug use/abuse) group, or a 1-session HIV risk reduction intervention. An adapted 37-item instrument was used to measure participants' opinions on sexual risk variables. Participants were assessed at pretest and posttest for sexual risk.

Results: The mean age of participants in the control group was 16.22, and mean age of participants in experimental group was 17.56. Repeated measures ANOVA identified a statistically significant change from pretest to posttest on the variable for sexual attitudes between groups. The control group had the same pretest and posttest mean of 3.57. The intervention group had means of 3.60 pretest and 3.94 posttest. Less than 10% of the females had ever been tested for HIV. Overwhelmingly, participants were concerned about a lack of confidentiality in the health care system.

Conclusion: Our study concluded that in the Caribbean, HIV/AIDS prevention programs should consider the broader cultural and social context of sexuality on sexual behaviors. A specific focus on changing sexual attitudes is critical to program development. It is important that young women become comfortable with their sexuality, and learn necessary skills for negotiating responsible sexual encounters.

0164

Using Chlamydia Positivity to Estimate Prevalence: Evidence from the Chlamydia Screening Pilot, England

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Objective: *Chlamydia trachomatis* is the most common bacterial sexually transmitted infection in England and can have serious sequelae in women, including PID, ectopic pregnancy, and infertility. Published data from the Chlamydia Screening Pilot in Portsmouth and the Wirral found prevalence among 16-24 year old women at 9.8% (95%CI: 9.3-10.3) and 11.2% (95%CI: 10.3-12.1), respectively. Studies have suggested that chlamydia positivity can be used to estimate prevalence in large screening programmes. This study assessed the use of positivity as a proxy measure for prevalence.

Methods: Using data from the Chlamydia Screening Pilot, we selected all testing episodes with a known test result from 16-24 year old women tested for genital chlamydial infection via a urine sample at family planning (FP), genitourinary medicine (GUM), general practice (GP), and youth clinics (N = 16,595). We calculated positivity as the number of positive tests divided by the total number of tests and compared this to the previously reported prevalence in this population.

Results: We found an overall positivity of 9.4% (1,147/12,242; 95%CI: 8.9-9.9) in Portsmouth and 11.0% (479/4,353; 95%CI: 10.1-11.9) in the Wirral. This was slightly lower, but not statistically different ($p<0.05$), to the published prevalence. Positivity varied by health setting, age, and with symptoms. When comparing positivity to the reported prevalence within these groups, estimates of positivity were not statistically different ($p<0.05$). Positivity was not compromised by the percentage of repeat tests that were positive because few women were tested more than once and the testing period was only twelve months.

Conclusions: We conclude that positivity may be a valid proxy measure for prevalence, regardless of health setting. This not only minimizes the reporting burden of uniquely identifying individuals tested through large scale screening programmes, but also allows more rapid monitoring of changes in the burden of disease.

0165

The Effect Of The Menstrual Cycle And Hormonal Contraception Use On The Detection Of Genital *Chlamydia Trachomatis* Infection In Urine Samples Using The Ligase Chain Reaction (LCR).

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Objectives: In 2003, an opportunistic chlamydia screening programme will be phased in across England. Previous studies suggest the detection of *Chlamydia trachomatis* (Ct) may be influenced by menstrual cycle or combined oral contraception use (COC). Our aim was to further evaluate the effect of the menstrual cycle and COC on Ct detection, and to determine possible implications for chlamydia screening.

Methods: Opportunistic screening of women, aged 16-24, attending general practice (GP), family planning (FPC) and genitourinary medicine (GUM) clinics, in Portsmouth and Wirral. Urine samples were tested by LCR. 801 women [167 GP; 290 FPC; 344 GUM] completed a questionnaire detailing contraception use and first day of the last menstrual period (LMP), on or within one day of their test. Logistic regression adjusting for age, contraception and location (GP, FPC, GUM) was completed.

Results: 106/801 (13%) of women (mean age 20yrs) were chlamydia positive, [7% GP, 10% FPC, 19% GUM]. 42% Ct positives and 41% Ct negatives were using COC; 15% Ct positives and 18% Ct negatives were using other hormonal methods; and 28% Ct positives and 27% Ct negatives using non-hormonal (NHC) methods of contraception. Contraception use ($p=0.487$) and LMP ($p=0.994$) did not vary by age.
A variation in Ct positivity mid-cycle was observed. In those using NHC Ct positivity increased from 13% at 1-2wks since LMP, to 20% at 2-3wks. In those using COC there was a decrease in Ct positivity from 18% to 13% over the same period. There was no significant association between Ct positivity and LMP for those using COC or NHC.

Conclusion: Variation in the time from last bleed did not significantly alter the detection of Ct, whether or not patients were using COC or NHC. Ct screening tests can be offered, irrespective of the time from last bleed.

0166

Is Circumcision Status Associated with Herpes Simplex Virus Type 2 Infection in Men? Data from the National Health and Nutrition Examination Survey, 1999-2000

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Objectives: To estimate the prevalence of circumcision in men aged 14 to 49 years in the United States and to examine the association between male circumcision and herpes simplex virus type 2 (HSV-2) infection.

Methods: Serum samples and data about circumcision status were collected from persons examined during a national probability survey in 1999-2000¾ the National Health and Nutrition Examination Survey (NHANES). The questionnaire module concerning circumcision status and sexual behaviors was administered using audio computer assisted self-interview in a private examination room. Sketches of a circumcised and an uncircumcised penis were used as visual aids. The

survey participant indicated his circumcision status by selecting the picture illustrating the appearance of his penis. Serum samples were tested for antibodies to HSV-2 using the type-specific immunodot assay.

Results: The overall examination rate for the survey was 76.3%. Data on circumcision status were available for 1645 men. The prevalence of circumcision was 81.1% (95% CI 78.1-84.3%). Circumcision prevalence was similar across age groups, but differed by race/ethnicity, with non-Hispanic whites having the highest prevalence (90.9%; 95% CI 87.4-94.4%) and Mexican Americans the lowest (39.0%; 95% CI 32.7-46.4%). Among the 1138 men who reported one or more lifetime sex partners, HSV-2 serology results were available for 1052 (92%) persons. The lifetime number of sex partners was similar in circumcised and uncircumcised men. The HSV-2 seroprevelence was 11.2% (95% CI 8.5-14.7%) in circumcised and 13.8% (95% CI 9.3-20.5%) in uncircumcised men (p=0.4). Analyses by additional demographic characteristics and risk behaviors indicated that circumcision status was not associated with HSV-2 infection.

Conclusion: The prevalence of male circumcision is high in the US. In this population, circumcision status was not associated with HSV-2 antibody. Although some studies indicate that circumcision is protective against HIV infection, our data do not indicate it is protective for HSV-2 infection.

0167

Intervention Lessons Learned from Commercial Sex Workers in a County Jail

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Objectives: Historically, North Carolina has ranked among the top five states in the nation for the number of infectious syphilis cases reported. In 2002, Durham County reported the highest number of primary and secondary cases in the state. Interviews by Disease Intervention Specialists indicated that commercial sex workers (CSW) were driving the outbreak. The goal was to garner information about attitudes, knowledge and beliefs relative to syphilis in order to target resources to this core transmitter population.

Methods: Two focus groups with 8 self-identified CSW were conducted in the Durham County Jail. The participants ranged in age from 19 to 44 years; 50% were African American and 50% were Caucasian; 100% admit crack use; 50% stated they had previously tested + for a STD. Each session was audiotaped for transcription. Qualitative analysis was conducted to detect trends.

Results: Commercial sex workers identified several barriers to outreach activities. 1) All participants stated that religion is a deterrent to seeking help. 2) While aware of community condom distribution sites,_most did not access them due to the hours of availability,_perceived cost of condoms,_and possible intimidation for access. 3) Participants were not interested in a full education session with each street outreach encounter. They cited drug use and the need to generate income as competing interests.

Conclusions: Linking faith initiatives with STD prevention may not be an effective means of reaching this core transmitter population. Lifestyle should be considered when selecting condom distribution sites. STD education sessions should be conducted in drug-free settings. More efforts are needed to involve CSW in design of outreach and risk reduction activities.

0168

Use of Sexual Network Analysis to Investigate STI Outbreaks

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Objective. To describe the sexual networks of gonorrhea cases during an outbreak, including those networks formed by attendance at common social venues, and correlate gonorrhea risk with an individual's position in network structure.

Methods: Social network techniques were used in addition to traditional case control and case and sex partner (contact) investigations during a gonorrhea outbreak. Demographic and risk behaviour data were collected for all individuals with gonorrhea and their named contacts. Inspired by social network analysis, we also asked respondents participating in the case control study to name popular "pick-up joints" which they patronised. Epi Info v.6, was used to enter and recode data, while UCINET V and Pajek were used to complete the network analysis.

Results: Sexual network analysis of case (n=107) and contact (n=75) links revealed components ranging in size from 1 - 39 individuals. In the case control study, attendance at a bar was found to be significantly associated with gonorrhea infection when compared with uninfected controls. Individuals who reported patronising the bar had significantly higher information centrality (Kruskal-Wallis, p=0.05) within each of their components. When social interaction links through the bar were considered, together with sexual links, a large network of 80 individuals was constructed, (44% of the population), conjoining all eight of the largest networks containing four or more individuals.

Conclusions: These preliminary results suggest that requesting names of meeting places and analysing individual centrality may be useful in understanding and preventing the spread of sexually transmitted infections.

0169

National Seroprevalence and Trends in Herpes Simplex Virus Type 1 and Type 2 Infection in the United States, 1988-2000

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Objectives: To estimate, and describe trends in, the seroprevalence of herpes simplex virus type 1 (HSV-1) and type 2 (HSV-2)

infection in the United States using data from two National Health and Nutrition Examination Surveys that were conducted in 1988-1994 (NHANES III) and in 1999-2000 (NHANES 1999-2000).

Methods: Serum sample and questionnaire data, collected for persons aged 14-49 years, were analyzed to estimate the seroprevalence of HSV-1 and HSV-2, and to describe changes between the two surveys. The same type-specific immunodot assays were used for both surveys, utilizing purified glycoproteins gG-1of HSV-1 and gG-2 of HSV-2 as antigens to detect antibodies to HSV-1 and HSV-2, respectively.

Results: The age-adjusted seroprevalence of HSV-1 was 62.0% (95%CI 59.5-64.5%) in NHANES III and 59.6% (95% CI 57.0-62.4%) in NHANES 1999-2000. With one exception, HSV-1 seroprevalence was similar in all age, gender and race/ethnicity groups between the two surveys. For HSV-2, the age-adjusted seroprevalence was 21.3% (95% CI 19.4-23.3%) in NHANES III and 17.6% (95% CI 15.4-20.0%) in NHANES 1999-2000, a significant overall decrease of 17% between the two surveys. Further analyses indicated that the largest significant decreases were in younger age groups (74% decrease in 14-19-year-olds, from 5.8% to 1.5%; 48% decrease in 20-29-year-olds, from 17.2% to 8.9%), in males (35% decrease, from 17.2% to 11.2%) and in Mexican Americans (46% decrease, from 22.5% to 12.1%).

Conclusion HSV-1 seroprevalence in NHANES 1999-2000 was similar to seroprevalence in NHANES III. HSV-2 seroprevalence has significantly decreased between the two surveys in adolescents and young adults, in males, and in Mexican Americans. These findings are consistent with data from behavioral surveys that suggest sexual risk behaviors have decreased in US adolescents in the 1990s. Continuation of adolescent risk behavior reduction programs may continue to reduce HSV-2 infection in these populations.

0170

Declining AIDS Mortality due to HAART?

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Objective: From 1995 onwards, mortality due to AIDS has been declining in most industrialized countries, probably due to the success and widespread use of highly active antiretroviral therapy (HAART) which became available in 1996. However, mortality trends are also influenced by the HIV incidence pattern in the past, which must be taken into account when evaluating the effect of HAART. We aimed to evaluate the impact of AIDS on mortality rates in Amsterdam from 1981 to 2000 and to distinguish the effects of HIV incidence patterns from the influence of HAART on AIDS mortality.

Methods: Using AIDS Surveillance and Statistics Netherlands data, the impact of AIDS on mortality in Amsterdam was evaluated. HIV incidence patterns among homosexual men participating in the Amsterdam Cohort Study (ACS) and attending the Amsterdam Sexual Transmitted Infections (STI) clinic together with the time from seroconversion to AIDS and death (in the pre-HAART era) were used to estimate the course of the AIDS epidemic without HAART.

Results: Up to 2000, 1611 individuals died due to AIDS in Amsterdam. AIDS was the most important cause of death among men aged 25-54 years from 1989 to 1996. After 1992 deaths from AIDS declined. Also the estimated course of the AIDS epidemic, without the benefits of HAART, showed a decline in AIDS mortality from 1992 onwards, but it was not as strong as the observed decline. Taking into account the HIV incidence over calendar time we estimated that in Amsterdam 331 deaths among homosexual men were prevented by HAART between 1996-2000.

Conclusions: Both HIV incidence and HAART resulted in a decline in mortality due to AIDS. This finding indicates that when evaluating the effect of HAART on mortality, changes in HIV incidence must be considered.

0171

Two Classes of Haemophilus Ducreyil Dsra Bind Multiple ECMS

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Objective: Extracellular matrix (ECM) proteins, such as fibronectin and laminin, are possible adherence targets for H. ducreyi. The outer membrane protein DsrA is involved in serum resistance, attachment to keratinocytes, and mediates binding to the ECM protein vitronectin. In our studies, we have discovered that certain strains of H. ducreyi express a second type of DsrA, which we have termed DsrA class II. Indeed, although both classes of DsrA share a common C-terminal sequence, their N-terminal sequence is very different. Thus, this study was performed to ascertain whether both classes of DsrA proteins function similarly to confer binding of H. ducreyi to ECM proteins.

Methods: dsrA Class II was amplified by PCR from H. ducreyi strain CIP542 from the ATCC, cloned, sequenced, and expressed in H. influenzae. To determine the efficacy of both classes of DsrA to bind ECM proteins, H. ducreyi strains expressing either classes of DsrA, an H. ducreyi strain deficient in expression of DsrA class I, or H. influenzae strains expressing unique classes of DsrA, were incubated with purified ECM proteins. The cells were washed, subjected to SDS-PAGE under reducing conditions, and subsequently immunoblotted with antibodies to ECM proteins.

Results: Although there is an apparent difference between the sequence of both classes of DsrA, H. ducreyi and H. influenzae strains expressing both types of DsrA were capable of binding fibronectin, laminin and vitronectin. Conversely, isogenic mutant strains deficient in DsrA class I expression did not bind any of the ECM proteins tested.

Conclusions: Both classes of DsrA bind ECM proteins such as fibronectin, vitronectin and laminin. Future studies will determine if DsrA Class II mediates binding to keratinocytes, which part(s) of the DsrA proteins are responsible for the adherence phenotypes, and whether DsrA can be used as a typing tool or a vaccine candidate.

0172

Vaginal Lubrication: Implications of Cultural Norms and Behaviors for the Acceptability of Vaginal Microbicides.

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In order to develop acceptable vaginal microbicides for the prevention of HIV and other sexually transmitted infections (STIs), it is important to understand how women and men would use such products, and to tailor development and introduction accordingly. In particular, since some microbicides may lubricate the vagina when used during sex, it is important to better understand individuals' and couples' practices and preferences regarding lubrication during sex. We initiated a qualitative study to explore norms, preferences, and practices regarding lubrication during sex. The first component, a review of the literature pertaining to vaginal lubrication, highlights the need for more research in this area. Existing literature covers a range of topics, including vaginal practices; hygiene and sexuality; women's sexual function and dysfunction and the role of vaginal lubrication; women's perceptions of vaginal discharge and health-seeking behavior with regard to perceived "abnormal" vaginal discharge; and the acceptability of contraceptive and HIV/STI prevention technologies, including condoms, spermicides, and vaginal microbicides. The second component consisted of in-depth interviews conducted with 13 women's health professionals from 9 countries in Africa, Asia, North America, and Latin America. Informants' perspectives on norms and behaviors regarding lubrication during sex in the countries in which they work were solicited. Interview data highlight that diverse personal and cultural factors shape preferences and practices regarding lubrication during sex, and may ultimately impact the acceptability of vaginal microbicides.

0173

Recall of LCx Neisseria Gonorrhoeae Assay and Shortage of LCx Chlamydia Trachomatis Assay, July-December 2002: Impact on Public Health Screening Programs

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Objective: On July 18, 2002, Abbott Laboratories (Abbott Park, IL) voluntarily recalled 32 lots of its LCx *Neisseria gonorrhoeae* assay due to a potential loss of sensitivity. Simultaneously, Abbott experienced difficulties in providing quality-assured LCx product for both *Neisseria gonorrhoeae* and *Chlamydia trachomatis*. A review of the events that occurred in the CDC-funded Infertility Prevention Program after the July 18 recall and reagent shortage was performed to determine the impact on testing services.

Methods: Public Health laboratories and program managers in project areas affected by the recall and shortage were contacted to determine: 1) the availability of LCx reagents for *N. gonorrhoeae* and *C. trachomatis*; 2) how many specimens for gonorrhea and chlamydia testing were backlogged; 3) solutions for testing backlogged specimens and maintaining ongoing screening operations; and 4) plans for transitioning to alternative amplified testing technologies.

Results: Immediately following the recall approximately 50,000 specimens were backlogged awaiting testing for *N. gonorrhoeae*. Two large screening programs were forced to suspend chlamydia and gonorrhea testing for up to six weeks. There were significant delays in processing specimens, reporting results, and initiating treatment of positive clients. Extensive communication among the amplified test manufacturers, FDA, and CDC occurred to help restore the provision of high quality testing for patients. On January 10, 2003, Abbott announced its decision to discontinue manufacturing LCx assays and to cease supplying product after June 30, 2003. Based on these experiences and facts, all of the affected Public Health laboratories ultimately transitioned to alternative testing technologies.

Conclusions: Public Health screening programs for chlamydia and gonorrhea depend on the availability of accurate and timely laboratory test results. The recall and shortage of Abbott LCx reagents have brought an increased awareness to the need for ensuring the provision of quality-assured testing reagents for chlamydia and gonorrhea.

0174

Intravaginal Immunization with CpG Oligodeoxynucleotides as an Adjuvant Induces Local and Systemic Immune Responses and Protection Against Genital HSV-2 Infection

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Objective: Although the genital tract has been considered a poor inductive site for immunization, especially with non-replicating antigens, genital immunization may be important for protection against sexually transmitted infections. Recently, we and others showed that immunostimulatory CpG oligodeoxynucleotides (ODNs) serve as potent adjuvants for mucosal immunization. The purpose of this study was to determine whether intravaginal (IVAG) immunization with recombinant glycoprotein B (gB) of herpes simplex virus type 2 (HSV-2) plus CpG ODN can induce specific immunity and protect against genital HSV-2 challenge.

Methods: C57BL/6 mice were immunized intravaginally with gB plus CpG ODN, gB plus control non-CpG ODN, or gB alone. Three weeks later, mice were challenged intravaginally with HSV-2 at a dose of 10^4 pfu/mouse and monitored daily for genital pathology, survival and vaginal viral load. Vaginal washes, nasal washes and serum were taken following immunization to measure mucosal and systemic levels of anti-gB IgA and IgG.

Results: Mice immunized intravaginally with gB plus CpG showed significantly higher survival and lower pathology scores following genital HSV-2 challenge than mice immunized with gB plus non-CpG ODN or gB alone. Additionally, vaginal viral titres were 2 logs lower in the gB plus CpG group 2 days after infection. Mice immunized IVAG with gB plus CpG had significantly higher levels of anti-gB IgA and IgG in the serum and vaginal washes compared to mice immunized with

gB alone. Interestingly, mice immunized IVAG with gB plus CpG also had the highest levels of specific IgG in the nasal washes however, no IgA was detected in the nasal washes of any group.

Conclusions: These results clearly show that the genital tract is capable of generating a protective immune response after intravaginal immunization. They also demonstrate that a non-replicating antigen is able to induce such a response when administered with an appropriate adjuvant.

0175

The Influence of Parental Warmth and Demandingness on Adoelscent Female Sexual Repretoire

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Objectives: To examine associations among parenting style (parental warmth and demandingness) and adolescent sexual behaviors.

Methods: 102 14-17 year old adolescent female-parent pairs were recruited from primary care adolescent clinics and completed a self-administered questionnaire on parenting style; parental warmth (7 items; á= 0.86) and parental demandingness (2 items; á=0.70). Sexual repertoire (SR) was measured by a 5-item index summing lifetime and recent occurrence of received and given genital touching, received and given oral-genital contact, and coitus. Interactions between age/warmth and age/demandingness were examined for all models and reported for $p<0.10$. Statistical analysis used logistic regression adjusted for age.

Results: Parental warmth and demandingness were uncorrelated (r=0.03). Older age was associated with recent and lifetime occurrence of many sexual behaviors and larger SR. Low parental demandingness was associated with recent breast touching by partner ($p< 0.005$), recent genital touch - received ($p < 0.09$) and a larger repertoire of recent sexual behaviors ($p < 0.002$). Parental demandingness was not significantly associated with any measure of lifetime sexual behavior. Low parental warmth was associated with lifetime genital touch - given ($p < 0.005$), lifetime genital touch - received ($p < 0.003$), and larger repertoire of lifetime sexual behaviors ($p < 0.05$). As age increased, recent oral-genital contact was more likely as parental warmth decreased.

Conclusion: Parenting style is associated with different patterns of sexual behaviors. Warmth may identify more enduring and pervasive aspects of parent-child relationships while demandingness may reflect temporally recent parental efforts to control adolescent sexual behavior. Interactions between age and parenting style may reflect parental reaction to perceived loss of behavioral control relative to their child's increasingly autonomous behaviors. These findings may be important in developing risk protection programs with parents of young adolescent women.

0176

Cost-effectiveness of on-site antenatal screening to prevent congenital syphilis in rural Eastern Cape Province, South Africa

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Objectives: Maternal syphilis remains common in South Africa's Eastern Cape Province, and congenital transmission accounts for a major portion of adverse pregnancy outcomes. On-site screening and same-day treatment might avert greater numbers of congenital syphilis cases than current practice by avoiding specimen transportation and follow-up treatment visits.

Methods: We evaluated the cost-effectiveness of on-site antenatal syphilis screening using decision analysis, as part of a joint CDC-University of Transkei (UNITRA) study to assess the feasibility and performance of on-site screening in the rural Eastern Cape in early 2002. We compared two on-site screening strategies—qualitative rapid plasma reagin (on-site RPR) and treponemal immunochromographic strip assay (on-site ICS)—to current practice of transporting specimens to off-site labs for quantitative RPR testing with confirmatory *T. pallidum* hemagglutination assay (off-site RPR/TPHA). We reviewed clinic records of 1245 women at the six study clinics using on-site RPR and on-site ICS, and of antenatal clients of six control clinics using off-site RPR/TPHA. Performance of on-site testing was evaluated by testing the same specimens at the UNITRA study reference lab using quantitative RPR with confirmatory TPHA and ICS. To estimate labor and supply costs of the screening strategies, we collected time-motion data, salary data, and costs of test materials.

Results: The model predicted that on-site ICS would avert 82% of congenital syphilis events that would be expected in Eastern Cape study clinics at a cost of US$90 per averted case, assuming 6.3% of women had true positive test results. In comparison, off-site RPR/TPHA would avert 55% of CS cases at a cost of US$80 per case, and on-site RPR would prevent just 46% of congenital syphilis outcomes at a cost of US$99 per case.

Conclusions: In settings with a high prevalence of maternal syphilis, on-site antenatal screening with ICS may be a cost-effective approach to reduce the incidence of congenital syphilis.

0177

Event-specific Correct Condom Use

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Objectives: To assess condom practices among at-risk adolescents and young adults

Methods: Sexually active patients attending 2 adolescent and 2 STD clinics and 1 emergency room in Indianapolis and Boston reported coitus-specific sexual behaviors using a calendar recall and structured inter-

view. Condom use was measured with 5 questions designed to determine whether the condom was: a) on before genital-genital contact, b) on after genital-genital contact, c) on during the entire coital time, d) held during withdrawal, e) did not break/tear. Each question was scored No = 0 and Yes = 1; a value of 5 reflected correct condom use. GEE was used to adjust for within subject intercorrelation.

Results: 382 men and 463 women (mean age 20 years) reported 4130 and 3670 coital events respectively; 24% of events (1875) were condom protected. When condom use was reported, males and females reported similar rates of use for the entire coital act (89%) but males were less likely to report holding onto the condom during withdrawal (57% vs 73%, $p < .001$). Females reported condom break/tears during 6% of coital events compared to males' reports of 11% ($p < .06$). Condom use was completely correct (score = 5) only 48% of the time when condoms were used. Breaks/tears were the single reason for incorrect use in 15% of the events.

Conclusions: 100% correct condom use occurred in only half of the coital events for which condom use was reported. Although condom breakage or tearing may represent the most obvious and serious risk for lack of effectiveness of condoms in preventing transmission of sexually transmitted infections, other factors also appear to contribute to risk for infection. Measurement of specific condom practices remains crucial in research about condom effectiveness.

0178

Mathematical Models of STI in the Era of Sexual Networks

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Mathematical models are very useful to study a wide array of epidemiological and methodological issues. Due to the recognized importance of the individual (egocentric) and population (sociometric) network structure on sexually transmitted infection (STI) and HIV/AIDS, complex individual based models of partnership formation and dissolution (network or micro-simulation) are increasingly being used. Although network models may intuitively be appealing, especially to non-modelers, they do not come without a cost. At the moment their level of complexity has exceeded the level of data currently available for most populations.

The objective is to give a brief overview of the range of mathematical models (from deterministic to network models) currently being used in STI epidemiology, to discuss their uses (type of questions they can help to address), their limitations and the types of results obtained with each. A special emphasis will be given to the difficulties encountered during the development of network models. These difficulties have implications for the interpretation of the model results, for the formulation of future research questions and the type of data required for model validation. The importance of different egocentric (mean sexual activity, concurrency, etc) and structural measures (centrality measures, number of components etc) of networks on the spread of diseases will be discussed along with the difficulties to estimate these measures in the field and to compare them with model results. In conclusion, a summary of future research questions will be proposed.

0179

Assessment of the Optimal Prime-Boost Strategy to Generate a Protective Immune Response Against HSV-2 in the Genital Tract

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Objectives: We previously demonstrated that intranasal (i.n.) immunization with recombinant adenovirus vectors expressing herpes simplex virus glycoprotein B (AdgB) or recombinant gB protein plus CpG oligodeoxynucleotides (ODN) as an adjuvant can induce mucosal immune responses and provide protection against intravaginal (IVAG) HSV-2 infection. In this study, we compared various intranasal prime-boost combinations of these immunogens in order to determine the optimal immunization strategy for inducing mucosal immunity and protection against vaginal HSV-2 challenge.

Methods: C57BL/6 mice were primed and boosted with AdgB or gB plus CpG in various combinations. Three weeks following immunization, mice were challenged with $2X10^4$ pfu/mouse of HSV-2 and monitored daily for genital pathology and survival. Serum and vaginal washes were taken following immunization to measure gB-specific IgA and IgG production. Vaginal washes were also taken after challenge to measure viral load and IFN-gamma production.

Results: Priming with AdgB followed by gB plus CpG ODN boost provided the greatest protection against IVAG HSV-2 infection. The level of virus in vaginal washes of this protected group was also at least a log lower than nearly all of the other groups after challenge. Interestingly, this group also showed the lowest levels of IFN-gamma in day 2 post-infection vaginal washes. All prime-boost combinations induced significant levels of anti-gB IgA and IgG both locally in the vaginal washes and systemically in the serum.

Conclusions: The results presented here indicate that priming with a recombinant viral vector and boosting with a recombinant subunit protein plus CpG is the most effective way of inducing a mucosal immune response and providing protection against genital HSV-2 infection. This approach should be of use when designing vaccination strategies for other sexually-transmitted infections, such as HIV-1.

0180

Effects of Local Mucosal Delivery of CpG Oligodeoxynucleotides on Infiltration of Antigen Presenting Cells into Vaginal Tissue of Mice

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Objective: Antigen presenting cells (APCs) detect infection through pattern recognition receptors (PRRs), such as Toll-like receptors, leading to activation of innate and adaptive immune responses. When compared to other mucosal sites, the vaginal tract is relatively deficient in APCs. As such, the vaginal tract has not been regarded as an effective immunization site. Given that the vaginal tract is frequently exposed to numerous pathogens strategies for boosting local immune responses are of considerable interest. We and others have shown that CpG

oligodeoxynucleotides (ODNs) can serve as a potent mucosal adjuvant. The purpose of this study was to examine the kinetics and magnitude of APC infiltration into vaginal tissue following local intravaginal CpG ODN delivery.

Methods: Following treatment with Depo-Provera, immuno-stimulatory CpG ODN was administered to the genital tract of female C57Bl/6 mice. At different time points following CpG ODN delivery, vaginal tissue was dissected, placed in OCT and immediately frozen in liquid nitrogen. Cryostat sections were air-dried for 36-48 hrs, fixed in cold acetone, and stained using the immuno-peroxidase technique.

Results: We observed a significant increase in the levels of MHC class II expression within the vagina as early as 9 hours post CpG ODN delivery. The infiltrating APCs appeared to be of the myeloid lineage; we observed a significant increase in the number of cells expressing the CD11b and F4/80 markers as early as 4 hours post stimulation, while CD8a levels remained low at these time points. The expression levels of all markers assessed in the study returned to normal levels within 6 weeks post-stimulation.

Conclusions: Our results indicate that vaginal delivery of CpG ODN induced a rapid infiltration of APCs into the vagina. Further studies are needed to assess functional contribution of these APCs towards the generation of immune responses.

0181

Immunization Against Viral Pathogens by Antigen Presentation at the Rectal Mucosa

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Objectives: Investigate the induction of antigen-specific local mucosal and systemic immune responses following intrarectal priming with antigen-encoding adenovirus-based vectors expressing viral antigens in protection against mucosal herpes and vaccinia challenge.

Methods: C57Bl/6 mice were primed intrarectally with adenovirus vectors expressing either ovalbumin (AdOVA) or HSV glycoproteinB (AdgB). Secretions and serum were analyzed at 3 weeks by ELISA for OVA- or gB-specific antibodies. *In vivo* cytotoxicity assays at 4-120 days defined the kinetics of primary CTL responses in local mucosa (intestinal lamina propria, ileac lymph node) and systemic sites (spleen). At 30 days after priming, mice were challenged vaginally with recombinant vaccinia virus expressing OVA (VaccOVA) or with a lethal dose of HSV. Spleen and ovaries were harvested at six days after challenge and VaccOVA from homogenates titered on CV-1 cells. Vaginal secretions were obtained on day 2 after HSV challenge to identify infected yet asymptomatic animals and mice were evaluated on days 1-21 for clinical symptoms.
Results: 11/11 mice immunized with AdOVA were protected against VaccOVA challenge. All control mice were susceptible. 24/27 mice immunized with AdgB survived lethal HSV challenge compared to 3/16 in controls. *In vivo* CTL showed specific lysis of >95% by day 7 post-infection at both local and systemic sites. Mice still exhibited >60% specific lysis locally and systemically at 4 months post-infection. AdOVA- and AdgB-primed mice had wide variations in antigen-specific mucosal IgA and IgG as well as systemic IgG, IgG1 and IgG2a antibody titers and levels did not relate to the level of immune protection against virus challenge.

Conclusions: After intrarectal gene delivery, the levels of antigen-specific antibody in serum or secretions does not account for protection against mucosal virus challenge. CTL activity peaks 7-10 days after intra-rectal priming and may last as long as 120 days at both local and systemic lymphoid sites.

0183

Reducing the STD Burden in Rural Malawi: STD Screening, Case and Contact treatment, Counseling and Condom Promotion

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Objectives: Reductions in STDs following community based screening have been rare. The association between STD and HIV acquisition continues to be an imperative to decrease the population-based STD burden in high prevalence areas such as Malawi.

Methods: Urine-based GC and CT LCR screening was offered to adults in 3 rural Malawi communities. During 2 time periods, 14-22 months apart, participants provided urine, received their results, and positives were treated, counseled and given condoms. Additional treatment packets were given to each case to facilitate their sexual partner(s) treatment. Urine-based HIV antibody testing was conducted during the second period only.

Results: During the 2 screening periods 1227/1751(70.1%) and 857/1178(72.8%) of subjects consented to STD screening. There were no demographic differences between those groups that were screened or refused screening at both visits, were screened at only one visit, or were LTFU at either visit.

Pathogen	Period 1 (n=1227)	Period 2 (n=853)	Incidence n=698
GC	56 (4.6%)	9 (1.1%)	9 (1.3%)
CT	64 (5.2%)	10 (1.2%)	10 (1.4%)
GC and/or CT	110 (9.0%)* **	16 (1.9%)* (p<.001)	16 (2.3%) ** (p<.001)
HIV	N/A	133/692 (19.2%)	N/A

The HIV prevalence of 27.7% among the 119 persons STD screened during the 2nd period only, differed from the 17.5% of 573 who were also STD screened at the initial period

(p<.01). Self reported condom use increased following the first screening period from 11.5% to 13.0%(p<.01).

Conclusions: The baseline burden of GC and CT in these rural communities was high at 9%. There was a > 4-fold decrease in the community STD prevalence ~1-2 years following screening, treatment of cases and sexual partners, counseling and condom provision. This data suggests that participation in this screening program may have had an effect on HIV prevalence, but this will only be determined during subsequent community-based HIV screening periods.

0184

Prevalence of High-Risk HPV and Concordance Between Self- and Clinician-Collected Specimens

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Objective: To compare the performance of two different collection methods for HPV DNA testing in older women undergoing routine cervical cancer screening.
Methods: Before routine cytologic screening 931 women (77% Hispanic) self-collected a sample of vaginal secretions using a Dacron-tipped applicator that was immediately placed into specimen transport medium. A gynecological examination was then performed which included sampling the cervix for HPV using a conical brush type device and obtaining a liquid based cytology specimen. HPV samples were tested for high-risk types of HPV using Hybrid Capture II (HCII). HCII positive samples are being typed using the Roche line-probe assay. Women who were HPV positive or had abnormal cytology were referred for colposcopy, as was a 10% random sample of women with normal results.

Results: A significantly higher prevalence of HPV was identified with self-collected (SC) compared to clinician-collected (MDC) samples in all age groups. Also, SC samples were negative in 31% of women with high-risk HPV infections identified using MDC samples, including 1 of 3 women with CIN 2,3 and 2 of 4 women with CIN 1.

Age	n	MDC HPV +	SC HPV +	Both HPV +
25-34	97	19.6%	22.7%	15.5%
35-44	284	8.5%	12.3%	6.3%
45-54	426	7.3%	10.6%	4.2%
55+	122	4.1%	4.8%	3.3%
Total	931	8.5%	11.6%	5.9%

PCR typing of HPV positive samples is currently being performed to investigate the reasons for lack of concordance between MDC and SC samples including cross-reactivity with low-risk HPV of the vulva and vagina.

Conclusions: Self-sampling does not identify all cervical high-risk HPV infections, including some associated with CIN lesions. This together with the overall higher rates of HPV DNA positivity using SC samples suggest that better self-sampling methods are needed.

0185

The Canadian Guidelines For Sexual Health Education, A Mechanism for Creating Effective Sexual Health Education Programs and Preventing STI/HIV Among Canadians

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Objective: Since its publication in 1994, the *Canadian Guidelines for Sexual Health Education* have not been up-dated or reprinted. Our goal was to obtain feedback from professionals working in the area that clearly substantiates the need to develop a revised version of the *Guidelines* that reflect the eclectic needs of its users.

Methods: Two focus groups were conducted in March 2003 to review the revised *Guidelines* and to obtain feedback from those working in the area. Participants were asked to respond to a list of questions surrounding content, layout, language, readability and ways to further improve the document to ensure that it meets the needs of its intended audience.

Results: All participants agreed that the revised *Guidelines* were more navigationally-friendly, more readable and the information was usable, logical and transportable. However, the majority saw the need to clearly define the intended audience. Many felt it should be less high jargon and saw an inherent language bias permeating throughout the document and hence thought the document should be more grassroots, less school-focused, using plain language; the language and examples used should reflect the diversity of its audience. Many expressed the need to reorganize the document to improve overall flow and recommended that areas such as determinants of health, conflict management and other relevant behavioural models be included.

Conclusion: Recommendations received from these focus groups will go towards significantly improving the utility and functionality of the *Guidelines*. It is anticipated that the final version of document will be release in July 2003. Participants realized that the recommendations were copious and varied according to profession, therefore, cannot all be incorporated into this document, hence it was suggested that compendiums to the *Guidelines* be developed at a later date.

0186

Comparison of the real-time multiplex PCR (M-PCR) with the ligase chain reaction (LCR) assay for the detection of Chlamydia trachomatis and Neisseria gonorrhoeae in urine specimens

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Objectives: To develop a real-time M-PCR assay for the simultaneous detection of *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG). The clinical performance of the real-time M-PCR assay was compared with the LCR assay (LCx CT/NG, Abbott Laboratories, Abbott Park, IL) using urine specimens.

Methods: A total of 96 urine specimens from 39 female and 57 male patients were tested for the presence of specific CT and NG DNA sequences using the LCR and a real-time M-PCR. Sequence-specific detection of M-PCR amplification products was based on TaqMan technology and achieved by using the real-time Rotor-Gene 3000 instrument (Phenix Research Products, Hayward, CA).

Results: The real-time M-PCR assay had a detection limit of 1 - 5 genome copies for NG and 1 elementary body for CT. Both LCR and real-time M-PCR were positive for 13 specimens containing both NG and CT DNA as well as for 36 specimens containing CT DNA alone. The real-time M-PCR had one false negative result for NG. One specimen tested negative by LCR but was positive for CT by real-time M-PCR. Using LCR as the standard, the M-PCR sensitivity and specificity for CT were100% and 95%, respectively. Similarly, the M-PCR for NG detection had a sensitivity of 97.4% and specificity of 100%.

Conclusions: The performance characteristics of the real-time M-PCR assay for the detection of CT and NG in urine specimens were found to be similar to those of LCR. The real-time M-PCR assay is rapid, the specimen volume lower, and requires fewer post amplification product manipulations than LCR. The ability of the real-time PCR cycler to analyze a maximum of 72 urine specimens per run offers an alternative for testing non-invasive specimens for CT and NG. In addition, the real-time M-PCR assay could prove to be even more cost effective by having the potential for quantitative detection of up to four target organisms from a single specimen.

0187

Using quality indicators to evaluate STI care in Family PACT (Planning, Access, Care and Treatment), a comprehensive family planning reproductive health care program

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Objective: Detection and treatment of sexually transmitted infections (STIs) are critical components of contraceptive management and family planning reproductive health care. The CDC and the Office of Population Affairs are currently developing a set of quality indicators around reproductive health and STI care. This study examines the feasibility of using available data sources in measuring performance on several pilot STI quality indicators in Family PACT, a publicly funded, comprehensive family planning reproductive health care program in California.

Methods: Three data sources covering fiscal year 2000/2001 were used to evaluate performance with respect to the STI indicators: claims data from clinician, laboratory and pharmacy providers, chart review data and laboratory data. Seven STI indicators, as well as chlamydia (CT) positivity, were examined for female clients: documented STI risk assessment; CT screening coverage; documented treatment within 14 days of CT test; documented partner management; CT cases with re-testing within 4 months of initial infection; CT re-infection; and documented STI/HIV counseling among clients tested for CT.

Results: The positivity of CT was 7.1% among females age 25 and under. Seventy-seven percent of clients were assessed for STI risk within the past 24 months. Sixty percent of females age 25 and under were screened for chlamydia in the past year. Nearly 80% of CT cases were treated within 14 days of CT test. Approximately ninety percent of female CT cases had documented partner management. Of female CT cases, 33.3% were re-tested for CT within 4 months of initial infection, and 10.3% were re-infected. Seventy-two percent of female CT cases had documented STI counseling at test visit.

Conclusions: Measurement of STI quality indicators based on administrative, laboratory and chart review data can aid in the assessment and evaluation of STI services integrated within a family planning reproductive health care program.

0188

High prevalence of ciprofloxacin resistance in Neisseria gonorrhoeae strains isolated in Guangzhou, China

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Objectives: To determine the prevalence of ciprofloxacin resistance (Cip^R) isolates of *Neisseria gonorrhoeae* from patients attending the Department of Dermatology and Venereology, Third Affiliated Hospital of Sun Yat-Sen University of Medical Sciences, Guangzhou, China, and to characterize the *gyrA* and *parC* mutations and Lipoprotein (Lip) subtypes of these strains.

Methods: Minimal inhibitory concentrations (MICs) of ciprofloxacin were determined for gonococcal isolates by the agar dilution method. The quinolone resistance determining regions of the *gyrA* and *parC* were

amplified by PCR and the amplicons sequenced. Lip subtypes were determined by PCR and DNA sequencing.
Results: From January to June 2001, 101 of 106 (95.3%) strains of *N. gonorrhoeae* isolated from symptomatic patients (7 females and 94 males) exhibited in vitro resistance to ciprofloxacin. Ciprofloxacin MICs of Cip^R isolates ranged from 1.0 µg/ml to >16 µg/ml. Mutations that conferred amino acid alterations at Ser-91 to Phe and Asp-95 to Gly of GyrA were detected in 76 Cip^R strains (75.2%). The most common ParC alteration, Ser-87 to Arg, was found in 50 strains (49.5%). The majority of Cip^R strains (47 of 101, 46.5%) belonged to Lip subtype 17c, and the second most common Lip subtype was 14d, present in 23 of 101 (22.8%) strains.

Conclusions: A high prevalence of ciprofloxacin resistance was observed among gonococcal strains isolated in Guangzhou, China. The molecular basis of this quinolone resistance was found to be double *gyrA* mutations plus *parC* mutation(s). These findings are consistent with the results of similar studies elsewhere.

0189

The role of Quantative PCR in diagnosis of intraepithelial displasia associated with HPV infection.

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The role of Quantative PCR in diagnosis of intraepithelial displasia associated with HPV infection. O.A. Katkhanova. Kuban center of Dermatology & Venerology. Krasnodar, Russia. Epidemiological and experimental studies have clearly shown that the high risk (16,18,31,45) human papillomaviruses(HPV)infection are strongly associated with anogenital intraepithelial displasia and plays a central role in uterine cervix carcinogenesis. Objective: To determine the diagnostic value of Quantative polymerase chain reaction (PCR) test in detection of HPV and the possibility to foresee the development of neoplasia (CIN) of the cervix. Methods: From 2000 till 2003 4075 women attending our sexually transmitted diseases department were screened using HPV DNA testing by PCR (basic method. And then those women, in whom the high risk HPV was determined, were examined using Quantative PCR test. Results: The HPV infection was demonstrated in 21,4%(1057): visible warts-14.5%(153), subclinical form - 26,5%(280), latent infection-59%(624).The data determination of quantative PCR estimation in patients suffering different forms of high risk HPV infection have shown that in the group with clinical manifestations the highest rate of the test was 102 ficellular DNA copies. During subclinical course the most patients had the concentration of DNA- 10 4. But it was not possible to find out any definite regularity because of the great range of data in population with latent form. The analyses were carried in 334 women with different forms of uterine cervix displasya. Max values -105-106 were registered in patients with cervical cancer, while the minimum ones 102- in the cases with CIN-1. So, we may conclude that the amount of cellular DNA was increasing with the disease increase. The concentration change data of DNA HPV while treatment are of grate interest. In 4 month, after corresponding complex therapy gradual reduction of DNA HPV concentration was observed till complete disappearance in 12-18 month. Conclusions: The use of Quantative detection of DNA HPV made it possible to define more precisely the etiological significance of our investigations, to find out the efficient correlative dependence of PCR value of the heaviness level of displasya process and to increase the reliability of the initial HPV screening.

0190

A Comparison of Two Syphilis Screening Protocols in the Robeson County, North Carolina Detention Facility

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Objectives: We evaluated two jail syphilis screening protocols in a jail with high rates of syphilis to determine which was most effective. Protocol #1 used existing medical staff to perform screening; counseling and protocol #2 used a dedicated staff person to conduct these activities. Methods: Four criteria were evaluated to determine which syphilis screening protocol was the most effective; 1) Which jail screening protocol identified more syphilis cases? 2) Which screening protocol identified the greater proportion of syphilis cases? 3) Which screening protocol is more cost effective? and 4) Which screening protocol resulted in the quicker treatment of those syphilis cases identified? Results: Protocol #2, which included hiring a Laboratory Technician as a full time syphilis screener and incorporating STAT RPR testing into the laboratory testing procedure was shown to be more effective in all four of the criteria used in evaluating the screening programs. Under the first criterion it was determined that almost twice as many persons were screened under protocol #2 (41%) as under protocol #1 (23%). Under the second criterion it was determined that protocol #2 identified more than three times the percentage of total cases (25%) than did protocol #1 (8.3%). Under the third criterion it was shown that the cost per case identified by protocol #2 ($1,590) was slightly more than half that of protocol #1 ($2,761. Under the fourth criterion it was found that protocol #2 resulted in patients identified with syphilis getting treated one day earlier than those in protocol #1.

Conclusions: Hiring specialized staff to conduct jail screening programs for syphilis in high morbidity areas may be an efficient and cost effective method of screening the highest number of detainees, identifying the most numbers of those who are positive for syphilis, and getting identified cases treated expeditiously and in a cost effective manner.

0191

Molecular typing of N. gonorrhoeae using clinical specimens for PCR diagnosis

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Background: Some laboratories in Canada are using PCR for patient diagnosis of gonorrhea. This presents a problem when there is an increase in the number of cases and there are no isolates for identifying clusters. There are molecular typing methods based on variability in *por* and *opa* genes using cultures. In this study, we evaluated *opa* and *por* typing using clinical specimens for PCR diagnosis.

Methods: 29 patient specimens were processed for the detection of *Neisseria gonorrhoeae* in New Brunswick, Canada using PCR. 23 patients were found to be

positive using the Cobas Amplicor CtNg assay and the NG 16s rRNA PCR Roche kit cultures were isolated on two of those patients and an additional four. To determine strain / specimen relatedness, *por* sequence analysis and *opa* gene fingerprinting were performed directly from patient specimens (including urine and cervical swabs).

Results: 26 of 29 specimens (including 23 from urine or swabs and 6 *N. gonorrhoeae* cultures) from 27 patients yielded PCR amplicons for RFLP determination. Twenty-four different *opa* types were identified including two matching pairs. 19 of 29 specimens (including 13 from urine or swabs and 6 *N. gonorrhoeae* cultures) from the 27 patients were analysed by *por* amplification and sequencing. Twelve different *por* sequences were identified including 5 groupings of identical sequences.

Conclusions: Obtaining PCR products directly from patient specimens was more difficult for molecular typing than for identification. The method requires optimization with PCR primers and conditions as well as testing more clinical specimens.

0192

Development of a Real-Time PCR for Genital Ulcer Disease (GUD) with an Evaluation with Vaginal Microbicides

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OBJECTIVES: To develop a real-time multiplex-PCR for Treponema pallidum (TP), herpes simplex virus types 1/2 (HSV1/2) and Haemophillus ducreyi (HD) and to evaluate potential inhibition of microbicides on the assay. METHODS: PCR primers/probes were adapted from the Roche Molecular Systems multiplex-PCR. Each probe was labeled with an organism specific flourophore. For assay development, 1.0 ng/ul of DNA from each organism was extracted on the Roche MagnaPur LC robot. Serial 10x dilutions were made from each stock DNA (TP, HSV1/2, and HD) (to 10-4ng/il,) before PCR was performed on the ABI Prism7900HT. Reactions containing all 3 organisms were also analyzed. Microbicide inhibition was examined by adding pro2000 (p), buffergel, or placebo-gel to TP, HD or HSV1/2 stock DNA before robot extraction to final microbicide concentrations of 0%, 0.1%, 0.5% and 1%. Preparations were serially 10x diluted to 10-4. Each stock organism-DNA and dilutions were tested using the GUD real-time PCR for inhibition.

RESULTS: The sensitivity of HSV 1/2 PCR was 0.02ng/PCR, while the TP and HD PCR had sensitivities of 0.002ng/PCR. PCR reactions containing stock concentrations of all three organisms were reproducibly positive at 6.5ng/PCR. Within the same run, pro2000 (p), buffergel or the placebo gel added prior to the DNA extractions did not inhibit the PCR endpoints obtained with no microbicide.

CONCLUSIONS: The real-time GUD multiplex PCR is a sensitive method for detecting low concentrations TP, HSV 1/2, and HD even in the presence of microbicide products. Although the in vivo effects of microbicides are unknown, no significant inhibition of the PCR was observed in vitro when the DNA from a simulated patient swab sample was extracted on the Roche MagnaPurLC robot.

0193

Oral Syphilis in BC: Case Presentations

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A male in his early 40's presented with a rash on one leg for 2 weeks and a sore on the side of his tongue for 10 days. He gave a history of unprotected receptive rectal sex four months previously. On examination, there was a healing anal sore consistent with primary chancre and a rash on the left leg consistent with secondary syphilis. On the side of his tongue there was a whitish lesion that resembled oral hairy leukoplakia. This lesion was darkfield and DFA-TP negative, but PCR positive for *T. pallidum*. RPR was reactive 1/64, MHA-TP was reactive. The RPR was negative 4 months previously. These findings are consistent with a mucous patch.

A heterosexual male in his 30's presented with a lip lesion and a two week history of cervical adenopathy. He denied oral sex with anyone for 6-9 months. but admitted to sharing "crack pipes" with a number of individuals prior to the development of the lesion. On examination there was a 1 cm indurated lesion on his lip. This lesion was darkfield negative, but positive for both monoclonal DFA-TP and PCR for *T pallidum*. The RPR was reactive 1/16, MHA-TP was reactive. There was no previous serology. This lesion is consistent with a primary chancre.

A woman in her late 20's presented as a contact to early syphilis . She gave a history of mouth-to-breast contact but no penis-to-breast contact. On examination she was noted to have a 1 cm slightly indurated lesion on the breast involving the nipple. She complained of no genital symptoms but would not allow a genital exam. Her RPR was reactive 1/32, the MHA-TP was reactive 1 plus the FTA-ABS was reactive 3 plus. 4 years previously the RPR was non-reactive. This lesion on the breast is consistent with a primary chancre

0194

Ethical Issues in Partner Notification and Management Studies

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Objective: Evaluation studies on new strategies for partner notification and management are subject to the federal code of regulations for the protection of human subjects. These studies raise various ethical questions.

Methods: We searched the Medline database and reviewed the ethical issues that could be raised in the 10 most recent published studies. We -explored (a) whether sex partners of participants are considered human subjects and the implications for applying the federal regulations to obtain informed consent, (b) the potential for unintended consequences, including breaches in privacy; risk for abuse, violence, and breakdowns in relationships; and concerns about side effects of medications given in the studies, and (c)

the protections needed for partners who are minors, incarcerated, pregnant, or engage in sex work or male-to-male sex.

Results: Type (eg, identifiable, anonymous) and format (eg, use of identification numbers) of data collected on sex partners as part of the study are factors that influence whether sex partners are considered human subjects and whether informed consent is needed, including consent for notification and for data abstraction from medical records. The level of risk of the study influences whether a waiver of informed consent or of documentation of informed consent can be justified. To minimize unintended consequences, use of stringent procedures for handling study data, training clinical and research staff, and use of appropriate wording and delivery modes for notification and management of partners are needed. Waivers of parental permission or adoption of special procedures to protect vulnerable and special populations need to be justified and executed.

Conclusion: Adherence to ethical principles and federal regulations can be compatible with good research. Practices, such as collection and analysis of data on ethical questions and on their effect on generalizability of study results, can enhance compatibility of research goals and ethical principles.

0195

The Changing Epidemiology Of Syphilis In Washington, DC, 1994-2002

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Objective: To characterize the epidemiology of Primary and Secondary (P & S) syphilis in the District of Columbia.

Methods: We analyzed P & S syphilis surveillance data for 1994-2002 using STD*MIS, U.S Census Bureau population estimates, and Epi Info Version 6.03.

Results: In 1994 there were 178 cases (rate of 31.5/100,000) of P & S syphilis in the District of Columbia. The number dropped to 38 cases (rate of 6.6/100,000) in 2000, but then rose to 61 cases (rate of 10.7/100,000) in 2002. During 1994 to 1999, the male to female ratio ranged from 0.8 to 1.4, but increased from 2.8 in 2000 to 5.0 in 2002. In each year from 1994-2002, except 1995, individuals 30-39 years of age accounted for the largest percentage of cases (range: 31.0%-44.9%). In each year from 1994-2002, African Americans accounted for the largest percentage of cases (range: 71.7%-97.8%). During 1994 – 2002, the percentage of total cases reported in the age category 40-49 years gradually increased from 11.8% to 27.9%. During 2000 – 2002, while cases among the other races/ethnicities remained relatively stable, cases among whites increased from 2 to 11.

Conclusions: Following national trends, P & S syphilis decreased in the District of Columbia during 1994 - 2000 in both sexes, almost all age categories, and all races/ethnicities yet increased during 2000 – 2002, primarily in white males, most likely MSM. The epidemiology of P & S syphilis is changing and local health departments will need to adjust control efforts accordingly to meet the National Plan to Eliminate Syphilis goals.

0196

Trends in Incidence, Prevalence and Risk Factors for HIV Infection among Inner City Patients attending the Johns Hopkins Emergency Department from 1988 to 2001

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Objective: To determine the temporal trends in HIV prevalence, incidence and associated risk behaviors in adults attending the Johns Hopkins Hospital Emergency Department (JHH ED) from 1988 to 2001.

Methods: Identity-unlinked sero-survey studies were performed in 1988, 1992, 2000 and 2001 at the JHH ED. A median of 1577 (range 986 to 2544) patients was surveyed at each time point. Excess blood was tested for the presence of HIV antibody by EIA, confirmed by western blot, and assessed for HIV viral load by Roche Amplicor™. Additionally HIV positive samples from the 2000 and 2001 study were tested by the STARHS assay to estimate HIV incidence.

Results: The prevalence of HIV for patients attending the JHH ED initially increased from 6% in 1988 to 11% in 1992 and has subsequently remained stable at 11%. There was a significant trend in the percentage of patients who knew their HIV status, from 27% in 1988 to 81% in 2001 ($p<0.05$). The estimated HIV incidence rate in 2000 and 2001 was determined to be 1%. Newly infected individuals had a higher viral load (median 2.7×10^5 copies/ml) than chronically untreated infected individuals (4.6×10^4 copies/ml) ($p=0.05$). A greater percentage of HIV infected individuals in 2001 admitted to IV drug use (40%) and high-risk heterosexual contact (41%) than HIV infected individuals in 1988 (23% and 5% respectively). Additionally there was a decrease in the percentage of HIV infected men who acknowledge to having sex with other men from 1988 to 2001 (47% vs. 21%).

Conclusions: Inner city EDs may provide an opportunity to identify previously unrecognized HIV infection and provide education for an at risk population. The trends in risk behavior seen at the JHH ED reflect national trends with a decrease in MSM and increases in IVDU and high-risk heterosexual behavior.

0197

Risk Factors for Mucopurulent Cervicitis among Women with Bacterial Vaginosis

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Objective: Characterize risks and vaginal bacteria among women with and without mucopurulent cervicitis (MPC) enrolled in a randomized, placebo-controlled study of intravaginal *Lactobacillus* capsules for treatment of bacterial vaginosis (BV).

Methods: Women 14-35 y with BV defined by Gram stain were randomized to receive *Lactobacillus* or placebo. Cervicovaginal specimens were tested for *C. trachomatis* (CT) and *N. gonorrhoeae* (GC) by strand displacement assay. MPC was defined by presence of endocervical mucopurulent discharge or easily induced bleeding. Univariate relationships between MPC, subjects' characteristics, and specific vaginal bacteria were examined by presence vs. absence of specific bacteria (Chi-square) and quantity (Mann-Whitney U).

Results: Of 423 women enrolled with BV, 63 (15%) had MPC. Of these, 4 (6%) had CT and 4 (6%) had GC; 55 (87%) had neither. Adjusted risk factors for MPC are below. No association was seen for douching, race, smoking, or time to or frequency of last intercourse. Neither presence nor quantity of vaginal bacteria other than H_2O_2+ *Lactobacillus* was associated.

Characteristic		Adjusted OR	95% CI	P
Age, y	14 – 19	1.0	Reference	
	20 – 24	6.0	1.8 – 19.5	.003
	25 – 29	8.0	2.3 – 27.5	.001
	30+	10.4	3.2 – 33.1	< .001
Education ≤ 12 y		2.5	1.4 – 4.7	.004
New Male Partner, 30 d		3.0	1.5 – 5.9	.001
Female Partner, 30 d		5.9	1.3 – 26.7	.02
Oral Sex, 7 d		2.2	1.2 – 3.9	.01
Absence of H_2O_2+ *Lactobacillus*		2.9	1.3 – 6.3	.007

Conclusions: Among women with BV, most MPC was not associated with CT or GC. Older age, less education, some sexual behaviors, and absence of H_2O_2-producing *Lactobacillus* were independent risks. While some of these suggest sexual exposure to a causative factor, others (increasing age) do not. Our findings suggest that loss of H_2O_2-producing lactobacilli characteristic of BV is directly related to presence of MPC, and require further study.

0198

Comparison of Three Commercial Nucleic Acid Amplification Assays on Vaginal Swab Specimen for the Detection of Chlamydia Trachomatis Infection

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Objectives: 1)To compare test performance of three commercial nucleic acid amplification assays (NAAT) (Abbott Laboratories LCx, BD ProbeTec and Gen-Probe APTIMA Combo) for the detection of *Chlamydia trachomatis* on clinician collected vaginal swab specimens. 2) To compare test performance of ProbeTec NAAT between vaginal and urine specimens. 3) To compare test performance of the APTIMA Combo on clinician collected versus self-collected specimens.

Methods: Specimens from 406 women were collected at the municipal STD clinic. Clinician collected vaginal specimens were collected in a pre-assigned random order. A true positive was defined as a positive by two or more NAATs and a true negative was defined as negative on two or more NAATs. Sensitivity and specificity for each test was calculated based on these definitions.

Results: Overall, the prevalence of chlamydial infection was 4.7% (19/406). All three amplified methods on clinician collected vaginal swabs showed a sensitivity of 100% (95% confidence interval (CI) 79.1% -100%) and a specificity of 99.0% or higher (95% CI 97.2% - 99.9%). Tests performed on vaginal swab specimens had comparable sensitivities to those performed on urine specimens, with urine ProbeTec having a sensitivity of 87.5% (95% CI 60.4% - 97.8%) and specificity of 99.7% (95% CI 98.2%-99.9%). Results were comparable from self-collected vs. clinician-collected specimens using the APTIMA Combo.

Conclusions: Our limited evaluation indicates that vaginal swabs are comparable to urine specimens and may be a useful specimen for chlamydia screening using NAATs.

0199

Predicting Acquisition of C.trachomatis, N.gonorrhoeae, and T.vaginalis in a Non-Clinical National Sample of Young Military Women During their First Year of Service

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Objective: To evaluate sociodemographic, behavioral, and reproductive health factors predicting acquisition of C. trachomatis (CT), N. gonorrhoeae (GC), and T. vaginalis (TV) in a non-clinical, national sample of young women during their first year of military service.

Methods: During recruit training 2157 (94%) women volunteered to participate in an intervention to decrease STD acquisition and unplanned pregnancy (UP). At baseline (T1), all participants completed a self-administered questionnaire and were screened for CT, GC (LCxR applied to urine and self-collected vaginal swabs) and TV (Trich In-PouchR). Women with positive tests were treated. All participants were re-screened by questionnaire and the same STD tests at three months (T2, including a two-week leave) and

9-12 months (T3) after baseline. This study represents analyses of STD acquisition at either T2 or T3.

Results: Participants were primarily young, (mean age=19.2 years), single (92%), diverse (44% non-Caucasian), and sexually experienced (85%). At follow-up, 834 women had complete data on both assessments; 8% acquired an STD (7% CT, 1% GC, .5% TV), and 4% had an unplanned pregnancy. Sociodemographic, behavioral, and reproductive health factors that were significant ($p<.10$) at the bivariate level were entered into a backward stepwise logistic regression model while adjusting for intervention group participation and time between T1 and T3 assessments. Race/ethnicity [African American vs. Caucasian (AOR=1.65, 9% CI 1.02-2.67); Native American vs. Caucasian=5.29, 95% CI=2.08-13.49], number of steady partners [>3 vs. <1 (AOR= 2.14, 95% CI=1.28-3.56)], perception that sexual partner(s) had an STD [yes/possible vs. no (AOR=3.41, 95% CI=2.31-5.04)], pregnancy since recruit training [yes vs. no (AOR=1.81, 95% CI=1.15-2.82)] were associated with acquisition of STDs during the women's first year of military service. The Hosmer-Lemeshow Goodness of Fit Test, p=0.88, indicated an excellent model fit.

Conclusions: This study has important implications for developing STD prevention programs for young at-risk women.

0200

Computer Assisted Self-Interview and Face-to-Face Interview Modes in Assessing Response Bias Among STD Clinic Patients

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Objectives: Computer assisted self-interview (CASI) may minimize social desirability bias in the ascertainment of sensitive behaviors. Our objective was to describe the bias in reporting risk behavior in CASI compared to face-to-face interviews (FFI) among patients attending a public inner city STD clinic.

Methods: Patients presenting for STD walk-in services were randomly offered participation in a study focusing on mood and risk behavior. They were given a CASI-formatted behavior assessment, then saw a clinician for an FFI in which a series of questions on illicit drug use and sexual risk behaviors were comparable to those asked on the CASI. We used the Sign test to evaluate paired responses (CASI and FFI for the same participant) for evidence of reporting bias.

Results: 669 STD clinic patients (48% men, 91% black, 7% white) consented to participate and completed both interviews. Participants were more likely to report same sex contact (0.9% FFI vs. 2.5% CASI, $p=0.01$), rectal sexual exposures (0.35% vs. 20.0%, $p<0.0001$), orogenital contact (44.6% FFI vs. 56.3% CASI, $p<0.001$), and ≥ 2 sex partners in past month (as compared to a single partner) (39.4% FFI vs. 43.7% CASI, $p=0.001$) more frequently when questions were formatted in CASI. Women were similarly more likely to report the exchange of sex for money or drugs (14% FFI vs. 22% CASI, $p<0.0001$) with CASI formatted questions. However, there were no differences in participant response to questions on use of injection drugs and needle sharing with CASI compared to FFI.

Conclusions: Patient reporting of some sensitive sexual risk behaviors to STD clinicians is highly susceptible to social desirability bias, in contrast to illegal drug use behaviors, and may compromise the quality of clinical risk assessments. Integration of computer-based interview into clinic operations may improve the accuracy of the sexual risk assessment for STD clinic patients.

0201

Clinical Characteristics of Patients Diagnosed with HIV Infection in an Urban STD Clinic and the Diagnostic Impressions of Clinicians Unaware of their Sero-Status

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Objectives: STD clinics serve as a critical location for HIV case finding. Many HIV patients are diagnosed "opportunistically" as part of routine STD evaluations. We evaluated characteristics of HIV-positive patients attending 2 Baltimore public STD clinics, and the clinical impressions of healthcare providers who were unaware of their HIV status at that visit.

Methods: Patients who were not known to be HIV-positive and who underwent serologic testing for HIV were eligible. Logistic regression was used to describe the clinical and behavioral characteristics on the day of the HIV testing visit of those who were later found to be HIV-positive.

Results: Between 1/1998 and 10/1998, of 8152 HIV tests performed, 161 patients (63% men, 95% black) were newly diagnosed with HIV infection. 30% were active intravenous drug users. 15.5% were gay/bisexual. 19% presented specifically for HIV testing, 9% presented following partner referral for HIV contact and 40% presented because of STD-related symptoms. 81% had a history of a previous STD. 21% had a positive RPR/FTA-ABS, 11% were positive for *N. gonorrhoeae*, and 23.5% of men were diagnosed with NGU. In multivariate analysis, other predictors of having a positive HIV test included skin rash [OR 3.7(1.7; 8.3)], generalized lymphadenopathy [OR 2.7(1.4; 5.0)], and having a positive RPR/FTA-ABS [OR 2.6 (1.4; 4.8)]. No other STI predicted concomitant HIV infection. After adjusting for syphilis contact, previous history of syphilis, and current RPR/FTA status, patients who were later diagnosed with HIV infection were more likely to be treated empirically for syphilis based on clinical suspicion [OR 3.1 (1.3; 7.6) despite negative serologies.

Conclusions: In a setting with high HIV and syphilis morbidity, clinical signs of HIV may be misinterpreted by seasoned clinicians as attributable to syphilis. Rapid testing algorithms for both HIV and syphilis may optimize case finding of both infections.

0203

Partner Notification and Referral: Gender Differences in Rates of Infection for Syphilis, Gonorrhea, Chlamydia, and Nongonococcal Urethritis Contacts

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Objectives: Partner notification and referral service (PNRS) is an important patient educational service and disease control strategy for syphilis (SY), gonorrhea (GC), and chlamydia (CT) infections. We compared the predictive value of PNRS in the diagnosis of the specific STI generating the referral, in contacts to SY, GC, CT, and nongonococcal urethritis (NGU).

Methods: We reviewed data from medical electronic records captured for 1782 patients presenting for STI clinical evaluation as a definite or suspected contact to SY, GC, or CT/NGU between January and October 1998. During this time, field staff notified and referred contacts of SY, while patient referral was standard for GC, CT and NGU. Odds ratios using logistic regression were calculated for contacts testing positive for the specific infection with which they had contact.

Results:

	MALE CONTACTS				FEMALE CONTACTS			
	SY	GC	CT	NGU	SY	GC	CT	NGU
DEFINITIVE								
n	250	156	216	N/A	246	166	N/A	264
OR(CI)	3.9(2.8;5.4)	1.3(0.7;2.6)	1.5(0.9-2.4)	3.8(2.8;5.1)	9.3(6.4;13.5)	0.9(0.5;1.5)		
SUSPECTED								
n	83	65	49	N/A	52	147	N/A	88
OR(CI)	3.0(1.7-5.4)	1.0(0.7;1.6)	1.9(1.5-2.3)*	2.1(1.0;4.3)	7.8(5.4;11.3)	0.9(0.4;2.0)		

*small sample size. **adjusted for condom use.

Conclusions: Though PNRS by field staff for syphilis was highly predictive of infection in both male and female contacts; this was not consistently true for other bacterial STIs. A standard approach to PNRS for all STIs may not be optimal. Innovative strategies that take into account the unique characteristics of each STI should be developed and tested to maximize patient education, interruption of disease transmission, and diagnosis of asymptomatic infections.

0204

DETERMINATION OF IgG ANTIBODIES TO SGN-00101 (HspE7)

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Objective: Stressgen's immunization platform combines heat shock proteins (HSP) with protein antigens from viral or cancer targets into a single recombinant fusion protein. Preclinical data demonstrate the ability of Hsp fusion proteins to induce antigen-specific cytotoxic T lymphocytes, Type 1 cytokines and anti-tumor immunity. HspE7, a fusion of full length E7 antigen from Human Papilloma Virus (HPV) Type 16 onto full length Heat Shock Protein 65 from BCG (Hsp65), is in clinical development for treatment of diseases caused by HPV. HspE7 has shown activity in the treatment of anal intraepithelial neoplasia (AIN) and genital warts. The relationship of an HspE7 induced B-cell response to clinical outcome is unknown. This study reports the development of a dose and time dependent B cell response to the injection of HspE7 in patients with HPV induced AIN.

Methods: Patients with high grade AIN received either placebo or 100 mcg HspE7 subcutaneously once a month for three months. Six months after the first dose, all patients received 500 mcg HspE7 once a month for three months. ELISA's were developed to determine total IgG against E7, Hsp65 and HspE7 in sera collected at various time points throughout the study.

Results: Preexisting titers to all antigens were observed. Placebo treatment did not induce an increase in serum IgG anti-Hsp65, anti-HspE7 or anti-E7 antibodies. IgG anti-Hsp65 and anti-HspE7 antibody responses induced by HspE7 were robust; they were long lasting and of high titer. IgG anti-E7 antibody responses were also observed but were of lower overall titer. Antibody responses to all three antigens were boosted upon repeat dosing.

Conclusion: Injection of HspE7 to patients with HPV induced disease induces IgG antibodies to the heat shock protein fusion and its component parts in a dose and time dependent manner.

0205

Syphilis infections increases HIV viral load in patients with detectable viremia

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Objectives: While syphilis has been shown to have an epidemiologic impact on HIV transmission, the biological effect of new syphilis infections in HIV-infected persons is unknown. We sought to determine the effect of incident syphilis infection and treatment on the HIV viral load of HIV-infected patients.

Methods: We reviewed San Francisco syphilis surveillance data in 2001 and 2002 and databases from public health clinics to identify HIV-infected patients with > 1 syphilis serology and an HIV viral load. We selected cases with laboratory data before syphilis infection, during syphilis treatment and follow-up.

Results: 40 cases were available, of whom 12 had adequate data. In 8 (89%) of 9 patients with detectable viremia there was an increase in HIV viral load from baseline, with 5 (56%) of 9 patients having a greater than 2.0 log increase. Upon syphilis treatment, 7

(78%) of 9 cases experienced a decline in viral load with 5 (71%) of 7 returning to baseline. In 3 (100%) of 3 patients with undetectable HIV viral load at baseline, there was no change in HIV viral load.

Conclusions: Incident syphilis infection in HIV-infected patients with detectable HIV viremia was associated with clinically significant increases in HIV viremia. These increases mostly resolved with syphilis treatment. In HIV-infected patients with suppressed viral load, there appeared to be little impact of syphilis infection. Because the infectiousness of persons with HIV is correlated with plasma HIV viral load, these findings suggest that persons co-infected with HIV and syphilis, may not only be more infectious for HIV due to syphilitic lesions but due to increases in plasma viremia. The clinical implications of increases in HIV viral load require further evaluation.

0206

Roche Combas Amplicor PCR Test Compared to Abbott LCx Test for Screening Male and Female Urines and Swab Specimens for Chlamydia Trachomatis and Neisseria Gonorrhoea

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Objective: To compare performance characteristics of Roche COBAS AMPLICORÔ Chlamydia *trachomatis* (CT) and Neisseria *gonorrhoeae* (NG) (PCR) assay to the Abbott LCxÔ (LCR) CT and NG assay.

Methods: A total of 179 urine and 177 swab specimens obtained from multiple sites were tested at Santa Clara County Public Health Laboratory (SCCPHL) by PCR in accordance with Roche COBAS AMPLICOR CT/NG Test method manuals. All specimens were tested in duplicate. Nineteen of the 179 urines were tested using the AMPLICOR® CT/NG Test (MWP). The 160 urines and 177 swabs were originally tested by LCR in accordance with Abbott LCx CT and NG package inserts. Collection and storage of specimens was performed in accordance to AMPLICOR/ COBAS AMPLICOR CT/NG Test procedure.

Results:

	Male urine		Female urine		Male urethral swab		Female cervical swab	
	CT	NG	CT	NG	CT	NG	CT	NG
Sensitivity	100%	96.9%	96.6%	91.2%	95.2%	100%	95.2%	100%
Specificity	100%	98.3%	98.0%	100%	100%	100%	100%	98.6%
NPV	100%	98.3%	98.0%	94.2%	98.0%	100%	96.4%	100%
PPV	100%	96.9%	96.6%	100%	100%	100%	100%	96.0%

Conclusions: Roche COBAS AMPLICOR CT/ NG Test exceeded or was with-in 5% of the comparative reference ranges of the COBAS AMPLICOR method manual and Abbott LCx package insert for female urine NG testing. Data from this study for male and female urine and swab specimens support the use of Roche PCR testing for the detection of CT and NG at SCCPHL. Roche includes an internal control for the purpose of avoiding false negative results, which is not available in the Abbott test.

0207

Samples and assays for N. gonorrhoae molecular testing

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Advances in non-culture, pathogen-specific molecular methods have revolutionized the diagnosis of sexually transmitted infections (STIs). These tests are mainly based on nucleic acid amplification technology and allow for testing of variety of samples including self-collected specimens (i.e. urine, swab and tampon). As the result, screening for STIs in non-clinic settings, have become highly desirable for detection of asymptomatic infections. Several commercial, as well as a number of in-house, assays are currently utilized for detection and confirmation of N. gonorrhoeae in laboratories across Australia. The focus of this presentation is to discuss these assays and their applicability in testing of various samples.

0208

Prevalence of Genital Chlamydia Trachomatis Infection in the General Population of Slovenia

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Objectives: One of the objectives of the first national survey of sexual lifestyles, attitudes and health in Slovenia was to estimate the prevalence of genital *Chlamydia trachomatis* infection in Slovenian adults aged 18-49 years.

Methods: Data were collected during 1999-2001 from a probability sample of the general population by a combination of face-to-face interviews and anonymous self-administered questionnaires. Respondents were invited to provide a first void urine (FVU) specimen for polymerase chain reaction testing for *C trachomatis* infection.

Results: 1447 individuals contributed FVU specimens (82.6% response among survey respondents, 55.3% among eligible). *C trachomatis* infection was diagnosed in 3.0% of men and 1.6% of women. Prevalence was highest in men and women aged 18-24 years (4.1% for both). Individuals who reported first heterosexual intercourse before the age of 16, unprotected sexual intercourse with at least one heterosexual partner during the preceding year, a concurrent heterosexual relationship during the preceding year, and five or more lifetime heterosexual partners had a higher prevalence of genital *C trachomatis* infection. The association was statistically significant only for five or more lifetime partners (adjusted OR 3.0; 95% CI 1.3-6.9; p=0.01).

Conclusions: A relatively high prevalence of genital *C trachomatis* infection among 18-24 year old Slovenians, in contrast with relatively low-risk sexual behaviour and low reported incidence rates of chlamydia infection, suggest that there may be serious gaps in diagnosing and treating the condition. The results provide strong support for the introduction of chlamydia screening in Slovenia.

0209

HSV-2 prevalence in pregnant women

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Objectives: To evaluate the specificity of the HerpeSelectTM 2 ELISA IgG (Focus, Cypress, California, USA) and to study the prevalence of HSV-2 specific IgG in pregnant women followed at the Virology Laboratory of the St Luc teaching Hospital in Brussels (Belgium).

Methods: Between december 2001 and march 2002, the serum of 1000 consecutive pregnant women were collected. Control sera from patients known to be infected by HSV-1 (n=22) and by HSV-2 (n=21) were added to the study. All sera were tested with the HSV-2 Focus ELISA based on the use of the recombinant gG-2 antigen. Procedure and interpretation were as recommended by the manufacturer.

Results: Control sera: the 21 HSV-2 controls were positive, all but one with an index value >2.0. Among the 22 HSV-1 controls, 18 were negative and four were positive. Among the 1000 pregnant women tested, 803 were negative (80.3%), 15 were equivocal (1.5%) and 182 were positive (18.2%). No statistical difference was observed according to the european (prevalence 17.3%) or the african (prevalence 22.2%) origin of the women.

Conclusions: the results obtained with the control sera indicate a high sensitivity of the Focus ELISA, as well as a capacity to discriminate between HSV-1 and HSV-2 infection. The HSV-2 prevalence in the studied population (18%) raises the question of the possible benefit of a specific preventive programme aimed at HSV-2 in pregnant women.

0210

Seroprevalence of Herpes simplex virus type 2 infection among women participating in a vaginal microbicide study in South Africa

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Objective:To determine the HSV-2 seroprevalence among women participating in a vaginal microbicide trial in two cities in South Africa as well as to investigate the rate and time of seroconversion during 12 months of follow-up.

Methods:Sera collected at enrollment were used as baseline specimen. Final visit sera from the women who tested negative at baseline were retested. Intervening sera from quarterly clinic visits were tested to determine the time of seroconversion. HSV-2 antibodies were detected using a commercially available kit (Gull/Meridian HSV-2 specificgG2 immunoabsorbent assay; Meridian Diagnostics, Cincinnati, OH).

Results:A total of four hundred women from Pretoria and Cape Town were enrolled in the study. The mean ages of the participants were 26.9 years and 29.0 years respectively. The HSV-2 seroprevalence and incidence is shown in the table below:

	PRETORIA(N=200)	CAPE TOWN(N=200)
No. tested	194	181
No positive - prevalence	135 (70%)	148 (82%)
Negatives that were retested	56	28
No. seroconverted -incidence	12 (21%)	5 (18%)

Defaulters: (3, Pretoria; 5, Cape Town) from the negative that were retested did not return for later study visits.

Excluded: (6, Pretoria; 19, Cape Town) because of insufficient serum.

In order to validate the "sticky" nature of African sera, twenty randomly selected samples were sent to the Focus Laboratories in California. The confirmatory inhibition EIA assay showed 100% correlation with the results of the MRL kit used in the study.

Conclusions: The HSV-2 seroprevalence observed in this group of women was higher than reported in other studies conducted among the general population in Africa. The study also showed high rates of seroconversion. The type specific antibody assay used in this study was verified by the inhibition EIA assay. These findings indicate that intervention strategies to prevent HSV shedding may reduce HIV transmission.

0211

Building a Sentinel Surveillance System for Sexually Transmitted Infections in Germany, 2003

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Objectives: Increases in several STIs have been reported from the US and Europe. Since 2001, only syphilis and HIV remain notifiable in Germany and reliable data on other STIs do not exist. A new STI surveillance system is set up in Germany to assess occurrence and trends of STIs and identify risk groups.

Methods: Through the sentinel system, data will be collected from local health offices, hospital-based STI clinics and private practitioners (dermato-venerology, urology, gynaecology or HIV). For every lab-confirmed infection of HIV, gonorrhoea, chlamydia, syphilis or trichonomiasis, physicians complete a standardised questionnaire regarding diagnosis, symptoms, presumed mode of transmission and demographic information. Additionally, the patients complete an anonymous questionnaire about sexual risk behaviour and the likely route of transmission. The patient form is matched with the diagnosis form using a unique identifier number. Data about genital warts and herpes are collected every 3 months. Data will be analysed regularly to detect STI trends.

Results: 57 local health offices, 12 hospital-based STI clinics and 154 private practitioners (among then 53% dermato-venerologists) from all federal states participate in the study. 135 of 223 (60.5%) sentinel sites are located in large cities. During the initial phase (October 2002 - March 2003), a total of 117 cases of STI have been notified, among them 31 syphilis, 21 chlamydia, 18 gonorrhoea, 18 HIV. 77/117 (65.8%) of the patients were male, the median age was 30.5 years. 16/39 (41%) female and 20/78 (26%) male patients were of foreign origin.

Conclusions: As STIs are expected to increase in Germany, a sensitive surveillance system is needed. Our sentinel system is expected to provide a base for early detection of STIs trends in Germany. In addition, information about sexual risk behaviour and risk groups will permit to target prevention at those most at risk for STIs.

0212

Laboratory Methods for Detection of Sexually Transmitted Infections (STI): Survey of Laboratories in Vilnius County, Lithuania

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Objectives: There are a number of laboratories performing STI- testing in Lithuania. However neither the exact numbers of laboratories nor testing volumes, methods or the qualifications of personnel are known. The present study aimed to investigate the STI diagnosing laboratories in the biggest Lithuanian County – the county of Vilnius.

Methods: Heads of 41 laboratories, certified for STI diagnosing, were asked to fill-in a standard questionnaire, concerning the technologies used for the diagnosis of C. trachomatis, N. gonorrhoeae, T. vaginalis, T. pallidum and microscopy of genital smears.

Results: The vast majority of laboratories were performing syphilis serology. Other STIs were diagnosed only by microscopy. N. gonorrhoeae and T. vaginalis are diagnosed by microscopy of methylene/gram stained smears and defining typical morphology. Culture of N. gonorrhoeae is not done and consequently no laboratory would routinely test for N. gonorrhoeae antimicrobial resistance. Just a few laboratories diagnose C. trachomatis infection. Physicians usually collect genital swabs. Nurses bring smears to the laboratory at the same day and highly qualified staff does reading of smears.

Conclusions: (a) STI diagnostics in Vilnius County is not optimal; (b) the majority of Vilnius laboratories are located very close to each other so STI testing could be centralized; (c) study results could provide an additional explanation for the declining numbers of STIs.

0213

Trend in Seroprevalence of HSV-2 in England between 1991 and 2000

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Objectives: To provide a recent estimate of adult HSV-2 seroprevalence in England using sera collected in 2000, and to assess changes in seroprevalence between 1991 and 2000.

Methods: In 2000, sera from an age-stratified general population sample of 3,645 adults (16 - 64 years; 43% male) were collected from routine diagnostic samples from nine public health laboratories in England. Sera were tested for HSV-2 using the FDA-approved MRL indirect ELISA IgG assay. In addition, stored sera from 2,259 adults collected in 1991 from four laboratories common to the 2000 sample, were also tested using the MRL assay to ascertain trends over time. Age, sex, geographical and temporal effects on HSV-2 seroprevalence were investigated using logistic regression in STATA 6.0. Seroprevalence estimates have been standardised using the English population age structure in 2000.

Results: In 2000, the overall age-standardised HSV-2 seroprevalence was 9.9% (95% CI 8.6% to 11.3%), and ranged between 5% and 15% in the laboratories sampled. Seroprevalence increased steadily with age and was higher in females than in males for all age groups. When data from the four common laboratories only were compared, the age-standardised seroprevalence was 11.7% (95% CI 9.9% to 13.4%) in 1991 and 12.2% (95% CI 9.7% to 14.8%) in 2000. After adjustment for age, sex and geographic location in a multivariable model, there was no effect of time on HSV-2 seroprevalence ($p = 0.4$).

Conclusions: This large, population-based survey from England indicated that the age-standardised HSV-2 seroprevalence in 2000 approached 10%. This may be an underestimate of the national seroprevalence as samples were not collected from London, where surveillance data indicate a higher disease burden. There was no evidence of a change in seroprevalence between 1991 and 2000.

0214

Acceptability of the Diaphragm among Women in an Ongoing Sexually Transmitted Infection Efficacy Trial

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Background: The diaphragm holds potential as a female controlled sexually transmitted infection (STI)/HIV prevention method, but because it has not been widely available in Kenya for two decades its acceptability in this population is unknown.

Objectives: To determine the acceptability, ease of use, hygienic care and the proportion of sexual acts 'protected' by the diaphragm in women enrolled in an STI prevention trial.

Methods: Participants enrolled in a diaphragm and condom only arm in the randomized controlled trial of the diaphragm to prevent recurrent gonococcal and chlamydial infection kept a detailed coital log

during the eight-week duration of follow-up. Information on diaphragm and condom usage, including acceptability, care and problems with use were recorded at biweekly follow-up visits.

Results: Of the 102 women recruited the median age was 25 years, 60% had 8 years of basic education and 68% were married. Baseline condom use was reported by less than 4%. Of the 53 women randomized to the diaphragm 41 (77%) used it during the trial. During the 8-week follow-up period the percentage of those who liked it increased from 80 to 100%. Participants recorded 2303 sexual acts, 1061 in the diaphragm arm and 1242 in the control arm. Diaphragm users had 84% of their sexual acts 'protected': 764 (72%) using the diaphragm, 78 (8%) by condom and 47 (4%) by both. Women enrolled in the control arm had 711 (57%) acts protected by the condom leaving 531 (43%) unprotected. No significant problems were noted with insertion, removal, cleaning, or storage of the diaphragm.

Conclusions: The diaphragm was acceptable to most women at enrolled in the randomized trial; problems with its use, cleaning and storage were not identified. Provision of a diaphragm resulted in more 'protected' sexual acts than in the condom alone arm.

0215

Surveillance System for STIs Based on Double Reporting: Trial in Kaunas County, Lithuania

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Objectives: The Lithuanian law of communicable diseases requires mandatory reporting of six sexually transmitted infections (STI), namely syphilis, N. gonorrhoeae, C. trachomatis infection, donovanosis, ulcus molle and HIV. The reporting, however, dos not function well. In order to optimize the reporting routines a trial with simultaneous physician and laboratory registration of STIs has been implemented in Kaunas County (Lithuania) since June 2001.

Methods: A monthly laboratory reporting system was implemented. New reporting forms for physicians were implemented particularly not allowing identification of the infected person. An inventory revealed that there are 32 laboratories testing for STIs in Kaunas County. Of these, 26 agreed to participate in the experiment.

Results: During the trial year the STI epidemiological department of Kaunas Public Health Center received 297 reports from laboratories and 215 reports from physicians, namely: 116 and 104 for syphilis, 95 and 76 N. gonorrhoeae infections, 86 and 35 C. trachomatis infection cases, respectively. The prevalence of syphilis was 1.5 %, N. gonorrhoeae infection 0.2 % and C. trachomatis infection 8.1 %.

Conclusion: The introduction of double reporting routines and anonymous forms proved to be effective in estimating the volumes of STI testing vs. positive cases, in revealing "non-reporting" physicians and improving STI surveillance routines. From March 2003 the double reporting system and new reporting forms became mandatory in Lithuania.

0216

Bi-Locus Sequencing for N. gonorrhoeae

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Objectives: To develop a sequence based highly discriminatory and high-throughput typing method for *N. gonorrhoeae* that can be used to study the molecular epidemiology of gonorrhoea.

Methods: Two variable outer membrane proteins of *N. gonorrhoeae* were chosen, Por and TbpB. Variable regions of their genes were defined and primers designed for sequencing, using single reactions. An evaluation of the method was carried out using a panel of gonococcal strains of diverse origin and phenotype, known linked isolates from sexual contacts, a random selection of surveillance strains and high-level antibiotic resistant strains (penicillin, tetracycline, ciprofloxacin) isolated in London during 2000. Results of the sequencing approach were compared to those obtained using *opa*-typing, a known highly discriminatory genotypic method for *N. gonorrhoeae*.

Results: The *por-tbpB* sequencing distinguished between the panel of isolates of *N. gonorrhoeae*. The pairs of strains from 10 known sexual contacts had the same *por-tbpB* genotype. Within a random selection of 183 surveillance strains, 82 *por* alleles and 35 *tbpB* alleles were determined, providing 98 *por-tbpB* genotypes. Analysis of the high level resistance isolates revealed diverse groups and clusters for PPNG, TRNG, PP/TRNG and QRNG.

Conclusion: The bi-locus sequencing method provides a high level of discrimination between strains of *N. gonorrhoeae* using only two different genes. The use of two genes increased the sensitivity compared to the use of either *por* or *tbpB* alone and the level of discrimination has been shown to be comparable to *opa*-typing. The typing method is high-throughput and gives precise and unambiguous data that is easily manageable. We believe that bi-locus sequencing of *N. gonorrhoeae* is applicable to large numbers of strains and can be used to examine sexual networks of transmission. The sequences (alleles) at each locus and the bi-locus genotypes, together with interrogation software, are available through www.mlst.net

0217

Revised Dutch Guidelines for the Prevention of Neonatal Herpes: Pragmatic Approach or Asking for Trouble?

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In the first edition of the Dutch guidelines for the prevention of neonatal herpes, published in 1987, it was suggested to no longer perform a cesarean section in women with a herpes recurrence at term. This suggestion was based on, both, literature data indicating a low risk transmitting HSV to the neonate in case of a herpes recurrence, and a low neonatal herpes incidence in the Netherlands. Based on a postal survey among all virological laboratories and a representative sample of obstetricians and paediatricians, the incidence for the period 1981-1985 was calculated to be 2.5 per 100.000 deliveries. The above named advice apparently was well taken: while in the period 1981 – 1985 the annual number of c-sections performed because of 'herpes' was approximately 80, a

second survey, covering the period 1987 – 1991, showed a significant decrease to approximately 20. However, the incidence of neonatal herpes has remained low over the past 15 years, i.e. 2-3 per 100.000 deliveries. In 1999 a guideline development group started to prepare a revision of the Dutch guidelines. It soon became evident, that it is extremely difficult, if not impossible, to introduce measures –other than Draconian ones (e.g. 'no more sex during pregnancy')- that will result in a significant decrease of a prevalence which is already very low. Also, it was found of utmost importance to produce guidelines that would be acceptable to the professionals involved in obstetrics, especially midwives. The above group has tried to 'play down' the problem of neonatal herpes in a scientifically responsible manner. The new guidelines were published in 2002 and will have to be reviewed after approximately 5 years. Guidelines will be briefly discussed, also in relation to those from the USA and some other countries.

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0218

The Haemophilus Ducreyi LspB Protein is Involved in the Secretion of the LspA1 Protein by this Pathogen

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The LspA1 and LspA2 proteins of *Haemophilus ducreyi* 35000 are two very large macromolecules that can be detected in concentrated culture supernatant fluid. Both of these proteins share homology with *Bordetella pertussis* filamentous hemagglutinin, particularly within the N-terminal region that is involved in the secretion of the latter macromolecule. The *lspA2* open reading frame is flanked immediately upstream by a gene, *lspB*, that encodes a predicted protein with homology to the *B. pertussis* FhaC outer membrane protein that is involved in secretion of filamentous hemagglutinin across the outer membrane. The *H. ducreyi lspB* gene encoded a protein with a predicted molecular mass of 66,573. RT-PCR analysis suggested that the *lspB* gene was transcribed together with the *lspA2* gene on a single mRNA. Polyclonal *H. ducreyi* LspB antiserum reacted with a 64 kDa antigen present in the Sarkosyl-insoluble cell envelope fraction of *H. ducreyi* 35000, a result indicating that the LspB protein is likely to be an outer membrane protein. Concentrated culture supernatant fluid from an isogenic *H. ducreyi lspB* mutant did not contain detectable LspA1. However, complementation of this *lspB* mutant with the wild-type *lspB* gene on a plasmid restored LspB protein expression and resulted in detectable amounts of the LspA1 protein being released into culture supernatant fluid. When evaluated in the temperature-dependent rabbit model of infection, the *lspB* mutant was attenuated significantly in its ability to cause lesions and was never recovered in a viable form from lesions. These results indicated that the *H. ducreyi* LspB protein is involved in the secretion of the LspA1 protein, and probably that of the LspA2 protein, across the outer membrane of this pathogen.

0219

Patients Preferences Towards HSV Identification and Attitudes Concerning the Acquisition of HSV During Pregnancy

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Objectives: To determine ·patients attitudes towards HSV testing during pregnancy. ·whether patients may be willing to modify sexual behaviour without knowing their serological status. · whether patients may be more willing to modify sexual behaviours with knowledge of their serostatus

Methods: 200 pregnant women over the age of 17, attending either an antenatal clinic or parenting classes completed anonymous questionnaires having read an information sheet detailing the effects of HSV during pregnancy, transmission and the possible consequences. Subjects graded how keen they would to be tested for HSV antibodies and have their partners tested during pregnancy. They were then given 4 scenarios with differing levels of serostatus characterisation and were asked for each scenario to grade how prepared they would be to abstain from sex (vaginal and oral) or use condoms.

Results: 73% of women were either "Very Keen" or "Keen" to be tested for HSV antibodies as part of their routine antenatal tests. There was a significant increased desire to be tested during pregnancy than in the non-pregnant state ($p=< 0.0$) and to have partners tested in pregnancy ($p<0.01$) There was a significant increase in the willingness to practice preventative measures when serological testing had been carried out compared to situations where no testing had been performed ($p= <0.01$).

Conclusion: Women are more likely to accept, and have an increased desire to have their partners tested if HSV testing is offered during pregnancy than in the non-pregnant state. Women are more willing to carry out preventative measures if they know their own and their partners serostatus.

0220

Sex work in India: patterns embedded in societal tradition

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Objective: Designing effective STI/HIV prevention programs for female sex workers (FSWs) requires an understanding of the link between individual, social and societal level factors that influence the organizational and behavioural patterns in sex work. The objective of this study was to compare the social, demographic and behavioural characteristics of women involved in the *Devadasi* traditional form of sex work with other types of FSWs in the Indian state of Karnataka.

Methods: Data were gathered through an in-person interview survey. Sampling was stratified by district and type of sex work. Selection of participants was done along with sex worker peers who participated on field teams as "guides".

Results: 1,598 FSWs were interviewed, with a completed response rate of 94.6%. 414 (26%) reported that they entered into sex work through the *Devadasi* tradition. Those in *Devadasi* form of sex work were: more likely to have begun sex work at age less than 15 (40.3% vs. 9.9%), less likely to be mar-

ried (2.2% vs. 22.0%) and more likely to have a "lover" (46.6% vs. 26.9%), more likely to be illiterate (92.8% vs. 76.9%), more likely to own a house (80.2% vs. 36.4%), more likely to entertain clients at home (68.6% vs. 14.9%), less likely to have worked in another district of Karnataka (4.6% vs. 18.6%) but more likely to have worked in another state (19.6% vs. 13.0%), less likely to report police harassment as a problem (7.5% vs. 49.1%) and reported more sexual partners in the past week (mean 8.3 vs. 5.1).

Conclusions: Compared to other FSWs, women involved in the *Devadasi* form of sex work differ substantially with respect to socio-demographic characteristics, engage in different organizational patterns of sex work and have different behavioural patterns. Consideration needs to be given to the implication of these differences in designing STI/HIV prevention programs.

0222

Inventory of the STI Management Strategies used by Dermato-Venereologists and Gynecologists in St Petersburg, Russia

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Objectives: STI management strategies in Russia are not standardized. During the year 2002 the specialists of St Petersburg worked out STI patient management algorithms. However, there is no knowledge about presently used STI patient management strategies. The aim of the present study was to investigate the strategies used in St Petersburg.

Methods: This is a questionnaire-based study distributed among 376 dermato-venereologists and gynecologists in St Petersburg.

Results: 237 gynecologists and 130 dermato-venereologists, which were 43,7±11 yrs old and had 13±9,2 yrs of professional experience, answered the questionnaire. Of all physicians answering the respective question, 8.8% had a microscope in their office. However, only 2.0% informed the patient directly, 5.1% only after consulting the laboratory and the remaining waited for the laboratory report. Only one fourth were informing the patient on results of the investigations at the first visit. Only a minor part of those who answered the questionnaire could list what genital infections belong to the STIs and how reporting should be done.

Conclusions: The present study indicates that knowledge about STIs is unsatisfactory. To improve preventive work, this issue has to be addressed.

0223

Risk behavior in Patients Following Attendance at Sexually Transmitted Disease Clinics - United States, 1997-1999

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Objectives: Although sexually transmitted disease (STD) testing, diagnosis, and treatment are the primary functions of STD clinics, an STD clinic visit represents a unique opportunity for delivering prevention messages. To guide these prevention efforts, we considered an STD diagnosis at a subsequent STD clinic visit a marker of continued risk behavior and analyzed characteristics of patients returning with STDs.

Methods: Medical records were reviewed for patients who sought STD care at five public STD clinics in Atlanta, Denver, Houston, and New Orleans in 1997 and 1998. Records for patients presenting during this period were reviewed through December 1999. An "initial STD" was defined as a non-viral STD diagnosis at the initial visit in 1997-1998 or within one month of the initial visit and an "STD at a subsequent visit" was defined as an STD diagnosed between one and 12 months after the initial visit.

Results: From January 1997 through December 1998, 64,625 patients attended these STD clinics: 59% were men (of whom 94% were heterosexual), 16% were under age 20, and 69% were black. Of all patients, 23,060 (35.7%) were diagnosed with an initial STD and 4,818 (7.5%) had an STD at a subsequent visit. Univariate analysis showed STDs at subsequent visits were more common among patients who: had an initial STD (12.9% vs. 4.9%, $p<0.01$), were under age 20 (10.3% vs. 6.9%, $p<0.01$), or reported exchange of sex for drugs or money (13.4% vs. 7.3%, $p<0.01$). Stratification by sex and race/ethnicity produced similar results.

Conclusions: Substantial numbers of STD clinic patients returned with STDs at a subsequent visit, suggesting the need for improved STD prevention counseling. Increased STD prevention efforts should focus not only on patients diagnosed with an STD, but also on patients under age 20 or reporting exchange of sex for drugs or money.

0224

Dramatic Increase in ciprofloxacin resistance in Scotland

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Objectives: To monitor the increasing level of ciprofloxacin resistance in Scotland and to determine regional variation to inform appropriate treatment policies.

Methods: Antibiotic susceptibility testing and phenotyping on all isolates of *Neisseria gonorrhoeae* throughout Scotland were performed in the national reference laboratory. Between 1991 and 2002, 6901 isolates of *N. gonorrhoeae* were tested.

Results: The overall level of ciprofloxacin resistance (MIC $\geq$ 1.0 mg/l) was 2.6% (178/6901). The level of "intermediate" resistance (MIC 0.125 to 0.5 mg/l) was 2.2% (150/6901). No ciprofloxacin resistant isolates were found between 1991 and 1994 although the level of intermediate resistant isolates increased from 0.5% (3/558) to 1.5% (5/326) during this period. Ciprofloxacin resistant isolates first appeared in 1995 at a level of 1.2% (5/424) and was relatively stable for a few years (0.8% in 1996; 1.1% in 1997; 0.6% in 1998) before increasing to 2.2% (12/540) in 1999, 2.8% (24/848) in 2000, 4.3% (35/817) in 2001and 11% (90/821) in 2002.

In 2002, ciprofloxacin resistant isolates were found in 11 of 12 Health Board areas and occurred mainly in men 82% (74/90). From eight Health Board areas that submitted more than 20 isolates the level of resistance varied from 2.9% (1/34) in the Highland region to 15.5% (37/239) in Greater Glasgow; the level of resistance was greater than 5% in six areas. Phenotyping indicated that the 37 resistant isolates in Greater Glasgow represented 13 serovar/auxotype classes but two classes (Bropt/NR and Bropyst/NR) accounted for 17 (46%) and 12 (32%) of the isolates suggesting that these strains are now endemic in the area.

Conclusions: Between 2001 and 2002 there was a dramatic increase in ciprofloxacin resistance throughout Scotland and resistance is now greater than 5% in many areas. Treatment with ciprofloxacin should be discontinued in these areas and ceftriaxone considered as an alternative.

0225

Modifying STD Risk Behavior Among Abused Minority Adolescent Women

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Objectives: This study builds on our behavioral interventions developed in the studies, "Modifying STD Risk Behavior among Minority Women" (NEJM, 1999, STD, 2002). These studies are unique in that they designed and evaluated culturally relevant, minority-women-specific interventions based upon the AIDS Risk Reduction Model (ARRM), and were shown to be effective through controlled randomized trials. These interventions are grounded in knowledge of the target populations' behavior and culture and use STD and detailed measures of sexual behavior as primary outcome variables.

Results of the first trial demonstrated that although the intervention was successful with the sample as a whole, sexually abused 14-15 year olds were not helped. Subsequent studies indicated physically or sexually abused adolescents who used drugs or alcohol (14-18 years) had the highest STD and unintended pregnancy rates and were not benefiting from the intervention. This study focused on reducing rates of abuse recurrence, STD and unintended pregnancy among a similar population by changing high-risk sexual behaviors, decreasing substance use and encouraging contraceptive use. Its primary goal was to expand risk-reduction interventions created in previous studies to further increase intervention efficacy for this particularly vulnerable, high-risk group.

Methods: An adolescent intervention, containing violence and contraception components in addition to sexual risk reduction was created and pilot tested. Participants included a convenience sample of 70 Mexican-and African American adolescent women, aged 14-18 years with a history of sexual or physical abuse and current STD.

Results: Preliminary findings indicate greater contraceptive use and lower sexual risk behaviors, substance use, abuse recurrence, unintended pregnancy and STD rates than previous studies.

Conclusions: Further testing through control-randomized trials is necessary to evaluate the effects of the adolescent intervention model versus enhanced counseling for this group on ARRM-related constructs, high-risk sexual behavior, substance use, abuse recurrence, contraceptive use, unintended pregnancy and STD.

0226

Sex Work in the UK and Europe: Changing Demographics, Changing Patterns

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Although there is no simple relationship between sex work and STI, workers in the industry are almost universally regarded as both vulnerable to acquisition and capable of transmission. Large variations in the shape and size of epidemics have been attributed to the role of prostitutes at key points in time, and research has been directed towards finding some key feature, or parameter, of sex work that will unlock the mystery. However, explanations are not going to be found within the essence of sex work or behaviours of the individuals, but within the social context in which sex work exists.

Within Europe, major changes have occurred including globalisation, European integration and social transformation in former "eastern bloc" states. At the same time there have been changes in women's employment, family structure and attitudes to sex. There are now more people selling sex, greater mobility of sex workers and clients, more men selling sex, and a growing "legitimate" adult entertainment industry. Policy on prostitution has changed, ranging from regulation in the Netherlands to criminalisation of clients in Sweden.

We have documented some of these changes through ongoing research with female sex workers. The most dramatic change has been the increased mobility of sex workers. At one project in London the proportion of migrant sex workers increased from 17% in 1985 to 78% in 2001. We were concerned that migrant workers may be more at risk of STI, but compared with non-migrant women they were less likely to have a history of STI or to use drugs, had similarly high levels of condom use, and the same low risk of a prevalent STI. The key differences related to access to health care including hepatitis B vaccination and cervical cytology screening. The impact of these changes will be discussed.

0227

Prevalence, Signs and Symptoms Mycoplasma Genitalium and Chlamydia Trachomatis Infection in Female STD-attendees and in Young Adult Women Attending for Pap Smear Screening

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Objectives: To compare prevalence, signs, and symptoms of Mycoplasma genitalium (Mg) and Chlamydia trachomatis (Ct) infections in female STD-attendees and to compare diag-

noses of sexual partners of those infected. A secondary aim was to compare microscopical signs of those Mg or Ct infected with an asymptomatic control group i.e. women 22 to 26 years old called for Papanicolau smear screening.

Methods: Women attending the Örebro STD-clinic from February through July 2000 were examined and tested for Mg and Ct. The Mg samples and the Ct samples were analyzed at Statens Serum Institut and at Örebro University hospital respectively. Wet smears and samples from the urethra and endocervix were microscopically examined. Urethritis was defined as more than 4 polymorphonuclear leucocytes (PMNL) in more than 4 high power fields (1000x). Cervicitis was defined as more PMNL than vaginal epithelium cells in vaginal wet smear. Fifty-nine asymptomatic women called for Papanicolau smear screening in autumn 2002 were in autumn 2002 tested and sampled as described above.

Results: The prevalence of Mg and Ct was 5.6% (26/464) and 9.7 % (45/464) respectively in the STD population and 0% (0/59) and 2% (1/59) in the control cohort. Four Mg infected women had a concurrent Ct infection. The double infected Wwomen with dual infection were excluded in comparisons. and oOf those chlamydial infected with Ct, 34% had relevant symptoms and 66% signs of cervicitis and/ or urethritis as compared to those with Mg infection where 23% had symptoms and 50% had signs (not significant but there were no statistical significant differences in symptoms or microscopical signs between the two infections (OR 0.56 95%CI 0.17 to 1.90 and OR 0.52 95%CI 0.18 to 1.55 respectively)). IWomen in the asymptomatic control cohort were less likely to have signs of urethritis and/or cervicitis (22%); OR 0.16 95%CI 0.07 to 0.42 compared to Ct infected, 22 and OR 0.31 95%CI 0.11 to 0.89 compared to the Mg infected% had signs of urethritis and or cervicitis, which is statistically significant less, than compared with those Ct or Mg infected (OR 0.16 95%CI 0.07 to 0.42 and 0.31 95%CI 0.11 to 0.89 respectively). Twenty-five male sexual partners to Mg infected women attended and 12/25 (48 %) were Mg-infected compared with 28/ 45 (62%) Ct-infected partners of 45 Ct infected women.

Conclusions: Mycoplasma genitalium and Chlamydia trachomatis infections in women are common in an STD-population. Both weare most often asymptomatic, but. Mmicroscopical signs of infection in cervix and urethra weare common. However, this which wasis not the case less common in an age-matched control cohort. Despite Although most women in the control cohort were in mid-menstrual cycle (day 14), only a few women had leucocytosis in their vaginal wet smears. Leucocytosis has been claimed as beingto be common pre-ovulatory and an argument against performing using wet smear examination in women attending for testing for detecting cervicitis. Although this sign has a rather low specificity, it was found to be significantly associated with infection both with C. trachomatis and M. genitalium STIs with and without symptoms, which statement the present study disproof. .

0228

Rapidly Increasing Ciprofloxacin Resistance in Neisseria Gonorrhoeae in England and Wales: Data from the National Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP).

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Objectives: To describe recent trends in ciprofloxacin resistance in Neisseria gonorrhoeae as part of the ongoing GRASP initiative in England and Wales.

Methods: Between June and August 2002, consecutive gonococcal isolates from 26 genitourinary medicine clinics (GUM) were systematically collected for antimicrobial susceptibility testing at one of two central reference laboratories. The minimum inhibitory concentrations of five antimicrobials were determined, including ciprofloxacin (0.002-0.125mg/l) extended range (0.125-32mg/l) tested as necessary. Clinical, demographic and behavioural data were collected for each patient included in the collection.

Results: 2209 GUM isolates were tested in 2002. The overall prevalence of ciprofloxacin resistance (¡Ý1mg/l) was 9.8% in 2002 compared to 2.1% in 2000 (p<0.0005). Distinct geographic heterogeneity in the prevalence of ciprofloxacin resistance was observed (p<0.0005). However, marked increases in ciprofloxacin resistance were seen in all regions. The highest prevalence was observed in the Northern and Yorkshire region, 20.5% in 2002 (vs 6.5% in 2000, p<0.0005). High prevalences were also observed in the South East 13.3% (vs 1.0% in 2000, p=0.001), Trent 12.4% (vs 3.8% in 2000, p=0.001) and the West Midlands 12.1% (vs 3.4% in 2000,p<0.0005). London, which previously had notably low prevalences saw a rapid increase in prevalence from 0.9% in 2000 to 7.2% in 2002 (p<0.0005). Increases in ciprofloxacin resistance have occurred irrespective of gender (p<0.0005), sexual orientation (p<0.0005) and sex abroad (p<0.0005).

Conclusions: Ciprofloxacin is currently the first line therapeutic choice for treatment of gonorrhoea in England and Wales. The rapid increase of ciprofloxacin resistance to >5% in all regions of England and Wales highlights the need for an urgent review of national treatment guidelines and emphasizes the utility of an ongoing active surveillance.

0229

A Comparison of Three Different Strategies to Treat Partners of Men with Urethritis

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Objectives: Because many partners of persons with STDs are not treated, alternative methods of partner treatment are needed. The purpose of this study was to compare patient-delivered partner medication (PDPM), which has not been well studied in men, with two types of partner referral methods.

Methods: Men who attended the Delgado STD/HIV Clinic in New Orleans with a diagnosis of urethritis between Jan 2002 and Jan 2003 were offered the study and 79% accepted. A quasi-experimental design was used to assign the men to one of three interventions: standard partner referral (PR), booklet-enhanced partner referral (BR) and

patient delivered partner medication (PDPM). Information about each partner was elicited from each index man at baseline and one-month using a computer-assisted interview.

Results: There were 453 index men reporting information on 726 partners. Index men were predominantly African American (96%), the median age was 25 (range 16-52), at baseline they reported a median of 2 partners in the last 60 days (range 0-20), 59.6% reported dysuria, 78.1% reported discharge and 86.1% had a positive test for either Chlamydia (14%) or gonorrhea (59.2%). The percentage of men who reported that their partners told them they took the medicine was highest in the PDPM group (PR 30.2% vs. BR 46.9% vs. PDPM 77.2%, $P < 0.001$). In multivariate analysis, men were more likely to report that their partners told them they took the medicine if they were > 24 years of age (R.R. 1.7 1.2-2.4), had < 2 partners at baseline (R.R. 2.2, 1.4-3.4), and received either BR (R.R. 2.2, 1.5-3.2) or PDPM (R.R. 9.6, 5.9 – 15.8) compared to PR. Index patients in PDPM were also more likely to have seen and talked to their partners than patients in PR.

Conclusion: Patient delivered partner medicine was better than booklet enhanced partner referral and both were better than traditional partner referral for assuring that partners of men with urethritis get treated.

0230

Sexual Function Problems and Help-Seeking Behaviour in Britain: Evidence from the British 2000 National Survey of Sexual Attitudes and Lifestyles ('Natsal 2000')

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Objective: To examine prevalence, duration and factors associated with sexual function problems reported by heterosexual adults.

Methods: Probability sample-survey of 11,161 men and women aged 16-44 years resident in Britain in 2000. Data collected by face-to-face and computer-assisted-self-interviewing. Outcomes included self-report of seven sexual function problems; 'any problems' (1+ months in past year) and 'persistent problems' (6+ months in past year).

Results: 34.8% (95% confidence interval 33.1%-36.4%) of men and 53.8% (52.3%-55.2%) of women reported experiencing sexual function problems in the past year. The three most common problems among men were lacking interest in sex (17.1%, 15.8%-18.4%), premature orgasm (11.7%, 10.6%-12.9%), and performance anxiety (9.0%, 8.1%-10.0%). Among women, lacking interest in sex (40.6%, 39.2%-42.1%), inability to experience orgasm (14.4%, 13.4%-15.4%), and painful intercourse (11.8%, 10.9%-12.9%) were most commonly reported. Persistent sexual function problems were reported by 6.2% (5.4%-7.1%) of men and 15.6% (14.6%-16.7%) women. For men (but not women), STI diagnosis in past five years was significantly associated with reporting any problems (age-adjusted OR 2.08, 1.35-3.21) and persistent problems (age-adjusted OR 2.08, 1.11-3.89). Of those experiencing sexual function problems, 32.5% (29.7%-35.3%) of men and 62.4% (CI 60.4%-64.3%) of women avoided sex as a consequence. Only 10.5% (8.8%-12.4%) of men and 21.0% (19.3%-22.7%) of women experiencing problems sought help, which, in most cases, was from their physician (63.8% (54.6%-72.1%) and 74.3% (70.1%-78.1%) of men and women respectively). In contrast, 9.2% (5.3%-15.4%) and 4.8% (3.2%-7.2%) of men and women respectively sought help from a GUM clinic.

Conclusions: Sexual function problems are common among British adults. While many avoid sex because of their problems, few seek professional help, possibly reflecting the nature of the problem and/or perceptions about the help available. The data urge the inclusion of these wider aspects of sexual health in relationship counselling, medical education, policymaking and service provision.

0231

Developing Performance Measures for STD Control

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Objectives: Performance measurement has been recommended by the U.S. Government Performances and Results Act, the National Research Council, and management strategists. Performance measurement helps communicate priorities and monitor progress. We are developing STD Program Performance Measures to improve performance by monitoring trends, identifying best practices, and assisting with advocacy.

Methods: The National Council of STD Directors, STD program representatives, CDC staff, and a management consultant developed a logic model to identify components of STD control along with relevant outputs, intermediate, and long term outcomes. The group identified 28 candidate performance measures reflecting activities at different points in the model, and giving a more comprehensive picture of performance than using disease incidence alone. Seven programs are evaluating the feasibility of collecting the information for these measures, and assessing their programmatic usefulness.

Results: Proposed measures reflect a broad view of STD control so some measures go beyond traditional control programs and address activities of private practitioners and juvenile detention facilities. Of the 28 meas-

ures, 14 have been set aside because of difficulties in defining the measure or collecting the data. Some of the others will not be available until there is more widespread use of electronic laboratory reporting. Useful and feasible measures include items related to timely and complete reporting, syphilis partner notification and outreach, screening in jails, timely treatment after positive chlamydia screening tests. Many discrepancies were identified in state and local data bases because of different definitions for terms such as "syphilis of unknown duration" or "date of diagnosis", and "previously treated for this infection". Some programs have changed because of data gathered during this pilot phase. For example, syphilis screening was discontinued at some outreach sites that found few infections.

Conclusions: U.S. STD programs will be asked to include some of these measures in the next funding cycle. The measures will continue to evolve as they are utilized

0232

New Resources to Improve Chlamydia Screening in Adolescent and Young Women Enrolled in Managed Health Care Organizations

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Objectives: Private-sector clinicians reported 78% of the nearly 800,000 Chlamydia cases reported to CDC in 2001. Because most infections are asymptomatic, several organizations recommend routinely screening sexually-active adolescent and young women. To assess managed care organization (MCO) quality, the HEDIS system monitors screening rates. Among MCOs reporting HEDIS scores, 26% of eligible enrollees were screened in 2001. We assessed screening barriers in MCOs and resources to implement feasible screening strategies.

Methods: We searched peer-reviewed articles, webware, and MCO trade association reports.

Results: MCO clinicians report several screening barriers: inconsistent national screening guidelines, confusion regarding tradeoffs of various laboratory tests, the belief that privately-insured women are rarely infected, few tools to identify cost-effective screening strategies, and lack of MCO intervention models. New resources address these barriers. Most national guidelines now recommend routine screening of all sexually active females aged <26 years and are consistent with HEDIS specifications. When 30 preventive services were recently ranked by quality-adjusted life-years and cost-effectiveness, Chlamydia screening ranked among the ten most valuable adult/adolescent services. CDC's 2002 laboratory testing and treatment guidelines detail test performance and cost trade-offs and treatments for infections identified through screening. Recent studies of routinely-screened MCO enrollees show that 3% -10% are infected, refuting the belief that privately-insured women are rarely infected. New webware can facilitate screening, including tools that allow MCOs to calculate cost-effective screening strategies, provide confidential feedback to clinicians about screening practices, and provide hotlinks to CDC guidelines. Recent MCO interventions have shown that monthly clinician screening performance feedback and input on overcoming screening barriers increased screening ~40% within 18 months and offering Chlamydia screening at the time of Pap smears would increase screening rates.

Conclusions: Several new guidelines, prevalence data, webware, and interventions allow MCOs to identify feasible strategies that can increase screening rates and improve HEDIS scores.

0233

Gonococcal Antimicrobial Resistance in England and Wales: Data from the Third Year of the National Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP).

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Objectives: To describe the prevalence, geographic distribution and determinants of antimicrobial resistance in Neisseria gonorrhoeae in England and Wales.

Methods: Between June and August 2002, gonococcal isolates were systematically collected for antimicrobial susceptibility testing in the third annual GRASP collection. All consecutive gonococcal isolates from 26 genitourinary medicine clinics (GUM) in England and Wales were sent to reference laboratories for antimicrobial susceptibility testing. The minimum inhibitory concentrations of five antimicrobials were determined. Clinical, demographic and behavioural data of patients included in the collection were collected. Antimicrobial resistance estimates were calculated using direct standardization using existing aggregated GUM data as the standard population. Fishers exact and Chi2 tests were undertaken to demonstrate association with explanatory variables.

Results: In 2002 data on 2209 GUM isolates was collected. Prevalence estimates for resistant types include: penicillin resistance (>=1mg/l or B lactamase positive) 9.5% (vs 8.3% in 2001), PPNG & PP/TRNG 4.2% (vs 4.0% in 2001), TRNG & PP/TRNG 6.1% (vs 5.2% in 2001), CMRNG 3.6% (vs 3.9% in 2001), ciprofloxacin 10.1% (vs 3.9% in 2001). No isolates were resistant to ceftriaxone. A uniform regional distribution of PPNG, TRNG and CMRNG, resistance was observed. In contrast ciprofloxacin resistance was observed to be heterogeneously distributed throughout England and Wales. The estimated prevalences of penicillin and tetracycline resistance types over time appeared to be relatively stable, whereas a rapid increase in ciprofloxacin resistance was observed. Associations with geographical region, sexuality, ethnicity and sexual contact abroad have been observed for some or all resistance types.

Conclusions: GRASP provides a greater understanding of the epidemiology of both gonococcal infection and antimicrobial resistance patterns within England and Wales. Prevalence estimates of antimicrobial resistance and their changing patterns over time will ensure local and national prescribing policy remains responsive to changes in gonococcal epidemiology.

0234

A Comparison of the Theoretically Predicted Distribution of Bacterial STIs and their Observed Prevalence in Urban Peru

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Objectives: The expected distribution of sexually transmitted infections depends upon the pattern of risk behavior of the individual and the population, the biology of infection and also treatment seeking behavior and availability of appropriate care. A comparison of the observed and expected distribution of infection tests how well these interacting factors have been described within a theoretical framework.

Methods: A deterministic compartmental mathematical model of the spread of a curable STI has been developed to include rates and patterns of treatment and has been parameterized to represent syphilis, chlamydia, gonorrhoea and trichomoniasis. Sexual behavior in the model is based upon population-based surveys carried out in 24 cities throughout Peru which sampled 17000 individuals. The observed distribution of the 4 infections in the surveys is available for comparison with the pattern of infection predicted by the model.

Results: There was substantial variation in the prevalence of each STI in the general population in the different cities: chlamydia range 1% – 8%; trichonomiasis 1% – 10%; syphilis (in the 16 cities where it was detected) 1% – 4%. Also the prevalence of the different STIs was poorly correlated: the strongest correlation was between prevalence of chlamydia and trichonomiasis, (R=0.26). The distribution of infections amongst individuals by patterns of risk behavior can be readily explained within the model but the overall prevalence of the infections in the different populations is less easily predicted.

Conclusions: Stochastic variation is likely to play an important role in the epidemiology of bacterial STI due to their relatively short infectious periods, particularly where prevalence is low and in population subgroups with a relatively low risk of infection and transmission. In low prevalence situations the model predicts that small improvements in treatment patterns can have a major impact on the local incidence of infection.

0235

Gynecologists' Attitudes Towards a Potential Vaccine for Human Papilloma Virus: A Survey of Fellows of the American College of Obstetricians and Gynecologists

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Objectives- Human papilloma virus (HPV) is the causative agent of cervical neoplasia and genital warts. A vaccine has recently been developed that may prevent HPV infection. Successful implementation of HPV immunization depends on the willingness of physicians to recommend HPV vaccination. This study examines gynecologists' acceptance of HPV vaccination for their patients as a function of physician and key vaccine-related characteristics.

Methods- Fellows of the American College of Obstetricians and Gynecologists (ACOG) were given surveys to evaluate vaccine acceptability using 13 vaccine scenarios defined with four dimensions: 1) *ACOG approval* (yes, no), 2) *Efficacy* (50% or 80%), 3) *Patient Age* (13, 17, or 22yo), and 4) *HPV type targeted* (cervical cancer, genital warts, or both). Demographic data was collected, including physician age, gender, year of residency, and community and practice setting. An 11-point (0-100) response format accessed physician approval for each vaccine scenario. Conjoint analysis evaluated physician preference for the attributes (part-worth utilities) for each scenario. The ranges of part-worth utilities were then converted into importance scores, indicating which dimensions are viewed as more significant.

Results Of the physicians that responded (183), the median age was 47.2 (30-73), and 55% were male. Overall, acceptability of HPV vaccination was high (79.1%). Demographic data did not play a role in recommending vaccination. *ACOG approval* influenced vaccine acceptability the most (importance scale=32.6, preference for ACOG approval), followed by *Age* (importance scale= 24.6, preference not to vaccinate 13 yo), *Efficacy* (importance scale=21.6 preference for 80% efficacy), and lastly *HPV type targeted* (importance scale= 21.2 with disinclination to vaccinate for warts alone).

Conclusions Our findings indicate a high acceptance of HPV vaccination and that gynecologists will implement a HPV prevention vaccine into their routine gynecological practices.

0236

Level of Certainty Among Males and Females in Recalling 30-Day History of Sexual Events and Associated Behaviors

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Objective: To measure the degree of certainty for recall of a 30-day history of sexual events and behavior.

Methods: In Boston and Indianapolis, sexually active males and females attending STD clinics, an adolescent clinic and an emergency room (index patients), were enrolled in a cross sectional study of *Chlamydia trachomatis* (Ct) transmission. Sex partners to Ct-infected participants were sought and enrolled. Using a calendar recall method, study participants were asked to recall sexual events, behaviors, and drug and alcohol use

for the prior 30 days. Following the interview, participants were asked to categorize confidence in their responses using a 5-level scale; characteristics of persons who were 'very sure' (certain) of their answers were compared to those with lower levels of certainty using univariate methods.

Results: A total of 649 participants completed a calendar recall interview; more than half enrolled in Indiana. Females accounted for 51% of participants; the median age was 20. Eighty-one percent were index patients (19% were partners). Overall, 60% reported being certain of the recalled events and behaviors. Study participants in Indiana were more likely to be certain than Boston enrollees (p=0.008). Females were 1.6 times more likely than males (p=0.002), and index patients 1.4 times more likely than partners (p=0.09) to be certain of their answers.

Conclusions: Females were significantly more likely than males to be certain of their answers. Differences by study site may be explained by differences in the clinical recruitment settings. Level of certainty reported by members of a sexual partnership may be useful when trying to assess discrepancies between members' recall.

0237

Predictors of Parental Acceptability of STD Vacciantion for Their Adolescent Children

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Objective: To examine parental acceptability of STD vaccination for their adolescent children.

Methods: 156 parents (ages 24-66; 92% female) who accompanied their children (ages 12-17; 69% female) to medical appointments completed questionnaires via audio computer-assisted self-interview. STD vaccine acceptability was measured by summing across 3 items (5-point response scale) which addressed GC, HSV-2, and HIV vaccination. Scores (range=3-15; mean=13.6) were trichotomized to form groups of low, medium, and high acceptors. Potential predictors of acceptability included parental health beliefs, parent and child age, and parental history of STD. Data were analyzed via cumulative logistic multiple regression.

Results: The high acceptability group included 84 parents whose vaccine acceptability score was 15. The medium acceptability group included 10 parents whose score was 14. The low acceptability group included the remaining 62 parents whose scores ranged from 3 to 13. Regression analysis findings were as follows: 1) anticipation that acquisition of an STD would lead the child to experience negative affect (OR=1.1; 95%CI=1.04-1.18; P<.001) and perception that the child is vulnerable to infection (OR=1.3; 95%CI=1.04-1.49; P<.02) were associated with higher levels of vaccine acceptability; 2) belief that STD vaccination would lead to more involvement in unsafe sex was associated with lower acceptability (OR=.77; 95%CI=.65-.94; P<.01); and 3) parents of older children (OR=1.2, 95%CI=.99-1.54; P=.06) and parents with a history of STD (OR=2.0; 95%CI=.84-4.54; P=.1) were marginally more likely to endorse STD vaccination. Parent age, STD stigma, and perceived severity of STD were not significant predictors of acceptability.

Conclusions: Most parents indicated high levels of acceptability of STD vaccination for their children. Even among the low acceptability group, 49 parents had scores of 12 or 13 out of 15. Most of the predictors of acceptability identified were potentially modifiable attitudinal factors, which may have implications for successful implementation of future STD immunization programs.

0238

Opportunitites and barriers in HIV testing: A survey of genitourinary clinic attendees

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Objectives: Improving HIV testing rates may reduce the proportion of undiagnosed HIV infection, ensure earlier access to treatment for those diagnosed, and limit further transmission. We identify factors associated with being offered and having an HIV test in a study conducted before the implementation of the UK Government's Sexual Health and HIV Strategy of which increasing HIV testing is a key component.

Methods: A prospective questionnaire-based survey of 585 patients of unknown HIV status, presenting at a London sexual health clinic during July and August 2000.

Results: 78.0% of patients (91.7% heterosexual) reported being offered an HIV test. This was associated (p<.05) with: patient's ethnicity (83.4% of white vs. 72.0% of non-white); prior intention to test (92.2% of intenders vs. 73.6%); use of Class A/B drugs (86.8% of users vs. 74.8%); previous STI diagnosis (71.3% of those previously diagnosed vs. 82.6%). 42.0% of patients had an HIV test. This was associated (p<.05) with: an HIV test being offered (50.2% of those offered vs. 8.9%); partner numbers (52.2% of those with 2+ partners in past year vs. 30.2%); new partners while abroad in past 5 years (50.5% vs. 37.3%); unprotected sex in past year (51.3% vs. 37.0%); previous STI diagnosis (30.0% vs. 49.5%). The most common reason reported for not testing was self-perceived low risk (51.6% of those not testing). A substantial proportion of patients not testing appeared unaware of the potential benefits of testing, including the availability of antiretroviral therapies.

Conclusion: Overall, we observed good rates of offering and uptake of HIV testing. However, lower rates of offering existed in some high-risk groups. Once tests were offered, similar rates of testing were found. Universal testing policies and greater public awareness of the benefits of knowing one's HIV status may reduce inequality in, and improve the uptake of HIV testing, respectively.

0239

The Cost-Effectiveness of Screening Men for Chlamydia to Prevent Pelvic Inflammatory Disease in Women

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Objectives: Screening men for Chlamydia trachomatis can potentially reduce transmission to female partners and reduce morbidity in men. With partner notification (PN), infected female partners of screened men may receive treatment they would not otherwise receive. We analyzed the cost-effectiveness of screening men for chlamydia using data from both men and their female partners from an ongoing four-site longitudinal study in the US.

Methods: Men aged 15 years or over were offered screening in a variety of opportunistic venues and were offered the opportunity to provide partner information. Disease investigation specialists sought locatable female partners and offered testing and treatment if they were found. Study personnel performed time-motion analyses to measure the staff time involved in screening and PN. Data on costs and the rates of progression to sequelae of epididymitis and orchitis and pelvic inflammatory disease (PID) were taken from published sources. We used study data on the rate of infection and treatment among screened men and their female partners. Our cost-effectiveness analysis compared screening men with and without PN to not screening men. We performed a healthcare-perspective analysis and considered both high ($3100) and low ($1300) estimates of the cost per case of PID.

Results: At a baseline prevalence of 7.4% in men, screening men (with or without PN) cost approximately 24% more than not screening men. The difference in cost between screening and not screening diminished as the prevalence among men increased. At the highest prevalence in men observed in the study (15%) the cost difference was approximately 11%. When we assumed a high PID cost, the cost difference was only 1%.

Conclusions: The interim results indicate that screening men for chlamydia and performing PN for their female partners can be cost-effective in high-prevalence settings. It can be cost-saving if the prevalence among asymptomatic men exceeds 7%.

0240

Challenging STD "Myth-perceptions" Among Adolescents: Design and Development of an Internet Intervention

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Objective: Adolescents are at risk for STD/HIV infection partly due to misconceptions they hold about condom usage, disease transmission and prevention, and their own perceived vulnerability to infection. We aim to develop and validate a single-user, self-administered, web-based intervention for rapid administration in a clinical setting. This intervention is designed to engage sexually at-risk adolescents and challenge specific misconceptions held by these patients.

Methods: Ovid Medline database and Google Internet search engine were searched for "myths," "misperceptions," "misconceptions," "mistakes," and "frequently asked questions" about STDs/HIV. We then formulated 31 truth-or-myth statements to cover key concepts in a time period manageable in a busy urban clinic. Following web-based informed consent for participation in this study, an adolescent is asked to point-and-click to indicate level of agreement (Likert scale measurement) with each statement. Transfer of subject responses directly into a secure database occurs via web-browser using 128-bit SSL encryption. The adolescent's response triggers a tailored intervention response (if correct, positive feedback and concept reinforcement; if incorrect, facts given). A user-friendly, attention-grabbing interface has been designed, which includes voice-overs to decrease literacy barriers, photos of STDs for shock-value, pop-up definitions of disease and body part terminology, and Macromedia Flash animated cartoons.

Results: We identified four key concept areas for adolescent misconceptions about STDs/HIV: (1) condom use, (2) disease transmission and prevention, (3) perceived vulnerability, (4) urban legends. Development is complete, the password-protected website can be viewed at https://dccwww.bumc.bu.edu/std_myth/intro1.aspx, and the site is undergoing field-testing in our clinic for reliability, internal validity, and acceptability (qualitative feedback elicitation and focus group evaluation).

Conclusions: Once validation is complete, we plan to use the website in a prospective, randomized controlled trial to determine if adolescents who undergo this Internet intervention are either less prone to recurrent STDs or pregnancy, or more inclined to safer sex practices.

0241

Syphilis Seroprevalence and Cases in North Carolina Jail Detainees

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Objectives: North Carolina (NC) is the US state with the greatest number of counties (n=6) involved in the nationwide Syphilis Elimination Project (SEP). As part of SEP enhanced surveillance, NC has instituted routine syphilis screening in 7 jails in those 6 counties. Our objective is to describe syphilis seroprevalence and cases in this population and make recommendations for further screening.

Methods: Screening personnel in each of the 7 jails counsel inmates on syphilis, draw blood for screening, and collect information on risk factors. The data are sent to an Epidemiologist at the NC State Health Department for analysis. These results represent screening from Feb, 2002 through Dec, 2002.

Results: A total of 6641 jail detainees were screened; 1064 (16%) were female. A total of 226 positive serologies and 50 new syphilis cases (13 female, 37 male) were identified. Screened females are more likely have a positive serologic test than their male counterparts (OR=3.70, 95%CI 2.81-4.87) and more likely to result in a new syphilis case diagnosis (OR=1.85, 95%CI 0.98-3.50). The same analyses were conducted at the county level and the trend remains consistent across the 6 counties. Females are again more likely to have positive serologies (ORs range from 2.86 to 8.47, all with significant 95%CI) and new cases (ORs range from 0.92 to 3.19, CI not significant due to small numbers).

Conclusions: Across all 6 North Carolina counties (representing both urban and rural settings), screening jail inmates for syphilis has proven to be useful in identifying n=50 previously unreported cases of syphilis. Seroprevalence trends support jail screening, even in counties where few cases are identified, by indicating that populations at-risk for syphilis are being reached. The findings related to female inmates have been translated into policy, with all NC SEP jail screeners advised to make extra effort to screen women in their jails.

0242

Cervical Infections Among Women with Vaginal Discharge in West Africa: Disappointing Performance of a Two-visit Algorithm

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Objective: Evaluate the effectiveness of a 2-visit algorithm for the syndromic management of women with vaginal discharge.

Methods: 746 non-pregnant women complaining of vaginal discharge without abdominal pain were enrolled in Ghana, Burkina Faso, Guinée, Mali and Bénin. Specimens were obtained for the detection of N. gonorrhoeae (NG), C. trachomatis (CT) and T. vaginalis (TV) by PCR. All participants were treated initially with oral metronidazole (2 gr) and clotrimazole cream. They were randomised to one of two strategies: A) come back on D7 only if not improved ; B) come back on D7 regardless of response. Women coming on D7 and who had not improved were then treated with ciprofloxacin and doxycycline.

Results: Prevalence of NG and CT were respectively 1.9%(14/726) and 3.2%(23/726). Prevalence of NG and/or CT did not vary according to age, marital status, duration of vaginal discharge, presence of urethral discharge in the partner. Cervical infections were more common among women with no formal education and among those with 2 or more sex partners in the last 3 months. Among women allocated to group A, 140/371 (38%) came back on D7, compared to 231/375(62%) in group B. Within group A, 6/10 women with NG/CT came back on D7, compared to 126/350(36%) among those without NG/CT (p=0.22). Within group B, 9/22 (41%) women with NG/CT came back on D7 compared to 218/344 (63%) women without NG/CT (p=0.06).

Conclusions: The majority of women with NG/CT infections did not come back following empirical treatment of agents of vaginitis. Attendance on D7 was unrelated to the presence of cervical infections. In West Africa, the prevalence of gonococcal and chlamydial infections is not higher among women with vaginal discharge than in contemporaneous surveys of asymptomatic pregnant women. The control of NG/CT must be approached through intensive efforts focusing on core groups.

0243

Factors Associated with Time of Day of Coitus among Adolescent Women

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Objective: Describe familial, inter/intrapersonal factors associated with timing of coitus to better understand risk of sexually transmitted infections.

Methods: Annual questionnaires and daily diaries were collected from 106 women ages 14 – 17 enrolled from three adolescent clinics. Participants could contribute up to 3 questionnaires and 12-week diary periods over 27-months. Questionnaire data included multiple-item scales of parental disapproval and parental condemnation of adolescent sex, parental supervision, number of household family members, sexual body image, sexual curiosity, and living with boyfriend. Diary data included partner support, negative mood, positive mood, sexual interest, argument with partner, condom use and type of day (vacation, school weekday, weekend). The outcome variable was: No coitus; coitus noon to 6 pm; or coitus after 6 pm. Random-effect multinomial logistic regressions with multiple covariates were fit using SAS PROC NLMIXED.

Results: Coitus was reported on 1,628/11,581 (14.1%) days. Coitus was about twice as likely after 6 pm than in the afternoon for each type of day. Afternoon sex is least likely to occur on school days (OR=0.72) while

evening sex most often occurs on weekends (OR=1.26). Accounting for recent sexual behavior diminished calendar differences for evening encounters. Young women's report of parental attitudes about sex did not affect the occurrence of sex at either time. Amount of supervised time at home and reporting to parents did not change the occurrence of afternoon sex but did increase the likelihood of evening sex. For school days, skipping school is associated with more afternoon sex. Condom use was not different for coital events between noon- 6 pm and those after 6 pm.

Conclusion: These data do not support the notion that supervised after-school time and awareness of their child's activities are deterrents to adolescent sexual activity. Risk of infection (unprotected sex) did not vary by time of day.

0244

Predictors of a Positive HSV 2 Antibody Test Among Young Persons with No History of Genital Herpes.

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Objectives: To determine demographic, historical, and behavioral factors that predict a positive HSV 2 antibody test in persons without a history of genita l herpes

Methods: Individuals age 14-30 without a history of genital herpes were recruited from four sites: STD clinic, primary care clinic, urban university, and adolescent clinic. Participants completed a questionnaire containing demographic, medical, genital symptom frequency, and behavioral information and were offered free type-specific HSV 2 antibody testing (HerpeSelect® EIA confirmed by western blot) . The genital symptom frequency score had questions that were common to men and women and questions that were gender-specific. Multiple logistic regression analysis was used to determine independent predictors of HSV 2 seropositivity.

Results: Among men, factors that predicted a positive HSV 2 antibody test included age [odds ratio (OR) 1.17, 95% confidence interval (CI) 1.06, 1.30, p=0.002], non-white race (OR 2.32, 95% CI 1.01, 5.29, p=0.046), history of an STD (OR 2.9, 95% CI 1.27, 6.63, p=0.012), and male-specific genital symptom ("zipper burn") frequency score (OR 2.09, 95% CI 1.12, 3.91, p=0.021). Among women, only age (OR 1.16, 95% CI 1.09, 1.29, p<0.0001), non-white race (OR 2.79, 95% CI 1.69, 4.61, p<0.0001), and history of an STD (OR 2.47, 95% CI 1.51, 4.05, p=0.0003) predicted a positive test. Genital symptom frequency scores (either common or gender-specific) were not predictive of a positive test in women.

Conclusions: Among young persons with no history of genital herpes who agree to HSV 2 antibody testing, increasing age, non-white race, and a history of an STD were predictors of a positive test. A history of frequent "zipper burn" in male subjects also correlated with a positive HSV 2 test while genital symptoms were not predictive among women. These results might be helpful in planning for HSV 2 antibody screening efforts.

0245

Comparison of the Use of InPouch Culture vs Pap Smear for the Detection of Trichomonas

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Objective: Many public family planning clinics do not screen for *T. vaginalis* (TV) and rely on Pap smear for diagnosis. The purpose of this study was to determine the predictive values of Pap smear compared to culture at a public reproductive health clinic in New Orleans.

Methods: A chart review was conducted of all women visiting the clinic between 3/1/02 and 6/30/02. Data were recorded regarding demographics, clinical assessment, Pap smear, GenProbe (for chlamydia and gonorrhea) and culture (using the InPouch TV™ test),. Analysis was done using culture as the gold standard.

Results: A total of 913 women were screened using both the Pap smear and the InPouch TV, 94.9% were African-American, and the mean age was 27.3 years (SD 7.7). TV positivity was 9.4% and 3.1% for culture and pap respectively. Sensitivity and specificity for Pap smear test was 31.4% and 99.9% respectively using InPouch TV as the gold standard. Only 25.6% of women who were TV positive had abnormal discharge at the time of visit. Women who were diagnosed with chlamydia were more likely to have a co-existing TV infection than those who were CT negative.

Conclusions: The common practice of relying on pap smear or symptoms for diagnosis of TV highly underestimates TV prevalence. More sensitive techniques are needed and given the high prevalence of TV in this family planning population, screening is recommended.

0246

A Multicentre Epidemiology Study to Evaluate the Prevalence of Human Papilloma Virus (HPV) Infections

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Objective: To determine the prevalence of infection with HPV-16 &/or 18 and other high risk (HR) types in adolescent and adult women in North America and Brazil and to identify associated risk factors for infection.

Methods: This multi-centered, cross-sectional epidemiology study was carried out in Canada, United States and Brazil. Women were recruited for a single visit with blood collection for antibodies to HPV 16/18, cervical cytology examination (ThinPrep Pap test) and cervical HPV DNA testing [PCR for 14 HR & 11 low risk (LR) types]. Epidemiologic risk information was collected by questionnaire completion and a face to face interview.

Results: Of 3204 women (age 15 – 25 yrs) enrolled, 6.9% (N=221) were found to be positive for HPV-16 &/or 18 DNA by PCR.

203/221 women had 2 or more HR types. The combined prevalence of all HR types was 21.7%. HPV 16, 51 & 52 were most commonly identified. Of women with HR HPV, 40.1% were found to have abnormal cervical cytology. This is in comparison to women with LR HPV where only 33.3% had cervical abnormalities. Prevalence of antibody to HPV-16 or HPV-18 was 15.9% & 9.7%, respectively. Analysis of risk factors for HPV DNA demonstrated an age adjusted OR of 2.8 for >3 lifetime sexual partners for HR HPV and 3.8 for LR HPV. Similar risk factors were demonstrated for cytological abnormalities – age adjusted OR of 3.9 and 8.3 for >3 lifetime sexual partners for LSIL and HSIL, respectively. The age adjusted OR for LSIL in the presence of HPV16 &/or 18 was 6.6.

Conclusion: This study confirmed the true prevalence of HPV infection in adolescent and young adult women in North America and Brazil. The most significant risk factor appears to be the number of lifetime sexual partners.

0247

Comparison of the Becton Dickinson ProbeTec ET Assay for the Detection of Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) With and Without the Urine Processing Pouch

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Objective: The manufacturer's directions for the Becton Dickinson ProbeTec assay require the use of a urine processing pouch for urine specimens. Pouching urines lengthens the time of the assay and provides a potential source of contamination if aerosolization occurs during the processing of urines. Our objective was to compare the sensitivity and specificity of the Becton Dickinson ProbeTec CT/GC assay with and without the urine processing pouches.

Methods: Prior to the addition of the urine processing pouch in the laboratory, a 4 ml aliquot was taken from 414 urine specimens submitted for CT/GC testing. Urine pouches were added to the remaining volume of each urine sample. After the 2 hours required for the processing of the urine-pouched specimens, both pouched and unpouched urines were tested by the ProbeTec assay, according to manufacturer's directions for CT/GC. The results from the pouched urines were used as the gold standard.

Results: For CT, there were 49/414 (11.8%) positives detected from pouched urines. From unpouched urines, 47/49 (sensitivity=95.9%) of the CT true positives were detected. Two additional positives were detected from unpouched urines that were negative by testing pouched urines. Specificity of the unpouched urines was 99.5%. [Youden J statistic = 0.95; (95% C.I. 0.90, 1.00)]. For GC, there were 15/414 (3.6%) positives detected from pouched urines. For unpouched urines, 15/15 (sensitivity=100%) positives were detected, as well as one additional positive GC that was negative from pouched urine testing. Specificity of the unpouched urines was 99.7%. [Youden J statistic = 0.99 (95% C.I. 0.99, 1.00)]. The "false positives" were not further resolved since results from the pouched urines were considered to be the gold standard.

Conclusions: There were no statistically significant differences for either CT or GC detection using or not using the urine processing pouches in fresh urines.

0248

Antibody Production and Induction of Cytokines in Response to Trichomonas vaginalis Infection in Mice and Humans

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Objective: The study was undertaken to assess cytokine production and serum antibody response during *T. vaginalis* infection in mice and humans.

Methods: Forty-five mice were inoculated with intravaginally with *T. vaginalis* and 15 were used as controls. The presence of IFN-g and TNF-a in mice was determined by using an E IA . Vaginal IFN-g and TNF-a mRNA was detected by RT-PCR. Vaginal secretions of human participants with trichomoniasis (n=35) and those without trichomoniasis (controls n=15) were assessed for the presence of the cytokines IL-8, IFN-g and TNF-a by EIA. Serum antibodies against *T. vaginalis* were assayed using an EIA.

Results: There were no significant differences in the concentrations of IFN-g (t=1.10; P=0.276) and TNF-a (t=1.878; P=0.066) in the infected and control mice. However, in human studies vaginal secretion concentrations of IL-8 (t=11.8; P<0.0001), IFN-g (t=12.79; P<0.0001) and TNF-a (t=9.36; P<0.0001) were significantly higher in infected individuals than the controls. There were no significant differences for these cytokines in individuals who were infected with *T. vaginalis* only and those who had co-infection with *Chlamydia trachomatis* or *Neisseria gonorrhoeae*. When serum samples were assayed for the presence of IgG there was no significant difference in individuals infected with *T. vaginalis* and those who were not infected (t=1.904; P=0.067).

Conclusion: These data demonstrate that infection with *T. vaginalis* results in upregulation of inflammatory cytokines at the human vaginal mucosa. Moreover, these studies indicate that the murine model of trichomoniasis appears to have limited utility as a model of the human immune response to *T. vaginalis* infection.

0249

Acceptability and Acceptance of HSV-2 Testing

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Objective: To evaluate acceptability and acceptance of HSV-2 testing as a function of test characteristics.

Methods: Participants without history of genital herpes were recruited from four sites: STD clinic, primary care clinic, urban university, and adolescent clinic. Participants completed a questionnaire that included 12 items evaluating acceptability of genital herpes tests. Each test was uniquely defined along the following dimensions: cost (free; $100), type of test (saliva; finger-stick; blood draw), and time (20 minutes for results; 2 weeks for results). Possible responses ranged from 0 (I would never get this test) to 100 (I would definitely get this test). One combination (free, blood draw, 2 weeks) was identical to the HSV-2 test (Focus Technologies) subsequently offered.

Results: 1,267 individuals (ages 14 – 30; 42% male) completed questionnaires. 826 (65%) subsequently accepted HSV-2 testing. Cost had the strongest effect on acceptability with a free test (mean=78.6) preferred over a $100 test (mean=40.2), P<.0001. Participants also preferred a 20 minute test (mean=62.9) over a 2-week test (mean=56.0), P<.0001. Finally, a test based on saliva was most preferred (mean=61.7), followed by finger stick (mean=58.6) and blood draw (mean=57.9), P<.001. Responses to the item describing the test subsequently offered were significantly associated with the decision to get tested (r=.25, P<.001). However, of the 174 who indicated little intention of getting tested, 40% subsequently agreed to the blood draw and of the 831 who indicated strong intention of getting tested, 27% refused testing.

Conclusions: Identifying the characteristics of HSV-2 tests most likely to be accepted will be important for successful implementation of serologic testing. Not surprisingly, these participants had strong preferences for a free test using saliva with results available in 20 minutes. Understanding the link between intention to test and subsequent acceptance or refusal of testing also will be important in terms of pre-test counseling.

0250

Is Condom Use Habit-Forming? Condom Use at Sexual Debut and Subsequent Condom Use

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Objectives: Sexually active adolescents remain at high risk for sexually transmitted infections (STI's) and yet determinants of regular condom use are only partially understood. While acknowledging the influence of demographic, individual, behavioral, and partnership characteristics on condom use, we hypothesize, using a condom at sexual debut increases the likelihood of subsequent condom use, independent of other factors.

Methods: Using data from a nationally representative sample of adolescents, the National Longitudinal Study of Adolescent Health, this study includes 4,024 sexually active 12-18-year-olds. In 1995, respondents were surveyed, using Audio-Casi, for information about sexual and partnership history. We used logistic regression to model the influence of condom use at sexual debut on the probability of condom use at most recent sex.

Results: For sexually active adolescents, 62% reported condom use at sexual debut, while 56% reported condom use at most recent sex. An unadjusted, logistic regression model, weighted for sampling procedures, showed condom use at sexual debut was associated with an increased probability of condom use at most recent sex (OR = 2.60, 95% CI = 2.16 - 3.11). A model adjusted for potentially confounding factors showed controlling for these variables only partially diminished the effect of condom use at sexual debut on subsequent condom use (OR = 2.20, 95% CI = 1.81 - 2.66).

Conclusions: Among sexually active adolescents, condom use at sexual debut is strongly associated with subsequent use, independent of other factors. Suggesting behavior from initial experience may lead to habit formation and the development of subsequent healthy sexual practices. Therefore, early sexual education emphasizing condom use may be particularly important in establishing regular use thereby reducing STI levels in the adolescent population.

0251

Internet STD Risk Behavior Among Men who have Sex with Men (MSM) and Men who have Sex with Men and Women (MSMW)

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Objective: To compare Internet STD risk behaviors among MSM and MSMW

Methods: A self-administered Internet based cross-sectional survey of 729 men aged at least 18 years who have male sex partners and who have solicited partners online. The survey documents demographics, sexual risk behaviors and STD and HIV testing behaviors.

Results: Of the sample, 556 (76%) are men who have only male sex partners (MSM), and 173 (24%) have both male and female sex partners (MSMW). A high proportion of MSMW (70%) indicate that all their partners recruited via the Internet are male and only 2.3% say that all partners not recruited via the Internet are male (2.3%, $p<0.0001$). MSM engage in more STD risk behaviors than MSMW: they have more anal sex (56% vs. 46%, p=0.02), and more Internet partners both in their lifetime (median 10 vs. 6, p=0.01) and in the past 12 months (median 5 vs. 3, p=0.02). MSMW more frequently have main partners than MSM (58% vs. 49%, p<0.01) and 56% of MSMW main partners are female. Logistic regression analyses with MSM/MSMW as the dependent variable shows the following factors to be independently associated with being MSM: more Internet partners in the past 12 months (OR: 1.07; 95% CI 1.02, 1.12) discussing HIV status with partners (OR: 1.34; 95% CI: 1.07, 1.68) and testing for HIV (OR: 1.68; 95% CI: 1.12, 2.53)

Conclusions: While MSM appear to engage in more STD/HIV risk behavior than MSMW, MSMW also face unique STD and HIV transmission and acquisition risks because of their sexual relationships with women and because they do not simultaneously engage in prevention behavior to the same extent that MSM do. The Internet offers an excellent opportunity to document risk and provide STD/HIV

prevention information among MSMW who may not disclose their sexual activity with men.

0252

Return for Results after Type-Specific Herpes Simplex Virus (HSV) Screening

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Objective: to evaluate factors associated with clinic return to receive results of type-specific HSV screening.

Methods: Participants without history of genital herpes were recruited in 2001-2002 from four sites: a county STD clinic; a primary care clinic; a university student population; and, a university-affiliated adolescent clinic. Eligible patients were offered type-specific HSV testing, requiring a clinic return for test results two weeks after testing. Potential predictors of return included herpes knowledge, perceived severity of genital herpes, HSV-related fear, perceived vulnerability to genital herpes, perceived benefits of testing, STD-related stigma, number of sex partners (past 6 months, scored as 0, 1, >1), condom use, STD history, presence of genital herpes symptoms, and prior intention to be screened for herpes.

Results: 826 patients (ages 14 – 30 [mean=22.1 yrs]; 42% male) received HSV screening; missing data reduced the final sample to 807. Of these, 571 (71%) returned for results. Return rates varied by site: 58% (STD clinic); 72% (primary care clinic); 86% (university students); and, 72% (adolescent clinic). Logistic regression showed that higher probability of return for HSV testing results was independently and significantly associated with older age (Odds Ratio = 1.06), female gender (OR = 1.54), enrollment at any site other than the county STD clinic), increased perceived HSV vulnerability (OR = 1.07) and having no recent sex partners (compared to those with more than 1 recent partner; OR = 0.85).

Conclusions: Limited recurrence potential of genital HSV-1, high prevalence of asymptomatic HSV-2 and recent demonstration that anti-viral drugs reduce risk of HSV-2 transmission will bring new emphasis to HSV-2 screening programs. Low rates of return in sites serving high-risk patients (e.g., STD clinics) suggest the need to focus resources on encouragement of receipt of test results. Otherwise, the clinical and public health benefits of screening may be substantially reduced.

0253

Increases in Early Syphilis Among Adolescent Females-A New Population at Risk?

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Objective: Baltimore City has seen dramatic declines in its early syphilis rates over the last 5 years. However, as rates continue to decline, new populations at risk arise. Here we describe the recent increase in early syphilis among adolescent females (aged 10-24) in Baltimore City, Maryland.

Methods: Early syphilis morbidity was examined for Baltimore City from 1997 through 2002 for all females. All interview records for female syphilis cases reported in 2001-2002 to the Baltimore City Health Department were examined. Additionally, as a result of syphilis elimination efforts enhanced behavioral data for 2001-2002 was also anal yz ed.

Results: From 1997 to 2002 the total number of female early syphilis cases in Baltimore City declined 88% from 801 to 98 reported cases. However, during this same period, the proportion of female P&S syphilis cases of ages 10 to 18 increased from 7% to 13% (p=0.041), but remained relatively stable for 19-24 year olds. Analyses of enhanced surveillance data for female early syphilis cases reported in 2001-2002 (N=165, 83% of all reported female cases) showed marked differences between adolescents and females over 25 years of age. Female adolescent early syphilis cases were less likely to report a history of incarceration (OR=0.33), sex work (OR=0.22), or exchanges of sex for drugs or money (OR=0.27) when compared to older female cases. Adolescent female early syphilis cases were nearly 3 times more likely to be pregnant (OR=2.97), compared to older female cases. No differences were seen for drug using or health care seeking behavior.

Conclusions: Recently, marked increases in the proportion of reported early syphilis cases among adolescent females have been identified in Baltimore City. Compared to older female cases, these adolescents less frequently report traditional risk factors such as sex work or incarceration. Given that syphilis is often viewed as an infection of older adults (30 or older), this population may present a challenge for the local elimination of syphilis.

0254

Defining Areas of Core Gonorrhea Transmission in Baltimore, Maryland: The Case for Repeat Infections

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Objective: To describe the geography of persons with repeat gonorrhea infections in Baltimore; and to compare gonorrhea core area definitions using the spatial distribution of isolated gonorrhea episodes and repeat infections.

Methods: We evaluated all reported gonorrhea to the Baltimore City Health Department, STD Program in 2001 - 2002. We defined repeaters as individuals who had at least two reported gonorrhea cases more than 14 days apart. Gonorrhea episodes (isolated and repeat) were geocoded and mapped. Six core area definitions were created based on census tracts with the highest quintile of: (a) cases for 2001 (b) cases for 2002, (c) rates for 2001, (d) rates for 2002, (e) counts of repeat infections over the two year period and (f) the proportion of total cases that were repeat. To assess agreement among the six definitions, percent agreement and kappa

were utilized. K-functions were generated to assess the spatial clustering of the isolated and repeat cases.

Results: Of the 6108 GC cases who had a valid residential address, 550 (9.0%) were repeaters. Areas classified as core by the definitions based on 2001 count data agreed reasonably well with the 2001 rate data (kappa=0.42). Similar agreement were seen among the 2002 count and rate definitions (kappa=0.42). However, the kappa's ranged from 0.13 to 0.36 for the agreement between core areas defined by 2001 and 2002 count and rate data with areas identified by repeat infections, suggesting poor agreement between definitions based on repeat and overall infections. Agreement was good (kappa=0.52) between census tracts identified as core based on the number of repeat infections and the percentage of total GC that was repeat infections. Both isolated cases of gonorrhea (non-repeat) and repeaters showed spatial clustering, yet the extent of clustering between the two groups was not significantly different.

Conclusion: Repeat gonorrhea infections are prevalent in Baltimore City and likely represent behaviors consistent with core transmission. Census tracts of core transmission defined by the geographic distribution of repeat infections may provide a more precise mapping of high risk sexual behaviors to geographic areas of high transmission.

0255

Multiple Dimensions of Stigma and STD-Related Care Seeking in Western Kenya

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Objective: To assess relationship of dimensions of STD-related stigma to STD-related behaviors among Kenyan adolescents and young adults.

Methods: 160 participants (56% women; ages 15-35 years) were recruited from urban and rural clinic sites. Structured face-to-face interviews (in English or Kiswahili) were conducted by trained female interviewers. Participants were asked about 2 outcomes related to STD care-seeking: any STD test in the previous year; and, perceived STD risk in coming year (scored as no chance versus any chance). Multiple dimensions of STD-related stigma were assessed by three subscales: social stigma (reflecting adverse opinions of others; 6 items, alpha = 0.80); STD-related shame (reflecting personal responsibility for STD; 5 items, alpha = 0.78); and, STD-related contamination (reflecting a sense of dirtiness; 2 items, alpha = 0.77). Six multivariable logistic regression models assessed potential influences of gender and stigma on recent STD testing and perceived STD risk

Results: Average social stigma was 18.1 (males) and 17.6 (females; p=NS); STD-related shame was 15.1 (males) and 17.0 (females; $p<0.01$); and, STD-related contamination 4.6 (males) and 4.7 (females; p=NS). Only 14/154 (9%; 9 men and 5 women) reported STD testing in the previous year. STD testing was associated with lower levels of social stigma (Odds Ratio = 0.91; $p < 0.10$) and STD-related contamination (OR = 0.65; $p < 0.03$). Any STD risk was reported by 46% of men and 29% of women ($p<0.05$ by chi square). Perceived STD risk was associated with male gender, lower levels of social stigma (OR = 0.92; $p < 0.02$) and STD-related contamination (OR = 0.83; $p<0.05$).

Conclusion: STD-related stigma, especially social stigma and perceiving a sense of contamination from STD, may pose important barriers to STD-related care-seeking in western Kenya, as in other areas. Interventions to reduce stigma should involve prolonged campaigns to alter attitudes and traditional behaviors.

0257

Prevention of Mother-to-Child Transmission of HIV in St. Petersburg, Russia: A Window of Opportunity

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Objectives: HIV seroprevalence in pregnant women giving birth in St. Petersburg, Russia, increased from 0.2% in 2000 (70/34,339 births), to 0.5% in 2001 (194/36,171) to 1.3% in 2002 (490/39,141). We assessed HIV testing, prenatal care access, and seroprevalence among women giving birth in two high risk maternity hospitals in St. Petersburg and one in Leningrad Region.

Methods: A review of reports from the high risk maternity houses identified 4826 women giving birth from January 1 through June 30, 2002, all of whom received standard, non-expedited HIV testing. We assessed the proportion with no prenatal care access and HIV seroprevalence and antiretroviral treatment among those with no prenatal care. A brief anonymous survey assessed HIV pretest counseling and knowledge that mother to child transmission of HIV is preventable.

Results: We found that 15.2% (734) of women delivering in high risk maternity hospitals in St. Petersburg and Leningrad Region had no prenatal care. Among women without prenatal care, HIV seroprevalence was 8.3% (28/337) and 14% (49/349) in the city hospitals and 19% (9/48) in the regional hospital; none of the HIV positive women nor their infants received intrapartum or postpartum antiretroviral therapy. Among 50 women interviewed, 62% reported HIV pretest counseling and 52% knew that mother to child transmission of HIV is preventable.

Conclusions: In St. Petersburg and Leningrad Region, HIV seroprevalence among women with no prenatal care who delivered in high-risk hospitals was high. The systematic implementation of rapid testing, which became available in June of 2002, along with appropriate antiretroviral therapy in women with no prenatal care is an urgent priority.

0258

Relationship of Vaginal Leukocyte Counts in Women with Bacterial Vaginosis to STDS

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Objective: Bacterial vaginosis is a predictor of genital chlamydia and gonorrhea, and its presence has been associated with vaginal leukocytes (WBCs) and inflammatory cytokines. Our goal was to evaluate whether vaginal WBC counts in women with bacterial vaginosis predict the presence of STDs.

Methods: Retrospective analyses of vaginal WBC counts and STDs in women diagnosed with bacterial vaginosis by a single experienced provider while at a routine new STD clinic visit during a 5-year-period. Vaginal WBC counts were categorized into 2 groups: group 1 ($\leq$5 WBCs per 400x) and group 2 (>5 WBCs per 400x).

Results: Of 313 women with bacterial vaginosis studied, the median age was 25 years (range 14 to 61 years) and 80% were African American. Group 1 consisted of 188 (60%) women and group 2 consisted of 125 (40%) women. There was a trend towards women in group 1 being older than those in group 2 (median age 25 vs. 23; p = 0.085), though race distribution did not differ. Controlling for age and concomitant STDs, group 2 women were more likely to have yeast vaginitis (12% vs. 2%; OR, 8.8; 95% CI, 2.4-32.4; p=0.001), chamydia (23% vs. 7%; OR, 3.2; 95% CI, 1.5-6.7; p=0.003), gonorrhea (24% vs. 10%; OR, 2.7; 95% CI, 1.4-5.4; p=0.004), or trichomoniasis (22% vs. 8%; OR, 3.7; 95% CI, 1.8-7.7; p=0.001). Vaginal WBC counts were not associated with a diagnosis of genital herpes, though this was rare in either group.

Conclusions: Elevated vaginal WBC counts in women with bacterial vaginosis were a strong predictor of yeast vaginitis, chlamydia, gonorrhea, or trichomoniasis. These data support the possible role of vaginal WBC counts in assessing STD risk and need for empiric therapy, and may be useful in resource-limited settings.

0259

Condom Use Error Among Male STD Clinic Patients

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Objective: The goal of this ongoing study is to evaluate condom use errors and problems among primarily African American men seeking an evaluation at an urban, publicly funded STD clinic.

Methods: Data collected from a cross-sectional, theory-based, computer-assisted self-interviewing (CASI) assessment were analyzed.

Results: Of 682 males recruited for this study, 308 (45.6%) reported using a condom at least once in the past 30 days. The mean age of the sample was 25.0 years (range=17-45) while the racial composition was 84.6% African American, 11.7% white, and 3.7% "Other". Self-report condom use errors/problems were high among study participants. Forty-one percent (n=186) stated that they had experienced a condom breaking or tearing, 59.7% (n=270) reported that they did not squeeze any air from the tip of the condom before putting it on, 65.0% (n=294) did not withdraw after orgasm while the penis was still erect, 75.4% (n=341) did not leave space at the tip, 19.2% (n=87) reported putting the condom on after starting intercourse, and 10.5% (n=48) put a condom on inside out, then flipped it over to use it. Only 3.3% (n=15) reported the re-use of a condom after using it during intercourse.

Conclusions: Condom use errors and problems were fairly substantial among these males seeking STD care and could contribute to decreased condom efficacy. Condom use interventions attempting to facilitate consistent use must also provide correct condom use skills to fully address the potential of inhibiting STD transmission.

0260

Physician Practices for Syphilis Screening and Case Management: Differences in Provider Characteristics, Morbidity Levels and Regional Areas

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Objectives: In 1999, a national syphilis elimination effort was initiated. Enhancement of syphilis preventive and care services was deemed critical for accomplishing this goal. This study examines differences in screening and case management practices by physician and examines their clinical practice characteristics.

Methods: In 1999, surveys were mailed to a randomly selected sample of 7,300 U.S. physicians. Completed surveys (N=4,226) were received from all 50 states, with approximately equal regional distribution. The sample was mostly male (70.8%), white (80.6), averaged 17.8 years in practice and had a mean age of 46.2 (sd = 10.3). The patient population served by physicians was 62.8% female, 67.5% white, 18.2% black, 12.9% Hispanic and 10.9% lacked health insurance. Logistic regression models examined the relationship between physician practice characteristics and syphilis screening and case management practices.

Results: Physicians diagnosed an average of 6.6 cases of syphilis (sd = 38.5) while in practice. Screening practices for males, non-pregnant females and pregnant females were examined, separately. Years in clinical practice, diagnosing ^{3} 10 cases and specialty were significant predictors of screening for all three sub-groups. Generally, male screening rates were low with Midwestern physicians half as likely as Southern physicians to screen males. Physicians located in high morbidity areas (HMA) or potential re-emergence areas (PRA) for syphilis were 1.3 times as likely to screen non-pregnant women. Physician practice characteristics significantly predicted syphilis case management practices, separately. For example, female providers were 2.5 times as likely as male providers to tell patients to use condoms. Syphilis morbidity, years practicing, syphilis experience, region of the U.S. and specialty also predicted condom use advice.

Conclusions: Findings indicate that some physicians are not adequately administering syphilis screening and preventive practices. Given recent increases in syphilis rates among men, targeted physician education and training is needed to enhance syphilis elimination efforts.

0261

Characteristics of Non-Participants in Clinical STD Research

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Objective: To assess characteristics of non-participants and reasons for non-participation in a clinical study of sexually transmitted diseases.

Methods: STD clinic attendees (ages 15-24 years) were randomly selected to participate in a clinical research study requiring detailed sexual history, exam and genito-urinary specimens (requiring about 60 minutes), and a 1-month follow-up visit. Benefits included expedited clinical care and payment of $20.00. Data collected from non-participants included gender, age, race, ethnicity, STD history, and source of health insurance.

Results: 496/1,050 (47.2%) invited, eligible patients declined participation. Among non-participants, 320 (64.9%) were male, compared to 45.8% males among participants ($p<0.05$). Most (683/1050; 65.5%) potential participants were African-American. However, non-participants were disproportionately white (27.3% of participants vs. 34% of non-participants; $p<0.05$) and were substantially less likely to report history of sexually transmitted diseases (79.7% of participants vs. 43.2% of non-participants; $p<0.05$). Non-participants were significantly more likely to respond "don't know" to items related to source type of health insurance. Reasons for non-participation were lack of time (61.4% and 50.2%, for males and females, respectively) and lack of interest (39.3% and 29.9% for males and females).

Conclusions: Non-participants differ from participants in terms demographic factors and STD history. High levels of "don't know" responses may additionally reflect lack of interest in the research. Lack of time is the most frequently cited reason for non-participation. Recruitment efforts may need to be specially tailored to ensure appropriate representation of a given clinic population.

0262

Comparison of the Cobas Amplicor Roche PCR assay with culture for N. gonorrhoeae under unique clinical conditions

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Background: Recent studies have demonstrated that nucleic acid amplification methods, such as PCR have greatly improved sensitivity and specificity over culture for the detection of gonorrhea. However, the ability to perform antimicrobial susceptibility testing is lost, as the organism is no longer available. We sought to evaluate the performance of the Roche PCR assay and culture for *N. gonorrhoeae* under unique clinical conditions.

Methods:
Patient population: Male and female clients attending a single STD clinic in Edmonton, Alberta.

Specimen collection: All specimens were collected by STD Nurse specialists. In males, urethral swabs were collected for culture and a 10-20cc first catch urine for PCR. Endocervical swabs were collected for culture and PCR in females. The first specimen collected was randomly assigned so that equal numbers of specimens were collected for culture and PCR.

Gonorrhea culture: The swabs were immediately plated onto New York City agar biplates and incubated in a CO_2 incubator at the clinic site. The specimens were transported to the laboratory twice daily for further incubation and organism identification if necessary.
Gonorrhea PCR: The female swabs were placed into transport media and the male urine specimens were refrigerated at 4°C. Both were transported twice daily to the laboratory for PCR.

Results
Males: 1004 specimens were processed for both PCR and culture. The overall percentage positivity of the male specimens was 1.7%.

	CULTURE +	CULTURE -	
PCR +	17	0	17
PCR -	0	987	988
	17	987	1004

Females: 1006 specimens were processed for both PCR and culture. The overall percentage positivity of the female specimens was 0.7%.

	CULTURE +	CULTURE -	
PCR +	7	0	7
PCR -	0	999	999
	7	999	1004

Overall: The percentage positivity of all specimens was 1.2% with a sensitivity, specificity, PPV and NPV of 100%

Conclusion: Gonorrhea culture was equivalent to the Roche PCR assay under clinical conditions where experienced health care workers collected all specimens, immediately plated the specimens onto specific media with placement into an onsite incubator and daily transport to the laboratory for further processing. The results of this study will allow the continued availability of isolates for antimicrobial susceptibility testing from sites which can facilitate a similar process for the collection of specimens for gonorrhea culture.

0263

The Prevalence of Vaginal Douching Among Women with STDs and HIV

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Objectives: Douching perturbs the normal vaginal flora and can place a woman at higher risk for STDs, HIV, PID and other gynecologic complications. The purpose of this study was to assess the prevalence of vaginal douching among three cohorts of women with STDs in New Orleans. All three cohorts were exposed to health education messages discouraging douching.

Methods: Women from three different cohort studies (i.e. women with *Chlamydia trachomatis* 1998-2001, *Trichomonas vaginalis* 2001-2003 and HIV 2002-2003) were asked about their douching practices in the last month. The prevalence of douching is described.

Results: For all three cohorts (i.e. Chlamydia, Trichomonas and HIV), the majority of the women were African American (97%, 96% and 84%) and the mean ages were [21.0 (s.d. 4.3), 26.0 (s.d. 6.8) and 36.0 (s.d. 8.1)] respectively. Of 569 chlamydia-infected women, 32.2% douched in the last month. Of 186 trichomonas vaginalis-infected women, 26.3% douched in the last month, 69.4% used over-the-counter products and the remaining used home-made products. Of 135 HIV-infected women, 67.5% ever douched and, of those, 97.8% douched once a month or more frequently.

Conclusion: Rates of vaginal douching among these three groups of women with STDs is high despite education to prevent it. More intensive interventions to reduce this practice are needed.

0264

Predictors of Motivational Readiness for Consistent Condom use with Main Partners Among Individuals at High-risk for STD/HIV Infection

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Objective: To determine factors associated with varying degrees of motivational readiness for consistent condom use.

Methods: Data collected from a cross-sectional, theory-based, computer-assisted self-interviewing (CASI) assessment were analyzed.

Results: Of a total of 1470 participants, 1059 (72%) reported having a main partner and were included in the analyses. The mean age of the sample was 24.9 years, the majority (56.4%) were female, and 86.9% were African American. Participants were classified into three groups: (1) individuals reporting no intention to start using condoms (n=266); (2) individuals thinking about starting to use condoms consistently (n=628); and (3) individuals currently using condoms consistently (n=165). Using consistent condom users as the reference group, results from a multinomial logistic regression indicated that being older ($p<.01$), African American ($p<.05$), having a history of STDs ($p<.05$), engaging in sex before age 14 ($p<.001$), and having 6 or more lifetime sex partners ($p<.01$) increased the odds of being in the "no intention to use condoms" group. Fewer distinctions were found between participants who were thinking about changing and consistent condom users. Individuals with a history of STDs and reporting six or more lifetime sex partners had higher odds of being in the "thinking about using condoms" group ($p<.01$ and $p<.05$, respectively), while those who reported having sex within 24 hours of meeting a partner were more likely to be using condoms consistently ($p<.05$). No statistically significant differences were found for gender, education, or employment across the three groups.

Conclusions: The results indicate that a substantial proportion of individuals at greatest risk for STD/HIV have no intention to change their condom use behaviors with main partners and that interventions to increase consistent condom use need to be tailored to individuals' motivational readiness for change.

0265

Multiple Same-Day Coital Events and Condom Use among STD Clinic Patients

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Objective: to describe multiple same-day coital events and condom use among young adults.

Methods: STD clinic attendees (ages 15-24 years) used calendars to identify dates on which coitus occurred in the previous 30 days. For each coital date, participants reported number of partners, number of coital events on that day, and condom use. Condom use was calculated as the proportion of condom-protected coital events.

Results: Among 215 women, 2,980 coital events were reported. Thirteen women reported any single day with more than one sex partner. Women with more than one partner on any day had higher levels of condom-protected events (71%) compared to women who never had more than one partner on the same day (23%; $p<0.05$). Ninety-nine (46%) women reported multiple same-day coital events with the same partner, accounting for 923 (31%) of all coital events. Condom use did not differ among women with any multiple same-day coital events (21%) compared to women who never had sex more than once on a given day (25%). Condom use declined in third and subsequent same-day exposures. Among 246 men, 3,766 coital events were reported. Twenty-three men reported at least one day with more than one sex partner. Men with more than one same-day partner had higher levels of condom-protected events (36%) compared to men who never had more than one same-day partner (28%). 116 (47%) men reported multiple same-day coital events, accounting for 1,318 (34%) of all coital events. Condom use was lower among men with multiple same-day events (21%) compared to those without (32%; $p<0.05$).

Conclusions: Multiple same-day coital exposures with one partner are common. Condom use is less common among men with multiple same-day events, perhaps reflecting sex in more established relationships. Failure to account for condom use in multiple same-day exposures may lead to underestimation of condom effectiveness.

0266

Factors Associated with Sexual Coercion among Adolescent Women

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Objective: Describe interpersonal and behavioral factors associated with sexual coercion among adolescent women with high STI risk.

Method: 152 women ages 14 – 17 years enrolled from primary care clinics. Data were collected from quarterly face-to-face interviews, identifying up to 5 sex partners per interview (10 interviews over 27-months). Data included race (non-black/black), age at interview, and enrollment STI. Partner-specific items included alcohol or marijuana use before sex, duration of sexual relationship, relationship quality (5 items; alpha = 0.92), number of coital events, and number of coital events without condom use. Partner-specific sexual coercion was assessed by four dichotomous items regarding occurrence (in previous 3 months) of exchange of money/gifts for sex, unwanted sex, partner anger if denied sex, and relationship termination if sex were denied. Partner-visit coercion was defined as a positive response to any of these items. A random-effect logistic regression with multiple covariates was fitted using SAS PROC NLMIXED.

Results: Coercion occurred in 177/1,052 (17%) partner-visits. Average number of coital events was 15.0 for partner-visits with coercion, compared to 9.0 for partner-visits without coercion. Average number of coital events without condom use was 12.4 for partner-visits with coercion and 6.8 for partner-visits without coercion. Relationship quality was lower for partner-visits with coercion, but sexual relationship duration was longer with coercion (1.4 years) compared to partner-visits without coercion (0.9 years). Multiple logistic regression showed that coercion was associated with non-black race (OR=0.36, 95% CI 0.14 – 0.93), longer duration of sexual relationship (OR=1.36, 95% CI 1.12 – 1.65), decreased relationship quality (OR=0.9, 95% CI 0.84 – 0.96) and increased condom non-use (OR=1.01, 95% CI 1.0 - 1.02). Coercion was not associated with age, enrollment STI, alcohol and marijuana use.

Conclusion: Coercion is reported in a minority of adolescent sexual partnerships. Condom use is less frequent in relationships associated with coercion.

0267

Predictors of douching behavior among African-American women attending an urban STD clinic

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Objective: To determine predictors of douching behavior among African-American women attending an urban STD clinic.

Methods: Data collected from a cross-sectional,theory based, computer-assisted self-interviewing assessment were analyzed.

Results: Of 665 African-American women participating in the study, 80.0% (n=532) reported ever douching in their lifetime. Among these, 58.6% (n=312) identified themselves as current douchers (douched in the last 2 months). Current douchers most often reported a vinegar and water solution as the product of choice for douching (74.5%), followed by "some commercial product" (17.0%), and a combination of the two (8.5%). Most current douchers douched once a month (71.8%), however, 28.4% reported douching once a week or more. When asked when they usually douche, most women reported after their period ended (74.4%) and when they wanted to feel fresh and clean (47.4%). Current douching status was associated with having a main partner (odds ratio [OR]=1.1; 95% confidence interval (CI), 1.5-5.4) and engaging in one-night stands in the past month (OR=0.4; 95% CI, 1.0-2.4). Ever douching status was associated with not being married (OR=1.4; 95% CI, 1.2-14.5) and older age (OR=0.2; 95% CI, 1.0-1.5). Never douching status was associated with younger age (OR=-0.8; 95% CI, 0.3-0.7) and not having a main partner (OR=-1.42; 95% CI, 0.1-0.5). Contrary to previous studies, no significant associations were found between douching status and number of lifetime sexual partners, number of sexual partners in the last year, drug or alcohol use before sex, condom use at last intercourse, or self-reported STD history.

Conclusions: Douching is common among this high-risk population of African-American women. Future studies should attempt to intervene on sexual risk and douching behaviors as they can collectively pose potentially serious health consequences for women.

0268

Condom Use and Sexual Behaviors after STD Evaluation

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Objective: To assess changes in sexual behaviors, condom use, and correctness of condom use during the 30 days following a clinic visit.

Methods: 269 STD clinic attendees (55% male; ages 15-24 years) completed face-to-face interviews at enrollment and 1-month follow-up visits. At each visit, dates on which coitus occurred in the previous 30 days were elicited. For each coital date, participants reported the number of coital events. For each identified coital event, participants were asked if a condom was used. If a condom was used, 5 subsequent items assessed effective, correct condom use: placement prior to vaginal contact; breakage; vaginal contact after condom removal; use during entire coitus; anchoring during withdrawal. Condom-protected coitus is calculated as the number of condom-protected coital events in proportion to total coital events. Coitus-specific exposure score summarized both use and effectiveness/correctness, ranging from 0 (correct event-specific condom use) to 5 (condom non-use or completely ineffective/incorrect use).

Results: Average proportion of condom use was 31% at enrollment, increasing to 53% at follow-up. The proportion of participants reporting no condom use dropped from 47% at enrollment to 29% at 1-month follow-up.

Ineffective/incorrect condom use was reported at least once by 53% of participants at enrollment and 49% at 1-month follow-up. About 18% of participants who reported any ineffective/incorrect use at enrollment reported completely effective/correct use at 1-month follow-up. However, about 13% reported ineffective/incorrect use at enrollment but at least one ineffective/incorrect use at follow-up. Overall, only 29% of participants reported 100% correct use at both visits. Average coitus-specific exposure score decreased from 3.65 to 2.66 ($p<0.001$).

Conclusions: STD clinic evaluations provide a salient cue-to-action for behavior change as well as opportunity for brief clinical interventions. These data suggest that clinical prevention efforts could benefit from additional emphasis on effective/correct as well as consistent condom use.

0269

Safety and Efficacy Evaluations for Rectal Use of BufferGel in the Macaque Model

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Using our non-human primate model for the safety evaluation of rectally applied topical microbicides, we first investigated the safety profile of BufferGel (ReProtect, Inc.) after repeated rectal application. Effects of three daily applications of product were assessed by rectal flora, pH and evaluation of rectal lavage in test animals, compared to a control (no product) group (n=6/group). Eight different animals were enrolled in an efficacy trial designed to test BufferGel's ability to prevent rectal chlamydial infection (n=5 test vs n=3 control animals). In this study, status of infection was determined by culture, NAAT and serological data.

In the safety study, each animal received three daily intrarectal applications of 2.5ml BufferGel or no product. Each day, a pre-application swab for rectal microbiology, pH and a rectal lavage were collected. Repeat samples were collected 15 minutes after product application.

Microbiological assessments did reveal a decrease in detection of H_2O_2-producing lactobacilli after repeated BufferGel product application (day 4). However, no such shift was noted on a daily basis (15 minutes after product use). As expected, BufferGel use had a transient acidifying effect on the rectal pH. Animals receiving no product recorded slightly higher pH measurements at the 15-minute collection. Observations of rectal washes viewed under 7X magnification, indicated an increase in epithelial desquamation ($=9mm^2$), 15 minutes after BufferGel application, compared to no product use. Ten of the 42 rectal lavage samples collected from BufferGel test animals throughout the experiment revealed sheets of epithelium (one of which occurred at baseline, prior to initial BufferGel use). Four (of six) animals accounted for these observations. Only 3 of the 42 rectal lavage samples collected from control animals contained epithelial sheets. Two animals accounted for these observations.

In the efficacy study, a single rectal inoculation with *Chlamydia trachomatis* (serovar D, clinical rectal isolate) was delivered 15-minutes after a single 2.5ml application of BufferGel in 5 test animals. Control animals (n=3) received no product prior to inoculation. All 8 animals tested positive (culture and NAAT) for chlamydial infection by day 14 post-inoculation.

Repeated rectal applications of BufferGel may cause a reduction in H_2O_2-producing lactobacilli, as well as an increased incidence of epithelial desquamation after product use. A single rectal application of BufferGel did not protect against rectal chlamydial infection in this study.

0270

Transmission of Chlamydia Trachomatis Between Heterosexual Sex Partners; Preliminary Results from a Concordance Study

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Objective: To measure rates of concordance for Chlamydia trachomatis (Ct) infection in heterosexual partnerships (dyads).

Methods:. Sexually active males (M) and females (F) ages 14-24 years attending sexually transmitted disease (STD) clinics in Indianapolis and, in Boston, an emergency room and adolescent clinic, were interviewed, and tested for Ct and other STDs. Sex partners of index participants with Ct infection were offered study enrollment to evaluate Ct infection in sexual dyads. For each member of a dyad, Ct infection status was determined by culture of endocervical (F) and urethral specimens (M, F), and nucleic acid amplification testing (NAAT) of urine (M, F), urethral (M, F), and endocervical specimens (F).

Results: A total of 77 dyads were contributed by 75 index participants (40 female, 37 male) and their partners; median age was 20 years. Dyad members were predominantly non-Hispanic African American (70%). Among 64 dyads with a culture-positive member, 39 partners (61%) were concordant by culture;

2 additional partners were culture-negative, but NAAT-positive. Among those with a NAAT-positive, but culture-negative member (n=13), none had a partner who was Ct-infected by any test, so that overall concordance decreased to 53% (41/77) when infection was defined by either a positive culture or NAAT. Among 36 dyads with either a culture- or NAAT-positive index female, 20 (56%) of male partners had Ct infection. Among 41 dyads with either a culture or NAAT-positive index male, 21 (51%) of female partners had Ct infection.

Conclusions: Crude concordance rates measured in this study were high and similar to those reported previously. Although directionality cannot be assumed in a concordance study, the probability of transmission does not appear to differ by sex. Ct infection could not be documented in any of the partners to persons who were NAAT-positive, but culture-negative, suggesting that there is little transmission by such persons.

0271

Health Compromising Behaviors Among STD Clinic Patients

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Objective: To determine the prevalence of multiple health risk behaviors among STD clinic patients seeking an evaluation visit.

Methods: Data collected from a cross-sectional, theory based, computer-assisted self-interviewing (CASI) assessment were analyzed.

Results: As part of an ongoing study, 748 individuals seeking STD care completed an assessment on a variety of health-compromising behaviors. The mean age of the sample was 24.9 years (range 17-45), the majority (52.3%) were female, 83.3% were African-American, and 55.6% reported having no health insurance. Sixty-three percent of the sample did not use a condom at last sexual intercourse, 55.6% reported having a history of STDs, and 35.6% had concurrent sexual partners. With regards to substance use, 41.9% smoked cigarettes, 32.0% reported having five or more drinks per occasion in the past 30 days, and 38.9% reported drug use in the last 6 months [89.3% pot, 6.5% crack, 4.1% "other" drugs]. Nearly one-third (30.3%) reported usually drinking alcohol or using drugs before having sex. Violence rates were also high with 21.3% reporting that they carried a weapon on one or more days during the past week and 27.6% having been in one or more physical fights in the past 30 days. Twenty-one percent of the sample had also been physically abused by a sex partner in the past year with no gender differences for partner abuse found. Among women, 56.4% reported vaginal douching in the past two months with 27.7% of these women douching once a week or more.

Conclusions: These findings indicate that focusing on a single risk behavior such as consistent barrier protection with STD patients may be too narrow a focus and that a more comprehensive approach to high-risk behavior change is warranted.

0272

Reasons for not Learning Test Results Among STD Clinic Patients

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Objective: To evaluate self-efficacy for learning test results among 717 STD clinic patients during their initial evaluation visit.

Methods: Data collected from a cross-sectional, theory-based, computer-assisted self-interviewing (CASI) assessment were analyzed.

Results: The mean age of the sample was 24.9 years (range 17-45 years), 45.3% were male, and 86.2% were African American. Consistent with previous findings, 16.7% (n=122) of the sample reported during their evaluation visit that they had low self-efficacy for learning their test results in a variety of situations. Specifically, individuals reported low self-efficacy to learn their test results: when they felt they could not contact the clinic during regular business hours (25%; n=179); if their symptoms went away on their own (20.9%; n=150); if they were afraid that the results would show that they were infected (13%; n=93); and, if they were given some medicine by the doctor/nurse during their evaluation visit (10.7%; n=77). Males reported significantly lower levels of confidence than females across all situations (p<.001).

Conclusions: These findings point out the importance of assessing patients' self-efficacy for learning their test results at the evaluation visit so appropriate intervention can be delivered to increase adherence to follow-up recommendations. All reasons provided for not learning test results are amenable at both the individual and system levels.

0273

Commercial Laboratory Participation in Chlamydia Prevalence Monitoring-the Case for Public-private Partnerships in STD control

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Objective: Chlamydia prevalence monitoring is primarily based on collecting line-listed test and patient data from clinics serving family planning, STD, and corrections populations. The logistics of this method are costly and may not be representative of at-risk populations. This study evaluated feasibility of linking chlamydia test results from a commercial laboratory to claims and enrollment data for female family planning clients to estimate prevalence and to compare these estimates with clinic-based prevalence monitoring data.

Methods: Family PACT (Planning, Access, Care, Treatment) test results for chlamydia during December 2000 to July 2001 were extracted by payer code, electronically transmitted to the California Department Health Services Sexually Transmitted Disease Control Branch, and merged with enrollment and paid claims data by unique client identifier. The chlamydia test results were analyzed by

age, gender, race/ethnicity and type of clinical provider and compared with clinic-based sentinel site prevalence data.

Results: The Branch received 54,846 records for 50,958 unique clients (48,587 females) who were seen by 322 public and private sector clinician providers in Southern California. Female chlamydia prevalence was 6.8% (95% CI 6.3-7.4) for age < 20, 4.8% (95% CI 4.5-5.1) for age 20-25, and 2.0% (95% CI 1.8-2.2) for age 26-35 years. Overall, 27.7% of 1851 female cases in the laboratory file were re-tested between one and six months after initial infection. Chlamydia prevalence among those re-tested varied by age, with the highest re-infection rate among females age < 20 years (15.2%, 95% CI 17.9-25.0%). Comparison of these estimates with clinic-based prevalence monitoring data indicated similar differences by age and race/ethnicity.

Conclusions: The linkage of laboratory test data to program enrollment and utilization data is a feasible, less costly, and more precise method of prevalence monitoring in large populations. Estimates of lab-based chlamydia prevalence are comparable to estimates from clinic-based data collection.

0274

Gender of Sex Partners Reported by Men with Primary and Secondary Syphilis, New York City, 2000-2002

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Objective: To characterize the sexual behaviors reported by men with primary or secondary (P&S) syphilis of different racial/ethnic groups in NYC, in the context of an ongoing outbreak of syphilis among men who have sex with men (MSM).

Methods: We analyzed male P&S syphilis cases reported to the New York City Department of Health and Mental Hygiene between January 1, 2000 and June 30, 2002 (n=400) . Sexual behavior was determined by patient report of gender of sex partners during the critical period. Race/ethnicity was defined by self report as Black non-Hispanic (Black), White non-Hispanic (White), Hispanic, and Other.

Results: Overall, 52 men (13%) reported female sex partners only, 237 (59%) reported male sex partners only, 42 (11%) reported sex with both male and female partners, and for 69 (17%), gender of sex partner was unknown. Stratifying by race/ethnicity revealed significant differences (p<0.0001). Bisexuality was reported more often by Black men (19%) than by any other racial/ethnic group (Hispanics, 10%; Whites, 4%). Black men were also the most likely to report sex with women only (23%). White men were more likely to report sex with only men (82%) than were any other racial/ethnic group; only 2% reported sex with only women.

Conclusions: Continued increases in syphilis among MSM underscore a need to gain a better understanding of risk behaviors and transmission pathways. The risk for introduction of syphilis into the female population may differ by race/ethnicity. Study findings may also be a reflection of racial/ethnic differences in the willingness to disclose having sex with another man. If men of one racial/ethnic background are less likely to disclose MSM behaviors, female sex partners to men in that group may be at an increased risk for sexually transmitted diseases including HIV.

0275

In-vitro susceptiblity testing of Trichomonas vaginalis

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Objectives: This study was undertaken to determine the emergence of resistance in T vaginalis isolates obtained from a tertiary diagnostic hospital laboratory service using a variety of methods.

Methods: In the absence of internationally acceptable susceptibility testing guidelines, questions have been raised about atmospheric requirements, time of incubation and visual detection of endpoints. In this study, minimum inhibitory concentrations (MIC) were determined for 36 isolates where: (1) aerobic incubation was compared with anaerobic incubation. (2) incubation time of 24 hours was compared with 48 hours (3) endpoints were determined by use of a pH colour indicator for visual readings compared to microscopy results Minimum lethal concentrations (MLC) results were obtained by passaging isolates into fresh culture medium and incubating them for 7 days

Results: All strains tested had MIC values ≤ 8 µg/ml MIC50 and MIC90 values were lower after 24 hours incubation compared to 48 hours incubation Visual MIC readings were slightly lower than microscopic read results for both aerobic and anaerobic incubation MLC concentrations ranged from 0.25 µg/ml to 12.5 µg/ml MLC50 for aerobic incubation was higher than MLC50 under anaerobic incubation MLC90 for anaerobic incubation was higher than MLC90 under aerobic incubation

Conclusions: All strains tested were regarded as being susceptible to metronidazole (resistant values being 100 µg/ml) Visually read results had lower MIC values than microscopically readings Values obtained under aerobic incubation were similar to values obtained under anaerobic incubation. Where values did not correlate the differences were minimal.

0276

Trichomonas Vaginalis and HIV Vaginal Shedding

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Objectives: While the influence of cervical infections on HIV vaginal shedding has been studied, far less information is available on vaginal infections and shedding. The purpose of this study was to compare HIV vaginal shedding among HIV-infected women with and without Trichomonas vaginalis (TV) infection and HIV-infected women with TV before and after treatment for TV.

Methods: Women attending an HIV outpatient clinic were screened at baseline and one month for TV using the InPouch system. Vaginal secretions were collected using a dacron swab and analyzed for cell free HIV RNA with the Amplicor HIV-1 Monitor test from Roche Diagnostics (level of detection=50 c/mL).

Results: Of 39 women enrolled thus far (16 TV^+ and 23 TV^-), 62% were on ART, and 25.6% had detectable virus in their vaginal fluids at baseline (range 87 - 25,250) and 74.4% had detectable virus in their plasma (range 57 – 410,181). At baseline, TV^+ were more likely to have detectable vaginal virus (VV) than TV^- (37.5% vs. 17.4%, $P<0.16$) and women with detectable plasma virus (PV) were more likely than those without to have detectable VV (34.5% vs. 0%, $P< 0.03$); those who were on ARV were less likely than those not on ARV to have detectable PV (66.7% vs. 91.7%, $P < 0.10$) and VV (12.5% vs. 50.0%, $P < 0.02$); TV^+ were as likely as TV^- to have vaginal inflammation (i.e. >1 PMN per gram stain). Among all women from baseline to one month, 17.9% had a > 1 log increase in vaginal HIV, 61.5% had no change and 20.5% had > 1 log decrease. Those who were TV^+ and treated for TV were more likely to have > 1 log decrease in vaginal HIV compared to those who were TV^- (37.5% vs. 8.7%, $P < 0.09$).

Conclusion: This study suggests that co-infection with TV may cause increased HIV vaginal shedding and that TV treatment can reduce this shedding.

0277

Octylglycerol as a Topical Microbicide: Preclinical Safety Evaluations for Rectal Use of a Liposome Formulation

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Octylglycerol is a low molecular weight compound that has been shown to have in vitro activity against STDs including HIV without negatively affecting *Lactobacillus crispatus*. In order to successfully deliver the active agent octylglycerol, it has been formulated in a stable, safe and effective dosage form using liposomes to encapsulate the active compound. Liposome encapsulation allows for prolonged residence time of the octylglycerol at the site of application, and provides a means of targeted delivery to infectious agents. The formulation tested in the non-human primate studies contained 1% octylglycerol.

Using our non-human primate model for the safety evaluation of rectally applied topical microbicides, we investigated the safety profile of the liposome-encapsulated octylglycerol (OG 1%) formulation (Optime Therapeutics, Inc.) after repeated rectal application. Effects of three daily applications of product were assessed by rectal flora, pH and evaluation of rectal lavage in test animals, compared to a control (no product) group.

In this safety study, each animal received three daily intrarectal applications of 2.5ml OG 1% or no product. Each day, a pre-application swab for rectal microbiology, a pH measurement and a rectal lavage were collected. Repeat samples were collected 15 minutes after product application.

In general, the octylglycerol formulation appeared to have a somewhat neutralizing effect on rectal pH, measured 15 minutes after product application. Rectal lavage samples were assessed under a dissecting microscope, where presence of fecal debris, blood and sloughed epithelium were noted. Epithelial sheets measuring at least 3mm in any dimension were measured and assessed visually for presence of attached stromal tissue and/or red blood cells. All findings were recorded. Observations of rectal washes viewed under 7X magnification, indicated no increase in epithelial desquamation, stroma or blood associated with use of the OG 1% formulation, compared to no product use. Microbiological assessments are ongoing.

Repeated rectal applications of liposome-encapsulated octylglycerol (1%) appear to be non-toxic to rectal tissues as measured in this study. Liposome encapsulation of the active antimicrobial compound octylglycerol, appears to allow for safe product delivery for a topical microbicide, intending to have activity in sensitive mucosal environments. Safety assessments of the OG 1% formulation are continuing, and preclinical efficacy studies are planned as well.

0278

Trends in Neisseria Gonorrhea Infection in New York City, 1994-2002

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Objective: To describe trends in Neisseria gonorrhea (GC) infections reported for New York City (NYC) residents between 1994-2002.

Methods: We used all GC cases reported to the NYC Department of Health and Mental Hygiene between 1994 and 2002 to calculate case rates per 100,000 population. For each case, residence was defined using their zip code at the time of report; cases were classified as belonging to one of 42 NYC neighborhoods. Population estimates were derived from interpolated estimates from the 1990 and 2000 censes.

Results: Between 1994 and 2002, the overall GC rate declined from 238 to 146 cases per 100,000. Among females, the rate declined 43% (from 246 to 139/100,000); in contrast, the rate among males declined 42% between 1994 and 1998, and then increased slightly from 1999–2002. In 2002, the male case rate surpassed the female case rate for the first time. Among women, 15-19 year olds have the highest rates, accounting for almost one third of all female cases, while the highest male case rate is among 20-24 year olds. Fourteen of the 42 NYC neighborhoods (33%) had a case rate higher than the NYC average. While these neighborhoods comprise only 33% of the total city population, they accounted for 65% of cases reported in 2002.

Conclusions: Despite decreases in the overall rate of GC in NYC, large segments of the population, predominantly adolescents and young adults, continue to have high rates of infection. In the face of declining rates among women, leveling of case rates among males may reflect increases among men who have-sex with-men. Individual-level risk information would help to better characterize risk groups, however, neighborhood level data may prove useful for targeting risk reduction messages.

0279

Assessment of the National STD and AIDS Hotline Clinical Services Directory: What

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Objectives: The CDC National STD and AIDS Hotline (CDC NSTDAH) provides a 24-hour toll-free referral service for callers seeking STD care. This service is considered an important point of contact for individuals accessing local STD clinical services. The objectives of our study were to determine the frequency and type of referrals provided by the hotline and to describe the scope of referral information available to callers requesting local clinical resources.

Methods: We assessed the database of STD clinical service providers in the United States maintained by the CDC NSTDAH and reviewed NSTDAH annual reports.

Results: In 2002, 36% of the 669,484 callers to the hotline were provided referrals to public health clinics, health care providers, or Planned Parenthood. The directory includes the clinic name; address; telephone number; appointment requirements; fees; hours of operations; and services offered. The database is updated annually and includes providers based on information submitted by callers, health communication specialists, or the facilities themselves. Of the 3,902 STD providers listed in the directory, the majority are public health facilities. However, the actual clinic providing services is often not indicated. Providers are located in all 50 states, American Samoa, Guam, Puerto Rico, and Washington, DC. Approximately one-half of the providers do not require appointments or charge a fee. The hours of operation, the services provided, and general comments are not collected or listed in a uniform format.

Conclusions: Accessible STD clinical care is a critical component in the prevention of STDs. CDC NSTDAH provides an essential link to persons needing STD services. Standardizing the collection and reporting of provider information could enhance the quality of the database and avoid creating potential barriers to STD care.

0280

Neonatal Herpes Simplex Virus Infections in Canada

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Objectives: To determine the incidence, determinants and morbidity/mortality of neonatal herpes simplex virus (HSV) infections in Canada.

Methods: Monthly, from 2000-2003, CPSP is actively eliciting from all Canadian paediatricians any new cases of laboratory-confirmed neonatal HSV infections. The paediatrician uses a questionnaire to report on demographics, maternal and neonatal risk factors, laboratory results, treatment, and outcomes. A follow-up questionnaire on developmental outcomes for each surviving case will be submitted annually for 3 years in a cohort study.

Results: From October 1, 2000 (study outset) to December 31, 2002, there were 43 cases of neonatal HSV infection (5.8 per 100,000 live births), with 5 additional cases still under investigation. Mean maternal age was 26 years, with 76% Caucasians, no mother with HIV infection, and C-sections performed in 21%. 9/14 women (64%) had a reported genital herpes history before delivery. Mean gestational age was 38 weeks, mean birth weight 2935g and median 5-min APGAR 9. Fifteen neonatal HSV cases (38%)

were HSV-2. 8/12 disseminated cases (67%) were HSV-2 whereas 7/26 localized cases (27%) were HSV-2, ($p<0.05$). Dissemination occurred in 16/42 (38%), in 56% of C-section vs 33% of vaginal delivery cases ($p=0.2$). Case fatality rate (CFR) was 16%, with deaths occurring in the majority of disseminated cases (31% vs 4% for localized cases, $p<0.05$). All disseminated cases were treated with IV acyclovir.

Conclusions: A significant number of women were unaware of a genital HSV history. C-section did not reduce the risk of dissemination. HSV-2 was associated with dissemination. Over half of the neonatal HSV cases were HSV-1. This has implications for vaccine development.

0281

The Prevalence of and Factors Associated with Trichomonas Vaginalis Among HIV-Positive and Negative Women

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Objectives: Most public health clinics do not screen for *Trichomonas vaginalis* (TV) and therefore good prevalence estimates do not exist. The purpose of this study is to describe the prevalence of and factors associated with a TV infection among women attending a public family planning and an HIV outpatient clinic in New Orleans.

Methods: Women were screened using InPouch™ culture at a public family planning clinic (Jan-Dec, 2002) and at a public HIV clinic (June-Nov, 2002). Cultures were read by trained technicians immediately, at 24 and 72 hours. Demographic information was collected via personal interview or chart abstraction.

Results: At the FP clinic, 3411 women were screened, 8.6% were TV positive and 78/294 (26.5%) were detected on the 2nd or 3rd reading of the culture, 94.1% were African American, 42.6% were < 24 years old. At the FP clinic, factors associated with TV infection in multivariate logistic regression were age < 24 [O.R. 1.61 95% C.I. 1.26-2.07], and African American race [O.R. 8.5 (2.13-34.03). At the HIV clinic of 167 screened 38 were TV positive (22.6%) and 9/38 (23.7%) were detected on the 2nd or 3rd reading, 81.8% were African American and 94.7% were > 24 years. Age and race were not associated with TV positivity among the HIV infected women, but TV/HIV co-infected women were more likely to be Chlamydia positive (12.1% vs. 2.3%, $P < 0.03$). Two women at the FP clinic and two women at the HIV clinic demonstrated clinical metronidazole resistance but were their samples were sensitive upon culture.

Conclusion: There is a high rate of TV infection among women at these two sites and a high percentage of these positives were detected after the initial read indicating the importance of using more sensitive techniques.

0282

Wetmount Versus Cervico-vaginal Lavage for Detection of Trichomonas Vaginalis (TV) and Bacterial Vaginosis (BV)

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Objectives: Wet mount (WM) is used far more often than cervico-vaginal lavage (CVL) for the detection of several STDs. However, the latter is commonly done for research purposes and it would be useful to know the adequacy of microscopic studies for TV and BV using this specimen. The purpose of this study was to determine if these two specimens are comparable for diagnosing these diseases.

Methods: Motile trichomonads and clue cells were identified using both the WM and the CVL. BV was diagnosed from each specimen independently if the woman had both a positive whiff test and 20% or greater clue cells. Results from these two techniques were compared to the gold standards (InPouch culture for TV and Nugent's gram stain criteria for BV). All of the women were recruited from an HIV outpatient clinic.

Results: Of 167 tested, 22.8% were TV positive by culture. Sensitivities and specificities for microscopic examination of WM and CVL were the following: (43.2, 92.7) and (51.4, 90.2). Only 3.6% of women were diagnosed with BV by Nugent's score. Sensitivities and specificities for WM and CVL were the following: (16.7, 75.8) and (16.7, 72.7). When intermediate scores were included in the definition of BV the prevalence increased to 33.5% and the sensitivity and specificity for WM and CVL increased to (33.3, 94.6) and (37.8, 94.6) respectively.

Conclusions: Low but comparable sensitivities were found for both WM and CVL techniques for detecting TV and BV. Though the CVL appears to be equivalent to a WM for the point-of-care diagnosis of these conditions more sensitive techniques are needed.

0283

Molecular Epidemiology of Quinolone-Resistant Neisseria Gonorrhoeae in California, 2000 - 2002

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Objectives: From 2000 to 2002, the prevalence of quinolone-resistant N. gonorrhoeae (QRNG) in California increased significantly from 1% to nearly 10% of isolates tested.

Our goal was to understand the number of unique strains of QRNG that were prevalent in California and epidemiologic characteristics of the patients infected with different strains.

Methods: Cases included 88 patients with ciprofloxacin-resistant N. gonorrhoeae (MIC >1.0 *f*Ýg/mL) identified in California between January 2000 and June 2002. The majority of cases were identified from STD clinics in California (Long Beach, Orange County, San Diego County, and San Francisco) participating in the Gonococcal Isolate Surveillance Project (GISP), a national surveillance system for monitoring antimicrobial-resistant N. gonorrhoeae. Additional cases were identified among women and men in the southern California GISP sites and Southern California Kaiser Permanente. Demographic and risk factor data were collected from medical records and patient interviews. Eighty-five QRNG isolates were characterized by using pulsed-field gel electrophoresis (PFGE) SpeI and NheI restriction; 73 isolates were characterized by auxotype, Lip, gyrA and parC.

Results: Reflecting the population from which they were drawn, nearly all (95%) of 88 cases were male; most (70%) were men who have sex with men (MSM). Fourteen auxotype/Lip/GyrA/ParC and 28 PFGE types were identified; 11 of which were closely related. Pro/17c/91>Phe, 95>Gly/87>Arg isolates accounted for 77% (56/73) of the QRNG isolates; 79% (44/56) of which belonged to 12 closely related PFGE type A subtypes. Isolates from MSM were more likely to be outbreak strains (closely related PFGE type A subtypes) compared with non-MSM (75% versus 16%, p<.01).

Conclusions: Closely related strains accounted for a majority of California QRNG infections, particularly among MSM. Identifying the number and epidemiology of different strains provided insight into the epidemic spread of drug resistant GC and may lead to new methods of controlling the spread of QRNG.

0284

Gonococcal Susceptibility and Epidemiological Trends: Data from the Gonococcal Isolate Surveillance Project, United States, 2002

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Objective: To describe antimicrobial susceptibility data and epidemiological data from the Gonococcal Isolate Surveillance Project (GISP), the national sentinel surveillance system through which surveillance of gonococcal resistance in the United States is conducted.

Methods: In 2002, STD clinics in 27 U.S. cities provided the first 25 male urethral gonococcal isolates each month to GISP for antimicrobial susceptibility testing by the agar dilution method. Clinical information on patients from whom the isolates were obtained was abstracted from medical records.

Results: Preliminary 2002 data on 4735 gonococcal isolates are available. In 2002, 91 (1.9%) ciprofloxacin-resistant (MIC$1.0 Fg/ml) isolates were reported from 12 clinics compared with 2001 when 38/5472 (0.7%) isolates were identified at 6 clinics. Most 2002 ciprofloxacin-resistant isolates (74/91) were from the one Hawaii clinic (prevalence, 12.0%) or the 4 California clinics (overall prevalence, 10.4%). In 2002, there were 31 isolates with azithromycin MIC$1.0 Fg/ml from 15 clinics compared with 2001 when 15 such isolates were identified at 8 clinics. There were no isolates with cefixime MIC > 0.5 Fg/ml or ceftriaxone MIC > 0.5 Fg/ml in 2002. GISP patients in 2002 had a median age of 26 years (range, 12-81 years) while 19.9% identified as men who have sex with men (MSM), reflecting a continuing annual increase since 1993 in the proportion of GISP patients who are MSM. From June 2002 onwards, additional patient data showed that 9.1% of GISP patients were HIV-positive, and that during the 60 days prior to diagnosis, 3.1% had used injection drugs, 27.2% had used non-injection recreational drugs, and 4.7% reported exchanging money/drugs for sex.

Conclusions: Ciprofloxacin-resistant gonococci are endemic in Hawaii and California, and are appearing sporadically elsewhere in the U.S. A substantial and increasing proportion of male gonorrhea infections are among MSM. Ongoing nationwide antimicrobial susceptibility surveillance provides valuable gonococcal resistance and epidemiological data.

0285

A Transcription-mediated Amplification (TMA) Assay for the Detection of Mycoplasma genitalium (MG) in Clinical Specimens

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Introduction: Mg has been shown to be strongly associated with NGU in men. The role of the organism in genital tract infections in women remains to be determined. Research is hampered by lack of an efficient, standardized diagnostic assay for the organism. Here we report our work with a Gen-Probe TMA assay that~~which~~ could fulfill this need.

Methods: A TMA assay specific for Mg rRNA that follows the format of the APTIMAâ Combo 2 Assay was created for research use. Frozen urine specimens were added to stabilizing transport media and tested directly. The LSU in-house PCR comparator assay has been published previously. Urine and urethral swab specimens were obtained from men with NGU and were processed for Mg PCR prior to freezing one ml unprocessed urine aliquots at -70° C. Men were defined as Mg infected if they had a positive urine PCR test for Mg that was confirmed by either a repeat positive test from frozen urine aliquots or a positive result from a swab specimen.

Results: The TMA assay was specific for Mg and did not cross react with other mycoplasma or STD agents. Analytically, it was 10-fold more sensitive than the PCR assay.

Among 177 NGU cases tested by PCR, 36 (20.3%) were positive of which 35 were positive by TMA (sensitivity = 97.2%) In141 PCR negative cases, 140 were negative by TMA (specificity = 99.3%).

Conclusions: The TMA assay is highly sensitive and specific for the detection of Mg in male urine specimens. The advantage of the TMA assay over PCR is the potential for much higher laboratory throughput and the availability of standardized equipment and reagents. If confirmed these results are important as many other investigators will be able to initiate clinical research studies of this potentially important sexually transmitted pathogen.

0286

An Ecologic Analysis of Neisseria Gonorrhoeae Infection Among men who have Sex with Men in New York City

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Objective: To determine whether recent trends in rates of *Neisseria gonorrhoeae* (GC) among men may be explained by increases in GC transmission among men who have sex with men (MSM) in New York City (NYC).

Methods: Using laboratory confirmed GC cases reported to the NYC Department of Health and Mental Hygiene between 1998 and 2002, and interpolated estimates from the 1990 and 2000 censuses, we calculated the rate of GC infection among 18-64 year old males in 33 neighborhoods. We estimated the percent of sexually active men in each neighborhood who reported sex with another man in the past 12 months from a city-wide survey of health risk behaviors among NYC residents. Using neighborhood as the unit of analysis, linear regression techniques were used to measure the association between male GC rate, and MSM prevalence, adjusting for race and income within each neighborhood.

Results: Overall, 10% of NYC men surveyed reported sex with men in the past 12 months (range by neighborhood, 2.3%-26.4%). For each of the years examined (1998-2002) there was a significant association ($p<0.05$) between male GC rate and MSM prevalence after adjustment for race and median neighborhood income. MSM prevalence explained an increasing proportion of the adjusted GC rate between 1998 (8%) and 2002 (16%).

Conclusions: Our results suggest that an increasing proportion of male GC cases in NYC may be transmitted by sex among MSM. Health messages and other efforts aimed at reducing risky sexual behavior among MSM should be enhanced and expanded. Surveillance activities should be extended to collect risk information for male GC cases on an individual level.

0287

Feasibility of Population-Based STI Prevalence Studies: Preliminary Findings From a Mailed, Home-Collected Urine STI Prevalence Study

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Objectives: There are no population-based studies of STI prevalence among young adults in Canada. Postal urine STI screening methods have been used with varying success in the USA, Europe and Australia. We describe methods and response rate from an ongoing cross-sectional STI prevalence study in 15-30 year olds in British Columbia(BC), Canada.

Methods: A stratified(six age and sex strata) random sample was obtained from the BC Ministry of Health healthcare database. A letter describing the study is sent to target subjects. Postal returns are disqualified. Two weeks later, a package containing urine collection supplies, questionnaire (sociodemographic, sexual health and behaviour), stamped return envelope, and optional consent for results notification is mailed to all qualified target subjects. Subjects complete the questionnaire and return it and the optional consent to the study centre, and self-collect a urine specimen that is dropped off at a community health unit or participating commercial or hospital laboratory for transport to the study centre. Urine is tested for chlamydia and gonorrhea. Participants are offered a $20 honorarium and are entered into a 'lottery' for a $500 gift at study completion. Two reminder postcards are sent at 2 and 4 weeks following package mailout.

Results: Between 27/12/02 and 15/04/03, 806 letters have been sent, 151(19%) of which were postal returns. Study kits and reminder postcards have been sent to 655 target subjects. 26(4%) have called to decline participation, and 89(14%) specimens and 39(6%) notification consents have been received. Participation has been evenly distributed by age and sex.

Conclusions: Screening for STIs by postal survey methods is feasible. However, the preliminary response rate is poor so that it is questionable whether STI prevalence estimates would be truly representative of the 15-30yr old target population. The investigators are currently exploring alternative methods to maximize response rates.

0288

Diagnosis of Bacterial Vaginosis Using BV Stix

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Objective: To evaluate BV Stix as a point of care test for the diagnosis of bacterial vaginosis

Methods: 55 non-menstruating women ³ 16 years who presented with abnormal vaginal discharge were recruited. Vaginal fluid was collected from the posterior fornix. One swab was used for pH determination and preparation of a slide for Gram staining (Nugent score). The second swab was used to undertake the BV Stix test at the bedside. Vaginal discharge was applied to the two pH indicators and then the KOH impregnated strip. The pH indicators were read within 30-90 seconds and compared to a color chart. Both pH A & B had to be >4.5 for a positive result. The KOH strip was assessed for a "fishy" odour. Amine odor was performed on vaginal secretions remaining on the posterior lip of the speculum by the addition of 10% KOH. The Amsel criteria was assessed based on the identification of three of four of the following characteristics of vaginal discharge: whiff test, pH, presence of clue cells, and appearance of discharge. Demographic features were collected via a self-administered questionnaire.

Results: BV Stix compared to Gram stain had a sensitivity, specificity, PPV, NPV of 90.5%, 100%, 100%, and 89.5% respectively, whereas the comparison to Amsel had a sensitivity, specificity, PPV, NPV of 100%, 100%, 100%, 100% respectively. BV Stix compared to only pH and KOH had 95.2%, 94.4% sensitivity, 100%, 91.7% specificity, 100%, 89.5% PPV and 95.2%, 95.7% NPV, respectively. The presence of clue cells compared to BV Stix was sensitive (90.5%) and specific (95.5%), unlike the presence of abnormal vaginal discharge.

Conclusions: BV Stix would be useful in physician's offices, STD clinics, birth control centers, and prenatal clinics as a point of care test to help establish Amsel criteria.

0289

The Changing Epidemiology of Syphilis in New York City, 1998-2002

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Objective: To describe the epidemiology of Primary and Secondary (P&S) syphilis in New York City (NYC) from 1998 to 2002.

Methods: Reporting of syphilis cases to the NYC Department of Health and Mental Hygiene is mandated by law. We reviewed cases of P&S syphilis reported in NYC from 1998 to 2002, and calculated case rates per 100,000 population using data from the 2000 United States census.

Results: After years of steady declines, there has been a five-fold increase in the annual case-rate of P&S syphilis in NYC (1.1/100,000 in 1998 to 5.4/100,000 in 2002). During this period, cases are increasingly being diagnosed outside the health department Sexually Transmitted Disease clinics, (61% in 1998 to 23% in 2002). The male:female case ratio increased from 3.5 to 16.2; male case rates increased from 1.8/100,000 men to 10.7/100,000. In 2002, 94% of cases were among men. Despite these increases, the mean age for male syphilis cases has remained unchanged at approximately 35 years. Whites account for an increasing proportion of male cases (7% in 1998, 31% in 2002); African American men have the highest case rates (11.7/100,000 in 2002). Among the five boroughs of NYC, the largest increases in rate have occurred among male residents of the borough of Manhattan (from 1.9/100,000 to 33.1/100,000). On average, between 60 and 75% of P&S cases are interviewed. Preliminary data for 2002 suggest that the proportion of male cases reporting sex with other men (MSM) has increased to 66%. Among MSM, self-reported HIV infection has increased from 20% in 1999 to 67% in 2002.

Conclusions: MSM is an important factor for syphilis transmission in NYC. The increasing proportion of MSM coinfected with syphilis and HIV suggests increases in unsafe sexual practices among MSM, particularly those who are HIV-infected, and may be a harbinger of increases in HIV incidence among MSM. Further understanding of the motivations and behaviors among MSM is necessary.

0290

Prevalence and Subtypes of HPV Infection and Relationships to HIV-1 Infection and Classic STDs in Ugandan Women Attending the National STD Referral Centre

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Objective: To define the prevalence of Human Papillomavirus (HPV) infection in Ugandan women presenting to an urban STD clinic, and to examine the relationship of coinfection with HIV-1 and other STDs.

Methods: We conducted a prospective, cross-sectional evaluation of STDs in women presenting to the National STD Referral Centre in Kampala, Uganda between June 4 and July 12, 2002. Of 238 women presenting

during this time, 135 consented to participate, were interviewed about demographics and sexual behavior, and underwent complete physical exam. HIV status was determined by ELISA confirmed with rapid HIV-1 testing. Prevalent syphilis was established by positive VDRL titers confirmed with MHATP. Clinician–obtained cervical samples were evaluated for *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) by PCR. Cervical and vaginal swabs were collected for HPV PCR testing. HPV type was determined by PCR/reverse blot strip assay. Specimen adequacy was determined by amplification of human beta-globin sequences.

Results: 10.4% of specimens were inadequate for HPV testing, resulting in inclusion of 121 women. Despite a low prevalence of syphilis and bacterial STDs (2% and 7%, respectively), overall HPV prevalence was 49.6% (60/121). Oncogenic HPV genotypes were detected in 91.7% (55/60). High risk genotypes 52 (13.2%), 16 (8.3%), 58 (6.6%), 83 (6.6%), and low risk genotype 6 (6.6%) were detected most frequently. Genital warts were noted in 10 HPV positive women and 6 HPV negative women (R^2 = 0.006). HIV prevalence was 35.5% (48/135) overall, and 33% (40/121) among women included in the analysis. HPV infection was detected in 70% (28/40) of HIV seropositive women versus 40% (32/81) HIV negative women; C^2 =9.96 (p=0.002). Oncogenic genotypes were detected in 93% (26/28) of the HPV infected HIV seropositive women.

Conclusions: HPV prevalence was 50%. Oncogenic HPV genotypes were responsible for more than 90% of HPV infections. There was a significant association between HIV and HPV infection.

0291

Translating HPV Knowledge into Practice: Findings from Primary Care Provider Interviews

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Objective: To understand current knowledge and practices of primary care providers who care for patients at risk for or infected with genital human papillomavirus (HPV).

Methods: Structured telephone interviews were conducted with 27 randomly selected physician and midlevel providers from different US regions who managed genital warts or offered Pap screening. Using qualitative analytic methods, we identified provider HPV knowledge domains linked to specific provider practices.

Results: Three domains of provider HPV knowledge were identified: (1) distinction of high-risk and low-risk HPV types; (2) transmission; and (3) prevention. Most providers recognized that high-risk HPV types cause cervical dysplasia and low-risk HPV types cause genital warts. Nevertheless, some providers who recognized this distinction recommended Pap screening at the time of wart diagnosis. Although most providers verbalized understanding of HPV as an endemic viral STI and many stated that they thought current sex partners of patients with warts or cervical dysplasia were likely already HPV-infected, most providers counseled such patients to use condoms with current sex partners or recommended that their current partners to be examined for signs of HPV infection. For some providers, counseling patients diagnosed with warts or cervical dysplasia to use condoms with current partners reflected a concern that, because these patients were HPV-infected, they were also at risk for acquisi tion of othe r STI s and HI V.

Conclusions: Deficits in providers' HPV knowledge cannot completely explain inconsistent and incomplete translation of this knowledge into practice. Other factors appear to motivate provider practice such as perceptions about patient risk for other STIs and HIV. Interventions to align provider practices with up-to-date information on the natural history of HPV viral types, transmission and prevention must address factors other than HPV knowledge that contribute to individual provider decisions about managing and counseling patients with clinical manifestations of HPV infection.

0292

Only RPR Screening of High Risk Individuals...is that Enough?

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Objective: To assess whether the rapid plasma reagin (RPR) test is sufficient to be used alone in a mass screening campaign of high risk individuals to make the diagnosis of "no early syphilis" (primary, secondary or early latent) and therefore require no further testing with the microhemagglutination for Treponema pallidum (MHA-TP) and the fluorescent treponemal antibody absorption test (FTA-ABS).

Methods: Syphilis serology data from an evaluation study of the Syphilis Mass Treatment/Prophylaxis Initiative were reviewed. RPR, MHA-TP and FTA-ABS testing were performed on each blood sample. Two diagnoses were made for each set of test results. The initial diagnosis was based on only the RPR test result: a non-reactive RPR was diagnosed as "no early syphilis" whereas a reactive RPR was diagnosed as "query early syphilis". The confirmed diagnosis required an experienced STD clinical physician to interpret the RPR, MHA-TP and FTA-ABS test results to make the diagnosis of "no syphilis", "early syphilis" or "previously known syphilis". Particularly for each non-reactive RPR, the initial diagnosis was compared to the confirmed diagnosis to assess whether the initial diagnosis of "no early syphilis" matched its corresponding confirmed diagnosis.

Results: A total of 390 study participants each provided a blood sample of which 3 (0.8%) did not provide sufficient serum for testing. Of the 387 samples tested, 361 (93.3%) had a non-reactive RPR of which 1 (0.3%) with an initial diagnosis of "no early syphilis" did not match its corresponding confirmed diagnosis of "early syphilis".

Conclusion: Based on the syphilis serology data from the evaluation study, it appears that the RPR test alone may suffice in a mass screening campaign of high risk individuals to make the diagnosis of "no early syphilis" provided that the RPR is non-reactive. Only

reactive RPRs would require additional MHA-TP and FTA-ABS testing. Further studies are needed.

0293

Repeat Detection of Human Papillomaviruses in Women with Human Immunodeficiency Virus

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Background: Women who are co-infected with Human Immunodeficiency Virus (HIV) are at a greater risk of HPV infection and development of cervical dysplasia. The aim of this study was to determine the short-term persistence of high-risk HPV in the cervix, vagina, and urine of HIV co-infected women.

Methods: Six HIV/HPV co-infected women were followed by cervical, vaginal, and self-vaginal swabs and urine samples for 12 consecutive weeks. DNA was isolated and amplified by polymerase chain reaction (PCR) using PGMY09/11 primers. All HPV positive samples were genotyped using Roche's reverse line blot assay for HPV.

Results: Of the total sample population, 82% were amplifiable, and of those, 96% were determined HPV positive, and 79% were multiply infected. All sample types had a high presence of HPV: cervical, 97%, urine, 100%, vaginal, 98%, and self-vaginal, 95%. Upon genotyping, it was observed that each patient carried a dominant HPV for each site sampled. While there was in influx of several genotypes for each patient throughout the study, the constant type remained present 75% of the time. The constant genotype for one site was seen at two of three other sample sites on average.

Discussion: In this short-term pilot study, it was determined that true, HPV infections can be repeatedly detected by DNA due to the remarkably stable rates over this 3-month period. This implies that longer intervals between sampling time points can be utilized in HPV persistence studies even in HIV-co-infected women. Current HPV persistence studies are enrolling a larger cohort of HIV+ women (n=200) and following these women at 6-month intervals.

0294

Clinician Adherence to Centers for Disease Control

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Objective: To evaluate clinician's adherence to Centers for Disease Control's (CDC) chlamydia treatment guidelines in two U.S. health plans.

Methods: In 2000, 743 of 907 clinicians in two large health plans completed a mailed survey on chlamydia treatment practices, and CDC's 1998 STD Treatment Guidelines use. Guideline adherence was defined as reported use of CDC-recommended antibiotics for laboratory-confirmed chlamydia-infected patients. Because stratified probability sampling was used, weighted percentages and adjusted odds ratios were calculated. Analysis was restricted to 578 clinicians who treated at least one chlamydia-infected patient in the past year.

Results: The majority of respondents were male (66.2%), physicians (94.0%), and practiced internal/family/general medicine (73.7%). While most clinicians (90.0%) reported adhering to CDC Guidelines, only 61.7% would prescribe single-dose azithromycin to injection drug users (IDUs), which optimizes compliance. Although CDC did not recommend azithromycin as a first-line antibiotic for pregnant women, 47.6% reported they would prescribe it. Compared to internal/family/general medicine specialists, pediatricians (Odds ratio [OR]=5.7; 95% confidence interval [CI]=2.0-16.5) and emergency medicine specialists (OR=3.7; CI=1.1-13.5) were more likely to report adherence. Clinicians who practiced =20 years (OR=3.9; CI=1.3-11.4) versus >20 years, and clinicians who did not obtain STD treatment information from colleagues (OR=3.6; CI=1.8-12.2) versus those who did were more likely to report adherence. Reported adherence was not independently associated with being a physician, gender, or number of cases treated annually. Clinicians reported using several sources for STD treatment information, which were not associated with reported adherence: Sanford Antimicrobial Therapy Guide (84.6%), Physician's Desk Reference (80.4%), CDC Guidelines (69.1%), Red Book (42.8%), Conn's Current Therapy (41.1%), health plan protocols (20.5%), and American College of Obstetricians/Gynocologists Guidelines (11.9%).

Conclusions: Most clinicians reported treating chlamydia with CDC-recommended antibiotics. Interventions are needed to ensure optimal chlamydia treatment of single-dose azithromycin for IDUs.

0295

Physical or Sexual Abuse and Minority Adolescent Women with STD

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Objective: The purpose of this study was to assess the association between sexual and physical abuse, high-risk sexual behavior, substance use, symptom recognition, health-seeking behavior, contraceptive use and infection with gonorrhea and chlamydia among minority adolescent women with STD

Methods: Mexican- and African-American adolescent (<19 years) women with active STD entered a randomized study of behavioral intervention to reduce STD recurrence. Each underwent questioning at entry regarding sexual and physical abuse, sexual risk behaviors, genitourinary symptomatology, health-seeking behaviors, contraceptive use, substance use and STD history.

Results: Comparisons of these behaviors were made by sexual and physical abuse history. At entry, abused were more likely to have a STD history (33% vs. 19%, p<.03), concurrent relationships (30% vs. 14%, p<.001), partners having sex with others (55% vs. 37%, p<.001), abusive current partners (29% vs. 4%, p<.001), alcohol (67% vs. 54%, p=.01), or drug use (54% vs. 32%, p<.001) and less contraceptive use (26% vs. 32%). Abused reported more genitourinary symptomatology, waiting longer to seek health care for these symptoms (2.48 vs. 1.71 days, p=.02) and multiple barriers to health care (>2 barriers 57% vs. 40%, p<.001). More abused (20% vs. 12%, p=.04) had their last pap smear more than 12 months ago or previous abnormal results (16% vs. 4%, p<.001). Abused had the highest 6-month (33%, age 14-15; 26%, age 16-18), and 12-month (44%, age 14-15; 43%, age 16-18) re-infection rates; the odds of re-infection were twice as high for abused versus non-abused. Infection rates among abused adolescents reporting substance use were highest, 51% (14-15 years) and 42% (16-18 years) at 0-6 months.

Conclusions: Assessment for sexual and physical abuse is essential in programs focusing on STD prevention and contraceptive use for adolescents for promotion of health-seeking behavior and prevention of abuse recurrence, unintended pregnancy and recurrent STD.

0296

STD Risk and Health Seeking Behavior Among Abused Minority Adolescent Women

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Objective: Minority adolescent women with STD and physical or sexual abuse reported higher sexual risk behavior, genitourinary symptomatology, more barriers to health care and higher STD and PID rates than non-abused. Psychological effects of previous abuse include depression, decreased self-efficacy and somatization. These effects can prevent these women from making behavioral changes to prevent recurrence of abuse or transmission of disease.

The purpose of this study was to examine the relationship of DSM-IV–TR diagnoses, somatization, genitourinary symptomatology, health-seeking behavior and sexual risk behaviors among abused minority adolescent women with STD.

Results: Participants in this research included a convenience sample of Mexican-and African-American adolescent women, aged 14-18 years with STD and physical or sexual abuse history. Individual, open-ended, semi-structured interviews were conducted with 70 participants and included a modification of the SCID I and II. These interviews focused on participants' perceptions of their sexual risk, sexual relationships, symptomatology and factors influencing sexual behaviors and health care. Findings: Diagnoses and key categories and themes from qualitative data provided the context for interpretation of the quantitative data. Interview data was searched for elaboration of associations found in statistical analysis and words of participants were used to corroborate, refute, substantiate and supplement quantitative results. Apparent discrepancies were explored in detail to understand the source and possible explanations for differences. Themes identified related to perceived sexual risk of STD, genitourinary symptomatology, somatization, DSM-IV diagnoses, histories of physical or sexual abuse and health seeking behaviors.

Conclusions: These results identified a need for interventions specifically designed for minority adolescent women to realize a reduction in sexual risk behaviors, abuse, and STD. Identification of sexual or physical abuse and assessment for DSM-IV diagnoses is recommended to expand risk-reduction interventions for modifying sexual behavior patterns and health-seeking behaviors of Mexican- and African-American women that are related to STD.

0297

Rescreening for Gonorrhea and Chlamydial Infection Through the Mail: a Randomized Trial

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Objective: To determine if rescreening efforts for gonorrhea and chlamydial infection among STD clinic patients would be more successful if patients were given the choice to submit a specimen through the mail.

Methods: Asymptomatic heterosexual patients diagnosed with gonorrhea or genital chlamydial infection were randomly assigned to two rescreening methods ten weeks after treatment: 1) rescreening at the STD clinic (clinic rescreening; n=62), or 2) the choice to be rescreened at the STD clinic or to mail a specimen to the clinic for testing (mailing option; n=60). Tests were performed using PCR (Roche, Amplicor) on self-obtained vaginal swabs and urine specimens.

Results: Eighty-four men and 38 women were enrolled in the study; 103 (84%) had been diagnosed with chlamydial infection, 18 (15%) with gonorrhea, and 1 (1%) with both infections. A total of 27 (45%) patients assigned to the mailing option and 20 (32%) assigned to clinic rescreening were rescreened within 28 days (OR = 1.7 [0.8-3.8]). Of the 27 patients rescreened in the mailing option arm, 11 (41%) submitted a specimen through the mail and 16 (59%) came to the clinic. Of 42 patients in the clinic arm who were not rescreened within 28 days, 29 (69%) were successfully contacted a second time and offered an opportunity to mail a specimen for testing; 6 (21%) did so. Of the 38 men and 20 women with an initial chlamydial infection who were rescreened, six men (16%) and zero women tested positive for *C. trachomatis* at rescreening. Of the 9 men and 4 women initially treated for gonorrhea who were rescreened, zero men and one woman tested positive for *N. gonorrhoeae* at rescreening.

Conclusions: Mailed rescreening is feasible and may be a successful method to increase rescreening rates in urban STD populations.

0298

Dynamic Projection of the Effectiveness and Cost-Effectiveness of an HSV-2 Vaccine for Young Women

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Objective: Infection with herpes simplex virus type 2 (HSV-2) is extremely common. A recently developed vaccine is partially effective in reducing infection risk and symptoms in women without prior HSV-1 infection. We sought to generate a plausible estimate of the future effects and costs likely to be result from the use of such a vaccine in young women.

Methods: We incorporated the effects of vaccination into a previously constructed dynamic mathematical simulation of HSV-2 epidemiology. This model incorporates cross-sectional estimates of infection prevalence reported by the National Health and Nutrition Examination Survey, and published cost estimates. The impact of HSV-2 infection on health-related quality of life was derived from structured interviews with 40 individuals with symptomatic genital herpes.

Results: Without vaccination, annual incidence increased steadily between 2000 and 2025, from 9 to 26 infections per 1000 men and from 12 to 32 infections per 1000 women aged 14-39. Total costs increased by $900 million by 2025. Vaccination of 50% of teen girls resulted in modest reductions in projected disease incidence in women (RR of infection 0.93, RR for symptomatic disease 0.87) and men (RR of infection 0.97). Vaccination initially increased total healthcare costs, but within 12 years of initiation, vaccination was resulted in cost-savings due to reduced symptoms and pregnancy-related morbidity.

Conclusion: The burden and costs of incident HSV-2 infection in the United States are substantial and are expected to increase in the future. The use of a partially effective vaccine would cause a small decrement in the projected incidence and prevalence of this disease, but could still be net cost-saving. Assessment of the cost-effectiveness of vaccines should take into account the dynamic nature of herd immunity, and costs and health effects accrued to individuals aside from those directly vaccinated.

0300

Association of Methamphetamine use with HIV Among MSM Tested for HIV in an STD Clinic

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Objectives: To assess the association of methamphetamine use with prevalent and incident HIV.

Methods: Analysis of electronic medical records of MSM tested for HIV in an STD clinic.

Results: A total of 1547 MSM were evaluated and tested for HIV 2210 times over a 28 month period. On initial testing, 28 (3.1%) men tested HIV positive. Factors associated with testing positive for HIV included: injecting methamphetamine (OR 5.4, 95% CI 1.8-16.4), a period of >1 year since last HIV test (OR 3.0 95% CI 1.7-5.2), bacterial STD (OR 2.9, 1.6-5.3), unprotected receptive anal intercourse in the preceding 2 months (OR 2.5, 95% CI 1.0-4.3), African American race (OR 2.4 95% CI 1.0-5.8), and being uncircumcised (OR 2.0, 95% CI 1.1-3.4). A total of 419 (28%) men who initially tested HIV negative were retested, of whom 17 (4.1%) retested positive for HIV. Eight of 35 (22.9%) methamphetamine users and 9 (2.4%) of 374 non-methamphetamine users seroconverted (OR 12.02 95%CI 4.3-33.6). Only methamphetamine use was significantly associated with seroconversion on multivariate analysis. Among 165 MSM who sought care at the clinic and reported already being HIV positive, factors associated with having had unprotected anal intercourse with an HIV negative partner or partner of unknown HIV status on multivariate GEE analysis included methamphetamine use (OR 4.3, 95% CI 1.7-11.1), anonymous sex (OR 2.2 95% CI 1.2-3.9), and having a bacterial STD (OR 1.9, 95% CI 1.0-3.3).

Conclusions: Methamphetamine users were at exceptionally high risk of HIV acquisition and appear to be important HIV transmitters.

0301

Impact of reported sex partner HIV status on HIV risk assessment among MSM attending an STD clinic

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Objectives: To evaluate the impact of incorporating sex partner HIV status into sexual histories among men who have sex with men (MSM) attending an STD clinic.

Methods: All MSM seen in an STD clinic were asked about their condom use for insertive and receptive anal sex in the preceding 12 months. Questions were asked separately for sex partners who were HIV positive, HIV negative and whose HIV serostatus the patient did not know.

Results: 1932 MSM were evaluated 2654 times during the 15 month period of analysis. Among 1650 men who stated they were HIV negative or had never been HIV tested, 1057 (64%) underwent testing for HIV at least once. Complete risk assessment information was available for 971 (92%) of these men; 31 (3.2%) tested HIV positive. Among those tested, 563 (58%) reported unprotected anal intercourse (UAI) in the preceding 12 months, 26 (4.6%) of whom tested HIV positive. New HIV diagnosis was associated with history of UAI (3.9, 95% CI 1.4-10.2). UAI was 84% sensitive and 43% specific for new HIV diagnosis. Among tested men, 290 (30%) reported having UAI in the preceding year with a partner who was HIV positive or whose HIV status they did not know; 21 (7.2%) tested HIV positive. UAI in the preceding year with a HIV discordant partner or partner of unknown HIV status was associated with testing HIV positive (OR 5.2 95% CI 2.4-11.3), and was 68% sensitive and 71% specific for new HIV diagnosis. Among 202

men who stated they were HIV positive when evaluated, 88 (43%) reported UAI with an HIV negative partner or a partner whose HIV status they did not know.

Conclusions: Incorporating partner HIV status improves the specificity of HIV risk assessment, and may be a useful means to triage patients at high risk for HIV acquisition and transmission into more intensive prevention interventions.

0302

Quantification of Chlamydia Tachomatis in Clinical Specimens Using a Touchdown Enzyme Time Release Asymetric PCR (TETRA-PCR)

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Objective: To develop an amplification assay to quantify *Chlamydia trachomatis* (Ct) in clinical specimens.

Methods: We have developed a new method for the quantification of Ct in clinical specimens using asymmetric PCR followed by colorimetric detection of amplicons (TETRA-PCR). TETRA-PCR was validated by testing 173 culture-positive specimens with known numbers of viable Ct organisms (133 IFU/ml to 1,833,333 IFU/ml), randomly selected from archived specimens distributed in 6 discrete one-half log culture increments (STD clinic archives, Indiana University). Four 10-fold Ct serial dilutions, from 5000 to 5 IFU DNA equivalents (IFUde) per reaction, were included in each run as controls. Regression methods were used to examine the correlation between TETRA-PCR and quantitative culture. TETRA-PCR and quantitative culture were also applied to 155 clinical specimens from Ct-infected subjects attending outpatient facilities at two Boston hospitals, some of which were culture-negative but nucleic acid amplification test (NAAT) positive (62 endocervical, 52 female urethral, and 41 male urethral specimens).

Results: There was a strong correlation between TETRA-PCR and quantitative culture for the 173 culture-positive archived specimens from Indiana (correlation coefficient (R) = 0.7175, $P<0.0001$) and for 86 culture-positive specimens from Boston (R=0.7097, $P<0.0001$). The median Ct load by TETRA-PCR was higher than by quantitative culture for different specimen types from Boston: endocervix, 4,691 IFUde/ml versus 655 IFU/ml by culture; female urethra, 1,572 IFUde/ml compared to 260 IFU/ml; and male urethra, 708 IFUde/ml vs.100 IFU/ml. In culture-negative, NAAT-positive Boston specimens (n=69), the median Ct load quantified by TETRA-PCR was 380 IFUde/ml, 401 IFUde/ml, and 351 IFUde/ml in endocervix, female urethra, and male urethra, respectively.

Conclusions: TETRA-PCR was strongly correlated with quantitative culture. Our validation exercises suggest that TETRA-PCR can be used to quantify Ct loads in clinical specimens, including those from culture-negative infected subjects, to examine the influence of organism load on disease transmission.

0303

Social Marketing Campaign Significantly Increases Syphilis Testing in Gay and Bisexual Men: San Francisco 2002

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Objectives: Early syphilis cases increased in San Francisco from 44 cases to 494 between 1999 and 2002. These increases occurred among gay and bisexual men. In June 2002, a social marketing campaign, Healthy Penis 2002 (HP), was launched to encourage syphilis testing among gay/bisexual men. We evaluated whether the campaign increased testing among gay/bisexual men who had seen it.

Method: Gay/bisexual men were surveyed with a standardized, interviewer-administered instrument. Surveys were conducted in the target neighborhoods of the campaign at public places such as coffee shops, bars, and on sidewalks.

Results: Between December 2002 and February 2003, 244 gay/bisexual men completed the survey. The majority of participants were white (64%) with a median age of 34 years. 194 (80%) participants saw the campaign (33% spontaneously mentioned the HP campaign, and 47% recalled the campaign when prompted). Among men who saw the campaign, 53% reported the main message of the campaign was to get tested for syphilis, and 34% said they tested as a result of the campaign. Overall, 42% of men tested for syphilis in the last six months. Men who saw the campaign were 80% more likely to have tested than men who did not see it (P=.009). Among the 194 men who saw the campaign, those who tested had a significantly higher mean number of anonymous partners in the last month than men who did not test (4.7 versus 2.4 partners) (P=.001). Among the 102 men who saw the campaign but did not test, the most commonly cited reasons were: 36% low risk perception, 13% poor accessibility to testing services, 13% no symptoms, and 12% thought no need.

Conclusions: A large proportion of gay and bisexual men saw the HP campaign. Men who saw the campaign and men with more anonymous partners were significantly more likely to have tested recently for syphilis.

0304

Trichomonas Vaginalis Infection in Sexual Partners

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Objective: To measure rates and concordance for *Trichomonas vaginalis* (Tv) infection within sexual partnerships (dyads).

Methods: Individuals age 15-24 attending outpatient facilities at two Boston hospitals and a STD clinic in Indianapolis (n=705) were tested for Tv and *Chlamydia trachomatis* (Ct). Sexual partners of Ct-infected index cases (n=77) were contacted, enrolled, and tested for Tv and Ct. Tv infection was detected by nucleic acid amplification tests (NAAT) in vaginal, male urethral (Boston), and male urine (Indianapolis) specimens. Ct infection was detected by culture and NAAT in endocervical and urethral specimens, and by NAAT in urine specimens. As there were no differences in the prevalence of Tv or Ct among study sites, the aggregate results for the entire study population are presented.

Results: Tv prevalence was significantly higher among females 19% (73/385) than among males 3.8% (12/320), (P<0.0001). Ct prevalence was slightly higher in males compared to females, 38.8% (124/320) vs. 31.2% (120/385). There was no difference in the prevalence of Tv between Ct-positive and Ct-negative subjects, 13.6% (33/242) vs. 11.2% (52/463). A total of 77 dyads were enrolled in the study (40 female and 37 male index cases, and their sexual partners). Tv prevalence among members of dyads, 15/77 (19.5%) in females and 5/77 (6.5%) in males (P<0.02), was similar to the prevalence of Tv by gender in the rest of the study population. Only 3 of the Tv-infected dyads (17.6%) were concordant (both members of a dyad infected) compared to 41concordant Ct infected dyads (53%), (P<0.01).

Conclusions: Tv prevalence was higher in females compared to males, and was not affected by concurrent Ct infection status. Tv concordance rate among dyads was low compared to Ct. These findings suggest that Tv infection may be of shorter duration in males, and more persistent in females.

0305

Females' Emotional Reactions to Real and Hypothetical Diagnoses of Human Papillomavirus (HPV)

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Objective: The objective is to explore knowledge of and initial emotional reactions to a real or hypothetical diagnosis of high-risk human papillomavirus (HR-HPV) infection among HR-HPV positive women and women with no history of HR-HPV. Genital human papillomavirus (HPV) is regarded as the most common sexually transmitted infection in the United States, and high-risk HPV (HR-HPV) types are found in over 90% of cervical cancers.

Methods: Ten focus groups were conducted with females (n = 54, average age = 27.39) stratified by HPV diagnosis history (HR-HPV positive = 30% versus no history of HR-HPV = 70%); age (18-33 = 57.4%, 34-64 = 42.6%); and racial/ethnic group (African American = 42.6%, white = 31.5%, American Indian = 25.9%). The group discussions were tape-recorded, transcribed verbatim, coded, and analyzed using Ethnograph qualitative software.

Results: Participants discussed their knowledge of and described experiences with regards to pelvic exams, Pap smears, HPV, cervical dysplasia, and cervical cancer. Participants were asked to describe their initial emotional reactions to their diagnosis of HR-HPV or to describe hypothetically how they might react upon receiving a HR-HPV diagnosis. Women in both groups had low knowledge of HPV as a sexually transmitted disease and low knowledge of the relationship between HR-HPV and cervical cancer. More of the HR-HPV positive females expressed feelings of shock, denial, shame, and fear, while more of the females not diagnosed with HR-HPV expressed feelings of anger, violence, and blame toward partners.

Conclusions: Health care professionals should provide women with accessible information on the health risks and implications for their future health care, and information on how to cope with their personal relationships upon receiving a HR-HPV diagnosis.

0308

Chlamydia Infection Among Adolescents Girls in Brazil

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Objectives: To identify demographic, behavioral and clinical factors and to determine the prevalence of Chlamydia tracomatis (CT) infection among female adolescents.

Methods: Cross sectional study, community based, performed among female adolescents attending the Health Family Program in Vitória, Brazil. Participants were screened for CT using LCR applied to urine and answered a face-to-face questionnaire to assess demographic, behavioral and clinical factors. Informed consent was obtained by all participants and their parents.

Results: During the study, 464 adolescents were included. The prevalence rate of CT was 8.8%(95%CI 6.2-11.4). Mean age was 17.0 (SD 1.4) and median was 17.0 years old; mean education was 8.97 (SD 2.0) years of schooling and the mean age of the first sexual intercourse was 15.3 (SD 1.6) years old. Almost seventy percent of adolescents have already had sexual intercourse, 8.8% reported previous STI and 37.9% any drug abuse. Only 7.3% reported condom use in the last sexual intercourse although the majority of them received information about risks and prevention. Clinical problems were: genital ulcer 1.1%, dysuria 5.6%, inguinal lymphadenopathy 3.4%, vaginal bleeding 3.4% and pelvic pain 7.8%. The statistically significant associations of risky behaviors and clinical symptoms with Chlamydia infections were previous STI [OR 3.4 (95%CI 1.51-7.82)], prostitution [OR 3.9 (95%CI 1.12-13.67)] and pelvic pain [OR 4.9 (95%CI 2.18-11.14)].

Conclusion: Adolescents are a target population for STI. In spite of receiving previous information about STI they do not feel themselves at risk. Prevention measures and assistance for this population are important

skills to public health. This results suggest the need for ongoing prevention measures, including STI screening and risk reduction programs that target adolescents.

0309

The Effects of Early Syphilis on CD4 Counts and HIV-1 RNA Viral Loads in Blood and Semen

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Background: Early syphilis is associated with an increased risk of HIV-1 transmission. In-vitro evidence suggests that syphilis may stimulate HIV-1 replication, potentially impacting on HIV-1 disease progression as well as transmission. We carried out two studies, one retrospective and one prospective, to examine the effect of early syphilis on blood plasma viral loads and CD4 counts. In the prospective study we also examined the effect on seminal plasma HIV-1 RNA loads.

Methods: In the retrospective study, HIV-1 infected gay men diagnosed with and treated for early syphilis (cases; n=63) were identified from microbiology records. For each case, one or two HIV-1 infected controls (n=104) attending the clinic with a non-systemic acute sexually transmitted infection were selected, matched by dates of attendance and antiretroviral therapy status. For the prospective study, HIV-1 infected gay men attending the clinic with untreated early syphilis (cases; n=13) or with a negative STD screen (controls; n=20) gave blood and semen samples immediately prior to treatment for syphilis, and 1, 3 and 6 months later. HIV-1 viral loads and CD4 counts in cases during syphilis infection were compared to those before and after, and to those in controls.

Results: In the retrospective study CD4 counts were significantly lower in cases (median 410, n=139 counts) during syphilis infection compared to before (485, n=80) and after (475, n=88), whilst viral loads did not change significantly. Effects were similar for cases on and off antiretroviral therapy. In controls neither CD4 counts nor viral loads changed significantly during infection. There were broadly consistent findings in the prospective study and little evidence that early syphilis affected seminal plasma HIV-1 RNA load.

Conclusions: In these studies early syphilis was associated with reduced CD4 counts but not with viral load changes in blood or semen.

0310

Public Health Communicable Disease Reporting Laws: Managed Care Organizations' Laboratory Contracting Practices and their Implications for State Surveillance and Reporting Statutes

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Objectives: Managed care organizations' (MCOs) practice of contracting with regional laboratories that operate across more than one state may delay, and in some cases may prevent, the reporting of notifiable diseases such as HIV/AIDS, sexually transmitted diseases, and tuberculosis to state and local health departments. This research aims to identify where, and to what extent, state public health disease surveillance and reporting statutes and contracting practices have been modernized to reflect an awareness of the implications of changing health care delivery and financing systems brought about by managed care.

Methods: 1) Legal reviews of state communicable disease reporting laws and statutes; 2) Analyses of public health reporting duties contained in managed care contracts for Medicaid and SCHIP, and a sample of 13 state employee benefit health insurance contracts; 3) Telephone interviews with state public health laboratory, Medicaid, and MCO officials.

Results: 41 states and DC have public health laws with a general requirement that "all" laboratories must report notifiable diseases. Of these, 12 states have laws specifically requiring out-of-state laboratories to report test results back to the state of origin of a test specimen. Out of 42 Medicaid managed care (MMC) contracts and 17 SCHIP contracts, 12 MMC contracts and one SCHIP contract require MCOs and/or their contracted providers to report notifiable diseases to state or local health departments. None of the state employee benefit contracts imposed such reporting duties on MCOs.

Conclusions: Effective population-based communicable disease control depends on having access to complete and timely information regarding disease prevalence and incidence. State officials should examine current state public health reporting laws to incorporate consideration of the practice of out-of-state laboratory testing. Both public and private sector health insurance purchasers should collaborate with public health officials to ensure that notifiable disease reporting requirements are incorporated into their contracts with MCOs.

0311

The Development and Efficacy of an Online Intervention for Promoting Safer Sex in Steady Male Relationships – a Randomized Controlled Trial

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Objectives: Steady male relationships are a setting for HIV-infection. We developed an online tailored intervention promoting safer sex in steady male relationships and measured its efficacy.

Methods: We used principles from the Health Belief Model, Theory of Planned Behavior, the Information, Motivation, Behavioral Skills model and the Intention Implementation con-

cept. The online communiqué intended to increase knowledge and correct faulty beliefs regarding sexual risks in relationships, elevate sense of vulnerability and severity regarding HIV-infection, increase motivation and develop skills to engage in safer sex, and help implementing behavioral intentions. The use of Internet enabled us to tailor our message according to relationship status, knowledge, vulnerability and skills. A randomized controlled trial was conducted with a 6-months follow-up per e-mail. We examined, using an online questionnaire, differences between control and intervention groups on behavior, risk perceptions, behavioral intentions, attitudes, perceived control and response efficacy regarding HIV-testing, sexual agreements and condom use. Differences between a tailored and a non-tailored approach were also examined.

Results: Online recruitment produced 2431 participants from all regions in the Netherlands during Nov-Dec 2002. Men with non-Dutch ethnic identities constituted 25% of the sample. Median age was 33 (range 13-85). Mann-Whitney tests indicated significantly higher scores at post-test for the tailored intervention versus control on perceived vulnerability, response efficacy, intentions towards safer behaviors, constructive attitudes and perceived control (all $p<.05$). The tailored approach was more effective than the non-tailored approach in inducing cognitive change. Follow-up measurements on behavior will be available by June 2003.

Conclusions: The intervention proved effective in inducing cognitive change. Unlike other mass-communication means, Internet enabled us to produce a mass-prevention tool that effectively adapted itself to individual needs. Tailored messages that can reach huge audiences are the enormous potential Internet holds for future STD and HIV prevention schemes.

0312

Experience of Molecular Screening of Syphilis by PCR

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Objectives: To evaluate nested PCR on DNA purified from whole blood, comparing PCR results with syphilis (sy) serology and patient history.

Methods: Part of the T. pallidum (Tp) genome encoding the 47kD membrane protein was amplified by PCR (Zoechling et. al). Positive controls were obtained from a LuesII condyloma inoculated into rabbit scrota, and from a quantified suspension of Nichols Tp. Seventy-eight persons were then tested: 70 gay males, 2 LuesII cases, and 6 HIV(+) outpatients.

Results: The scrotum test was PCR(+), as was the Nichols preparation. Among the 70 men, all RPR(-) and TPHA(-), PCR detected 4 sy cases. Repeat sy serology in these 4 men was (-), except one weak TPHA. Both LuesII cases were serology(+) and PCR(+). One HIV(+) case found among the 70 men was sy PCR(+), but our 6 HIV(+) outpatients were all sy PCR(-). No sy PCR(+) case had a history except the LuesII cases. PCR detected sy in 4/78, for a prevalence of 5.6%.

Conclusions: Syphilis remains a difficult target, and probably facilitates HIV acquisition and progression. Serology missed 4 latent cases in our small series. Other techniques for direct detection of Tp require costly expertise. Our whole blood PCR did not cross-react with Lyme. It can be used in amniotic fluid and CSF. Can therapy for sy cure these inconclusive cases? Are they more vulnerable to HIV? Are they infectious? Perhaps sy PCR should be evaluated for screening.

0314

Resurgence of Syphilis in the Unites States

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Background: During the 1990's syphilis rates declined dramatically in the United States, the disease seeming so vulnerable that in 1999 the US launched an initiative to eliminate syphilis. However, soon thereafter, increases in syphilis among men who have sex with men (MSM) were noted in cities such as Seattle and Los Angeles.

Results: Increases in syphilis among MSM have since been noted in multiple cities, and have been responsible for the rate of syphilis in the US increasing 15% from 2000-2002; during that time rates among men increased 42%, while rates among women decreased 35%. In some cities, increases have been quite dramatic, often occurring where rates of syphilis had been quite low (eg., San Francisco reported 30 cases of primary/secondary syphilis in 1999; in 2002 there were over 300). Cases of syphilis among MSM have been characterized by: median age in the mid-30's; a high proportion being HIV-infected; having multiple and anonymous partners; being unwilling or unable to identify partners (limiting partner elicitation/notification efforts). In several cities, transmission is facilitated by various opportunities for sexual mingling — bathhouses, steambaths, x-rated bookstores, circuit parties, and private sex parties – where anonymous sex may occur on-site. Use of condoms in such settings has been inconsistent (in some settings it's unwelcome), and HIV serostatus is not typically discussed. Internet communication can also contribute to sexual risk taking.

Conclusion: Despite intense prevention efforts in cities experiencing syphilis increases – involving and communicating with MSM communities, increasing awareness of the epidemic among providers, screening at high-risk venues – rates have continued to rise. Syphilis elimination efforts, initially targeting minority populations and the South, appear successful in reducing syphilis among African-Americans, women, and in the South. However, effective approaches to address the increase of syphilis among MSM are still elusive.

0315

Risk of Cervical Dysplasia in Women Coinfected with Human Papillomavirus and Herpesvirus

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Objective: Human papillomavirus (HPV) is the most common sexually transmitted infection in women, yet few women develop HPV associated cervical dysplasia. HPV is required but not sufficient for dysplasia, and other STDs may be cofactors. Previous studies have shown an association between HSV-2 seropositivity and cervical dysplasia. CMV, EBV and HHV-8 have also been detected in the genital tract, and their oncogenic potential suggests a possible role in mucosal malignancies. Our objective was to assess the risk of dysplasia in women coinfected with HPV and herpesviruses.

Methods: A L1-consensus primer PCR was used to detect HPV and a herpesvirus DNA polymerase-consensus primer PCR was used to detect HSV-1, HSV-2, EBV, CMV, and HHV-8 in cervicovaginal lavage of 193 women. HPV infections were genotyped by reverse line-blot and herpesviruses were distinguished by unique restriction endonuclease patterns.

Results: HPV and herpesvirus were detected in 52% and 31% of women respectively, and 21% of women were coinfected. Infection with high-oncogenic risk HPV genotypes increased risk of cervical dysplasia [OR (CI) = 11.3 (3.3-38.2)]. This risk was not further increased by coinfection with any herpesvirus. The most commonly detected herpesvirus was EBV (16% of women), followed by HSV-2 (8%), HSV-1 (1%), and CMV (<1%). HHV-8 was not detected in any sample. Though not statistically significant, HPV coinfection with "oncogenic" herpesviruses (EBVand CMV) increased risk of cervical dysplasia (OR=4.0) while HPV coinfection with ulcerative herpesvirus infection (HSV-1/2) decreased risk of dysplasia (OR=0.80) when compared to women with high-risk HPV infection alone.

Conclusions: This study failed to show an increased risk of cervical dysplasia due to coinfection with HPV and herpesviruses. Interestingly, subdividing the herpesvirus group into "oncogenic" and "ulcerative" types demonstrated divergent trends in risk of cervical dysplasia in women with concurrent HPV infection.

0317

Interviews with Minority Women with STD

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Objective: The objective was to obtain qualitative data to provide a more in-depth understanding of the configuration of psychosocial and situational factors that are associated with high-risk sexual behavior (anal sex, concurrent relationships, substance use, sexual or physical abuse), health-seeking behavior, contraceptive use and treatment compliance among minority women with a history of STD

Methods: Participants included Mexican-and African-American women, aged 15-45 years enrolled in a randomized study of behavioral intervention to reduce STD recurrence. Individual, open-ended, semi-structured interviews lasting approximately 30 minutes were conducted with 513 participants. These interviews focused on participants' perceptions of their sexual risk, sexual relationships, individual histories of sexual, physical or psychological abuse and factors influencing their sexual behaviors. Additionally, participants were asked about health-seeking behavior, contraceptive use and STD treatment compliance.

Results: Key categories and themes from qualitative data provided the context for interpretation of the data. The interview data was searched for elaboration of associations found in prior statistical analysis. The words of participants were used to corroborate, refute, substantiate and supplement previous quantitative results. Apparent discrepancies were explored in detail to understand the source and possible explanations for differences. Examining the results of the survey data in the context of the participants' own words provided alternative explanations, conclusions and possible hypotheses for further research. Various themes included "Why women have sex?" "Ex-sex," "My Baby's Dad," "Why a woman stays with a man after he has given her a STD?" "I didn't tell my man about the STD," "I don't think I can get pregnant," "I use condoms if . . . " and "What do men (women) want from a woman (man)."

Conclusions: These results identified the context for modification of risk-reduction interventions specifically designed for minority women to realize a reduction in both sexual risk behaviors and STD re-infection rates.

0318

Improvement of STI Prevention and Control in Lithuania, Leningradskaya Oblast, St Petersburg and Estonia

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Objectives: The STI management strategies in the Baltic region are suboptimal. Resources, management and diagnostic strategies used have never been identified, standardized or quality assured. These were the objectives of the present study.

Methods: Inventory of the present status, creating of networks among the professionals, training activities, using the knowledge gained in the standardization process and preparation of local and national strategies.

Results: The situations concerning STI management, diagnostic strategies and professional knowledge have been identified. STI patient management standards were prepared. Laboratory quality control assurance standardization is on its way. Local (national) professional networks have been established.

Conclusions: Prerequisites for local (national) STI management strategies and programs have been created.

0319

A Survey on Sexuality, Social Profile and STD in a Brazilian High School

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Objectives: A survey about the influence of knowledge and social background in practices concerning STDs and contraceptive methods conduced in a state urban Brazilian school.

Method: Individual questionnaires were applied to students from the eighth grade up to the third year of high school, (a total of four grades) with students from 13 up to 20 years old. The questionnaires were made up of multiple-choice questions covering subjects such as the students' social and family status, their pattern of behavior towards the prevention of STDs and pregnancy and questions evaluating their knowledge and opinions about the same topics. Teachers were also surveyed. Confidentiality was kept by non-identification.

Results: We've obtained 448 questionnaires from students and 16 from teachers. The percentage of sexually active students was 35.32%. Among these, 12.36% said they didn't live with their parents, while 4.26% of the non-sexually active gave the same answer. In the sexually active group, 48.39% stated they were users of some kind of drug such as alcohol, tobacco, marijuana, etc. The percentage of drug users among the sexually non-active was 19.93%. Marijuana was the drug most associated with sexual activity: 7.74% of the sexually active group uses it, while 0.71% of non-active group uses it. Regarding knowledge: 50% believe condoms are always necessary, and of those who admitted knowing how to use contraceptives methods (85%) 94% correctly indicate whether they prevent STD or pregnancy. No teacher was able to correctly answer the whole questionnaire.

Conclusions: There is a strong association between sexual activity and the loss of the family core ($p = 0.003$). Likewise, the use of drugs ($p @ 0$) and especially marijuana ($p = 0.0002$) are related to sexual activity among those students. Most of the students are aware of STDs, pregnancy's risk and the means to avoid them.

0320

Doubling of Mean Number of Reported sex partners among men who have sex with men seeking STD services: San Francisco, 1995-2002

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Objective: To assess the role of reported number of sexual partners over time on the reproductive rate of STDs in men who have sex with men (MSM) in San Francisco.

Methods: We examined the number of sexual partners reported in the last 2 months among MSM attending the municipal STD clinic between 1995 and 2002. The reproductive rate, R0, of an STD is given by the equation, R0=©¬DC, where C is the sex partner change rate. C equals ¥î + ¥ã2/¥î, which adjusts the mean number of partners by the variance. To see if there was a significant increase in C over time, a log linear regression was performed. This trend also was examined by age group and HIV status.

Results: Between 1995 and 2002, the mean number of partners reported by MSM almost doubled from 4.1 to 8.1 ($p< 0.0001$) and the variance increased from 32.7 to 162.1. C more than doubled from 12 in 1995 to 28 in 2002 ($p< 0.0001$). Stratified analyses showed significant increases between 1995 and 2002 in C in all age groups, regardless of HIV status (all $P<0.001$). However, the greatest increases in reported partners occurred among MSM 25 to 34 years of age and HIV positive MSM.

Conclusions: The sex partner change rate, C, plays a central role in the generation of secondary cases of STDs, and the greater the heterogeneity of partners in a population the larger the impact on C. C more than doubled among MSM seen at the STD clinic in San Francisco, which would have a similar effect on the reproductive rate of a given STD. Early syphilis cases among MSM have doubled each year in San Francisco between 1999 and 2002. This sharp increase in early syphilis, may be explained, at least in part, by the increase in sex partner change.

0321

Analyzing and Mapping the Spatial Distribution of Sexually Transmitted Diseases for Public Health Intervention

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Objectives: We conducted a spatial analysis and mapping of the distribution of four reportable STDs, chlamydial infection, gonorrhea, syphilis (primary and secondary), and HIV infection, to describe and compare the spatial distribution of each STD, identify core areas of infection, and provide guidance for an intervention in Wake County, North Carolina.

Methods: We used STD surveillance data reported to Wake County, for the year 2000. We analyzed the spatial variability of STD rates by calculating and modeling covariances, which provide a quantitative assessment of the correlation between pairs of observations as a function of the distance between those observations. Covariances are

useful in assessing spatial patterns of disease locally and at a distance (globally). We combined observed STD rates and appropriate covariance models using a geostatistical method called kriging, to predict STD rates and associated prediction errors for a grid covering Wake County. Final disease estimates were interpolated using a spline with tension and mapped to generate a continuous surface of infection. STD rates were mathematically represented as a spatial random field.

Results: Lower incidence STDs had larger spatial variability and smaller neighborhoods of influence than higher incidence STDs. Chlamydial infection, gonorrhea, syphilis and HIV infection were spatially heterogeneous. Each STD had one primary core area of heterogeneous infection, and core areas of the four STDs overlapped.

Conclusions: Spatial heterogeneity and spatially definable core areas of infection indicate that uniform targeting of STD prevention strategies across Wake County may not be efficient. Random field modeling and kriging estimation is a reliable, objective, population-level approach to identify and analyze the spatial pattern of reportable STDs. The methodologic framework outlined can be used to map incidence rates as they are reported, enabling health departments to identify emerging outbreaks in near real-time and possibly lead to a more targeted and efficient health response.

0322

Health Seeking Behavior in Men with a History of Urethritis

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Objectives: Little is known about health seeking behaviors among young men at risk for sexually transmitted diseases (STD). Few studies have examined whether men change health-related behavior based on prior STD diagnoses. This study addressed whether male STD clinic attendees with a urethritis history recognized symptoms earlier, curtailed high-risk sexual acts upon symptom recognition more often, or sought therapy sooner than those men without a urethritis history.

Methods: Randomly selected men attending an urban Alabama STD Clinic were questioned regarding demographic, sexual, and health care seeking characteristics. The men were stratified based on whether or not they reported prior episodes of urethritis.

Results: 469 men were enrolled. 297 (64%) reported a prior history of urethritis. 234 (50%) reported current symptoms consistent with urethritis and were diagnosed with urethritis (gonorrhea or NGU) at the study visit. Among this subset, men with a history of urethritis did not recognize symptoms as STD sooner (1.4 days (d) v. 2.7 d, p=0.17), did not seek evaluation sooner (5.5 d v. 6.1 d, p=0.64), and continued to have sexual intercourse (15% v. 12%, p=0.69) as often as men without a history of urethritis.

Conclusions: The experience of a prior urethritis diagnosis does not appear to impact subsequent risk taking behavior or health-seeking behavior related to acute urethritis signs and symptoms.

0325

Prevalence of Chlamydia Trachomatis Infection and Sexual Behavior Among Male University Students in Novosibirsk, Russia.

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Objectives: The purpose of this study was to evaluate sexual behavior, condom use, and preva-lence of Chlamydia trachomatis infection and sexual behavior among male university students in Novosibirsk, Russia.

Methods: Overall 321 male students in three universities were examined (mean age 19.6+0.1 years, range 17-26 years). Information on sexual behavior was obtained through structured ques-tionnaire. First void urine samples were tested for C. trachomatis infection with transcription-mediated amplification C. trachomatis assay (AMPLIFIEDTM, Gen-Probe, USA).

Results: Almost all (99%) students know that HIV may be acquired through vaginal intercourse and drug injection, however, only 51% suggest risk of acquisition via oral sex. Eighty seven per-cent know that the use of condoms can prevent HIV and other STDs. The age of the first inter-course was 15.9+0.1 years (range 12-20 years). Sixty nine percent reported that they were sexu-ally active over last 3 months. Among them, 62% always or most of the time use condoms during vaginal sex. STDs have been found previously in 13% of those examined. C. trachomatis infection was detected in 10 subjects (3.1%). There was no difference between infected and non-infected students in relation to age, age at the first intercourse, number of sexual partners, condom use pattern, and knowledge about STDs.

Conclusions: The data show that the prevalence of C. trachomatis infection among Russian male university students is lower than in other populations. This may be due to sufficient knowledge about STDs prevention in this group of population.

0326

Prevalence of Chlamydia Trachomatis and Neisseria Gonorrhoeae Among Female Population in Novosibirsk, Russia

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Purpose: Epidemiology of sexually transmitted diseases (STDs) is largely based on surveillance data. The aim of the present study was to examine the prevalence of Chlamydia trachomatis and Neisseria gonorrhoeae infections and risk factors for these infections among various groups of female population in Novosibirsk, Western Siberia.

Methods: The non-amplified nucleic acid hybridization method (PACE 2, Gen-Probe Inc., USA) was used for N. gonorrhoeae and C. trachomatis testing in 293 females. Pregnant women (1 group, n=99, mean age 25.9 years), gynecological outpatients (2 group, n=98, mean age 25.7 years), and asymptomatic women who underwent regular check up (3 group, n=96, mean age 27.0 years) participated in the study. After an interview, a gynecologic examination was performed with collection of endocervical specimens.

Results: Overall prevalence of C. trachomatis infection was 6.8%; 5.1%, 8.2%, and 5,2% in 1, 2 and 3 groups, respectively. N. gonorrhoeae was detected in 1.4% (0%, 3.1% and 1.0% in 1, 2 and 3 groups). Out of 4 N. gonorrhoeae-positive females, 2 have both infections. In univariate analysis, STDs

were significantly associated with age under 25 years (odds ratio [OR] = 3.4, 95% confidence interval [CI] = 1.1-11.3, p = 0.02), age at the first sexual intercourse less than 18 years (OR = 2.8, 95% CI = 1.0-8.9, p = 0.04), alcohol or drug intoxication during first intercourse (OR = 10.6, 95% CI = 2.2-50.7, ð = 0.003), daily sexual intercourse (OR = 3.2, 95% CI = 1.1-9.5, ð = 0.02), migration from rural regions (OR = 7.0, 95% CI = 2.1-22.7, ð = 0.001), lower educational attainment (OR = 5.0, 95% CI = 0.9-29.1, ð = 0.037). Marital status, family income, previous STDs, history of vaginal discharge were not significantly different between infected and non-infected women.

Conclusions: The prevalence of C. trachomatis infection in our female population is moderate (5 to 8%). As in other populations, risk factors for STDs are lower socioeconomic status and risky sexual behaviour.

0327

HPV DNA Detection in Urine Specimens of New Orleans Area High School Student

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Objective: Infection with high-risk Human papillomaviruses (HPVs) leads to cervical cancer. HPV is difficult to grow in culture, but its DNA can be detected by PCR. A PCR-based urine assay for the detection of HPV DNA could identify at-risk women, provide non-invasive prevalence rates, and can be performed with *Neisseria gonorrhea* (NG) and *Chlamydia trachomatis* (CT) screening. In this study, we detected HPV DNA from urine specimens from a high school population.

Methods: 158 urine specimens, 52% male, were collected from three area public high schools. Urine was concentrated to 200ml and DNA extracted (Qiagen). Specimens were tested for NG and CT utilizing the BDProbeTec ET. Urine samples were amplified using outer HPV L1 consensus primers (PGMY09/11). Unamplified specimens were nested for the L1 gene (N=99 with the GP5+/GP6+ primers), and the control beta-globin gene (N=34). Genotyping was performed by the Roche Reverse line Hybridization assay.

Results: Only 56% of samples were beta-globin positive and 8.2% were HPV positive after first round amplification. The combination of non-nested and nested PCR demonstrated 94% beta-globin positive and 35% HPV positive. Six female students were type 16 or 18 positive. The presence of either a concurrent NG or CT infection was significantly associated with HPV detection by nested PCR ($p<.05$). HPV detection did not associate with the age of the population nor the number of lifetime sexual partners.

Conclusions: Amplification of urine samples (mostly male) may be accomplished by nested PCR. There was more HPV detection in females as opposed to males but this was diminished by nested PCR. Nested HPV detection was associated with CT or GC concurrent infection and may simply indicate a marker of sexual activity. The continuing evaluation of simultaneous HPV DNA testing combined with NG and CT testing in high school urine specimens appears highly feasible.

0328

Epidemiology of Sexually Transmitted Infections (STIs) in Bangladesh; Effective STI Intervention Program is Essential for Prevention of HIV Epidemics.

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Objective: Collect baseline information on the prevalence of STI infection among females from general population and females with high-risk behavior in Bangladesh.

Method: A total of fourteen cross sectional studies were conducted in recent years in different parts of Bangladesh in different female population groups (symptomatic and asymptomatic females from general population, floating, hotel based and brothel based female sex workers and females living around truck stand).

Results: Cumulative data from these studies indicates that despite all efforts to prevent the STIs, the prevalence of STI remains unexpectedly high in females from high-risk behavior. The prevalence of gonorrhea, chlamydia, syphilis, T. vaginalis infections among hotel based, brothel based and street based sew workers are 16-36%, 16- 40%, 17-34% and 8-25% respectively. On the other hand the prevalence of gonorrhea, chlamydia, syphilis, T. vaginalis among females from general population are 0.2-1%, 1.5-2.5% and 1-3% and 2-4% respectively, however, the prevalence of Bacterial vaginosis was high.

Conclusion: The need for innovative and multidisciplinary approach targeting both high-risk group and bridging group for STI prevention is essential. The data indicates that the traditional targeted intervention approach of STI intervention program has limited success so far. A concerted effort by Govt. Non Govt. organization, Developments partners are essential for successful STI/HIV intervention program.

0329

A Randomized Controlled Trial of Male Circumcision to Reduce HIV Incidence in Kisumu, Kenya: Preliminary Results

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Background: Numerous observational studies have found a protective effect of male circumcision (MC) against HIV acquisition, but observational studies cannot control for confounding, nor address issues of safety and behavioural disinhibition. We report baseline results from a randomized controlled trial (RCT) of MC to reduce HIV incidence in Kisumu, Kenya.

Study Design: This is an unblinded RCT with treatment (circumcision) and control (non-circumcision) arms. Sexually active 18-24 year-old men are counseled and tested for HIV. Seronegative men are invited to participate, and consenting men are randomized. Those in the treatment arm are circumcised, and are examined 3 days and 8 days after

surgery. Men in both arms are counselled and tested for HIV at one and three months after enrollment, and followed at 6, 12, 18 and 24 months with HIV testing, STD testing and treatment, and behavioural risk assessment. The target sample size is 1400 in each arm, to detect a 50% reduction in HIV incidence.

Results: Of the first 1209 men screened, 9.4% were HIV-infected and 677 (56%) were randomized, 338 to MC. Median age was 21 years; 27% had < 9 years schooling; 92% were unmarried; median age at sexual debut was 16; median number of sex partners in the last 12 months was 2; 42% used a condom with last sex partner; 7.6% had paid for sex in the past 6 months; and 6.2%, 5.9%, 2.5%, and 0.2% were positive for syphilis, chlamydia, gonorrhea and chancroid, respectively. There were 14 adverse events felt to be related to the MC procedure (mainly postoperative bleeding or infection), none severe, and all of which resolved without sequelae.

Conclusions: Men screened and recruited in this RCT are engaging in moderate sexual risk behaviours in an area of high HIV prevalence. The targeted sample size seems feasible to reach.

0330

Autovaccine Therapy of Chronic Inflammatory Diseases of Genital organs of Women

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The problem of chronic inflammatory diseases of genital organs of women is one of the most actual and unsolved up to present time of medical tasks. Antibiotics of a wide spectrum of action most are frequently applied to treatment of inflammatory diseases of genital organs of women. However activators quickly become resistant to antibiotics. Antibiotics reduce immunity, creating secondary immunodeficiencies, allergization an organism and diseases accept prolonged character with frequent aggravations develope the dysbacteriosis, a candidiasis, which treatment very difficult. For treatment of these processes use immunostimulants, vitamins, physiotherapeutic means, but they does not exclude application of antibiotics at aggravations. We investigate effectiveness of autovaccinetherapy at 103 sick women with chronic inflammatory diseases of genital organs. Etiology of diseases established by seeding cervical canal,s secretions of vagina on a bile-salt and blood agar, Endo and Sabourand medium.Most frequently distinguish Staph.aureus or Staph.epidermidis, Candida, Pseudomonas or Enterobacteries. From the allocated microorganisms prepared autovaccine density 700-800 million microbes bodies in 1 ml under the optical standard (S.B . Poznyak-1980) on a bactericidal liquid. For preparation di-or three vaccinies,i,e Staphylococcus and Ñandida or Staphylococcus, Candida and Pseudomonas, etc. Mixed equal volumes from 3 individual vaccines. In 24 hours after an establishment of sterility autovaccinies carried out autovaccinetherapy by intradermal-hypodermic injection of a vaccine 8-10 times from 0,1 up to 1-1,2 ml in 48-72 hours.

After the carried out treatment the good effect (absence of relapses of illness within 1-3 years) at 81 (78 %) is received, improvement (absence of relapses within 6-12 months) at 13 (12,7 %) and was not effect - at 9 (8,7 %). At carrying out autovaccinetherapy complications it was not observed, a method effective and its is necessary to wider applications.

0331

Pharyngeal Gonorrhea in CSWs: Response to a Single 2g Dose Azithromycin Therapy

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Objectives: A sharp increase in the incidence of gonorrhea has been observed in Tel Aviv, Israel, since 1999. Two-thirds of interviewed male patients admitted having unprotected oral sex (fellatio) with CSWs. In the present study we assessed the prevalence of pharyngeal gonorrhea among CSWs in Tel Aviv, and evaluated the efficacy of a single 2g dose of azithromycin in eradicating the infection.

Methods: Throat specimens were obtained from 301 female CSWs practicing in 'health clubs', and were processed for gonococcal culture and antibiotic susceptibility according to standard methods. An extensive questionnaire covering demographic and sexual behavior information was administered to all participants, and a single 2 g dose was administered orally under supervision. Women with positive cultures were re-examined a week later for eradication of *N. gonorrhoeae* using the same procedures.

Results: The median age of participants was 25 yrs (range, 18-53 yrs); 85% were born in former Soviet Union (mostly Russia, Ukraine, Moldavia), and only 9% were Israeli-born. The majority (60%) had 5-9 clients per day. Regular condom use in vaginal sex was reported by 96% of the participants, while only 70% reported always using condoms in oral sex. *N. Gonorrhoeae* was isolated from 27 women (9%); 37% of the gonococcal isolates were resistant to ciprofloxacin, while all were susceptible to ceftriaxone (MIC$\leq$0.016 mcg/ml) and to azithromycin (MIC$\leq$0.5 mcg/ml). Their mean age was lower (23 yrs), and fewer reported regular condom use in vaginal (88%) and oral sex (60%). Two of the 22 women who could be recultured, remained positive for *N. Gonorrhoeae*; one of the two refused treatment initially. Thus, gonococci were eradicated by azithromycin in 20/21individuals (95%).

Conclusion: A high carriage rate of gonococci in the throat and a reduced rate of condom use in oral sex were documented among sex workers in Tel Aviv. A single 2g dose of azithromycin was very effective in eradicating gonococci from the throat.

0332

The Similarities of Subclinical (Silent) and Acute PID- Insight into the Importance of Subclinical PID to Womens

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Objective: Determine if women with subclinical PID have similar clinical characteristics as women with acute PID.

Methods: A cross-sectional study of women with acute PID, subclinical PID, and without PID. Subclinical PID was defined as the presence of histologic endometritis in women without clinical criteria for acute PID. Acute PID was diagnosed in symptomatic women with endometritis. Controls were without clinical or histologic evidence of PID.

	Acute PID	Subclinical PID	Controls	Acute vs Subclinical PID- OR(95%CI)	Subclinical PID vs controls PID- OR(95%CI)	P (trend)
Chlamydia Cervix	36%	36%	13%	1.1 (0.6,2.0)	2.7 (1.8,4.1)	<0.001
Endometrium	20%	10%	2%	2.3 (0.9,6.4)	6.1 (1.8,21)	<0.001
Gonorrhea Cervix	49%	21%	7%	3.6 (1.8,7.3)	3.4 (1.6,7.2)	<0.001
Endometrium	9%	3%	0.3%	1.1 (0.2,12)	3.9 (1.7,8.9)	<0.001
BV	69%	78%	64%	0.7 (0.2,1.8)	2.6 (1.1,5.9)	0.05

Results: (see table) We enrolled 731 women meeting clinical criteria of acute PID and 562 women at-risk for, but lacking clinical criteria of, PID. Endometritis confirmed acute PID in 23% of symptomatic women and subclinical PID in 13% of women at-risk for PID. Demographics were similar among women with acute and subclinical PID. Symptoms and findings of PID were at intermediate levels in subclinical PID compared to acute PID and controls, including abdominal pain (acute PID-55%, subclinical PID-30%, controls-19%, $p<0.001$) and pelvic tenderness (99% vs. 15% vs. 4%, $p<0.001$, test for trend). Microbiologic findings in subclinical PID were either similar to acute PID or intermediate between acute PID and controls.

Conclusions: Clinical features are similar in women with acute and subclinical PID. Subclinical PID is present in a substantial proportion of women without acute PID, yet many have subtle symptoms of PID. These findings suggest that the pathophysiologic mechanisms of acute and subclinical PID are similar and indicate that subclinical PID represents an often overlooked but important cause of reproductive morbidity.

0333

Outreach Strategies for Chlamydia Screening: Results from a Population-based Screening Feasibility Trial in Male Managed Care Enrollees

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Objective: To evaluate, via randomized trial, the feasibility and efficacy of population-based outreach screening strategies to improve genital C. trachomatis (CT) testing rates over usual care among young male managed care organization (MCO) enrollees.

Methods: All male enrollees ages 21-25, were selected from the automated files of a Northwest US MCO and were randomized: Group 1 received a letter and return card to request a mail-back CT urine home testing kit; Group 2 received a testing kit (and survey), mailed directly to the home; Group 3 (control) received usual care. Intervention groups received one reminder letter. All groups (n=2,940 per group) were followed for 4 months post-randomization for the main outcome measure, CT testing rates. Mailed-back samples were tested via urine LCR.

Results: 105 (3.6%) in Group 1 and 230 (7.8%) in Group 2 returned mailed specimens (additionally, 24 and 16, respectively, received clinic testing). All respondents were sexually experienced, 19% reported a prior STD, 27% had >2 sex partners in the past year, 80% reported no genitourinary symptoms. Relative to Group 3, the risk of receiving CT testing was 5.57 (95% confidence interval (CI) 3.59-8.65) for Group 1 and 11.09 (95% CI 7.27-16.92) for Group 2. Group 2 was significantly more likely to be tested than Group 1 (RR=2.28, 95% CI 1.80-2.89). CT prevalence for mailed-back tests was 1.0% (Group1)-2.6% (Group 2). In Group 3, 24 (0.8%) received clinic testing, prevalence=16.7%; since clinic testing was not urine-based, it is likely this group was mostly symptomatic.

Conclusions: Both population-based outreach strategies resulted in significantly higher rates of CT testing than usual care, with direct mailing of the kit performing better than the card-back approach. Mailed strategies may be particularly useful in outreach to populations who are geographically distant from clinics or who have infrequent contact with the healthcare system.

0334

Changing Patterns of STD in Botswana, 1993-2002

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Objectives: A study was conducted in Botswana in 2002 to determine the prevalence of STD among STD and family planning (FP) patients, and compare the current STD prevalence with rates from previous surveys.

Methods: Tests included: *Chlamydia trachomatis* (CT) *and Neisseria gonorrhoeae (*NG) -urine LCR; syphilis -RPR/TPHA; HIV - two ELISA, and *Trichomonas vaginalis* (TV) -culture; among genital ulcer specimens (GU) *Treponema pallidum,* HSV, and *Haemophilis ducrey* - multiplex PCR. Findings were compared with a 1993 survey among STD and FP patients, which tested for: CT, NG and TV - culture; syphilis - RPR/TPHA, and HIV - ELISA; and for GU specimens: *T. pallidum* – darkfield; *H. ducreyi* and HSV - culture.

Results: In 2002, 288 women and 199 men participated, while 102 women and 107 men participated in 1993. Among men with urethritis, HIV prevalence for 1993 and 2002 were 27% and 62%; NG, 63% and 59%; CT, 5% and 19%; and syphilis sero-prevalence, 41% and 3%, respectively. Among FP women, HIV prevalence for 1993 and 2002 were 17% and 43%; NG, 7% and 3%; CT, 20% and 12%; TV, 17% and 7%; and syphilis sero-prevalence, 18% and 2%. The proportion of GU due to HSV increased from 24% to 60%, and chancroid decreased from 26% to 1% in 1993 and 2002, respectively. Although the proportion of syphilis GU was similar in 1993 (1%) and 2002 (2%), syphilis sero-prevalence decreased from 56% to 3% among GU patients. HIV among GU patients increased from 40% in 1993 to 75% in 2002.

Conclusions: Despite differences in laboratory methodology, findings suggest a decrease in syphilis sero-prevalence and chancroid and an increase in herpes during 1993-2002. Contributing factors for these changes include: implementation of syndromic management since 1992 that may have impacted bacterial infections, and the evolving HIV epidemic that has contributed to increases in symptomatic herpes.

0335

Trial of Periodic Presumptive Treatment of Gonorrhoea and Chlamydia Infections Among Female Sex Workers in Bénin and Ghana: Adherence to Treatment Schedule over a 9-Month Period

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A randomised placebo-controlled trial of routine monthly antibiotics (RMA) against *N. gonorrhoeae* (NG) and *C. trachomatis* (CT) among female sex workers (SW) was conducted in Bénin (Cotonou and Porto Novo) and Ghana (Accra). The objective was to assess the effectiveness of this strategy on the prevalence of NG and/or CT among SW and their clientele. Enrolment of SW took place at dedicated clinics in Bénin (n=433) and in Ghana (n=384), whilst monthly follow-up was conducted in the SW communities, alternating with quarterly clinic visits on months 3, 6 and 9.

Objectives: To determine the adherence to treatment schedule in this hard to reach population.

Methods: RMA consisted of supervised intake of single-dose azithromycin (1g) on month-1, and single-dose ciprofloxacin (500mg) on months 2 and 3 (or corresponding placebos), with this 3-month cycle repeated two more times over 9 months.

Results: Overall, 71% of the 5260 "eligible" monthly doses were effectively received. Adherence was slightly higher in Ghana than in Bénin (73 vs 70%). Months during which azithromycin was distributed were associated with higher adherence (75.5%) compared to months during which ciprofloxacin was distributed (69%). Reasons for not taking study capsules were: "permanent" move out of the city (34%), "temporary" travel (28%), SW not found (26%), refusal (11%) and pregnancy (1%). Reports of "any" adverse effects related to azithromycin (28%) were more frequent than to its corresponding placebo (22%; p=0.04), while the reported frequency of adverse effects to ciprofloxacin (11%) and to its corresponding placebo (11%) were similar.

Conclusion: The adherence to study drugs was sub-optimal but reflects the high mobility of SW, even in a relatively settled environment. The study showed however this strategy to be feasible and acceptable by the SW, even over a relatively long period.

0336

Syphilis Among Men who have Sex with Men in New York City; Findings from a Case Control Study to Evaluate Risk Factors for Infection

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Objectives: In 2001 New York City experienced increases in infectious syphilis among men, primarily among men who have sex with other men (MSM). This study sought to investigate risk factors for syphilis infection among MSM in New York City.

Methods: We conducted a case control study of 88 men who reported sex with men in the previous year, 18-55 years of age, diagnosed with primary or secondary syphilis between January 1, 2001 and January 31, 2002; and 176 controls, frequency matched by age and type of health provider. Participants who consented to participate completed a 30-minute audio computer assisted interview (ACASI).

Results: HIV prevalence among syphilis cases was 48% compared to 15% among controls (p<0.001). High-risk sexual behavior and recreational drug use were reported by a high proportion of both cases and controls. Variables associated with syphilis in a multivariate model, were HIV infection (OR, 5.7; CI, 2.6, 12.3), unprotected anal sex at private sex parties or public cruising sites (OR, 4.9; CI, 1.7, 14.2), income >$30,000 per year (OR, 2.9; CI, 1.5, 5.8) and barebacking (OR, 2.0; CI 1.0, 3.7). Among most HIV-infected participants, HIV infection preceded syphilis infection with a median time since HIV diagnosis of 6 years for cases and 7 years for controls. HIV-infected cases were more likely than controls to report being on antiretroviral therapy (69% vs. 44%, p=0.05) and to report having undetectable viral load (58% vs. 24%, p=0.02).

Conclusion: HIV infection, barebacking and high-risk sex at private parties and public cruising sites were highly associated with syphilis in this sub-population of men who have sex with men. High-risk behavior reported by both cases and controls indicates the potential for increased HIV transmission.

0337

PILOT Chlamydia 2001-2003: a CT-prevalence and Intervention Study in the Netherlands in Urban and Rural Areas. Study design and First Preliminary Results.

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Situation analysis: Insight in the burden of CT-disease in the Netherlands is hampered by the fact that, except for the city of Amsterdam, no population-based data are available. Moreover, it is unclear if and how a national screening program should be organised.

Objectives of the study: To obtain insight in the prevalence of CT-infections among 15-30 yr old men and women living in four regions in the Netherlands (outside Amsterdam) in rural, semi-urban and urban areas. To determine the (cost-)effectiveness of a systematic CT-screening policy organised via the Public Health Services.

Methods: Cluster design study in 4 regions according to 3 different demographic characteristics (population density: high-medium-low) and organised by the regional Public Health Services (PHS). Between august 2002 and april 2003, 21.000 random-selected persons aged 15-30 yr received a package by post with a questionnaire and home-sampling kit. Logistics were facilitated by computer application software. Urine-samples could be returned by mail and were pooled (by five) and tested (PCR-Roche) in a central reference laboratory. Participants receive by mail the results. In case of a positive result a letter for their healthcare provider is included. This letter contains a returnslip. (Partner-)treatment is done via regular services: GP, local STI-clinic, or the PHS. The study includes an uptake study (different kind of reminders), partner-study, non-response study, cost-effectivity study, evaluation study and an acceptability study among participants.

Results: First results will be presented at the conference. Preliminary data (the study is still ongoing) indicate that approximately 50% of the participants respond.

Discussion: Postal urine screening seems well accepted and a more proactive role of the PHS is a feasible approach. Insight in the burden of CT-disease, and analysis of potential risk-profiles will contribute to determine if and how (selective) CT-screening in the Netherlands could be operationalised. Organising CT-screening in a sustainable manner in daily reality of primary care (–and not only in research settings -) will be a major challenge. Systematic or opportunistic screening both have their advantages and disadvantages. At this moment, the Dutch National Health Council is in the process of finalising their advice about CT-screening in the Netherlands.

Conflict of interest: none This research has been financed by Zorg Onde rzoe k Nederland.

0338

Health Care Seeking Behaviour in the Netherlands: GP Sees Majority of STI-cases

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Objective: STI-clinics and Public Health Services(PHS) report a resurgence of STI in the new millenium. No recent data are available about STI-related health-care seeking behaviour in the Netherlands. We wanted to know what is the role is of the General Practitioner (GP) in STI-care.

Method: Within the framework of the the second Dutch National Survey of General Practice of Nivel (2001), which has been carried out in cooperation with the National Information Network of General Practice (NINGP), data were collected about STI and STI-related health care seeking behaviour. A questionaire was send to 16.000 persons of 160 GP's. The Electronical Medical Files of 400.000 clients of these GP's, with more than 2 million patient contacts during the year under study, were analysed for STI-related diagnoses and consultations.

Results: 5% of persons aged 18-24 reports STI-related signs and symptoms in the past year. 2/3 visited the GP for this; 20% visited the STI-or PHS-clinic. Almost 10% reported not to have taken any action. Preliminary analysis from the Electronic Medical Files show more registered STI-related episodes than would be expected on the bases of the questionaire, suggesting some degree of underreporting by participants. GP's in highly populated urban area's and in social deprived area's see more STI-related consultations. MSM and persons with Surinamese/Antillean ethnicity report signifiantly higher numbers of STI.

Discussion: The GP is an important player in STI care, covering at least 70% of the STI burden of disease in the Netherlands. It was remarkable that 10% of respondens with STI-symptoms didnot go to any provider. The 'mean' GP sees on average in a year 10 patients with STI and 7 patients with questions on HIV/STI eg requests for HIV-tests. Moreover, there are some 50 consultations for contraceptive advice during which the GP can give tailored advice on risk reduction counselling. GP in urban and social deprived area see comparatively much more STI, and can be targetted for quality assurance and continuous education programmes. More positive attention for sexual health in GP is needed.

0339

Workshops in Educational Methodology to Improve the Quality of STD and AIDS Training in Brazil

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Objectives: In 1999 the National Coordination of STD/AIDS-Ministry of Health developed a project to provide training in Educational Methodology for health professionals involved in planning, execution and evaluation of training courses in STD/HIV/AIDS.

Methods: Development of instructional material and promotion of conscious debates about the educational processes related to STD/HIV/AIDS, through the study of the different educational theories. The pedagogical model chosen is based on the theory of social interaction conceived by Vygotsky, which states that human characteristics result from a dialectic interaction of the human being with its socio-cultural context. A 44-hour course was given in 8 workshops from November 2000 to August 2001 in all five regions of Brazil.

Results: A total of 212 health professionals received training, 65 from states of the Midwest region, 56 from the Northeast, 29 from the North, 40 from the Southeast and 22 from the South. The majority (85,4%) were female; 22,5% were psychologists, 19,5% nurses and 12% social workers; 20,7% were university professors, and 13,2% were from NGOs. The work plans for the states and municipalities defined at the end of each workshop proposed its replication at the local level and the adaptation of all training courses on STD and AIDS to the methodology. A national network of instructors to participate in the dissemination of the methodology was created.

Conclusions: The objectives of this capacity-building project were fully achieved. The work plans of states and municipalities revealed a trend towards an effective dissemination of this methodology. A series of advanced workshops are being planned to provide a sequence to the learning process that was initiated.

0340

Advances in Methods for Eliciting Sexual Networks

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Objective: To summarize recent research on methods for eliciting sexual networks.

Methods: Recent published and unpublished research on the elicitation of sexual partners is reviewed.

Results: Variations of prompting and certain types of recall cues enhance recall of sexual partners. When implemented in partner notification contexts, these supplementary interviewing techniques identify new cases of STD that would not otherwise be discovered. In general, interviewees' estimates of their numbers of sex partners approximate the numbers elicited prior to administration of prompts or recall cues. Analyses of the effect of interviewer characteristics, interviewee characteristics, and the interaction between them on the number of partners elicited in research and partner notification settings are in progress and will also be presented.

Conclusions: Relatively brief and simple supplementary interviewing techniques are useful for ascertaining sexual networks more completely. In most circumstances, interviewees' estimates of their numbers of partners should be treated as minimum targets for elicitation.

0341

Prevalence of Gonococcal and Chlamydial Infections Among Women in Northeast Brazil

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Objectives: In 2000-01 two prevalence studies were conducted to demonstrate the prevalence of gonococcal and chlamydial infections among women in Fortaleza, capital of Ceará State, Northeast Brazil.

Methods: In four sexually transmitted infections (STI) referral units 608 women with symptoms of vaginal discharge were examined for cervical infections and in one maternity hospital 630 women seen at consultation for routine pre-natal care participated in the prevalence study. After an informed consent was signed a sample collection was performed and laboratory diagnosis was done using the PCR technique – Amplicor R/Roche. Pregnant women were also tested for HIV infection using the ELISA technique and Indirect Immunofluorescence.

Results: Among symptomatic women, 5.6% (34/608) tested positive for gonococcal infection and 11.3% (69/608) for chlamydial infection. For the pregnant women the prevalence of gonococcal infection was 1.3% (8/630) and of chlamydial infection 11% (69/630); all pregnant women tested negative for HIV infection.

Conclusions: A very high prevalence of chlamydial infections was disclosed among pregnant women with no known risk for STI. This indicates the need to prioritize interventions aimed to control sexually transmitted infections in the general population. Comparatively the prevalence of HIV infection encountered was very low. Based on these findings one can predict that the capital of Ceará State is a region where STI control would have the greatest impact in the prevention of heterosexual transmission of HIV infection.

0342

Emergency Contraception: Who are the Users?

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Objectives: To describe the demographic, social and sexual characteristics of clients attending a Sexual Health Clinic for Emergency Contraception (EC).

Methods: Information about all women attending a Sexual Health Clinic in Sydney, Australia, who received EC between January 1999 and July 2002 was derived from the clinic database. Controls, matched for year of attendance and age were randomly selected. Demographic characteristics and a sexual and reproductive history were recorded. Univariate and logistic regression analysis were performed using SPSS to establish which demographic and behavioural factors were associated with use of EC.

Results: 267 women who requested EC and an equal number of controls were studied. 234 (99%) of those requesting EC attended within 72 hours of unprotected intercourse. Reasons for requesting EC included failure of contraceptive method (47%) - mostly condom breakage and failure to use contraception (51%). Factors that were independently associated with EC use were being a student, (OR=1.7 [95% CI 1.02-2.69]) and having a regular sexual partner (OR=2.3 [95% CI 1.14-4.73]). Women requiring EC were significantly less likely to have had a sexually transmitted infection (STI) (OR=0.3 [95% CI 0.16-0.60]) or a previous pregnancy (OR=0.2 [95% CI 0.09-0.67]) than controls.

Conclusions: Users of EC attending a sexual health service are at low-risk for STIs but high-risk for future unwanted pregnancy. EC consultations should include advice on ongoing contraception and condom technique.

0343

Adverse Pregnancy Outcomes among High Risk Women Without Prenatal Care, Russian Federation - Implications for the Perinatal Transmission of Syphilis and HIV

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Objectives: Prenatal care (PNC) is important for women at high risk for STDs/HIV to avoid associated adverse outcomes of pregnancy. We examined risk factors for lack of PNC among high-risk women in the Russian Federation (RF) and compared pregnancy outcomes for women with and without PNC.

Methods: We searched laboratory logs in maternity houses in five sites of RF to identify all women with positive syphilis tests during pregnancy. We reviewed maternal and infant medical charts to assess PNC utilization and pregnancy outcomes; the latter are reported separately for women with and without active syphilis infection.

Results: Of the 1071 women, 400 (37%) received no PNC. Independent risk factors for not receiving PNC included location of delivery and being homeless, non-resident of the place of delivery, single, unemployed, and having one or more previous pregnancies. Five of nine HIV-positive women had no PNC, and 80% of 71 women with unknown HIV status had no PNC. Of the 626 with PNC, 197 (32%) started PNC later than 20 weeks gestation. Among pregnant women with active syphilis who were adequately treated (n=284), the 56 without recorded PNC were more likely to have a low birth weight infant (<2500 gms) (32% vs. 11%; odds ratio [OR]: 3.8; 95% confidence interval [CI]:1.8-8.1), a pre-term infant (<37 weeks gestation) (29% vs. 9%; CI: 1.8-8.7) or to abandon the infant (25% vs. 4%, OR 7.4, 95% CI: 2.8-19.5) than the 228 women with PNC. Similarly, among 196 pregnant women without active syphilis, those 46 without PNC were more likely to have adverse pregnancy outcomes than the 150 with PNC.

Conclusions: We identified a high-risk population of women who are receiving either no or inadequate PNC and whose infants are at increased risk for adverse outcomes. Strategies to improve PNC utilization among these women are needed urgently, not only for the prevention of congenital syphilis, but also to prevent perinatal HIV transmission.

0344

Penicillin Binding Protein 2 and Reduced Cefixime Susceptibility in Neisseria Gonorrhoeae in Hong Kong

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Objective: Alterations in the Penicillin-Binding Protein (PBP) 2 (encoded by *penA*) have previously been linked to reduced benzylpenicillin susceptibility in *Neisseria gonorrhoeae*. Recently, in a clinical isolate (NG-3) from Japan, a mosaic-like structure in the *penA* gene was reported to account for the reduced susceptibility to cefixime rather than the Asp345-A insertion which was previously found to reduce PBP2 affinity to penicillin. Here, we examined for these alterations in isolates from Hong Kong.

Methods: From the 3496 isolates of *N. gonorrhoeae* obtained from Social Hygiene Clinics in 2002, 22 were selected, and showed varied levels of susceptibility to ceftriaxone by breakpoint agar dilution in the routine clinical laboratories. Their genetic relatedness was examined by random-primed (RP) PCR. MIC of ceftriaxone (CRO) and cefixime (CFX) were determined by agar dilutions. PCR and sequencing of *penA* was then performed on selected strains.

Results: The range of MICs or CRO and CFX of the 22 strains were 0.004-0.016 and 0.004-0.032 mg/L respectively. RP-PCR showed their low genetic relatedness. *penA* was examined in 9 strains with the highest and 4 strains with the lowest MIC values. The active-site serine residue (Ser310-X-X-Lys) and the Ser363-X-Asn and Lys497-Thr-Gly motifs were conserved in all 13 *penA* genes sequenced. There were 4 to 8 changes in the amino-acid sequences, including 1 to 2 insertions. The mosaic-like structure (DDBJ accession number AB071984) was not observed. Whilst all 13 strains contained Asp345-A, 4 of the 9 strains with highest MICs contained also the Asn573-A insertion seen in NG-3.

Conclusions: Our preliminary data showed the absence of mosaic-like structure in our *N. gonorrhoeae* with varying susceptibility to cefixime and ceftriaxone. Nonetheless, the presence of Asp345-A and Asn573-A insertions suggests the strains in Hong Kong may well be on their way to developing higher resistance by gathering resistance mutations. Further investigation is needed to delineate the role of these mutations.

0345

Heterogeneity Among Pregnant Women Living with Hepatitis C in British Columbia

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Objective: To determine the demographic profile of HCV infected pregnant women in British Columbia.

Methods: HCV positive pregnant women in British Columbia who consented to participate in a prospective, cohort study were enrolled. Key demographic data were collected antenatally through an interviewer administered questionnaire. Information on sociodemographic status, ethnicity and educational experience was collected.

Results: From 09/00 to 12/02, 106 women were enrolled in this large HCV cohort study. The mean age of participants was 29.8 years. The ethnicity of the mothers is represented by a majority (69%) of Caucasian women while women with First Nations (aboriginal) status comprised the second largest (19%) ethnic group. The study subjects varied in their educational experience with 22% completing only elementary school, 27% completing some high school and 29% completing some college or university. Although more than one third of the women reported a yearly gross household income of less than $30,000 this group was not over-represented in the cohort. At least 15% and 10% of the participants reported incomes of greater than $50,000, and $30,000-$50,000 respectively. Only 65% of the cohort reported ever using injection drugs.
Conclusion: Pregnant women living with HCV represent a heterogeneous group with respect to ethnicity, socioeconomic status, educational experience and risk history.

0346

Mycoplasma Pneumoniae Implicated in Female Urogenital Tract Infections

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Objectives: Following earlier work from this laboratory on the detection of *Mycoplasma pneumoniae* (Mpn) in the female urogenital tract, further work was undertaken to evaluate the significance of this organism in urogenital infections.

Methods: Mpn was detected by PCR (polymerase chain reaction) using primers specific for the Mpn P1 adhesion gene; the amplified product was confirmed using a DIG-labeled probe to the internal regions of this 345bp fragment. Specimens were received from women attending clinics for a variety of gynaecological problems; ages varied from 20 to 70 years.

Results: Over a 4 year period, a total of 58 specimens from 55 women with unresolved genitourinary problems were positive for Mpn by PCR. Twenty-four had cervicitis, 9 of these with additional urinary symptoms; 17 cervical swabs were received, 10 because of poor response to antibiotic therapy and 7 from women with a history of spontaneous abortions. Urines alone, were also received from 9 women with urinary problems. Infertility was the reason given for 3 women and no information was available on 2 other cervical samples. In 3 patients where both cervical swabs and urine were submitted, all 6 specimens were positive. Co-infection with *Ureaplasma urealyticum* was noted in 10 women with cervicitis and in 4 cases where only urines were submitted.

Conclusions: Though Mpn is commonly associated with lower respiratory tract infection, previous work from this laboratory and the present data indicate genital tract colonization by this organism and strongly suggest a causal role in urogenital tract infections.

0347

A Successful STI control Program in a Municipality of the State of Amazon, Brazil

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Introduction: In 1997, the authorities of Manacapuru (71.000 inhabitants) decided to improve the STI Control Program with technical assistance and supervision from the "Alfredo da Matta" Foundation, some measures were introduced to promote prevention and develop the quality attention given to STI cases. Health professionals were trained in the Syndromic Approach, medication was distributed, and a notification system was implemented. Moreover, "peers educators" for working with the vulnerable groups and with the sale of condoms on low prices.

Results: No new cases of congenital syphilis occurred and there was a STI decrease. In 2002, in comparison to 1998, the incidence of cervical discharge syndrome fell by 48%, male urethral discharge by 16%, pelvic pain 78% , vaginal discharge 67% and genital ulcer 61%, HIV remained practically absent. A STI prevalence study in 147 women sex workers(SW) showed, an absence of HIV infection(0,0%), low prevalence of syphilis(0,68%) and Chlamydia infection(7,1%), and intermediate prevalence of gonococcal infection(16,3%) and trichomoniasis(23,1%).STI prevalence study in asymptomatic women was 33,3% and 47% in symptomatic women(p=0,17). Two questionnaires were used to evaluate the educative component of the SW and measure variations in the risk perception STI levels and changes in behaviour at 2 yearly intervals. There was an increase in the STI risk perception and the continual use of condoms in 2001; an improvement in the correct use of condoms (10,1vs59%) and an increased of women who showed to be in possession of condoms at the time of the questionnaire (14vs54,7%). These results are consistent with low prevalence levels of STI in sex workers and the decreasing tendency within the general population.

Conclusions: All implemented measures were effective in the short term. Probably this result is also due to the epidemiological situation with predominance of curable STI and the HIV incipient epidemic.

0349

Prevalence of Chlamydia and Gonorrhea in the United States Among Persons Aged 14-39 Years, 1999-2000

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Objective: We report for the first time, *Chlamydia trachomatis* and *Neisseria gonorrhoeae* prevalence from a representative sample of the U.S. population aged 14-39 years.

Methods:Information about demographics, sex behaviors and sexually transmitted disease history was obtained and urine specimens were collected as part of the ongoing National Health and Nutrition Examination Survey (NHANES) 1999-2000, a probability sample of the U.S. population. Results were weighted to represent the U.S. civilian, non-institutionalized population aged 14-39 years. Urine specimens were tested for *C. trachomatis* and *N. gonorrhoeae* using the LCx assay (Abbott Laboratories, Abbott Park, IL).

Results: Testing for chlamydia and gonorrhea was performed on 3145 respondents. The prevalence of *C. trachomatis* infection was 2.6% (95%CI 2.0-3.5%) with no significant difference between males and females. The prevalence of *N. gonorrhoeae* was 0.25% (95% CI 0.14-0.45%). The prevalence of gonorrhea among non-Hispanic blacks (1.3% [95% CI 0.6-2.6%]) was over 25 times that among non-Hispanic whites (0.05% [95% CI 0.01-0.39%]) ($p<0.05$). Among those infected with *N. gonorrhoeae*, 57% were also infected with *C. trachomatis*.

Conclusions: The burden of *C. trachomatis* among men and women in the U.S. is sizable. While overall prevalence for *N. gonorrhoeae* is low, significant racial/ethnic disparities exist. Current recommendations to cotreat patients infected with *N. gonorrhoeae* when *C. trachomatis* infection is not ruled out appear appropriate.

0350

Early Syphilis at Guy's and St. Thomas' Hospital, London: 2000-2002

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Objective: To describe features of early syphilis presenting to a London teaching hospital from 2000-2002.

Methods: Data were collected for all cases of primary, secondary and early latent syphilis by retrospective note review. Statistical analysis used Fisher's exact test.

Results: 133 cases of syphilis were identified in 122 men and 11 women; 46 primary cases, 7 cases with simultaneous primary and secondary manifestations, 56 secondary cases and 24 early latent cases. Yearly caseloads increased by 480% in heterosexuals and by 513% in men having sex with men (MSM). Subjects were mainly White (70%), Black-Caribbean (17%) or Black-African (7%). Mean age was 34.4 years (men) and 29.8 years (women). Ninety-three (76%) men identified as MSM and 29 were heterosexual. White ethnicity was associated with MSM subjects and Black African/Caribbean ethnicity with heterosexual subjects ($p<0.0001$). Data on HIV serostatus were available for 102 subjects; 32 (31%) were HIV positive with a mean CD4 count of 390 (range 77-900). HIV seroconversion illnesses occurred in 4 subjects. Most primary syphilis presented with a solitary ulcer (70%); there was no association of HIV seropositivity with multiple ulcers ($p = 0.63$). Rash (86%) and mouth ulcers (21%) were the most frequent manifestations of secondary syphilis. Dark ground microscopy was positive in 18 (60%) of 30 primary cases and 8 (44%) of 18 secondary cases. Serological screening by EIA IgG/IgM was positive/equivocal in 86% of primary cases; TPPA/TPHA performed better and was positive/equivocal in 96% of cases. Both serological techniques performed well in secondary/early latent stages. Concurrent STIs were detected in 31% of subjects.

Conclusions: The hospital has witnessed an ongoing outbreak of syphilis in both MSM and heterosexuals. HIV seroconversion was observed in 4 subjects which supports the concept that syphilis can enhance HIV transmission. All patients with syphilis should undergo screening for STIs, including HIV.

0351

The Best of Friends: Harmonizing Proposals for Circumcision as a Preventive for HIV with Science, Ethics, and the Law

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Circumcision, first introduced as a medical therapy in the Victorian era as a preventive measure against masturbation, has enjoyed a heyday over past decades unparalleled for a procedure lacking medical justification. Recent promoters of the surgery are claiming it may serve as a preventive for HIV/AIDS. This recommendation relies on observational studies suggesting an association between the foreskin and an elevated vulnerability to HIV infection. These studies suffer from several serious flaws. They compare disparate populations that are distinguishable on other relevant independent variables. The studies also vary significantly between themselves. Suggestions that circumcision may help stave off the HIV/AIDS pandemic are speculative, even reckless. Ethical pitfalls clearly confront any scientist proposing to undertake a randomized controlled trial requiring permanent amputation of a body part, particularly where the procedure's benefit is questionable. Any responsible recommendation of universal circumcision must grapple with grave issues in order to harmonize the proposal with science, medical ethics, the law, and human rights: 1) The proposed intervention must be compared for efficacy, costs, and complications to other interventions 2) The surgical complications of the procedure are probably much higher in developing nations. 3) The loss of function of the intact penis. 4) The questionable propriety of removing healthy tissue from non-consenting minors to "protect" them from a disease that may not exist when they reach sexual maturity, based on speculation about their future sexual behavior. 5) The likelihood that such a recommendation would be interpreted as thinly veiled colonialism. 6) Recent research throws into question previous assumptions regarding principal mechanisms by which African HIV is spread. This possible new era for AIDS research may emphasize the importance of 1) determining the truth about HIV propagation and 2) avoiding the understandable temptation to create unscientific, unethical, and unlawful scapegoats such as the foreskin for HIV's catastrophic persistence.

0352

STI, HIV Among Sex Workers and their Health Seeking Behavior in Kazakhstan

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Objectives: In 2002 the contribution of people who had never injected drugs to newly identified HIV cases in Kazakhstan was doubled that may prove growing role of sexual transmission of the virus. According to the rapid assessments the total number of street commercial sex workers (CSW) in different cities and towns of Kazakhstan is coming to 20,000. Each of CSW has about 700 sexual contacts with non-cohabitant and cohabitant clients annually i.e. in average 4 sexual intercourse per each sexually active male resident of the country. This study was performed in order to evaluate the prevalence of STI among CSW, their health seeking behavior and the linkage between STI and HIV transmission.

Methods: Serological and behavioral surveillance in randomized samples of totally 285 CSW was conducted in three towns of Kazakhstan with the highest prevalence of HIV (Pavlodar, Shymkent and Temirtau).

Results: The prevalence of antibodies against T. pallidum among CSW varied in different localities from 4,5 to 21,5 per cent, while the share of HIV positive CSW varied from 0,7 to 35,3 per cent. Correlation (r=0,56) between presence of antibodies against T. pallidum and HIV in the blood serum of CSW was established. About half of interviewed CSW had genital ulcers, vaginal discharge and/or abdominal pain syndromes during the period of the last three months. However less than one-third of them was seeking official health care settings and treated properly. Condoms were used constantly during the last month by one-third of respondents. Less than one-third of CSW was aware of STI and their significance in HIV transmission.

Conclusion: It is ascertained that special programs targeted at STI prevention and treatment should be addressed to CSW and that must provide significant impact on the reduction of HIV transmission in the country.

0353

Rates and Associated Risk Behaviour for HIV and HBV Infection in Pregnant Women Living with Hepatitis C

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Objective: To determine the self-reported rates and risk factors for HIV and HBV infection in HCV infected pregnant women.

Methods: HCV positive pregnant women in British Columbia who consented to participate in a prospective, cohort study were enrolled. Information was sought via questionnaire regarding diagnosis, treatment, and risk factors for HIV and HBV infection.

Results: Data from 106 participants were analyzed. Risk factors for blood borne pathogens show that 65% reported a history of injection drug use with 33% reporting they had shared needles. A large proportion, 54%, also reported having sex with a person who used injection drugs while 26% reported having sex with a person who had HIV, hepatitis or who they would consider to be at high-risk. Other sexual practices reported in the group include sex with gay or bisexual men (19%), sex with a person with genital herpes or sores (19%), anal sex (43%) and fisting (3%). Other risk factors include 22.6% of participants reporting a history of blood transfusion, 22.6% reporting occupational exposure to body fluids and 5.7% reporting needlestick injuries. Hepatitis B infection was reported by 10.4% of the cohort. 93.4% of subjects reported having been tested for HIV with 12.3% reporting HIV positivity. Of those living with HIV, 92% were currently receiving antiretroviral treatment.

Conclusion: There is a high prevalence of HIV and HBV infection in this cohort of pregnant women, as ascertained by self-report. This is congruent with the history of injection drug use or higher risk sexual behaviour reported by many in the group.

0354

Sexual History and Self-Reported Sexually Transmitted Infections Among Pregnant Women Living with Hepatitis C

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Objective: To determine the sexual history and rates of self-reported sexually transmitted infections (STI) for HCV infected pregnant women.

Methods: HCV positive pregnant women in British Columbia who consented to participate in a prospective, cohort study were enrolled. A questionnaire sought information on age at first intercourse, number of sexual partners, current relationships, sexual practices, and lifetime incidence of sexually transmitted infections (STI).

Results: Data from 106 women were analyzed. The mean age was 29.8 years with a mean age at first intercourse of 15.2 years (range 4-25 years). 10% of participants reported they were bisexual and 43% reported a history of anal intercourse. Of 82 women that reported on the number of sexual partners in the past 10 years, over one third (37%) reported having more than 10 sexual partners, while 8.5%, 10%, 29% and 16% reported not sure, one, 2-5, and 6-10 sexual partners respectively. 65% of subjects were currently in a sexual relationship with the mean length of that relationship being 3.9 years. 17.9% of subjects reported ever having chlamydia, 5.7% gonorrhea, and 16% reported having a history of genital ulcers. Rates reported for genital warts and herpes were 14.2% and 9.4% respectively. Lower rates were reported for syphilis (3.8%), and other STI (3.8%).

Conclusion: Pregnant women living with HCV in British Columbia, Canada reported a high number of sexual partners, experience of anal intercourse and high cumulative rates of STI. This may pose added challenges in terms of health maintenance and the prevention of potential sexual transmission.

0355

Prevalence of Sexually Transmitted Infections Among Individuals at High Risk for HIV in Chennai, India - Implications for HIV Prevention

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Objective: Sexually Transmitted infections(STI) facilitate the transmission of HIV infection. Knowledge about STI burden in the community will help to design better HIV prevention strategies. With this background this study was carried out to determine the prevalence of sexually trans-

mitted infections in a cohort of individuals who are at high risk for HIV infection in Chennai, India.

Methods: This study was carried out at VHS-YRG Centre for AIDS Research and Education, Chennai. 453 subjects, 18 or older, residing in or near Chennai who are at high risk for HIV infection were recruited for this study. Inclusion criteria for men included a recent STD, recurrent recent sex with a CSW or recurrent recent vaginal sex with an HIV+ partner. For females, inclusion criteria included having had five or more male sex partners in the last year, a current male sex partner who recently injected drugs, a recent STD, recently exchanged sex for money or drugs or has a current male sex partner who is HIV positive. The laboratory tests included PCR for Chlamydia trachomatis and Neisseria gonorrhea, Elisa for HBsAg, anti-HCV and for HSV-2 antibodies, RPR and TPHA for Trepnema pallidum. Inpouch culture for Trichomonas vaginalis.

Results: Of 453 subjects, 51.7%(234) were female, 38.4%(174) with HSV-2, 2.4%(11) with Chlamydia trachomatis, 0.7%(3) with Neisseria gonorrhea, 4.9% (22) with HBV, 3.3% (15) with HCV. 9.5% (43) had syphilis. Of females, 2.3% (10) tested positive for Trichomonas vaginalis. Women were more likely to be infected with HSV-2 (p=0.001) and Chlamydia trachomatis (p=0.01), but there was no statistical correlation between gender and Neisseria gonorrhea, HBV, HCV, TPHA positivity.

Conclusion: There is a high prevalence of HSV-2 in this cohort of HIV negative high risk individuals. Suppressive therapy for HSV-2 should be planned in preventing transmission among individuals at high risk for HIV infection.

0356

High Prevalence of Trichomonas Vaginalis Infection in Papua New Guinea Male STD Clinic Attendees Using Polymerase Chain Reaction

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Trichomonas vaginalis infection is the most common STI among sexually active women in Papua New Guinea (PNG). This infection is ignored in the male sexual partners because of lack of signs and symptoms. Consequently very little has been done previously to determine its prevalence in men in our population. In the original study in 1997, we determined 1% of this infection as opposed to 40% in women who were presenting to STD clinic in 2 major towns in PNG. This marked differences as well as similar prevalence rates observed of the other STIs namely gonorrhoeae, chlamydia, and syphilis in both men and women has prompted us to reanalyse these samples using a more sensitive polymerase chain reaction (PCR) method. Hence the aims of the current study were to determine the prevalence of T. vaginalis in these male patients using PCR and to compare this with those obtained previously using wet mount, and the In Pouch culture method. Urethral swabs that were stored at –80°C for the last 5 years were re-examined in this study. The samples were removed from storage and allowed to thaw at room temperature. DNA was extracted using a crude extraction method and PCR performed using primers TVA5 (5'-GAT CAT GTT CTA TCT TTT CA-5') and TVA6 (5'-GAT CAC CAC CTT AGT TTA CA-5') as described previously. Briefly, the reaction was done in 50 ml mixture containing 0.5 mM of each primer, 1.5 mM MgCl2, 200 mM dNTPs and 0.2 Units of DNA Taq polymerase. This mixture was subjected to an initial denaturation at 94°C for 5 minutes and thereafter at 94°C for 1 minute, annealing at 47°C for 1 minute, and extension at 67°C for 1 minute for 35 cycles. An extra 7 minutes extension was performed at the end and the products resolved on 2% agarose gels. T. vaginalis was detected under UV following ethidium bromide staining. Our results show that out of 189 male urethral swabs that were processed, 32% (60/189) were positive for T. vaginalis by PCR. We found no statistical deference between the prevalence rate observed in men (32.6%) in this study compared to that of women (40%) established previously, M-H chi-square = 0.575, p = 0.05.

These results indicate that men are infected almost as frequently as women are in our population, and that the low prevalence detected previously could be attributed to sensitivities of the methods used. Recently, others have reported similar prevalence rates in both infected men and women and have attributed this to low concentrations detected in prostate glans and the urethra. We have established in this study that T. vaginalis is common in both men and women in our population. Trichomoniasis has never been treated in men diagnosed with urethritis.

Our finding calls for comprehensive treatment of this infection in both men and women. Effective control of all STIs among those who are at risk is vital for the control of escalating HIV epidemic in the country.

0357

Comparison of HIV Risk Reported in Two Data Collection Modes: Use of Audio Computer-Assisted Self-Interviewing (ACASI) and Face-to-Face (FTF) Interviews among Women in Harare, Zimbabwe

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Objective: The accuracy of self-reports of HIV risk behavior may be compromised by social desirability bias. Computer interview technologies are believed to reduce this by increasing the privacy of the interview setting. This study compared the prevalence of HIV risk behaviors reported through two interview modes: ACASI and FTF questionnaires.

Methods: HIV negative women, who were participants in a multi-site study on hormonal contraception use and HIV acquisition, were recruited from two family planning clinics outside Harare. In this longitudinal, crossover study, women were randomized to complete a questionnaire using either ACASI or FTF interview. Women returned for follow-up visits every three months for up to nine months. At each visit women completed the same questionnaire using the opposite interview mode from that which they used at the previous visit. GEE analyses are presented.

Results: As of February 2003, 581 women aged 18-35 were enrolled and completed a total of 1,597 visits. Comparisons of the prevalence of HIV risk behaviors suggest that condom use reports did not vary between in-

terview mode. However, other HIV risk factors did vary by mode, with reports of multiple partners in the previous three months, and use of withdrawal and the rhythm method higher in ACASI compared to FTF interview (odds ratios (OR) =10.2, 2.7 and 37.5, respectively; $p<0.01$ for each). Reports of pregnancy were also higher in ACASI (OR=1.7, $p<0.01$) whereas reports of hormonal use were lower in ACASI (OR=0.5, $p<0.01$).

Conclusions: ACASI appeared to yield higher reports of several key HIV risks. The differences found in reports of pregnancy and hormonal contraception use likely reflect the parent study's focus. The lack of an effect of mode on reports of condom use may indicate less bias in reporting this behavior, or perhaps a stronger bias that could not be attenuated even with the increased privacy ACASI affords.

0358

Do We Need to Screen Women Presenting for Termination of Pregnancy (TOP) for HIV and STIs in South Africa?

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Objective: To determine the prevalence of HIV and STIs amongst women presenting for TOP, in order to develop intervention strategies for implementation by health care administrators.

Methods: Vaginal and endocervical swabs were collected from 60 consecutive women presenting for TOP at Ga-Rankuwa Hospital, Pretoria during November-December 2002. Standard laboratory methods were used for the diagnosis of bacterial vaginosis (BV), trichomoniasis, and candidiasis. The Roche PCR Cobas Amplicor system was used for the detection of *Neisseria gonorrhoeae* and *Chlamydia trachomatis*. Venous blood was also drawn for testing for syphilis (RPR/TPHA) and HIV1/2 (unlinked) antibodies.

Results: The participants mean age was 23.5 years (range 12 – 39). The mean gestational age for termination was 12.6 weeks (range 6 – 20). The overall prevalences of STIs among the 60 women enrolled were: *Neisseria gonorrhoeae* 3%, *Chlamydia trachomatis* 15%, *Trichomonas vaginalis* 13%, BV 42% and yeasts infection 38%. Antibodies to syphilis were detected in 7% and HIV1/2 in 16%.

Conclusion: The study showed a high prevalence of STIs amongst the women attending for TOP with HIV infection being diagnosed in 16% of the study population. Chlamydial infection, which would otherwise be undiagnosed, was detected in 15% of the women. There is an urgent need to provide pre and post test counseling for HIV and screening for STIs to all women coming for TOP at health care facilities in South Africa.

0359

Safety and Immunogenicity of a Prophylactic Genital Herpes (GH) Vaccine Formulated Glycoprotien D2 (gD2) and AS04 Adjuvant in Pre-teens, Adolescents and Adults

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Objective: We conducted an open, randomized trial to assess safety and immunogenicity of gD_2 vaccine formulated with 3-deacylated monophosphoryl lipid A (3D-MPL) adjuvant in HSV-1 and -2 seronegative (HSV 1-/2-) pre-teens, adolescents and adults. Previous studies suggested that this vaccine prevents GH disease in HSV 1-/2- adult women.

Methods: Three doses were administered on a 0,1,6-month schedule to four groups of healthy HSV 1-/2- males and females (group A: 10-15 years, 10µg gD_2; group B: 10-15 years, 20µg gD_2; group D: 16-18 years, 20µg gD_2; group E: 19-45 years, 20µg gD_2). Vaccine containing 20µg gD_2 was also given to 10-15 year-olds on a 0,6-month schedule (group C). Serum and peripheral blood lymphocytes (PBLs) were collected at baseline, months 2, 7 and 12 for assessment of immunogenicity (in a subset). Subjects were evaluated for vaccine reactogenicity and safety.

Results: 308 subjects were enrolled. One month after completing vaccination, all subjects were seropositive for gD_2 antibodies, with highest titers in group B. Month-7 geometric mean titers (GMTs) were 5526 (A), 8512 (B), 4557 (C), 6019 (D) and 5940 (E) ELISA units per milliliter (EU/mL). GMTs declined by month 12 but all subjects remained seropositive, with highest GMTs in group B (month-12 GMTs: 2295, 3178, 1644, 2215 and 2485 EU/mL respectively). HSV-2 neutralizing antibody responses followed a similar pattern. PBLs showed induction of interferon-gamma and interleukin-5 secretion in all groups. The incidence of adverse events was similar in all groups; injection site pain was the most frequent symptom (~80% overall/dose). No related serious adverse events were reported.

Conclusion: The gD_2-3D-MPL vaccine was well tolerated and immunogenic in all groups. The highest serologic responses were observed in 10-15 year-olds receiving the 20µg gD_2 formulation on a 0,1,6-month schedule. These results support the selection of the 20µg gD_2 formulation for use in pre-teens and adolescents.

0360

The Role of Mycoplasma Genitalium in Infertility

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Objectives: *Mycoplasma genitalium* causes acute and possibly chronic nonchlamydial, nongonococcal urethritis in men. In women, *M. genitalium* has been associated with cervicitis, endometritis and pelvic inflammatory diseases. Evidence of sexually transmission of *M. genitalium* has also been published. *Chlamydia trachomatis* is a common cause of tubal factor infertility (TFI). We wanted to

investigate the serological response of infertile women against *Mycoplasma genitalium* and for comparison against *C. trachomatis* and to examine whether *M. genitalium* could attach to motile spermatozoa and thereby be transported to the fallopian tubes as an alternative way of infection.

Methods: Recombinant proteins of the major antigen, MgPa of *M. genitalium*, were used to develop an immunoblotting test for *M. genitalium*. Serum from 308 patients was investigated. Of these 132 patients had TFI, 67 were infertile because of male factor and 109 were infertile for unknown reasons. A commercial pELISA was used to test for antibodies against *C. trachomatis*. To study the mycoplasma and sperm interactions light- and X-ray microscopy methods were used.

Results: Of women with TFI 29 (22%) had antibodies against MgPa whereas 11 (6.3%) of women with normal tubes were MgPa positive. In this study 75 (56.8%) TFI-patients were positive to *C. trachomatis* and of the MgPa-positive TFI-patients 8 (27.6%) were negative to *C. trachomatis*. *M. genitalium* was able to bind to 30% of human motile spermatozoa within two hours. Spermatozoa with *M. genitalium* attached to the head or midpiece were still motile as demonstrated with a "swim up" method following immunofluorescence microscopy.

Conclusions: Serologically these studies associate *M. genitalium* with TFI and the correlation was independent of *C. trachomatis*. We propose spermatozoa as vectors for the transportation of *M. genitalium* to the upper genital tract.

0361

Response to Treatment of Bacterial Vaginosis in HIV-1 Infected Women

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Objectives: The conclusion of a recent study that compared the effectiveness of the drugs used in the syndromic management (SM) of non-ulcerative STIs and bacterial vaginosis (BV) in HIV-1 infected and uninfected women, was that the microbiological response to SM of the non-ulcerative STIs was not affected by HIV co-infection, while cure rates for BV was reduced. The aim of this study was to determine whether the poor response was the result of relapse or a poor response from the outset.

Methods: Two hundred and twenty six women, recruited from the STD clinic in Kwamsane, South Africa were screened for BV and followed up at days 8 and 14. Metronidazole 400mg tds for 7 days was administered together with other SM drugs for vaginal discharge.

Results: Of 226, 142 (63%) were infected with HIV-1. Using Nugent's criteria BV was diagnosed in 145 (64%). At day 8, 37/145 (26%), remained BV positive. Of the 108 that were BV negative at day 8, 78 (72%) remained negative, while 30 (28%) became positive when tested at day 14. The response to treatment was significantly greater at day 8 than day 14 ($p = 0.03$). When stratified by HIV-1 infection, the response to treatment was significantly greater in the HIV-1 infected group at day 8 than 14 ($p = 0.04$), while no difference was noted in the HIV-1 uninfected group ($p = 0.6$). The response to treatment at days 8 and 14 were not affected by HIV status ($p=0.3$ and $p=0.1$ respectively). However, HIV-1 infected women relapsed more frequently than HIV-1 uninfected women at day 14 ($p = 0.05$).

Conclusions: These data suggest that while BV responds equally well in HIV-1 infected and uninfected women, HIV-1 infected women relapse more frequently.

0362

Diagnosing Chlamydial Infection in Seminal Fluid Specimens of Men Attending the Andrology Clinic.

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Aim: This study was undertaken to diagnose *C. trachomatis* infections in seminal fluids of patients attending the andrology clinic at Ga-Rankuwa Hospital.

Methods: Seminal fluid specimens were randomly collected from patients attending the andrology clinic at Ga-Rankuwa Hospital over a six-month period. These were analysed for antigen detection test using EIA, molecular tests (DNA hybridisation and DNA amplification), antibody detection using EIA and inoculated in McCoy cell lines for culture.

Results: A total of 135 specimens were submitted for analysis to the Microbiology Laboratory. All specimens were negative for culture, antigen and DNA detection. A total of 26 specimens tested positive for *C. trachomatis* antibodies. The results of the antibody assay are shown in the table below:

N=135	104	20	4	3	3	1
IgA	-	-	-	+	±	-
IgG	-	+	±	+	+	±

Discussion: Culture is being contested as a gold standard for diagnosis of *C. trachomatis* infection. An expanded gold standard is recommended where culture is combined with another method. However, for seminal fluid there is no such recommendation. In this study, culture, antigen and DNA detection methods were negative. The presence of both IgG and IgA antibodies indicates active infection and the presence of IgG antibodies indicate exposure to *C. trachomatis*. The antibody-detecting assay may be an appropriate diagnostic tool to detect chlamydial infections in men investigated for infertility.

0363

Multisite Comparison of Nugent and Amsel Criteria for Bacterial Vaginosis - What is the Gold Standard?

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Background. Bacterial vaginosis (BV) is a highly prevalent vaginal flora ecologic disorder. Diagnosis is by either clinical (Amsel) or Gram stain (Nugent) criteria. The methods have not been compared in detail in multicenter studies.

Objective: Compare Amsel and Nugent criteria in several trials in the US and UK
Methods Women were enrolled in BV diagnostic trials in Boston, Baltimore, Chester (UK) and London. As part of the evaluation, Amsel criteria were recorded by clinicians; Nugent scores were determined on vaginal Gram stains by laboratory staff. Nugent scores were classified as negative (scores:0-3); intermediate (4-6); positive (7-10) Inter-site reproducibility was determined for a subset.

Results. 1,762 women were enrolled; 868 (49%) Black; 664 (38%) White; and 230 (13%) Other. The Amsel/Nugent(A/N)correlation was:

	Nugent			
Amsel	Negative	Intermediate	Positive	Total
Negative	929 (97. 76%)	159 (68.2%)	146 (25. 32%)	1234 (70.0%)
Positive	22 (2. 4 3%)	74 (31.8%)	432 (74.7%)	528 (30.0%)
Total	951	233	578	1762

For negatives, agreement was 97%; For Nugent positives, agreement was 74.7%. Similar patterns were observed in sub analyses by site and ethnic group. Of 146 Nugent-positive/Amsel negative (N+/A-); 91 (62.3%) had ph>4.5, 57 (39%) had clue cells. For the 159 Nugent-intermediates/Amsel negatives, 96 (60.3%) had pH>4, and 19(11.9%) had clue cells. In contrast, for the 22 N-/A+, none had an elevated pH, and only 3 (13.6%) had no clue cells.

Conclusions: A gold standard BV diagnostic has not been identified. The Nugent is infrequently used clinically, and the N/A correlation is only ~75%. pH may be the most sensitive Amsel criterion. We suspect, there may be additional factors (eg douching, local variation in vaginal flora) which impact the Nugent, especially since BV prevalence varies by clinical setting and population.. New diagnostic approaches addressing pathogenesis and practicality issues are needed.

0364

International comparison of molecular typing methods for Neisseria gonorrhoeae.

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Objective: To facilitate the first international comparison of different molecular typing methods by circulation of a panel of isolates of *Neisseria gonorrhoeae* to allow comparison of the ability of different molecular techniques to discriminate between strains.

Methods: A panel of 20 gonococcal isolates that consisted of 18 strains known to be of diverse origin and phenotype and two isolates from sexual contacts were circulated to six centres. The strains were tested blind and the results returned to the co-ordinating centre using the following methods; por hybridisation, pulsed field gel electrophoresis (PFGE) using two restriction enzymes *SpeI* and *BglII*, sequencing of the complete *por* gene, and of loops 3 to 5, *lip* typing, multilocus sequence typing (MLST) using the seven *Neisseria* genes plus six extra housekeeping genes, PCR amplification of the *por* gene followed by digestion with restriction enzymes *MspA1*I and *Cfo*I , bi-locus sequence typing using a 490 base pair segment of the *por* gene and a 390 base pair region of *tbp*B gene, and *opa*-typing.

Results: All 18 strains of diverse origin and phenotype were found to be different using six of the techniques, PFGE, *por* sequencing (complete and partial), bi-locus sequencing, the 13 gene MLST and *opa*-typing. Partial discrimination was found using lip typing (15 types), *por* hybridisation (17), PCR-RFLP of the *por* gene (13) and MLST using the standard seven genes (16). All methods found both isolates from the known sexual contacts to be indistinguishable.

Conclusion: Molecular typing of *N. gonorrhoeae* can be achieved by multiple techniques but the relationship between these methodologies has never been tested. This first direct comparison demonstrates that all the different techniques used were highly discriminatory, but the most discriminatory methods involve sequencing of one or more genes, examination of the complete genome by PFGE, or of the diversity of the 11 *opa* genes.

0365

HIV and STDs Among Injecting Drug Users in Kazakhstan: Risk for Sexual Spread of Infection Within and Beyond Injecting Populations

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Objectives: In Kazakhstan, the HIV epidemic is predominantly confined to injecting drug users (IDUs) and sex workers. To date, over 60% of all HIV cases identified have occurred among IDUs in one city, Temirtau. To improve prevention services, we wished to assess the risk of sexual spread from this core group of IDUs to the non-injecting general population. We conducted a cross-sectional survey of IDUs to determine the prevalence of HIV, hepatitis B, hepatitis C, and syphilis infection, to characterize risk factors for these infections, and to describe the social networks of these IDUs.

Methods: IDUs were recruited through needle exchange points in Temirtau and through referrals from other study participants. Participants were interviewed about injection practices and sexual behaviors. Blood was drawn for HIV, hepatitis B, hepatitis C, and syphilis testing. Participants received their test results, counseling, treatment, and referrals.

Results: Nine hundred IDUs were enrolled. Of these, 24.9% were HIV positive, 79.2% were hepatitis B (anti-HepBc) positive, 85.2% were hepatitis C positive, and 5.5% had infectious syphilis (TPPA positive and VDRL $\geq$ 1:8). Use of raw opium, rather than

heroin, was a risk factor for both HIV and hepatitis C infection. Having sex with another IDU was associated with HIV and syphilis infection. Network analysis is in progress.

Conclusions: HIV, hepatitis B and hepatitis C were highly prevalent among these IDUs; infectious syphilis was less common. Having sex with another IDU was associated with HIV infection independent of other risk factors for HIV, suggesting that sexual transmission of HIV is important even in the presence of higher-risk behaviors. Educational campaigns aimed at IDUs should emphasize safer sex in addition to safer injection practices. Future analysis of network data from this study will help characterize the risk of HIV spread through sexual networks and will thus improve prevention efforts.

0366

HIV Seroprevalence and Incidence in Immigrant Commercial Sex Workers

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Background: Men and women who work in the commercial sex industry differ from the general population by their increased vulnerability to HIV infection. Objective: to define the prevalence and incidence of HIV infection among immigrant sex workers.

Methods: retrospective review of clinical charts of attendants to the STI centre at the Institute of Infectious and Tropical Diseases and the District Health Unit, Brescia between 1998 and 2002. HIV testing and counselling were offered to all persons. Sex workers were self-identified as persons offering sex for money.

Results: 190 sex workers were included in the analysis; 138 (72.6%) females (FCSW) and 52 (27.4%) transsexual males (TSM), the median age was 24 years (range 17-50). Regions of origin were: 28.8% from South America (85.2% of these from Brazil), 48.4% from Africa (98.9% of these from Nigeria) and 22.9% from Eastern Europe. Regular condom use was referred by 86.1%. Twenty persons (10.5%) had a positive HIV test, 3 FCSW (2.2%) and 17 TSM (32.7%). In 1998 there were no HIV positive test, in 1999 the proportion of positive cases rose to 11.6% and remained stables thereafter. In the univariate analysis male gender, age > 25 years and South America origin were significantly associated with a higher risk of HIV infection. In the logistic regression, being a TSM was independently associated with a higher risk of HIV infection (OR= 20.2; 95% CI 5.4-75.2). Forty-four persons (23%) were followed for a mean period of 1.85 years; 2 new cases of HIV infection were identified, for an incidence rate of 24.6 cases/1,000 person-year (95% CI 2.97-88.70).

Conclusions: Our results show a high prevalence of HIV infection among immigrant TSM. Preventive interventions, like condom use and treatment of STIs, are urgently required in this population. The early stage of the HIV epidemic among FCSW provide a unique opportunity to curb the HIV epidemic linked to heterosexual transmission.

0367

The Impact of HIV-1 Infection on Quantitative Syphilis Serology

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Objectives: It has been suggested that HIV-1 infection alters the reagin levels that result from infection with *Treponema pallidum*. We explored this possibility on sera from 4646 individuals.

Methods: To explore this we combined the syphilis serology results from databases from 8 studies done between 1998 and 2002. This included 2584 antenatal clinic attendees and 2062 patients with symptomatic sexually transmitted infections (STDs).

Results: The HIV and syphilis prevalence was in the ANC attendees 36% and 9.5% respectively. In the STD group these figures were 42% and 13%. We compared RPR and TPHA titers in the HIV infected (n=356) and HIV non-infected (n=227) RPR positive individuals. These included 268 antenatal clinic attendees and 315 patients presenting with STDs. Of these 583 RPR positive individuals, 65 (11%) could not be confirmed by TPHA: 23 (9%) in the ANC and 42 (13%) in the STD group. Data were summarized using medians and ranges. The nonparametric Wilcoxon rank sum test was used to compare RPR and TPHA titers between the groups. RPR titers varied from 1:1 to 1:1024. Prozone effect was not observed in any of the 4027 RPR negative sera. There was no difference in RPR titers but TPHA titers were significantly lower in HIV infected individuals ($p = 0.001$). When analyzed separately, this difference remained significant in the ANC clinic attendees ($p = 0.008$). Although the TPHA titers were also lower in HIV infected STD patients, this did not reach significance ($p = 0.07$). The RPR titers did not correlate with the level of TPHA antibodies (Pearson correlation coefficient: $r = - 0.076$).

Conclusions: HIV infection has no effect on reagin levels in *T.pallidum* infected patients if determined by RPR but TPHA titers tend to be lower in the HIV infected.

0368

High Frequency of Transmission of STI Pathogens in the General Population of Kwazulunatal

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Objectives: The KwaZuluNatal province of South Africa combines a high HIV-1 incidence with a high prevalence of all sexually transmitted infections (STIs), including HIV. We postulated that the reason for the high incidence of HIV in KwaZuluNatal is the high

frequency of STI transmission within the total population. We tested this hypothesis by comparing the prevalence of treatable STIs in women belonging to the self-declared core group of female STD clinic attendees with pregnant women from the same population.

Methods: The study was done at the KwaMsane primary health clinic. Vaginal tampon specimens were collected and tested for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* by means of a strand displacement assay, for *Trichomonas vaginalis* by in-house PCR and for bacterial vaginosis (BV) by Gram stain.

Results: Women in both groups were comparable regarding level of education and marital status. The mean age of STD clinic attendees was significantly higher (p 0.01). A history of previous ulcerative STIs, multiple current sexual partners, and total number of lifetime sexual partners were similar between both groups of women. The prevalence of treatable STIs (excluding BV) in STD clinic attendees was 48 % and in ANC attendees 44 % (p 0.32). *T.vaginalis*, *N.gonorrhoeae*, *C.trachomatis* and BV prevalences were with 36% vs. 32% (p 0.32), 12% vs. 7% (p 0.07), 15% vs. 11% (p 0.28), and 28% vs 29% (p 0.70) not different between both groups. No difference in prevalence of positive syphilis serology was found. After adjusting for potential confounders i.e. age, HIV infection, total number of lifetime sexual partners, and history of previous vaginal discharge, there was no increased risk for STIs associated with either clinic population (OR 1.3; CI 0.8-1.9, p 0.3).

Conclusions: Pregnant women, representing the general population, have similar risk factors and STI prevalences as STD clinic attendees.

0369

Genetic Characterisation of HIV-1 Isolates from Ga-Rankuwa, South Africa

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Objective: To determine HIV-1 subtypes circulating among the population in the Ga-Rankuwa region of Pretoria, South Africa.

Methods:152 HIV positive blood specimens from patients presenting with HIV/AIDS symptoms at Ga-Rankuwa hospital were randomly selected for the study. All blood samples were previously screened for HIV-1 and HIV-2 antibodies using Axsym HIV 1/2 system (Abbott) and positive results were confirmed with a HIV Recombinant EIA (Murex). $CD4^+$ counts were performed on all adult specimens. Viral DNA was extracted from 200ml blood, using QIAamp DNA blood mini kit. A nested PCR assay using two sets of primers targeting the gp120 region was used to detect HIV DNA. Subtype determination was done only on PCR positive samples by using the *env* heteroduplex mobility assay (HMA), whereby heteroduplexes are formed by mixing, denaturing and annealing a PCR amplification product from the unknown with the known DNA from a selected subtype. The mobilities were analysed on polyacrylamide gels.

Results:Of the 152 specimens, 48% (73 of 152) were from women, 25% (38 of 152) from infants, 18% (27 of 152) from men and 9% from adults with undisclosed sex. All 152 samples were HIV antibody positive from the screening and confirmation tests. The absolute values of $CD4^+$ cell counts for the adult specimens ranged from 0 to 843 cell/mm^3. Eigthy five percent of adult patients had counts less than 200 cells/mm^3, indicating that they were in the advance stage of the disease. All 152 samples were subjected to nested PCR while 38% (58 of 152) could not be amplified and were therefore not subtyped. Of the 94 samples which were subtyped by HMA 89% (84 of 94) was subtype C, 9.6% (9 of 94) was subtype D and 1.1% (1 of 94) was subtype B.

Discussion: This study confirms previous studies that showed that the majority of HIV infections in South Africa are with subtype C viruses. The absence of huge subtype variation in South Africa makes intersubtype recombination unlikely although our study was not designed to investigate this. However, intrasubtype C recombination could be a reality. It is important to continue monitoring the emergence of new HIV-1 strains in order to understand their spread and evolution of HIV-1. Molecular HIV epidemiology will provide valuable information for vaccine development specific for a defined population since the expected success in vaccine development is based on having a vaccine specific for the subtypes circulating in population.

0370

Genital and Systemic Humoral Immunity in Women with Bacterial Vaginosis

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Objectives: Bacterial vaginosis is a poorly understood condition associated with abnormal vaginal discharge. We compared markers for humoral immunity in such patients with those with other sexually transmitted infections (STIs)

Methods: We measured immunoglobulin (Ig) levels in the cervico-vaginal secretions and serum of women with BV but no STIs and compared these with Ig levels in healthy women and in women with an STI. Cervico-vaginal secretions were collected by means of vaginal tampons. A double sandwich ELISA was used for the quantitative determination of the Ig classes. The results are expressed as fraction of the total protein concentration. Results: Serum IgG and IgA ratios were significantly higher in women with BV as compared to the healthy controls ($p=0.008$ and $p<0.001$ respectively) but there was no difference with women with an STI. Serum IgM ratios did not differ between the 3 groups of women.

In the cervico-vaginal secretions the IgG and IgA ratios showed a significant decrease as compared to healthy women ($p=0.008$ and $p<0.001$ respectively). As compared to women with an STI, genital IgA and IgG ratios were similar. IgM levels in all groups were too low to calculate a reliable ratio. However, the absolute amounts suggest IgM to be higher in women with BV compared to healthy women as well as to women with an STI.

Conclusions: BV as well as STIs are associated with a dissociated general and local humoral immune response with lower levels of IgG and IgA in the genital tract. This needs further exploration.

0371

STIs Among Female Sex Workers in China

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Objectives: To provide baseline data to monitor trends and impacts of STI prevention and control programmes to determine the baseline prevalence rates of N. gonorrhoeae (NG), C. trachomatis (CT), T. vaginalis (TV), treponemal seropositivity (TS) and HIV infection among female sex workers in China.

Methods: Ethics approval for the study was granted and informed consent was obtained from all participants prior to data and sample collection. A questionnaire was confidentially administered to obtain limited demographic information. Overall 3 amplification reactions were performed on DNA extracted from each tampon specimen. PCR reaction for detection of NG/CT conducted by Roche kits. PCR detection of TV and ?globin gene sequences were performed using a rapid real-time PCR. Each serum sample was tested by RPR. All positive RPR sera were re-tested using TPHA for confirmation of positives. HIV test was done by ELISA and positive samples were confirmed using Wester n blot.

Results: A total of 505 female sex workers with mean ages of 24.7 years (SD 5.0 years). 57.6% (291) female sex workers were drug users. Prevalence of STIs was as follows: NG 37.8%; CT 58.6%; TS 9.5%; TV 43.2%; and HIV 10.3%. 35.4% (179) had 2 concurrent infections, 15.8% (80) had 3 concurrent infections and 2.2% (11) had 4 infections.

Conclusions: The prevalence of STIs including HIV in female sex workers is substantial. The patterns of infections suggest potential measures for intervention.

0372

PCR Diagnosis of Lymphogranuloma Venereum in Patients with Genital Ulcer Disease

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Objectives: Reports on prevalence of lymphogranuloma venereum (LGV) are few and thus far use conventional diagnostic methods.

Methods: The presence of *C.trachomatis* LGV biovar in ulcers was determined by the polymerase chain reaction followed by digestion to obtain biovar specific restriction patterns.

Results: In 520 consecutive patients, the prevalence of *C.trachomatis* biovar LGV, HSV-2, *Haemophilus ducreyi, Treponema pallidum, Calymmatobacterium granulomatis* and 'no pathogen detected' was 12%, 55%, 10%, 10%, 1%, and 20%, respectively. Clinically, patients with primary lesions of LGV were indistinguishable from patients with non-LGV ulcers. The high number of genital ulcers caused by *C.trachomatis* LGV biovar is in contrast to the classical description of LGV i.e. a non-significant/unrecognized primary genital lesion, with lymphadenopathy (the secondary stage) as the presenting symptom.

Conclusions: A likely reason for this discrepancy is inadequate diagnostics used previously, although an altered natural history of LGV in HIV infected patients cannot be excluded.

0373

Mucosal and Systemic Antibody Responses to Sexually Transmitted Infections in Association with Pregnancy

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Objectives: It has been suggested that pregnancy alters the immune response. We measured immunoglobulin (Ig) levels in cervico-vaginal secretions of pregnant and non-pregnant women with and without non-ulcerative sexually transmitted infections (STIs) and compared these with serum levels.

Methods: Cervico-vaginal secretions were collected by means of vaginal tampons. A double sandwich ELISA was used for the quantitative determination of the Ig classes. The results are expressed as a fraction of the total protein concentration. Non-pregnant women without an STI served as controls.

Results: Comparison between non-pregnant and pregnant women without STIs showed a decrease in IgA levels in the genital mucosa ($p=0.003$) but not in serum. No differences were found for IgG and IgM. Non-pregnant women with an STI had significantly lower levels of IgG and IgA in the cervico-vaginal secretions as compared to the controls ($p=0.002$ and $p=0.0002$ respectively). This was also observed in pregnant women ($p= 0.03$ and $p< 0.001$ respectively), but these differences were smaller. In serum, IgG and IgA levels were increased in women with STIs independent of pregnancy ($p< 0.001$) while IgM levels showed no difference. IgM levels in the genital mucosa were too low to evaluate reliably. However, there was a trend towards lower IgM in pregnancy but in the presence of an STI these values increased in both pregnant and non-pregnant women.

Conclusions: The decreased IgA and IgG levels in genital secretions in combination with increased serum levels in women with an STI suggest an inappropriate compartmentalised humoral immune response in the female genital tract. This response is unaffected by pregnancy.

0374

Risk Factors for the Acquisition of HIV-1 and HSV-2 in Patients Presenting with Genital Ulcer Disease

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Objectives: Between 1995 and 1998, the association between genital herpes and HIV-1 seropositivity disappeared in KwaZuluNatal, indicating a differential acquisition of HSV-2 and HIV-1.

Methods: We investigated the risk factors for acquisition of HSV-2 in HIV non-infected individuals presenting with genital ulcer disease to the Prince Cyril Zulu Centre for Communicable Diseases in Durban in 2002 and compared this with risk factors for the acquisition of HIV-1.

Results: HSV-2 sero-positivity was associated with age 25-34, years of sexual exposure, number of lifetime sexual partners, lower education as well as with a history of previous ulcerative or non-ulcerative STDs. Females were more likely to have HSV-2 antibodies than males (OR: 2.6; 95%CI: 0.6-16, = 0.2). This gender difference for HSV-2 infection did reach statistical significance if primary infections were included, (p=0.02). Like HSV-2 infection, HIV-1 infection was associated with age 25-34, years of sexual exposure and number of lifetime sexual partners. Unlike HSV-2 infection, no association was found with lower education or a history of sexually transmitted diseases. However there was a strong association with HSV-2 sero-positivity (OR 3.9; 95% CI: 1.9-8.4; p< 0.001) and this remained significant after adjusting for potential confounders in a logistic model (adjusted OR 5.6; 95%CI: 2-16; p = 0.001).

Conclusions: In patients with genital ulcer disease, the risk factors for the acquisition of HSV-2 infection outnumber those for HIV-1. This supports observations by others that HSV-2 precedes HIV-1 infection.

0375

The Susceptibility of Gonococcal Isolates to Penicillins, Cephems, Quinolones, Tetracyclines, and Spectinomycin in Various Areas of Japan in 2002

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Introduction: We have reported that the gonococcal infection caused by the multi-drug (penicillin, cephems including oral expanded spectrum one, fluoroquinolones, tetracyclines) resistant isolates were prevalence in Japan, and these resistant isolates to oral expanded spectrum cephems could be detected by the MIC of cefozopran (>2mcg/ml). We therefore called these resistant isolates CZRNG (cefozopran-resistant N. gonorrhoeae). In order to investigate the antimicrobial resistant ratio of gonococci including CZRNG, we examined the susceptibility of isolates from patients with gonococci.

Methods: In this study, we used 512 N. gonorrhoeae isolates from different cases with urethritis or cervicitis in 2002. The 231, 88, 90, 77, and 26 isolates of all were isolated in Kitakyushu, Nagoya, Tokyo, Yamaguchi, and the other Japanese area. The MICs of various antimicrobials against the isolates were determined by the two-fold serial agar dilution method according to NCCLS.

Results: Against all 512 gonococci, the resistant ratios of penicillin (MIC >0.06mcg/ml), cefozopran (MIC >2mcg/ml), ciprofloxacin (MIC >0.06mcg/ml), tetracycline (MIC >0.25mcg/ml) were 99.2, 48.4, 85.7, and 83.8%, respectively. The rates of high-resistant isolates of penicillin (MIC >2mcg/ml), cefixime (MIC >0.5mcg/ml), ciprofloxacin (MIC >1mcg/ml), and tetracycline (MIC >2mcg/ml) were 65.8, 17.8, 79.3, and 46.3%. One mcg/ml of cefodizime and 0.5 mcg/ml of ceftriaxone inhibited the growth of all gonococcal isolates tested. There were no isolates that MIC of spectinomycin was more than 64 mcg/ml.

Conclusions: In Japan, most of patients suffering from N. gonorrhoeae are treated with oral antimicrobials. But the rate of resistant gonococcal isolates to oral antimicrobials has been higher, in all Japanese area tested. We have reported that the CZRNG isolates in gonococcal infection were eliminated by single dose treatment of ceftriaxone (1g i.v.), cefodizime (1g i.v.), or spectinomycin (2g i.m.). We therefore recommend to use the above 3 parenteral antibiotics as the first line treatment for gonococcal infection.

0376

Acceptability of Screening by Home Based Urine Testing for Chlamydia Trachomatis

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Background: A pilot study on screening of *Chlamydia trachomatis* (CT) by home based urine testing was conducted among 22,000 women and men aged 15 to 30 years in the Netherlands, aiming to establish CT-prevalence and to explore the feasibility of this method of screening for general implementation. As part of the study we investigated the acceptability of the screening method and explored psychosocial consequences of positive as well as negative screening results among participants, with focus on gender differences.

Methods: A comparative cross-sectional study was carried out among 156 CT-positives, and from a random sample of 600 CT-negatives (300 women and 300 men). Six to twelve weeks after receiving the result of their CT-test, participants were invited to fill out a questionnaire with open and multiple-choice questions regarding their experiences with the screening method before and after the test result became known.

Results: In total 37% of the men and 55% of the women responded to the questionnaire (overall response 46%), with no difference in response between CT-positives and CT-negatives. The majority (68% of 330) took part in the screening programme out of curiosity for their CT-result; 12% of those considered themselves at risk of having contracted CT, for 28% certainty about being not infected was decisive. 21% of 330 participated out of support for the research project; the remaining 11% gave various reasons for participation. The extent to which participation in the screening and the result of the test was shared with partners, and the effect of positive test results on relationships, is subject to further analysis. In general, however, home based testing was well received.

Conclusions: The experiences regarding acceptability of screening in the pilot study are essential to take into account, whether this is in home based urine testing or any other approach to CT-screening which may be adopted in the future. Early case finding (secondary prevention) will be most effective with methods that are acceptable to persons at risk for CT-infection.

0377

The Mechanism of Resistance of CZRNG (Cefozopran-Resistant Neisseria Gonorrhoeae) that is Resistant to Beta-lactamas Including Oral Expanded Cephems

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Introduction: We have reported the incidence of clinical failures in gonococcal urethritis treated with oral expanded spectrum cephems, such as cefixime, cefdinir, cefpodoxime, cefcapene. The N. gonorrhoeae isolates from such clinical failure cases exhibited high-level MICs to them and other beta-lactams. These resistant isolates were clearly separated from the isolates exhibiting a low level of beta-lactam-resistance by the MIC distribution of cefozopran. We therefore called these resistant isolates CZRNG (cefozopran-resistant N. gonorrhoeae). The aim of this study is to investigate the mechanism of resistance of CZRNG isolates.

Methods: In this study, we used 200 N. gonorrhoeae isolates from different cases with urethritis or cervicitis in 1999-2002. The 100 isolates were CZRNG (MIC of cefozopran >2mcg/ml), and MICs of cefozopran against the other 100 isolates were less than 2mcg/ml. The MICs of various antimicrobials against the isolates were determined by the two-fold serial agar dilution method. PBP-2 gene (penA) sequences of gonococcal isolates were determined by ABI377 sequencer using BigDye Terminator Cycle Sequencing Kit. To detect altered penA, PCR was performed using primers established the altered penA.

Results: PBP-2 gene sequences of 30 CZRNG and 10 non-CZRNG isolates were determined. Regarding CZRNG, all PBP-2 gene sequences tested were same 100%. The homology of deduced amino acid sequence between PBP-2 of CZRNG and that of penicillin-susceptible gonococci was 90.7%. The 58 amino acids were different from PBP-2 of CZRNG and that of penicillin-susceptible gonococci (GeneBank accession number AY146785). It was resulted that by PCR using primers established PBP-2 gene of CZRNG, all CZRNG isolates were positive, and all non-CZRNG isolates were negative.

Conclusions: The CZRNG isolates were resistant to beta-lactams including oral expanded spectrum cephems. In Japan CZRNG isolates have been increasing. It is considered that the mechanism of resistance was PBP-2 alteration.

0378

Comparison of two commercial HSV-2 antibody tests in African patients in South Africa

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Objectives: A comparison of antibody tests for HSV-2 on sera from patients from east African countries, suggests that these tests have different sensitivities and specificities on sera obtained from populations of different ethnicity.

Methods: We compared the HSV immunoblot test (HerpeSelect™, Focus Technologies) that we use routinely, with the HSV type2 IgG ELISA (Kalon Biological Ltd). This ELISA has been reported to be the optimal test for use on African patients. Discrepancies between tests were resolved by another ELISA (Captia™ HSV-2, Trinity Biotech). This work was done on sera of 183 patients presenting with genital ulcer disease to the Prince Cyril Zulu Centre for Communicable Diseases in Durban in 2002.

Results: Using the immunoblot, only 1 of the 183 patients had no antibodies against HSV-1, while 120 (66%) did have antibodies against HSV-2. There were 4 discrepancies

between the immunoblot and Kalon ELISA test: 3 dot-blot positives were ELISA negative and 1 dot-blot negative was ELISA positive. All 4 discrepancies were resolved in favor of the dot-blot test.

Conclusions: Both tests behaved similarly on sera from South African patients with a slightly better performance of the dot-blot test.

0379

Prevalence and management of Non-Ulcerative Sexually Transmitted Diseases at Time of Delivery in Booked and Unbooked Women

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Objectives: Since sexually transmitted infections (STIs) are associated with adverse pregnancy outcome, it is imperative that these are appropriately managed when diagnosed in pregnancy.

Methods: We enrolled 112 women presenting for delivery to King Edward VIII Hospital in Durban and recorded the history of symptoms compatible with an STI during the current pregnancy and the treatment given. Of these women, 34 did not receive any antenatal care (unbooked women). Vaginal tampon specimens were collected prior to delivery and tested for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* by means of a strand displacement assay, for *Trichomonas vaginalis* by in-house PCR and for bacterial vaginosis (BV) by Gram stain. BV was diagnosed by a Nugent's score of ≥ 7 in the absence of a vaginal discharge associated pathogen. Pregnancy outcome was assessed using standard criteria.

Results: Complaints of vaginal discharge were more common among unbooked women (p 0.02). While there was no difference in history of genital ulcer disease, the prevalence of sero-positivity for syphilis was higher in unbooked women (p 0.04). Of the 66 women that reported vaginal discharge, 34 (52%) remained untreated during the course of their pregnancy. None of the remaining 32 received treatment according to the local SM protocol. Non-ulcerative STIs and bacterial vaginosis were diagnosed at the time of delivery in 51% of the women. Prevalence rates for *N.gonorrhoeae*, *C.trachomatis*, *T.vaginalis*, and bacterial vaginosis were 8%, 12%, 25%, and 16%, respectively. Apart from a higher syphilis seroprevalence, no differences were found between booked and unbooked women. Adverse pregnancy outcome was documented in 29 (26%) women. No association was found between infection at the time of delivery and adverse pregnancy outcome.

Conclusions: The prevalence of STIs in pregnant women in our setting is high, but management is poor, despite the introduction of syndromic management guidelines.

0380

STI and HIV counselling and partner notification in France

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Objectives: In France, there are no national recommendations regarding STI counselling and partner notification. Our goal was to describe practices for screening, treating and counselling STI patients and their partners, according to physician settings and patient characteristics.

Methods: Physicians were prospectively recruited from 91 volunteering laboratories in the Paris area between December 2001 and March 2002. A physician was included as soon as one of his patients was diagnosed with syphilis, gonorrhoea, Chlamydia trachomatis or HIV. He was interviewed with a thirty-minute, face-to-face, standardised questionnaire in his office to describe the management of the index case. Open questions were included to describe the counselling process. Each physician completed the questionnaire only once Results: The participation rate was 77% and this rate was not linked to physician setting or the diagnosis. The patients described by physicians (n=154) were diagnosed with syphilis (n=43), gonorrhea (n=14), chlamydia (n=45), and HIV (n=52). Among them, 12% were diagnosed in an STD clinic and 45% in a private practice. Most patients had a main partner (64%), of whom 15% had been diagnosed previously. The patient was given a treatment or a test prescription for his/her main partner by 22% of physicians, and a letter or a leaflet by 5%. The main partner consulted the interviewed physician at the same time as or after the patient in 12% of the cases. Only 10% of physicians did not talk about main partner notification with their patients. With patients who had no or no exclusive main partner, 72% of the physicians did not talk about partner notification, except through some general recommendations. We are currently analysing the factors associated with partner notification.

Conclusions: Most physicians are concerned about notification of the main partner. However, few physicians actively encourage their patients to notify partners other than the main one.

0381

Disappearing association between genital herpes and HIV-1 infection

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Objectives: In 1995, a strong association was observed between genital herpes and HIV-1 sero-positivity. This association was not found in patients attending the same clinic from 1998 onwards.

Methods: We investigated the HSV status of 100 HIV-1 infected and 100 HIV-1 uninfected patients presenting with genital ulcer disease to the Prince Cyril Zulu Centre for Communicable Diseases in Durban in 2002. An HSV-2 specific PCR was used to detect HSV-2 in ulcer specimens and an immunoblot (HerpeSelect™, Focus Technologies) was applied for detection of HSV type specific serum antibodies.

Results: Combining HSV-2 serology and PCR results, the overall prevalence of HSV-2 infection was 95 % in HIV-1 infected patients and 85% in non-HIV infected patients (OR: 4.2; 95%CI: 1.3-18.1, p= 0.02). Of those infected, the type of HSV infection (primary, reactivation or latent) differed significantly with HIV status (p = 0.002). HIV negative patients were more likely to have a primary infection (OR 4.0; 95%CI: 1.7 – 9.5, p=0.004), whereas HIV positive patients were more likely to have reactivation disease (OR: 2.4; 95%CI: 1.3-4.7, p=0.005). The prevalence of latent infection was similar in HIV sero-positive and negative patients, p=0.7.

Conclusions: We propose that initially, HIV induced reactivation of latent HSV-2. This increased the pool of highly infective sexually active individuals. The disappearance of the association of the 2 viral infections can be explained by a higher transmission efficiency of HSV-2 over HIV-1. Our findings show that HIV-1 infection can result in the increase of other infections in the HIV non-infected.

0382

Sexual Practices and Site of Infection with Neisseria gonorrhoeae in Rural South Africa

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Objectives: *Neisseria gonorrhoeae* is a common STI that classically causes cervicitis in the female and urethritis in the male. If oro-genital and ano-genital sex is engaged in, oropharyngeal as well as rectal infection may occur. The aim of this study was to determine the prevalence of *N.gonorrhoeae* at these sites and to show a possible correlation between sexual practices and site of infection.

Methods: Patients attending the STD clinic at Kwamsane during working hours between July and December 2002, with symptoms and signs of genital discharge syndrome were recruited with informed consent. A questionnaire was administered to these patients detailing sexual practices. Dacron swabs were used to sample the cervix, urethra, rectum and pharynx for culture of *N.gonorrhoeae*

Results: A total of 305 patients were recruited. The prevalence of *N.gonorrhoeae* among men and women attending the STD clinic in Kwamsane was 44/81 (54%) and 23/224 (10%) respectively. Seventy seven (95%) of the men were heterosexual. Of these, 40 (59%) of the 68 that practised genito-genital sex only, and 2 of the 3 that in addition practised genito-anal sex, were infected in the urethra only. Four men engaged in sex with men only. Of these 2 had a urethral infection. Exclusive genito-genital intercourse was performed in 206/221 heterosexual women. Of these, 21 were infected: 4 cervical, 2 urethral,1 rectal, 8 cervical and urethral, 5 cervical,urethral and rectal, 1 rectal and urethral. No infection was found in the 15 heterosexual women that did not exclusively practice genito-genital sex. Two of the 3 women that had sex with women only, had gonococci isolated from the urethra only. No pharyngeal isolates were found in either of the sexes.

Conclusions: Rural men and women in South Africa engage in different sexual practises. The site distribution of *N.gonorrhoeae* isolates did not always correlate with these practises.

0383

Aetiogy and response to treatment of genital ulcer disease is not influenced by level of immunosuppression

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Objectives: In a recent study we showed that although 75% of a genital ulcer disease (GUD) study cohort was infected with HIV-1, 90% showed healing of the ulcer within 10 days. This suggests that co-infection with HIV-1 does not impact on response to treatment. However, since the level of immunosuppression was not measured in this group of patients, we addressed the question whether this influences response to treatment.

Methods: Specimens were collected from the genital lesions at the initial visit for PCR for Herpes simplex virus 2 (HSV-2), *Treponema.pallidum* (TP), *Haemophilus ducreyi* (HD), and *C.trachomatis* (LGV). All patients were treated according to the local syndromic management guidelines for GUD. Venous blood was collected for HIV serology and CD4 counts. Patients were asked to return 10 days later to assess clinical response to treatment. Repeat specimens were collected from lesions with decreased healing tendency.

Results: Of the186 patients recruited, 148 (80%) were infected with HIV-1. The prevalence of HSV, TP, HD, LGV and mixed infections was 46%, 3%, 6%, 8% and 4% respectively. There was no association with HIV-1 infection and aetiology. A similar distribution of the aetiologies were seen in patients with a CD4 count $\leq$ 350 and in those > 350, the exception being LGV in which a significant proportion had CD4 counts >350 (p=0.02). Healing was evident in 111(90%) of the 123 patients returning for follow up. All 12 patients with non-healing ulcers were HIV-1 infected with an equal proportion hav-

ing CD4 counts ≤ 350 and > 350. Decreased healing tendency was not associated with ulcer aetiology.

Conclusions: The level of immunosuppression is not associated with any GUD aetiology, nor does it appear to affect response to treatment.

0384

Shedding of HSV-2 during pregnancy and its association with HIV and other sexually transmitted infections in rural women in KwaZuluNatal, South Africa.

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Objectives: HSV-2 has increasing prevalence rates with the highest being reported in Africa. Asymptomatic viral shedding appears to be increased during pregnancy and in the presence of HIV. We report on the asymptomatic shedding in 201 pregnant women attending the primary health care clinic at KwaMsane, KwaZuluNatal, for their first visit antenatal visit.

Methods: Venous blood was taken for HIV and HSV serology. The HSV immuno-blot (HerpeSelect™, Focus Technologies).was applied for detection of HSV type specific serum antibodies. Vaginal tampon specimens were collected and tested for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* by means of a strand displacement assay, for *Trichomonas vaginalis* by in-house PCR and for bacterial vaginosis (BV) by Gram stain. The presence of HSV-2 in cervico-vaginal secretions was established on the tampon specimens by in-house PCR.

Results: Two hundred and one consecutive women were recruited. Eight women were excluded because genital ulcers were present. Of the remaining 193 women, 81 (42%) were HIV infected. The HSV-1 and HSV-2 seroprevalences were 99% and 66% respectively. Non-ulcerative STIs were present in 70 (36%) and BV in 92 (48%). HSV-2 seropositivity was associated with HIV (p=0.000001) and with BV (p=0.001). HSV-2 shedding was detected in 9% (11/128) of HSV-2 seropositive women. Shedding occurred more frequently in HIV infected (11.4%) as opposed to HIV non-infected women (5.2%) with HSV-2 antibodies (p=0.17). HSV-2 shedding was not associated with the presence of non-ulcerative STIs (p=0.2) or BV (p=0.5).

Conclusions: The point prevalence of HSV-2 shedding in KwaZuluNatal is high during pregnancy and is highest in HIV infected women. This may contribute to the continuing rise in prevalence of both HSV-2 and HIV in our setting.
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0385

Global Epidemiology of Chancroid

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Objective Epidemiological studies have shown that sexually acquired genital ulcerations enhance the transmission and acquisition of HIV infection. During 1980s and early 1990s, primary syphilis and chancroid are the major causes of genital ulcerations in many developing countries. Recent years, a significant decline in relative prevalence of chancroid among patients presenting with genital ulcerations was documented in countries where the disease was highly endemic. Following the rapidly declining trends, attempts were made to explore the potential elimination or eradication of chancroid. A better understanding of global epidemiology of chancroid is urgently needed in order to provide necessary support for the activities related to prevention, control and possible elimination of the disease.

Met hod: A rapid assessment method is established to assess the current global situation of the disease using multiple data sources such as reviews of published and unpublished literatures, key informant survey and Delphi approaches.

Results: Result of this preliminary assessment is discussed. Mapping is done based on available prevalence data and patterns of ecological susceptibility for the transmission of Haemophilus ducreyi by country. In addition, the presentation describes recent developments at World Health Organization for strengthening of STI surveillance activities at global, regional and country level, and potential opportunities for further collaboration among partner institutions, research communities and WHO to improve the global epidemiology of STIs including chancroid.

0386

Can Focus on Teens (FOT), an Adolescent STD/HIV Prevention Program, Lower STD Rates in High Schools?

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Objectives: To determine whether FOT can lower STD prevalence. To measure changes in risk behavior and STD/HIV knowledge.

Methods: Adolescents were enrolled from six high schools. FOT was presented during 12-lunch periods. Students completed 4 surveys: pre-/post-intervention, 6-/12-month follow-up. Surveys assessed demographics, sexual risk behaviors, and STD/HIV knowledge. Sexually active students were encouraged to visit School Health Centers for screening for chlamydia, gonorrhea, and trichomonas by urine amplification tests. A 6-month "Booster" intervention was given, and STD/HIV knowledge quizzes at 6 and 12-months.

Results: Enrolled: 1,220 students over 5 Waves (WI-WV). To date, for Baseline WI-IV (N=1,025): 47.6% were 14-15 years; 70.5% were female, and 47.7% were sexually active. Of 725 giving consent for urine screening, 84.8% submitted baseline-prevalence urines: chlamydia, 13.3%; gonorrhea, 5.5%; and trichomonas, 16.2%. Follow-up (N=108) urine screening prevalences were: chlamydia, 15.7%; gonorrhea, 7.4%; and

trichomonas, 10.5%. Of sexually active students, 54.2% had >1partner, 77.6% used condoms last sex, and 4.4% reported history of a STD. Between Survey #1 and #3 and #4, there were increases in STD knowledge (79% to 85% and 86%; p<0.01), and condom use knowledge (75% to 85% and 85%; p<0.01). Condom use increased to 79.8% by Survey 4 (p=0.665). There was a two-fold decrease in the %, who reported sex >5 times last 6 months from Survey 1 to 4 (16.9% to 8.3%; p=0.047). The STD/HIV-knowledge quiz #1 was administered to 72.1% of 727 (WI-III) [correct score: 75.8%]. Quiz #2 has been given to 78.3% of 442 (WI-II) [score of 89.3%], (p =0.024). (Waves III-V follow-up surveys and quizzes are ongoing).

Conclusions: FOT was successfully conducted during school lunch periods, showing increases in STD/HIV knowledge and reductions in risk behaviors. High STD prevalences were observed in students participating in urine screening, but a reduction in these prevalences has not yet been demonstrated.

0387

Use of condoms: female demand in reprodutive and not reprodutive contexts at a reference center in São Paulo, Brazil

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Objectives: 1) To compare women in reproductive and not reproductive ages concerning demands for condoms at Penha RC. 2) To analyze demands in cases of confirmed disease or under investigation or absence of disease.

Methods: At Penha DST/AIDS Reference Center, it was selected a set of women that had been attended from September 2002 to February 2003. Women with active sexual life and supposed to had initiated it at least 5 years before were classified as being at reproductive age (30 to 35 years old) or at not reproductive age (50 years old and up). The groups were compared about demand for condoms and analyzed in cases of confirmed diagnostic or under investigation (for predominance of HIV/AIDS or DST or isolate hepatitis B) or total absence of symptoms (spontaneous demand). Cases of isolate hepatitis C, biological accidents and "professionals of sex" have been excluded.

Results: It was found 134 women in reproductive age and 44 in not reproductive age. Date of 50-year-and-up women is too dispersed across different diagnostics to lead to consistent inferences. Large majority of 30 to 35-year-women utilized preservative if diagnostic of HIV/AIDS was confirmed. None of groups utilized condoms during period of investigation. Spontaneous demand for condoms is about 50% greater in not reproductive age than in reproductive age.

Conclusions: 1) Results suggest that anticonceptive features are not relevant in negotiation between sexes concerning adoption of condom. 2) Use of preservatives along investigation of different diagnostics should be more encouraged in both groups. 3) Strategies for prevention must be focused for each age group, since elder women seem less opposed to spontaneous use of preservatives.

0388

Mycoplasma genitalium:When to test and treat. Present status in Scandinavia

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Objectives: *Mycoplasma genitalium* (Mg) has recently emerged as a pathogen causing NGU in males and cervicitis in females. The bacterium can be detected by PCR in genital secretions and in urine samples. Treatment is still empirical. We present preliminary results of an open treatment trial and describe the indications for Mg testing with regard to the present knowledge.

Methods: Patients were recruited at open STI clinics. Mg was detected by PCR as described by Jensen et al. A total of 47 patients with NGU and/or cervicitis were enrolled and treated according to the standard treatment of the individual clinic. The treatment consisted of doxycycline 200 mg day 1, 100 mg days 2-9 or azithromycin 1 g as a single dose. Patients with microbiological treatment failure 3 weeks after treatment were given azithromycin 500 mg day 1, 250 mg days 2-5 or doxycycline 100 mg bid for 2 weeks in a cross-over design.

Results: Microbiological cure rates for doxycycline and azithromycin were 12/34 (35%) and 11/13 (85%) respectively. 19/20 (95%) patients with treatment failure after doxycycline became Mg-negative after azithromycin for 5 days.

Conclusions: Our preliminary findings indicate that doxycycline is less effective in eradicating *M. genitalium* -and in alleviation of symptoms than azithromycin. Azithomycin given for 5 days appears to be more effective than the single dose regimen. The relevance of treating asymptomatic patients harbouring Mg still remains to be elucidated. At present, the opinion in Scandinavia is that Mg should be sought in patients with non-chlamydial NGU or cervicitis with persistent or recurrent symptoms after treatment.

0389

Molecular Epidemiology of Neisseria gonorrhoeae among visitors to a Sexually Transmitted Infections (STI) Clinic in Amsterdam, The Netherlands

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Objective: Molecular typing, combined with epidemiological data, can give insight into sexual networks. The objective is to describe a cluster of typed *NG*-isolates of visitors to the STI clinic in Amsterdam.

Methods: All clinic visitors are routinely examined for *NG*. Inclusion: positive *NG*-isolates. Molecular clustering: isolates

having identical RFLP patterns for the Por- and OPA- genes, using Bionumerics Software. Structured partner notification data was collected and evaluated three weeks after treatment.

Results: From September until December 2002, 276 isolates were collected (226 patients). Molecular data revealed 39 clusters (size: 2-15 patients) and 58 unique isolates. Patients were mostly men (87%), aged 15-65 years (41% under 30), of Dutch (54%), Surinamese (13%), Dutch-Antillean (3%), or other (30%) ethnicity. Co-infections with chlamydia (25%), syphilis (3%), or HIV (1%) were found. One cluster (n=15) consisted of 14 men (11 homosexual) and 1 woman, aged 20-40 years (modal age group:30-34), diagnosed between September and November. They reported traceable- (n=22) and non-traceable partners (n=161; range 1-70; median 13).

Traceable partners in 6 months prior to the visit (range 1-4) were 86% men and 14% women, aged 20-50-years (modal age group: 30-34), who lived predominantly in Amsterdam (73%). Four patients were identified partners of each other. The HIV-status of 50% (11) of the partners was unknown to patients; 18% (4) were HIV-positive. Evaluation showed that patients notified 73% of their partners, that 41% were examined, but that the outcome was unknown in 64%.

Patients reported anal sex with 90 (56%) non-traceable partners (29 without condoms) and vaginal sex with 24. The HIV-status of 93% of these partners was unknown. Sexual contact occurred mostly at home (63) and in dark rooms (50).

Conclusions: This study shows that combining molecular typing and clinical epidemiology can lead to the construction of a sexual network for *NG*-transmission.

0390

The transmission dynamics of syphilis: can we understand and predict outbreaks?

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The natural history of syphilis and the impact of patterns of treatment on the incidence and prevalence of infection and disease have been explored in deterministic mathematical models of the transmission dynamics of infection. Such models have emphasised the importance of early treatment and the potential problems of treatment reintroducing individuals into the pool of susceptibles. In many populations syphilis is an epidemic rather than endemic infection, where interventions need to be geared to rapidly detecting and responding to outbreaks of infection. For a theoretical approach to provide useful insights there is a need to focus on the observed patterns of risk behaviour where there are outbreaks, and whether these outbreaks can be better predicted or the response to them made more efficient. Deterministic ordinary differential equation models and stochastic simulations of curable STD have been developed and used to explore the impact of interventions. Deterministic models have focussed on describing the natural history of infection, whereas stochastic simulations have focused on the details of the sexual partner network and its measurement. The application of these models to syphilis will be reviewed in the light of recent syphilis outbreaks and the observed and predicted patterns of syphilis incidence will be compared. The discussion will focus on the role of theory in understanding and responding to syphilis outbreaks.

0391

Neisseria Gonorrhoeae Surveillance in France in 2001

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Objective : To monitor epidemiological trends in Neisseria gonorrhoea (NG) infections and to assess antimicrobial resistance patterns in France.

Methods : In 1986, the sentinel surveillance programme RENAGO including private and public laboratories was implemented in France. Monthly, each laboratory reports the number of positive NG isolates and associated epidemiological data and sends NG strains to the National Reference Centre where susceptibility to 6 antibiotics is tested. Because the number of participating laboratories varied every year, the average number of reported NG isolates per laboratory was the indicator defined to monitor trends in incidence (NG/lab/year).

Results: In 2001, the participating laboratories accounted for 5% of all microbiology laboratories in France. The number of NG isolated decreased from 1,9 NG/lab/year in 2000 to 1,5 NG/lab/year in 2001 This decreased concerned mostly men (-26%) and the Paris area (-30%). Of 332 stains isolated during the year, 149 were available for antimicrobial susceptibility testing. PPNG/TRNG strains accounted for 9% of isolates. Twenty-Five percent of isolates were found resistant to tetracycline. Reduced susceptibility to ciprofloxacine increased from 5% in 2000 to 7.5% in 2001. Resistance to ciprofloxacine, which appeared in 1997, increased from 3.3% in 2000 to 7.5% in 2001. No strain was resistant to ceftri axo ne.

Conclusion: After 10 years of a steadily decrease followed by 3 years of increase (1998-2000), the number of NG isolates reported by laboratory decreased again in 2001 in the network. This trend needs to be confirmed with results of the year 2002. Reduced susceptibility and resistance to ciprofloxacine have markedly increased since 2000 and reached 15% of tested strains. Even, if then number of tested strains is low, clinicians should be aware of this emerging resistance in France.

0392

An Outbreak of Internet-Associated Infectious Syphilis among MSM, and Subsequent Heterosexual Outbreak in Calgary, Canada

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Objectives: To determine the characteristics of individuals diagnosed with infectious syphilis due to male-to-male and heterosexual contact during an outbreak in Calgary, Canada.

Methods: Prospective study of individuals diagnosed with infectious syphilis at the STD clinic in Calgary between January 2000 and April 2002.

Results: The outbreak reported here (September 2000 to April 2002) involves 32 cases of infectious syphilis, corresponding to rates of 0.9/100,000 population during 2000 and 1.8/100,000-population during 2001. Between September 2000 and June 2001, the cases diagnosed were among men who have sex with men (MSM); between May 2001 and April 2002, they were due to locally acquired infections among heterosexuals including one

case of congenital syphilis. Compared to the heterosexuals, MSM tended to be older, co-infected with HIV, report alcohol abuse (vs. injection drug use), and were diagnosed earlier with infectious syphilis. MSM used the Internet and bar or bathhouses to initiate sexual contact whereas heterosexually acquired infections were largely among sex workers and their clients. Contact tracing was more successful among the heterosexuals than among MSM. In response to the outbreak, public health staff at the STD clinic initiated a series of multifaceted interventions in response to the outbreak. These interventions were moderately successful as measured by the increased numbers of individuals seeking counseling and testing services at the clinic.

Conclusions: The results highlight key differences in the risk factor-specific characteristics of the outbreak that could be taken into account when designing prevention and control strategies, and suggest the successful implementation of interventions that contributed to termination of the outbreaks.

0393

Comparison between School-Bases and Street/ Community-Based Outreach for Young Males for Chlamydia and Gonorrhea Screening Programs

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Objective: To compare predictors of chlamydia (CT) and/or gonorrhea (GC) infection in males from School Based Health Centers (SBHC) and street/community-based out reach (S&C) programs.

Methods: Males >12-25 years were enrolled in screening programs for CT/GC from Baltimore SBHCs (N=1268) or Denver S&C (N=593) programs. Men provided demographical, sexual health practices information, and urine for CT/GC amplification testing. Individual and combined univariate and multivariate analyses were performed.

Results: The prevalence from each program was 11%. Compared to SBHC males, those from S&C were more likely to be older, ($p<0.0001$), non-African-American ($p<0.0001$), more likely to have had an STD ($p<0.0001$), more likely to have visited for routine screening ($p<0.001$), to have had more partners in the last 60 days ($p<0.0001$), and less likely to have used a condom at last sex with a main partner ($p<0.0001$). Predictors for CT/GC infections in SBHCs included: older age (OR 1.35, $p<0.0001$), dysuria or discharge (OR 10.36, $p<0.0001$), and more partners in the past 12 months (OR 1.03, $p=0.004$). Predictors for infection in S&C included: older age (OR 1.21, $p=0.008$), dysurina or discharge (OR=3.0, $p=0.0186$), and more partners in the past 12 months (OR 1.03, $p=0.006$). In a combined analysis, predictors for CT/GC included: Baltimore program (OR 2.36, $p=0.0002$), older age (OR 1.28, $p<0.0001$), symptoms (OR 6.93, $p<0.0001$), and more partners in past 12 months (OR 1.04, $p<0.0001$).

Conclusions: Different geographical locations and venues demonstrate differences in STD risk factors. However, predictors for infection with CT/GC, (older age, symptoms, and increased numbers of partners) were similar, despite venue and geographical differences.

0394

Validity, Acceptability and Feasibility of Self-sampling for Reproductive Tract Infections in South African Women

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Objectives: To determine sensitivity and specificity of self-sampling, using tampons or vaginal swabs, for reproductive tract infections (RTIs) with swabs obtained during speculum examinations as the gold standard. To evaluate the acceptability and feasibility of self-sampling procedures.

Methods: Four hundred and fifty women from a Community Health Centre in Gugulethu, Cape Town were enrolled in a cross-sectional study: Half the women were randomized to use either tampons or vaginal swabs. All specimens were tested for bacterial vaginosis (BV) and yeasts (Gram stain), *Trichomonas vaginalis* (TV)(culture), *Neisseria gonorrhoeae* (NG)(PCR), *Chlamydia trachomatis* (CT)(PCR) and human papillomavirus (HPV)(Hybrid Capture II). Questionnaires and focus group discussions provided acceptability and feasibility data.

Results: Overall 62%, 28%, 11%, 7%, 11% and 36% of clinician obtained specimens were positive for BV, yeasts, TV, NG, CT and HPV respectively. The self-sampled specimens performed favorably against the gold standard with the exception of TV (sensitivity of self-sampling 40.4%, specificity 99.8%) and HPV (sensitivity 70.1%, specificity 87.1%). The sensitivity of vaginal swabs was significantly higher than tampons for diagnosing HPV ($p = 0.002$). Both self-sampling methods were found to be feasible, and as acceptable as a speculum examination.

Conclusions: This study demonstrates that self-sampling methods are feasible, valid and acceptable methods for the diagnosis of most RTIs. However when using culture to detect TV, self-sampling methods cannot be recommended. Tampons are a less sensitive method for the diagnosis of HPV in comparison to vaginal swabs when using Hybrid Capture II technology.

0395

Exploratory profile of the elderly patients attended at the reference center of STD/AIDS in São Paulo city Brazil

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Objective: To know the exposition and sociodemographic characteristics of 60 year old patient or more contaminated by HIV/AIDS.

Method: Cross- sectional study where consulted the investigation document of 14 patients with 60 year or more, contaminated by HIV/AIDS, they were attended at the Reference Center Penha from June/1996 to February/2003.

Results: From the 14 patients studied, 7 were men and 7 women. The educational level was elementary, according to their profession, 6 worked as maid, carpenter, bricklayer, painter, 3 were retired, 4 were housewives and 1 unemployed. All the women were heterosexuals; among men two were bisexual and 1 homosexual. Five of them reported that they had sexual intercourse with individuals contaminated with HIV, and it was reported one blood transfusion. It was not reported the usage of injected drugs or hemophilia. Seven patients presented co- infection (3 tuberculosis, 1 STD and 1 hepatitis C tipe). All of them presented symptoms at the first appointment and nowadays 13 are taking medicine "antiretroviral".

Conclusion: The patients studied have low income and education. The sexual preference presented variation only among males. The number of cases of co-infection found was high. All patients of them presented symptoms at first appointment, what could mean that had a late diagnosis.

0396

Innate Immune-Mediated Antiviral State Protects Against Genital Herpes Simplex Virus Type 2 Infection

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Objective: Innate immune recognition of microbial non-self relies on a family of Toll-like receptors (TLRs) that recognize conserved pathogen-associated molecular patterns. TLR9 recognizes immunostimulatory CpG oligodeoxynucleotides (ODN) sequences. The objective of this study was to determine the mechanism by which CpG ODN induces protection against intravaginal (IVAG) herpes simplex virus type 2 (HSV-2) infection.

Methods: Female C57Bl/6 mice were treated with CpG ODN, control non-CpG ODN or left untreated 24 hours prior to IVAG HSV-2 infection. The mice were monitored daily for genital pathology, vaginal virus load and survival. Histology and staining with proliferating cell nuclear antigen (PCNA) was used to examine the genital tissue. Entry and infection of virus in the genital tract of CpG ODN or control ODN-treated mice was assessed using HSV-2 expressing green fluorescent protein and transgenic mice. Cells transfected with murine TLR9 were used to determine the dependence of the CpG-induced antiviral state on TLR9 expression. PCR was used to assess the expression of immediate-early, delayed-early and late HSV-2 mRNA transcripts in CpG-treated cells.

Results: Local delivery of CpG ODN induced rapid thickening and proliferation of the vaginal epithelium. CpG treatment resulted in inhibition of HSV-2 replication but not entry in genital epithelium. Using cells that naturally express murine TLR9 and cells transfected with mTLR9, this CpG-induced antiviral state was dependent on TLR9 signaling. TLR9 was shown to be expressed in vaginal epithelial cells. Analysis of viral transcripts showed both delayed kinetics and reduced levels of all classes of HSV-2 mRNA in CpG-treated cells when compared to control ODN-treated cells.

Conclusions: These studies show that local mucosal delivery of CpG ODN induces a novel innate antiviral state in vaginal epithelial cells that protects against lethal IVAG HSV-2 challenge. It is likely that this innate response will protect against a variety other sexually transmitted infections, including HIV-1.

0397

Clinical Benefits, Costs, and Cost-Effectiveness of Screening for Chlamydia trachomatis

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Objectives: Genital infections with *Chlamydia trachomatis* are responsible for a majority of the clinical and economic consequences attributable to pelvic inflammatory disease (PID), chronic pelvic pain, ectopic pregnancy, and tubal infertility. Our objective was to assess the cost-effectiveness of alternative recommendations for chlamydia screening in U.S. women.

Methods: A computer-based mathematical model is used to simulate screening with urine-based nucleic acid amplification tests, diagnosis, and treatment of *C. trachomatis* in a cohort of U.S. women. We compared the following strategies targeted to specific age groups (e.g., 15-19, 15-24, and 15-29 years): (1) no screening, (2) annual screening for all women, (3) annual screening for all women followed by a single repeat test within 3 to 6 months after a positive test result, and (4) annual screening for all women followed by selective semiannual screening for women with a history of previous infection.

Results: Screening for chlamydial infection prevented between 11% to 42% of all PID and its sequelae. The most effective strategy was one that screened all women between the ages 15-29 annually and selectively targeted those with documented infection for semiannual surveillance. This strategy had an incremental cost-effectiveness ratio of $7,500 per quality-adjusted life year gained, compared to the next best strategy. In comparison, a strategy in which all women were screened annually and women with a positive test result returned later for a single repeat test cost more but was less effective. The least effective strategies restricted routine screening to 15-19 year olds. Although our results were robust under a wide range of parameter estimates, the optimal screening strategy depended on assumptions about the relative contribution of persistence versus recurrence to repeat test positivity.

Conclusion: Screening all women age 15-29 annually for *Chlamydia trachomatis* and selectively targeting those with documented infection for semiannual screening is cost-effective compared to other well-accepted clinical interventions.

0398

Historical Correlates of Genital Herpes Simplex Virus 2 (HSV-2) Infection in Black American Men Attending an STD Clinic

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Objectives: While nearly one in four Americans has antibodies to HSV-2, only one of 50 reports a history of genital herpes. This study examined how well answers to several questions regarding personal history compatible with genital herpes correlated with HSV-2 serological status in Black American men attending a STD clinic.

Methods: Consecutive men attending an STD Clinic for acute care were approached to enroll in an ongoing study of genital herpes epidemiology. Consenting men underwent serological testing for HSV-1 and HSV-2 (Focus EIA). These men answered questions regarding their personal history of genital herpes. Association statistics between response to each question and HSV-2 serostatus were calculated

Results: 214 men were enrolled. 190 (89%) were black American. Of this subset, 88 (46%) had antibodies to HSV-2. Seven (3.6%) reported a history of genital herpes when asked among a list of other STD [sensitivity (S) 0.07, positive predictive value (PPV) 0.85, Odds ratio (OR) 7.3, p=0.05,]. Eleven (5.7%) reported a history of genital herpes when asked directly "Do you have genital herpes?" (S 0.11, PPV 0.91, OR 12.9, p=0.002). Forty (21.1%) reported a history of recurring genital sore, ulcer or zipper cut (S 0.31, PPV 0.70, OR 3.5, p=0.007). 65.9 % of HSV-2 seropositive Black American men answered "no" to all three questions; a "yes" response to one or more of the three questions was 34% sensitive for predicting HSV-2 infection.

Conclusions: Few HSV-2 infected Black American men report a history of genital herpes. Asking about a history of recurrent genital sores was a more sensitive historical marker of HSV-2 infection than asking about a history of genital herpes, though most did recognize the former historical fact as evidence of genital herpes.

0399

Immunosuppression and Anti-Retroviral Therapy as Determinants of HSV Diagnosis Among HIV-Positive Patients in a Specialized Dermatology Clinic

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Background: HIV infection changes the prevalence of certain dermatologic conditions, including Herpes Simplex Virus (HSV). However, clinical presentation of HSV among HIV-positive (HIV+) patients during the era of highly active antiretroviral therapy (HAART) remains unclear.

Methods: Patients referred to a specialized HIV, inner-city dermatology clinic between 1997 and 2002 were studied. At first visit, dermatologic diagnosis, demographic variables, CD4+ cell count, HIV viral load and ART initiation were abstracted from medical records.

Results: Of the 897 patients, 622 (69.3%) were African American, 646 (72.0%) were male, 466 (56.2%) acquired HIV via sexual transmission, 34 (3.8%) were diagnosed with HSV and 537 (61.2%) had initiated ART prior to visit. Mean CD4+ cell count and HIV log10 viral load of all patients were 269 cells/mm3 and 3.50 copies/mL, respectively. Individuals without an HSV diagnosis had higher mean CD4+ cell counts (272 vs. 196, p-value=0.09) but there was no difference in mean log10 viral load (3.49 vs. 3.83, p-value=0.27). 425 (48.6%) of all the patients had a CD4+ count <200. In a multivariate logistic regression model, patients with CD4+ count <200 had an increased adjusted odds (AOR=2.4, 95% CI: 1.1, 5.2) of HSV diagnosis, while having initiated ART decreased the odds (AOR=0.53, 95% CI: 0.26, 1.08). However, independent risk factors for ART initiation existed and older patients (AOR=1.26, 95% CI: 1.07, 1.49 for each 10-year age interval) and those who acquired HIV sexually (AOR=1.45, 95% CI: 1.08, 1.95) were more likely to be on treatment. African Americans were less likely to have initiated (AOR=0.72, 95% CI: 0.52, 1.00).

Conclusions: Our data suggest CD4+ count > 200 cells/mm3 and ART initiation reduce the odds of HSV diagnosis while HIV viral load had no effect. Despite these determinants, behavioral and demographic determinants may modify the association by influencing which patients receive ART.

0400

Treatment of the sexually transmitted diseases in Estonia: consistency with evidence based medicine principles

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Objective: Sexually transmitted diseases (STD) have been recognized as a major public health problem. Physicians have a vital role in interrupting the spread of STDs through early diagnosis and appropriate treatment. Our goal was to define the schedule of antibiotic treatment Estonian physicians use to treat STDs (syphilis, chlamydiosis, gonorrhea, trichomoniasis, genital herpes), and to determine whether this corresponds to evidence-based medicine principles.

Methods: The Estonian Health Insurance Fund (EHIF) covers about 90% of the population. Data abstracted from EHIF administrative-databases for 2000 and 2001 included medical utilizations, laboratory tests, and pharmaceutical reimbursements. European STI Management Guidelines were used as a reference for appropriateness of treatment.

Results: There were 26,493 STD management bills from 15,447 different persons, and 19,509 STD treatment prescriptions. In 87% of those prescriptions oral or parenteral antibiotics were used: 17,077 STD treatment episodes for 12,823 persons in 2000-2001.

Medical Specialists Managing STDs

Patient Gender	Gynecologist	Dermatovenerologist	GP	Infectionist	Urologist	Other
Male	105 / 1%	7813 / 90%	118 / 1%	27 / 0.3%	210 / 2%	405 / 5%
Female	13009 / 73%	3641 / 20%	247 / 1%	26 / 0.1%	18 / 0.1%	874 / 5%

The drug selected for treatment conformed to the guidelines in 91%; both dosage and drug conformed to the guidelines in 86% of prescriptions filled. Men were less likely to receive guideline-appropriate treatment compared to women (OR 0.34; CI 0.36-0.53). Individuals 35 years and older were slightly more likely than those under 35 (OR 1.3; CI 1.09-1.6). Dermatovenerologists and gynecologist were more likely to use appropriate treatment (drug+dose) than other specalialists (OR 1.4; CI 1.1-1.7).

Conclusions: At least for 14% of STDs, the treatment schedule used is not appropriate and for many of these cases, probably not curative. Discussion of issues related to evidence-based treatment will be presented.

0401

Do Physicians Provide Counseling With HIV and STD Teesting at Physician Offices or Hospital Ooutpatient Departments?

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Objectives. To estimate the frequency of HIV/STD counseling among patients tested for HIV or STD infection at physician offices and hospital outpatient departments and to describe the factors associated with HIV/STD counseling in private settings in the United States.

Methods. We analyzed 1997-1998 data from the National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS), two representative national surveys of ambulatory care visits in private settings, by persons aged 18-64 years.

Results. During 1997-1998, 12.7 million ambulatory care visits included HIV or STD testing. HIV/STD counseling was documented in 35% of all visits and in 28% of visits by pregnant women at the time HIV or STD tests were done. Counseling was less common when only HIV tests (21%) or STD tests (37%) alone were done than when visits with both HIV and STD tests (50%) were done. Counseling was more common (65%) if the patient's reason for visit was related to HIV, STD, or genitourinary complaints than if the visit was for other reasons.

Conclusions: Private physicians often counseled about HIV/STD when testing patients with symptoms. The proportion of other visits in which counseling accompanied HIV or STD tests was variable. This suggests the need for a better understanding of the reasons why clinicians in private settings decide whether to counsel patients about HIV and STD when they order testing, barriers to offering counseling, and interventions to increase counseling when appropriate.

0402

Differences in Reported Cure Rates for Bacterial Vaginosis Comparing Traditional and FDA Criteria

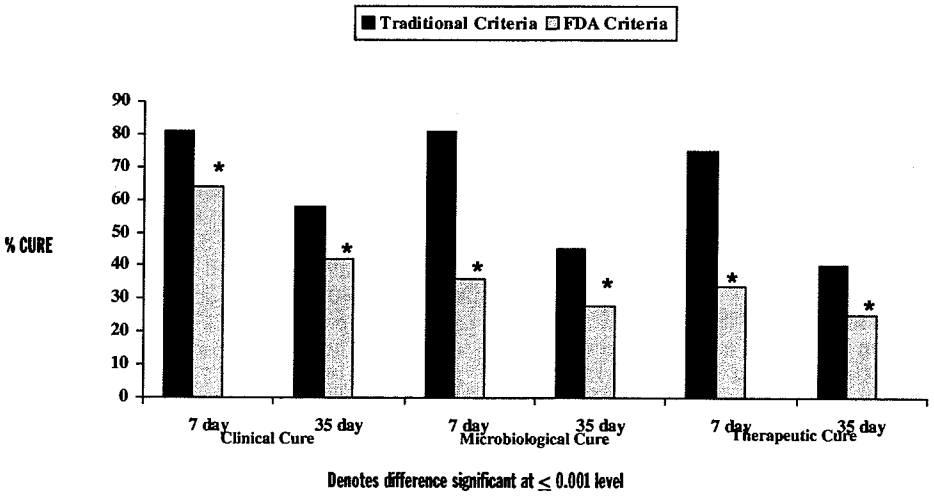
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Objectives: The definition of therapeutic cure in treatment trials of bacterial vaginosis has traditionally been a combination of the presence of < 20% clue cells on wet mount, having ≤2 of 3 Amsel's diagnostic clinical criteria and a Nugent score of <7. In 1998, the FDA released new guidance suggesting that a more strict definition of therapeutic cure be used in future trials. These include the complete absence of any of the four Amsel criteria and a Nugent score of ≤3. We investigated the differences in cure rates in a clinical treatment trial of bacterial vaginosis using these two different sets of criteria (traditional vs. FDA) to explore how these different criteria alter reported cure rates.

Methods: We conducted a randomized open-label clinical trial of vaginal metronidazole (MetroGel) vs. vaginal clindamycin (Cleocin vaginal ovules). Patients were enrolled from 3-2002 to 3-2003. After treatment, women had follow-up visits at 7-12 days and 35-45 days after treatment. Eighty women are available for analysis.

Results: (see table) Of 80 women, 38 were randomized to vaginal metronidazole and 42 to vaginal clindamycin. There was no significant difference in efficacy between metronidazole and clindamycin at either follow-up visit ($p>0.05$). However, when comparing cure rates using the two different sets of criteria,
we found significant differences that are displayed below.

Conclusions: A requirement for complete normalization of the vaginal microenvironment as suggested by the FDA significantly lowers the reported cure rates at both 7 and 35 days after treatment. This has important implications for patient counseling and clinician interpretation of efficacy. This difference must be considered when agents tested prior to the 1998 FDA guidance are compared to those tested after that time.



0403

Overlap Between Sexual and Injecting Drug Networks in St. Petersburg, Russia

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Objectives: HIV prevalence among injection drug users and commercial sex workers has increased dramatically in St Petersburg. The objective of this study was to estimate the extent of overlap among injecting drug use and sexual networks and to identify and characterize priority locations for prevention programs.

Methods: Interviews were conducted with community informants in three districts to identify public sites where injecting drug users could be found and sites where people seek new sexual partners. All sites were visited and characterized. At a sample of sites people were interviewed about their behavior including rate of new sexual partner acquisitions and injecting drug use.

Results: 819 informants identified over 700 sites in the three districts where people meet new sexual partners and/or injecting drug users could be found. Of these 27% were sites where people both go to meet new sexual partners and injecting drug users could be found. Sites included bars, streets, parks and stairwells. Condoms were never available at over 60% of sites. Over 45% of 1120 men interviewed while socializing at sites reported having a new sexual partner in the past 4 weeks; 10% reported ever injecting drugs; and about 20% reported giving money in exchange for sex in the past four weeks. Half of the men who reported injection drug use reported having a new sexual partner in the past four weeks. About 10% of women also reported injecting drug use; of these, almost 70% reported a new sexual partnership in the past 4 weeks.

Conclusions: Injecting drug networks overlap considerably with sexual networks in St Petersburg. The sexual networks include commercial sex workers, clients of commercial sex workers, as well as other people who have high rates of new sexual partner acquisition.

0404

HBV infection in women with sexually transmitted infections

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Objective: To investigate the burden and infectivity rate of HBV infection in selected women with confirmed laboratory diagnosis of STIs.

Methods: A total of 292 samples from women with *Chlamydia trachomatis* (n=30), *Treponema pallidum* (n=104), *Trichomonas vaginalis* (n=28), HIV (n=54), and more than one STI (co-infected) (n=76), were tested for HBsAg, anti-HBs and anti-HBc, using IMx MEIA assays (Abbott Laboratories). HBsAg positive specimens were further tested for HBeAg using ETI-EBK PLUS assay (Diasorin Saluggia, Italy). HBV DNA detection was performed with two different in-house PCR assays and COBAS AMPLICOR HBV Monitor assay (Roche Molecular Systems). A cohort of 99 healthy women, negative for STIs, was included as controls.

Results: Overall, total HBV exposure was 39.4% (154/391) in the population studied. However, higher prevalence of HBV was found in women with STIs. Total HBV positivity was 29.3% (29/99) in the control group. Against this, exposure to HBV infection was 42.8% (125/292) in women with STIs, with an odds ratio (OR) of 1.8, which was statistically significant (chi-square:p = 0.017). Amongst the STIs, the highest positivity rates of HBV infection were seen in the *C. trachomatis* (56.6%; p=0.007, OR=3.16), HIV group (50.0%; p=0.012, OR=2.41), and women co-infected with more than one STI (46.1%; p=0.023, OR=2.06). Although the HIV group had a significantly increased prevalence of HBsAg (OR: 10.0, p = 0.012), HBV DNA positivity was low in all the test groups and the control group. In addition, none of the HBsAg positives was HBeAg reactive.

Conclusion: STIs, including HIV, are associated with increased positivity to HBV infection, but are not necessarily the major risk factors for increased infectivity of HBV. It is recommended that teenagers and those engaging in risky sexual behaviors should receive hepatitis B vaccine as they are at risk of acquiring HBV infection.

0405

Assessing the impact of type specific prophylactic HPV vaccines on the emergence of new high risk types

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Objective: Five of the 15 identified high risk HPV types account for 90% of cervical cancer cases. However, vaccines in development currently cover one (16) or two (16 and 18) high risk HPV types raising concern over type replacement when released from cross-immunity induced by types included in the vaccine. Faced with the challenges of developing multivalent vaccines (and increasing vaccine costs) we explored the impact of low-level cross protection between types and assessed the relative benefits of including more than one type in a HPV prophylactic vaccine.

Methods: A mathematical model of HPV transmission and progression to disease was developed with two high risk HPV types: i) one included in the vaccine and ii) another not vaccinated against. Vaccine intervention was modelled and two scenarios were assessed: i) vaccinating against the most prevalent high risk type only, ii) vaccinating against the two most prevalent high risk types, with different levels of cross immunity. This simplified two type system is used to infer qualitative lessons applicable to the more complex multi-type system.

Results: Removing the highest risk types, i.e. types 16 and 18, leads to a decrease in CC incidence commensurate with the current fraction of CC attributable to these types. However, a very low level of cross immunity (i.e. below that currently excluded by epidemiological studies) could overturn many of the gains. In the model more co-infections are predicted than observed suggesting that

cross immunity may play a role in preventing infections from new HPV types.

Conclusions: Very low levels of cross immunity may reduce some of the gains seen with type specific vaccines. Time will tell whether non-vaccinated types fill the ecological niche created by vaccination making surveillance for changes in prevalence of HPV an essential part of HPV vaccination strategies.

0406

State Prenatal Syphilis Screening Laws And Regulations: Evaluating Recent Changes And The Association With Prenatal Syphilis Screening Rates

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Objectives. Prenatal syphilis screening is recommended for all pregnant women by CDC and many professional organizations. In addition, many states also have prenatal syphilis screening laws or regulations. The objective of this study was to assess recent changes in states' prenatal syphilis screening laws or regulations between 1997 and 2001 and to estimate the association between laws or regulations, prenatal syphilis screening rates, and infectious syphilis incidence rates.

Methods. Data on state laws or regulations were obtained from the LEXIS legal database and interviews of state STD program managers. Data on state syphilis incidence were obtained from CDC surveillance reports. Data on prenatal syphilis screening practices were obtained from a claims database covering a large commercially-insured population of pregnant women and from a national survey of physicians' STD screening practices.

Results. Of 50 states and the District of Columbia, 46 had laws or regulations from 1997 through 2001; four had no laws or regulations from 1997 through 2001; and one had a law in 1997 but eliminated it in 2000. The proportion of commercially-insured women with claims for prenatal screening was higher (63%) in states with high syphilis incidence than the proportion (52%) in states with low syphilis incidence, according to the claims database. However, the national physician survey found that the proportion of providers who reported screening pregnant women for syphilis was high (86%) and did not differ appreciably by the states of the physician's state prenatal syphilis screening law or syphilis incidence.

Conclusion. There were few recent changes in prenatal syphilis screening laws or regulations between 1997 and 2001. Our results suggest that prenatal syphilis screening laws or regulations have some influence, albeit minor or subtle, on prenatal syphilis screening practices. Interventions to increase routine provision of prenatal syphilis screening are urgently needed in areas with high syphilis incidence.

0407

Multi-Center Evaluation of the Gen-Probe APTIMA CT Assay and APTIMA GC Assay

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Objective: This ongoing investigational study will establish the performance characteristics of the APTIMA CT Assay (ACT) for *Chlamydia trachomatis* (CT) and the APTIMA GC Assay (AGC) for *Neisseria gonorrhoeae* (GC) (Gen-Probe Incorporated) in endocervical swab, male urethral swab, and female and male urine specimens. The ACT and AGC use oligonucleotides that target rRNA sequences different from those of the commercially available APTIMA Combo 2 Assay (AC2); the procedures for the three assays are the same.

Methods: To date, 904 female and 720 male subjects were enrolled at eight geographically diverse, high and low prevalence sites. Two endocervical or male urethral swabs and one first catch urine (FCU) were collected from each subject. ACT, AGC, and AC2 results were generated from one endocervical or male urethral swab, and the FCU. The second endocervical or male urethral swab and remaining FCU were tested using BDProbeTec (Becton Dickinson and Company) for CT and GC. Performance characteristics were calculated using a multi-test infected patient status algorithm.

Results: For the ACT, respective sensitivities and specificities were 96.9% (94/97) and 97.3% (681/700) for the endocervical swab, 98.2% (111/113) and 97.2% (485/499) for the male urethral swab, 97.3% (110//113) and 98.8% (492/498) for male FCU, and 92.8% (90/97) and 98.4% (693/704) for female FCU. For the AGC, respective sensitivities and specificities were 96.0% (48/50) and 99.2% (755/761) for the endocervical swab, 100% (84/84) and 98.0% (540/551) for the male urethral swab, 98.8% (83/84) and 99.6% (554/556) for the male FCU, and 90.2% (46/51) and 99.9% (765/770) for female FCU.

Conclusions: These interim findings demonstrate that the ACT and AGC are sensitive and specific for the detection of CT and GC, respectively, in urogenital swab and urine specimens.

0408

Application of a molecular typing system for Treponema pallidum to syphilis-endemic and outbreak situations

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Objectives: Syphilis remains a major public health problem in many developing countries, especially in sub-Saharan Africa, and in some industrialized countries. Our goal was to determine the discriminatory ability of a molecular typing system for syphilis by characterizing *Treponema pallidum* strains obtained from syphilis-endemic areas and in a defined outbreak situation.

Methods: 201 clinical specimens containing *T. pallidum* DNA were obtained from patients seen in South Africa and 21 specimens from patients seen in Madagascar between 1995 and 2000. In addition, 28 specimens (7 blood, 19 genital ulcer exudate, 1 placental tissue, and 1 brain tissue) were obtained from pa-

tients with syphilis during a heterosexual outbreak of the disease that has been occurring in Vancouver, Canada, since 2000. Typing was performed using PCR-RFLP analysis for the *tpr* gene and PCR amplification of the 60-bp repeat region of the *arp* gene.

Results: Of the 201 specimens from South Africa, 161 were typeable, revealing 36 *T. pallidum* subtypes. Among 21 typeable specimens from Madagascar, 8 subtypes were identified. Twenty-two of the 28 specimens from Canada were typeable, revealing only 3 subtypes (14*d*, 13*d*, and 15*d*). Subtype 14*d* predominated in all sites, accounting for 27.3% (44/161) of strains in South Africa, 52.3% (11/21) in Madagascar, and 90.9% (20/22) in Canada.

Conclusions: The typing system was able to discriminate among strains obtained from two syphilis-endemic settings and an outbreak situation. As expected, only a few *T. pallidum* strains were responsible for the syphilis outbreak in Canada compared with a diversity of strains detected in syphilis-endemic areas. The typing system is a promising tool for use in molecular epidemiological studies on syphilis.

0409

Reinfection with Chlamydia trachomatis; Rate and Predictors of Reinfection among Males

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Objective: To measure the rate of *Chlamydia trachomatis*(Ct) reinfection and predictors of reinfection among men.

Methods: Men were screened for Ct at various venues in Baltimore, Denver, and San Francisco. Ct-infected men received partner management interviews and treatment and were enrolled in a longitudinal study of Ct re-infection. At 1 and 4-month follow up visits, men completed questions on demographics and sexual health and were tested for Ct infection using nucleic acid amplification testing (NAAT). Overall and venue-specific re-infection rates were calculated for all three cities. Men with at least one re-infection were compared to men without re-infection using Chi square test for significance on data where study enrollment was complete (Baltimore and Denver).

Results: As of March 2003, 288 men were recruited into the study and 202 (70%) had at least one follow-up visit. The reinfection rate was 12% (Denver, 12%; Baltimore, 12%; San Francisco, 15%). The incidence was 44 reinfections per 100 person years. Low educational attainment (less than high school education), and unstable residence (lived at an address for less than 6 months) were associated with Ct reinfection. Men reported a median of 2 partners (range 0-7) at the baseline visit, and 37% of men had new partners during the study. Eleven percent of men with a new partner had reinfections compared with 13% of men without new partners; having a new partner was not significantly associated with reinfection.

Conclusion: The rate of Ct reinfection is high and similar to the rate observed among women in other studies. A new partner during the study did not predict reinfection. Further analysis of partner management and partner change may identify specific strategies for prevention of reinfection in men.

0410

Ensuring Phase III Microbicide Trials Against HIV Adequately Estimate Treatment Efficacy : Guidance from Dynamical Models

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Objective : The primary objective of phase III clinical trials for microbicides is to determine effectiveness of protection against HIV while determination of efficacy of protection against other sexually transmitted infections (STI) is secondary. However, given the transmission interaction between STI and HIV, it is not evident that protocol-defined statistical analyses for estimation of the true individual efficacies of protection against HIV and STI will be valid. We examine the conditions under which a trial can accurately determine the individual effects of a candidate microbicide.

Method : A compartmental stochastic mathematical model simulating clinical trials of a microbicide whose protection against HIV and STI varies between low and high efficacies under varying strengths of HIV-STI interaction is employed. Statistical analysis to estimate the individual effects is validated based on trial follow-up data.

Results : Preliminary results show that disentangling the treatment effect of against HIV and STI is difficult if STI infection times are not well determined. For example an estimation of 40% efficacy against HIV can arise due either to a 30% protective efficacy against HIV and 80% against STI or 40% against HIV and 0% to STI. However, more frequent screening of STI permits more accurate estimation of the individual effects against both HIV and STI. Also probability of falsely identifying a significant treatment effect against HIV is increased if STI cannot be adequately controlled in analyses.

Discussion : The capacity to estimate microbicidal efficacy HIV depends on the frequency of trial visits, strength of HIV-STI interaction and efficacy of protection against STI. Value can be added to large-scale trials and external validity improved if the individual treatment effects can be estimated separately.

0411

Prenatal Syphilis and HIV Screening of Commercially Insured Women

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Background: Although routine serologic testing for syphilis and human immunodeficiency virus (HIV) for all pregnant women is recommended by CDC and many health professional organizations, little is known about syphilis and HIV screening rates of commercially insured pregnant women.

Methods: We used a claims database containing a large commercially insured population to estimate syphilis and HIV screening rates for pregnant women who were continuously enrolled in the same health insurance plan during 1997 and 1998 in 14 U.S. states. Diagnostic and procedural services were used to determine pregnancy, prenatal care, and syphilis and HIV testing during pregnancy.

Results: Of 13,580 pregnancies, 11,971 (88%) were among women who had prenatal visits; 7796 (57%) included claims for syphilis testing and 3921 (29%) included claims for HIV testing. Of the 7796 pregnancies with syphilis tests, 6178 (79%) included syphilis tests that were performed during the initial prenatal visit, and 7768 (99%) at any time during the pregnancy before the day of delivery. Of the 3921 pregnancies with HIV tests, 2894 (74%) included HIV testing on the initial prenatal visit and 3882 (99%) at any time during the pregnancy before to the day of delivery.

Conclusion: Our findings indicate that if syphilis and HIV screening was routinely provided to commercially insured pregnant women already seeking prenatal care, syphilis and HIV screening rates could increase substantially. Routine provision of these screening tests early in pregnancy are urgently needed to prevent prenatal syphilis and HIV transmission in commercially insured women.

0412

Profile of the antibiotic sensibility tst for Mycoplasma hominis and Ureaplasma urealyticum in samples of women

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Objective: To diagnose the antimicrobial susceptibility for M. hominis and U. urealyticum in samples of women's genital secretion HIV-1-seropositives assisted in this service, in the period November/2002 to March/2003.

Methodology: 44 samples of feminine secretions were analyzed using the kit Micoplasma IST - 2 (Biomerieux) that allows to accomplish the culture, identification and antimicrobial susceptibility of 9 antibiotics for M. hominis and U. urealyticum.

Results: Of the 44 samples, 21 (47,7%) presented negative culture, 22 (50,0%) positive and 1 (2,3%) indeterminate. Of the positives cultures were detected: M. hominis 1 (4,5%), U. urealyticum 15 (68,2%) and positive for both species 6 (26.1%). U urealyticum was highly susceptible to josamycine 16 (100%) and pristinamicin 16 (100%); higher resistance was found to ciprofloxacin 7 (46,7%) in vitro. M. hominis: it was susceptible to the majority of drugs except claritromycin and erytromycin. In the samples where there were both positive cultures to U. urealyticum and M. hominis, the most effective drugs were doxycycline 6 (100%) and pristinamycine 6 (100%); and the less efficient drug was erytromycin 6 (100%) in vitro.

Conclusion: The reason of the bacterial resistance is not clear, it was observed that the best drug in this study were pristinamycine and josamycine and the worst, erytromycin. This is an alert for the necessity more profound studies about the resistance of these specimens. In addition this method provides to smalls and medium laboratories to care out research in routine.

0413

Liquid PAP samples are suitable for detecting Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) rRNA by the APTIMA Combo 2 Assay

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Objectives: A proposed strategy for controlling CT and GC infections is to screen for them by testing liquid PAP specimens with nucleic acid amplification (NAA). Our objectives were to determine the sensitivity of the APTIMA Combo 2 assay to detect CT and GC in fresh and stored liquid PAP samples.

Methods: Dilutions of CT and GC rRNA were spiked into Gen-Probe specimen transport media (STM) and 2 liquid PAP systems: PreservCyt (CyTyc) and Autocyte (TriPath); then assayed for detection sensitivity immediately and after storage. Liquid-prep samples containing CT or GC were mixed in varying concentrations to determine the ability of the dual detection assay to identify single or dual infections. Cervical swabs were collected from women immediately after CyTyc and TriPath samples were collected and all samples were assayed for CT and GC in the APTIMA Combo Test.

Results: The APTIMA Combo 2 CT and GC assay sensitivity curves for organism rRNA diluted in STM, PreservCyt and Autocyte were parallel to one another and became negative between 8 and 9 log dilutions. Bacterial rRNA was detected in both liquid PAP systems when only CT or GC was present or when both were mixed together either in equal concentrations or when one was in 1000 fold concentration greater than the other. In 200 patients enrolled to this point, concordance for the detection of CT and GC has been identical and this clinical component is ongoing.

Conclusions: The APTIMA Combo 2 assay detected low levels of CT and GC from both PreservCyt and Autocyte media with equal efficiency to the assay's STM. Detection was still possible after 3 weeks storage of the specimens. CT and GC were detected in equal numbers of clinical samples.

0414

Laboratorial study of the frequency of Mycoplasma hominis and Ureaplasma urealyticum in women positive HIV assisted at the Center Reference and Trainning STD/ AIDS - São Paulo city - Brazil

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Objective: To make a laboratorial diagnosis of the frequency of Mycoplasma hominis and Ureaplasma urealyticum in patient positive HIV assisted at this service, in the period of November of 2002 to March of 2003.

Methodology: 44 samples of feminine secretions were analyzed using the kit Micoplasma IST2 (Biomerieux), that allows to accomplish the culture, identification for Mycoplasma hominis and Ureaplasma urealyticum.. The incubation time of the strip is 24 to 48 h., after this time, a reading of the strip is proceeded, and it will change color, from yellow to red. The change of coloration means the culture is positive.

Results: Of the 44 samples, 21 (47,7%) presented negative culture, 22 (50,0%) positive and 1 (2,3%) indeterminate. Of the positive cultures were detected: M. hominis 1(4,5%), U. urealyticum 15 (68,2%) and in both species 6 (27,3%).

Conclusion: A higher frequency of U. urealyticum was observed in women serum positive, followed by both species. It is important to accomplish other studies, once this stumps can either be part of the normal flora or be a cause of diseases in those women and, therefore, they would increase the transmission of HIV.

0415

HPV Prevalence and Genotype Differences from Two Family Planning Clinics in Louisiana

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Objective: Despite the decline in cervical cancer rates over the past 30 years, Louisiana has seen no significant reduction. Furthermore, regions in Louisiana vary almost 2-fold in cervical cancer incidence and mortality. The objective of this study was to ascertain HPV genotype prevalence among women in 4 regions of Louisiana.

Methods: Demographic data, Pap smears and cervical swabs were collected on 229 women ages 18-65 at two sites: New Orleans and Baton Rouge, Louisiana. Cervical swabs were screened for HPV infection using PGMY09/11 PCR; all HPV isolates were genotyped using the Roche reverse line blot assay.

Results: HPV DNA screening was performed on 182 women in New Orleans and 47 women in Baton Rouge. Demographically, 90% of the women screened were African American and 60% were less than 30 years old. HPV was detected in 22.5% of the New Orleans women and 17% of the Baton Rouge women. There was no statistical difference between New Orleans and Baton Rouge clinics for number of high risk, low risk, or multiple HPV types detected. HPV high-risk types 51, 52, 59, and MM7 were more common in New Orleans, while types 31, 35, 55, and 68 were more frequent in Baton Rouge. Abnormal Pap smears were detected in 15.5% of the women. For New Orleans and Baton Rouge, there was no association seen between demographic risk factors and presence of HPV or between Pap smear results and HPV type.

Conclusions: Previous studies have reported HPV prevalence rates of 10% in family planning clinics. Prevalence rates in New Orleans and Baton Rouge were much higher (20%) and were not different between sites. However, the most prevalent genotypes detected were different for the two sites implying separate sexual networks. Enrollment from 2 additional regions (Shreveport-low-risk and Monroe-high-risk) is currently in progress.

0416

First report of Neisseria gonorrhoeae strains Azitromycin resistant in the state of Amazonas, Brazil

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Introduction: A study was carried out using a representative sample (confidence level 95%, expected frequency 5% and acceptable error 2%), obtained from the patients with risk of gonococcal infections diagnosed at the STI Department of Alfredo da Matta Foundation (Reference Centre for state of Amazonas, Brazil and sentinel Centre for monitoring the antimicrobial susceptibility of the gonococcal strains).

Definitive samples of 133 patients were isolated between the 21st September 2002 and the 22nd January 2003, with gonococcal infection. Methods: Culture, isolation, standard strain, identification, $f\dot{O}$ lactamase test and reference values followed standard methodology. The ephisolometric method was used to antimicrobial susceptibility test. Total of 41 strains were tested to the following antibiotics: Azithromycin, Ceftriaxone, and Ciprofloxacin.

Results: 93(69.9%) were male and 40(30.1%)female, the mean age was 22 years and ages varied between 11and 45years. 4.9% of those tested, 37.5%(50/133) were b lactamase positive. Undetermined result to ceftriazone was noted and 7.3%(3/41) showed a reduced susceptibility

to ciprofloxacin. 22.2% of the isolates were resistant to azithromycin, the first resistance detected in our region. It isn¡¦t possible to demonstrate association (p>0.05) between the levels of resistance in relation to sex, age or having lived outside of the municipality during the last three months or having travelled to other municipalities, states or countries in this period.

Conclusion: With the detection of undetermined values in the susceptibility tests to ceftriaxone and a reduced susceptibility of some strains to ciprofloxacin, more careful follow up become necessary. Due to the percentage of strain resistant to azithromycin it is advisable to refrain from its use in gonococcal infections.

0417

Laboratorial study of frequency of Mycoplsma hominis and Ureaplasma urealyticum in patients assisted at the Center of Reference and Trainning STD/ AIDS - São Paulo city - Brazil

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Objective: To make a laboratorial of the frequency of M.hominis and U.urealyticum in patients with genital flowing assisted in this service, in the period of novembro/2002 the março/2003.

Methodology: 135 samples were analyzed, of masculine uretral secretion 58 (43,0%) and feminine genital secretion 77 (57,0%), being used the kit Micoplasma IST - 2 (Biomerieux), that allows to accomplish the culture and identification for M.hominis and U.urealyticum. The time of incubation in the strip is 24 to 48 h., after this time, a reading of strip is proceeded, and it will change color, from yellow to red. The change of coloration means the culture is positive.

Results: Of the 135 analyzed samples, 89 (65.9%) presented negative culture, 45 (33,3%) positive and 1 (0,8%) indeterminate, being 40 (88,9%) in women and 5 (11.1%) in men. Of the 40 positive samples in women, were detected: M.hominis 2 (5,0%), U.urealyticum 29 (64,4%) and both species 9 (20,0%). All the men positive cultures were to U.urealyticum 5 (100%).

Conclusion: This study showed that there was a larger frequency in women for U.urealyticum, followed by both species and smaller for M.hominis. In men, there was a totality for U.urealyticum. The detection of those aetiologic agents has great importance, because it facilitates a more appropriate treatment, avoiding complications like DIP, breathing syndrome syndrome of the newly born, and others. Besides, it points a reflection to include this method in the attendance routine of this service, where patients narrate multiple sexual partnerships.

0418

Recent outbreaks of syphilis in EU: do we need an Early Warning System for STI outbreaks in Europe?

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Objectives: To describe and compare the main epidemiological characteristics of, and public health responses to, outbreaks of infectious syphilis in Western Europe.

Methods: Comprehensive literature review of outbreaks of infectious syphilis reported in Western Europe since 1995. Medline archives (1995-2002), reports from national surveillance centres and grey literature were used as key data sources. Outbreaks were analysed in terms of time, place and person.

Results: Fourteen syphilis outbreak reports were identified during the observation period (mostly from northern-central European countries). When available, the epidemic curves showed a consistent pattern: following extended periods of low level endemicity, small increases in disease reports predated sharp and dramatic rises (more than 10 fold increases over baseline). Nine outbreaks lasted more than 18 months. The majority of reported outbreaks occurred in large European cities, with most incident cases being endemic. Only one report mentioned an explicit outbreak case definition, or had implemented an analytical investigation. The number of people involved in outbreaks ranged from 13 to over 700. Homosexuals and bisexuals were predominantly affected, ranging from 63% to 100% of reported cases. Eleven out of twelve outbreaks involved HIV positive individuals. Unprotected sex, especially oral sex among homosexuals, was considered among the main risk factors in nine out of 13 outbreaks.

Conclusions: A resurgence of infectious syphilis has been reported in many Western European countries, with many experiencing large outbreaks. Despite having several characteristics in common, there is currently no standard approach to outbreak definition or management. The development of a European Early Warning System for monitoring outbreaks of syphilis and other STIs could be very useful in order to facilitate their early detection; to inform early and effective intervention; and to rapidly disseminate information across European countries.

0419

GENEVAR DETERMINATION OF NEISSERIA GONORRHOEAE BY USING PYROSEQUENCING™ TECHNOLOGY OF THE MOST HETEROGENEOUS SEGMENTS OF THE porB GENE

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Serovar determination of *N. gonorrhoeae* is based on antigenic diversities in the outer membrane protein PorB, which is encoded by the mutually exclusive alleles of the *porB* gene, *porB1a* and *porB1b*. Analysis of short highly heterogeneous segments of the *porB* gene, which encode surface-exposed amino acid loops of mature PorB, and the entire gene generate the same level of discrimination of isolates.

Objective: To investigate the feasibility of using Pyrosequencing technology, a real-time sequencing of short DNA stretches, to determine the sequences of the six most heterogeneous *porB* gene segments of *N. gonorrhoeae*.

Materials & methods. *N. gonorrhoeae* reference strains (n=29) and clinical isolates (n=58), each comprising a unique *porB* gene sequence according to conventional DNA sequencing, were included. The entire *porB* gene of the isolates was amplified by real-time PCR (LightCycler system with SYBR Green I fluorescence melting curve analysis) for genogroup designation (*porB1a* or *porB1b* allele) and the six most heterogeneous segments were pyrosequenced.

Results. Pyrosequencing allows rapid (in approximately one hour) determination of 30 to 60 nucleotides of 96 sequences. The results are in concordance with conventional sequencing with exception of some determinations of the correct numbers of nucleotides in homopolymers. The number of sequence variants identified in the most heterogeneous segments of the *porB1a* allele (encoding 1oop 1, 2, 3, 4, 6, and 8) and *porB1b* allele (encoding 1oop 1, 3, 5, 6, 7, and 8) range from five to 11 and eight to 39, respectively. Subsequently, the isolates were designated as different genevars (genetic variants) due to different sequence variants in the heterogeneous segments. Among the *N. gonorrhoeae* isolates (n=87), 86 unique genevars were identified.

Conclusions. Pyrosequencing of short highly heterogeneous *porB* gene segments and subsequent genevar designation form a highly discriminative, high throughput, objective, portable and reproducible molecular characterization of *N. gonorrhoeae*.

0420

Detection of Mycoplasma genitalium in laparoscopically diagnosed acute salpingitis in Nairobi, Kenya

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Objectives: *Mycoplasma genitalium* has been associated with cervicitis and endometritis, but its role in salpingitis remains undefined. Thus, we used PCR to determine the prevalence of *M. genitalium* in tubal, endometrial and cervical specimens from women laparoscopically diagnosed with acute salpingitis.

Methods: Women aged 18-40 years old presenting to Kenyatta National Hospital in Nairobi, Kenya with = 14 days of low abdominal/pelvic pain and no history of antibiotics in the prior 2 weeks underwent endometrial sampling, diagnostic laparoscopy including tubal biopsy and testing for *M. genitalium*, *Neisseria gonorrhoeae* and *Chlamydia trachomatis* by PCR.

Results: One hundred and five women with clinical PID were recruited of which 89 (85%) had laparoscopically confirmed acute salpingitis: 45 (43%) mild (i.e. tubal erythema and edema), 19 (18%) moderate (i.e. severe tubal erythema, edema, adhesions, purulent exudate) and 25 (24%) severe disease (i.e. pyosalpinx and tubo-ovarian abscess). Overall, *M. genitalium* was detected in 4 (4%) participants: the cervix alone in 3 (3%) women, both the cervix and endometrium in a single subject (1%), but was not identified in the Fallopian tube. In comparison, *N. gonorrhoeae* and *C. trachomatis* were detected from any genital tract site in 16 (18%) and 8 (9%), and from the Fallopian tubes in 13 (15%) and 7 (8%), respectively. *M. genitalium* was most commonly detected in those with moderately severe salpingitis (16%) in comparison to mild (0%) and severe disease (4%).

Conclusions: Except for perhaps women with moderately severe salpingitis, *M. genitalium* was rarely detected in this population.

0421

Projected Clinical Benefits and Cost-effectiveness of an HPV 16/18 Vaccine

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Objective: To project the health and economic consequences associated with a prophylactic type-specific HPV-16/18 vaccine in the setting of a cervical cancer screening program.

Methods: A computer-based model of the natural history of cervical cancer that incorporates the type-specific HPV distribution within precancerous lesions and cancer was used to estimate cancer incidence and mortality, quality-adjusted life years (QALY), lifetime costs, and incremental cost-effectiveness ratios associated with different cancer prevention policies consisting of vaccination, screening, and combined vaccination/screening strategies. Strategies included (1) no vaccination and no screening; (2) no vaccination and cytology screening every 1, 2, 3, 4, and 5 years; (3) vaccination and cytology screening every 1, 2, 3, 4, and 5 years. Screening strategies included conventional and liquid-based cytology initiated at age 18, 21, 25, and 30. We assumed vaccination occurred at age 12 and was 90% effective in reducing the probability of acquiring persistent infection with HPV 16/18, but evaluated the impact of alternative assumptions about vaccine efficacy and waning immunity.

Results: Vaccination at age 12 followed by triennial cytology screening beginning at age 30 provided reductions in cervical cancer mortality above those provided by annual conventional cytology and had an incremental cost-effectiveness ratio of below $50,000 per QALY compared to the next best strategy of vaccination and triennial cytology screening beginning at age 35. These results were stable over a range of vaccine efficacies (60% to 100%) but sensitive to the degree to which vaccination effect persists over time.

Conclusions: A prophylactic vaccine that prevents persistent HPV 16/18 infection can be expected to significantly reduce HPV-16/18-associated high-grade lesions and cervical cancer even in a setting of cytology screening. A program of vaccination that permits a later age of screening initiation and a less frequent screening interval is likely to be a cost-effective use of health care resources.

0422

Relationships and Clandestine Method Use

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Objective: To examine the importance of using diaphragms clandestinely among women enrolled in a diaphragm acceptability study, and factors associated with the importance of clandestine use.

Methods: A sexually active cohort of women who were identified as inconsistent condom users was followed every two months for six months. Women were fitted with a diaphragm, and received diaphragm counseling, followed by a booster 2 months later. At each visit, demographic, and behavioral data was collected and free condoms were distributed. In addition, five focus groups were conducted with women who completed the study and six with their male partners.

Results: 186 women were enrolled, and 181(97%) completed 6 months of follow up. Mean age was 28 (range 16-45), 96% were married and 99% were monogamous. At the final visit, 97% had used the diaphragm in the last 2 months but only 22% told their partners about every use. 45% of women reported that being able to use the diaphragm without their partner's knowledge was very or extremely important. In a multivariate logistic regression analysis, importance of clandestine use was associated with knowing that partners had other sex partners (OR=9.9 95%CI 1.5 to 65.8), being confident that she could refuse sex if partners would not agree to use a condom (OR=2.7 95% CI 1.2 to 5.8). In all female focus groups, female control and clandestine use were discussed as positive attributes of the diaphragm. In male partner focus groups the majority participants did not want to know when the diaphragm was being used but, nevertheless, accepted its use.

Conclusions: Women with risky partners were more likely to report that clandestine use was very important. Female-controlled methods, like the diaphragm, which can be used clandestinely, are critical in this population.

0423

Re-thinking Increases in Gay Men

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Objective: To review developments in self-reported sexual practices of gay men from geographically diverse settings and consider implications for HIV/STI prevention.

Methods: Published papers, research reports and key abstracts from 12 behavioural surveillance, and ad hoc quantitative studies and 3 related qualitative studies from 8 countries (Australia, Canada (x2), England (x3), Netherlands, New Zealand, Republic of Ireland, Scotland and USA (x2)) were reviewed to examine reported sexual risk practices among gay men, and explanations or hypotheses about any changes. Results: All the quantitative studies detailed high levels of sexual risk behaviour, primarily unprotected anal intercourse (UAI), and UAI with partners of unknown or discordant HIV status. Higher rates of UAI were found among men with diagnosed HIV infection. Agreement that HIV is still an important personal and community health issue for gay men was found in every study that measured it. Key evidence from the qualitative studies from Australia and England suggest: 1) Change in gay men's sexual practice is not universal or fixed, but rather, appears to be highly contextualised; 2) Adoption of some 'risk reduction' strategies (e.g. among HIV- men, always being insertive with casual partners) usually involves careful consideration, based on relatively sophisticated understandings of HIV transmission risk; 3) Knowledge, understanding of epidemiological risk and in some cases experience of developments in HIV clinical care, figure prominently in some men's safer sex strategies.

Conclusions: Population changes in gay men's sexual practices present new challenges for HIV/STI prevention. Whether the range of 'risk reduction' approaches documented by researchers and adopted by some gay men, can legitimately be promoted as safer sex strategies relies on answering key questions about HIV epidemiology and transmission dynamics in the era of treatments. Gay men are active subjects incorporating medical knowledge and epidemiological risk assessments into personal understandings of prevention and transmission risk

0424

Susceptibility testing of Neisseria Gonorrhoeae - is it Possible to Replace the Swedish Reference Medium with the more Generally Applicable BSAC Medium? A Pilot Study.

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Fastidious organisms present challenges in antibiotic susceptibility testing due to their specialized cultural requirements. A medium recommended by BSAC (British Society for Antimicrobial Chemotherapy) for susceptibility testing of *H. influenzae* may also be suitable for streptococci, *M. catarrhalis, N. meningitidis*, and *N. gonorrhoeae*.

Objective: To examine if the BSAC medium can replace the medium recommended by the Swedish Reference Laboratory for Pathogenic Neisseria (SRLPN) for susceptibility testing of *N. gonorrhoeae*.

Materials and Methods. The SRLPN reference medium contains GC II agar base with 1% haemoglobin and 1% IsoVitaleX. The BSAC medium consists of IsoSensitest agar supplemented with 5% defibrinated horse blood and 20 mg/l NAD (b-nicotinamide adenine dinucleotide). E-test for determination of minimum inhibitory concentrations (MICs) of ampicillin, ceftriaxone, ciprofloxacin, and azithromycin was performed on both media. *N. gonorrhoeae* reference strains (n=4), rec-

ommended by WHO, Copenhagen, Denmark and SRLPN for quality control of susceptibility testing of *N. gonorrhoeae*, and clinical strains (n=20) representing 20 distinguishable pulsed-field gel electrophoresis types and 17 different serovars were included in the present pilot study.

Results. Overall, *N. gonorrhoeae* grew better on the reference medium than on the BSAC medium and several strains exhibited inhibition zones that were more difficult to read on the BSAC medium. The MIC-values obtained for ampicillin, ceftriaxone and ciprofloxacin showed no significant differences between the two media. However, for azithromycin the MIC-values on the BSAC medium were often one to two dilution steps lower than on the reference medium.

Conclusions. Although the BSAC medium was applicable for MIC-determination of most investigated *N. gonorrhoeae* strains, one of the 20 clinical strains failed to grow and several others produced poorer growth on the BSAC medium. For azithromycin there was a tendency towards lower MIC-values on the BSAC medium. The reference medium was superior to the BSAC medium.

0425

Evaluation of HIV/AIDS Surveillance in St. Kitts & Nevis

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Objectives: To evaluate the surveillance system for HIV/AIDS in St. Kitts & Nevis.

Methods: Like many Caribbean countries, St. Kitts & Nevis is seriously affected by HIV/AIDS with nearly 200 cases reported to the end of 2001. The majority of cases are associated with heterosexual contact and the most affected age group is 25-44 years. Key attributes selected from published guidelines for surveillance systems provided the methodologic basis for this evaluation. Interviews with stakeholders determined the structure and operation of the system, and this information was supplemented by analysis of surveillance data. Timeliness, completeness, acceptability, and usefulness were the main system attributes that were assessed.

Results: In St. Kitts & Nevis, AIDS surveillance is based on physician reporting and HIV surveillance is based on lab reporting. Local labs send HIV positive results to physicians and the Chief Medical Officer (CMO). Physicians are then asked to provide more detailed epidemiological and clinical data for HIV/AIDS cases. Structure and operation of the system are simple, and the timeliness of reporting is adequate (delays of 1-4 weeks for lab reports and 1-8 weeks for doctors' reports). Data management is evolving from a paper-based to an electronic system and data completeness is limited for some variables.

Conclusions: The HIV/AIDS surveillance system has a simple structure and good potential for public health action. Underreporting and incompleteness of data are major limitations to its usefulness. Recommendations include implementing written guidelines for data management, supporting doctors to report cases and provide additional information through various incentives, and improving dissemination of results. These improvements will help St. Kitts & Nevis better use surveillance data to guide prevention and control measures and to assess needs for patient care.

0426

Epidemiology of Reinfection: an Approach Using Mathematical Models and Empirical Data

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Objective: Infections with *Neisseria gonorrhoeae* (GC) continue to rise in the UK. This study aims to use mathematical models, together with observed rates of reinfection, to analyse the effect of different network structures on rates of reinfection.

Method: Two mathematical models of GC reinfection were developed, a deterministic and stochastic partnership network. An analysis of the effect of varying the degree of assortative mixing (i.e. like with like) on the rate of reinfection was carried out to determine whether this difficult to measure parameter can be estimated using other epidemiological characteristics of the disease, in this case the rate of reinfection.

Results: Between 1995 and 2001 5.0% (Male, 5.3%, Female 3.8%) of patients diagnosed with GC in a London GUM clinic were diagnosed two or more times, and 0.4% (0.4% Male, 0.4% Female) three or more times, on average each year. Cumulatively over the seven years of the study, 11.5% of patients were diagnosed two or more times, and 2.5% diagnosed three or more times. Model simulations show that as mixing becomes more random, the frequency of reinfection decreases. Those who become reinfected have a higher average rate of partner change than those who are singly infected. Reinfection is overestimated in the deterministic model but because of the difficulties identifying a repeat infection, is likely to be underestimated in observed data.

Conclusions: Difficulties exist in comparing deterministic scenario with epidemiological data, we use a second model to quantify these discrepancies, so that models can be used to estimate other parameters from epidemiological data.

0427

Multiple Episodes of Gonorrhoea with the Same Strain, Identified by Highly Discriminatory Molecular Methods.

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Objective: To use a combination of phenotypic and highly discriminatory molecular techniques to determine whether multiple episodes of gonorrhoea in a single individual are caused by the same strain.

Methods: Gonococcal isolates from patients who had been infected on two or more occasions between 1998 and 2002 were typed using a range methods including, antibiogram, auxotyping, serotyping and the molecular methods of *por* sequencing and *lip* typing. A control set of isolates was also tested, matched for sex and date of isolation. Any indistinguishable isolates were also tested using *opa*-typing, one of the most discriminatory molecular typing methods.

Results: Gonococcal isolates were tested from 30 patients who had been infected on two (17 patients), three (seven patients), four (five patients) or five (one patient) occasions. Of the total 80 isolates, 57 gave unique profiles and 23 (29%) had a profile indistinguishable from at least one other isolate. There were 10 paired isolates, each from

the same patient, six of which were from women. All were confirmed by *opa*-typing. In addition there was one cluster of three isolates, from different patients. In the matched control group a greater degree of diversity was encountered with fewer indistinguishable pairs of isolates.

Conclusion: Gonorrhoea is known to occur in the same individual on multiple occasions, implying that no immunity is acquired. However, there has been some evidence that, particularly in women, that immunity can be acquired to the major porin. We have demonstrated that, in comparison with a set of matched controls, that reinfection with indistinguishable isolates does occur. These isolates are of the same serovar and have the same *por* sequence and occured in women. Although many studies have addressed this question previously this is the first study using a range of highly discriminatory molecular techniques to identify indistinguishable isolates.

0428

Use of the Gonostat Transformation Assay for Detection of Antimicrobial Resistance in Neiiseria gonorrhoeae

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Objective: To determine the feasibility Detection of resistance was independent of culture capability or refrigeration/freezing equipment required to maintain viability of gonococcal isolates at the site of specimen collection. Detection of resistance was independent of culture capability or refrigeration/freezing equipment required to maintain viability of gonococcal isolates at the site of specimen collection.

Methods: Collection swabs and/or transport media and lysis buffer used for nucleic acid amplification tests (NAATs) were spiked with *N. gonorrhoeae* and used as sources of antimicrobial resistant specimen DNA for use in the Gonostat transformation assay. Obtained transformants were then plated onto a series of antibiotic-containing media to determine if the genetic markers that confer resistance had been transferred and therefore resulted in resistant colonies.

Results: Using spiked swabs with the Gonostat assay, we were able to transform and identify resistance in *N. gonorrhoeae* to ciprofloxacin (1.0-8.0 mg/ml), azithromycin (in vitro resistance of 1.0-4.0 mg/ml), and spectinomycin (≥256 mg/ml). In the cases of ciprofloxacin and azithromycin, we also determined that the genetic alteration(s) in the transformants were the same as those found in the original resistant isolate. Additionally, with ciprofloxacin, we were able to use spiked NAAT transport media or lysis buffer to obtain resistant transformants (4.0-8.0 mg/ml).

Conclusions: In this study we have used the Gonostat transformation assay for detection of resistance to three antimicrobials in *N. gonorrhoeae*. Detection of resistance was independent of culture capability or refrigeration/freezing equipment required to maintain viability of gonococcal isolates at the site of specimen collection. Studies using clinical specimens instead of spiked swabs are currently being undertaken.

0429

A Semi-Automated Application for the Digene Hybrid Capture® 2 HPV DNA Test

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Objective: The Rapid Capture™ System (RCS) is a semi-automated platform for Digene's Hybrid Capture®2 (HC2) technology that provides up to 352 test results from each 5.3-hour run. The Digene HC2 Chlamydia and Gonorrhea tests are currently FDA cleared for use on the RCS instrument. This semi-automated platform enables laboratories to increase throughput while decreasing the labor requirements for HC2 HPV testing. The goal of this study was to compare HC2 HPV DNA test results between the manual and RCS formats.

Methods: 400 residual cervical specimens collected in PreservCytâ medium and with ASCUS or higher ThinPrepâ Pap TestÔ results were included in the study. Each specimen was processed according to the Digene Sample Conversion Kit package insert and then tested with the HC2 HPV test using a modified manual test procedure and the RCS application. (The modified manual method incorporates a minor procedural change that reduces the potential for technique-related false-positive results due to improper pipetting technique.) Additional studies were performed to compare the reproducibility and precision of the manual and RCS test methods.

Results: Of the 400 specimens tested, 224 (56%) were positive by the manual method. A comparison of RCS and manual results generated positive, negative, and total agreements [95% CI] of 99.6 [97.4, 99.9], 97.2 [93.5, 99.1], and 98.5% [96.8, 99.5], respectively, with a Kappa value of 0.97 [0.95, 0.99]. Reproducibility and precision studies showed overall equivalent results for the two test methods, with RCS demonstrating improved precision and test result reproducibility for HPV negative samples.

Conclusions: The RCS application provides equivalent HC2 HPV test results and improved precision and test result reproducibility of negative samples when compared to the HC2 manual method. In addition to reliable results, this semi-automated platform will enable laboratories to increase throughput while decreasing test-associated labor requirements.

0430

Correlate of Human Papillomavirus (HPV) Infection Among Women in Rakai, Uganda

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Objective: To identify correlates of high risk HPV infections among women in Rakai, Uganda. We further sought to explore these associations by the participant's HIV status.

Methods: 977 women aged 15-49 who provided 3 or more self-collected HPV swabs at 10-month intervals were included in this analysis. The main outcome was the prevalence of high risk HPV infection detected by hybrid capture II assay (Digene). Adjusted odds ratios (AOR) and population attributable fraction (PAF) of HPV infection were estimated.

Results: 17% of women were HIV positive. Median age and age at first sexual intercourse were 28 and 16, respectively. Overall HPV prevalence was 19%; 15% in HIV- and 43% in HIV+ women, p = 0.01. The PAF of HPV due to HIV was 45%. Factors independently associated with HPV infection were HIV infection (AOR=4.7; 95% CI: 3.1-7.0), age <28 years of age (AOR =2.0, 95% CI: 1.4-3.0). Being currently married was inversely associated with HPV infection (AOR=0.6; 95% CI: 0.4-0.9). Among HIV- women independent risk factors for HPV infection were age <28 years old (AOR= 2.6; 95% CI: 1.7–4.2) and husband's having more than 2 wives (AOR=1.5; 95% CI: 0.96–2.3). Among HIV positive women, after adjusting for age, the only independent correlate of HPV was being married (AOR=0.4 95% CI: 0.2-0.8).

Conclusions: The strongest risk factor for HPV infection was HIV infection and younger age. Current monogamous marital status decreased risk, suggesting marriage provided protection. Interventions to reduce HIV and HPV risk such as condom use must be actively promoted.

0431

Parents Willingness to Vaccinate Their Children Against Genital Herpes

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Objectives: Recent efficacy trials supply some evidence that prophylactic vaccines could help control viral STDs including Human Papillomavirus (HPV) and genital herpes (HSV-2). These findings suggest that vaccines appear most effective for unexposed young women, making children an appropriate target group. As work to develop an efficacious vaccine continues , it is important to understand what factors influence an individual's acceptance of a STD vaccination, especially parents/guardians of adolescents and preadolescents who comprise an ideal group for immunization. This study investigates correlates of parents' favorable attitudes toward vaccinating their children against genital herpes.

Methods: A telephone survey of 315 parents/guardians in the Southeast U.S. asked parents about giving their child a genital herpes vaccination, if one were available. Respondents ranged in age from 18 to 75, 27.1% were African-American, 74.3% were married, and 70% were female.

Results: Roughly two-thirds (69.0%) of respondents said they would give their child the hypothetical vaccination. About half (51.8%) said they thought it should be voluntary while 48.2% said law should require it. Logistic regression revealed that African-Americans were twice as likely as whites to say they would vaccinate their children against genital herpes (OR=2.30, CI=1.01, 5.26), females were 2.23 times (CI=1.19, 4.20) more likely to accept it than men, and parents/guardians whose children received a flu vaccination were 3.12 times (CI= 1.62,6.01) more likely to accept a herpes vaccination than those who reported their children was not flu vaccinated or that they did not know.

Conclusions: Even without efforts to promote vaccination, findings here indicate an overall acceptability of an HSV-2 vaccine among parents/guardians for their children. This is especially true among African Americans, women, and those already actively involved in voluntary vaccinations for their children. Public health campaigns to encourage potential HSV-2 vaccinations should identify and target groups of parents/guardians based on their beliefs and attitudes toward such a vaccine.

0432

Increasing Heterosexual Transmission of HIV in the Newly Independent States of the Former Soviet Union

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0433

STD Prevalence in Recently HIV Infected Men who have Sex with Men

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Objectives: Our objectives were to determine the prevalence and predictors of STDs in a population of recently HIV infected men who have sex with men (MSM).

Methods: We confirmed primary HIV infection (PHI) during the previous 6 months using laboratory testing. We collected interview data on sexual behavior, substance use and STD history. We tested participants for urethral gonorrhea (GC) and chlamydia (CT) by ligase chain reactionnd (LCx, Abbott Laboratories)chain reaction and screened for syphilis by Venereal Disease Research Laboratory (VDRL) and TPPA testingtesting. Beginning January 2001, we performed universal screening of STDs.

Results: Among 275 individuals with PHI enrolled between October 1996 and November 2002, 12% reported having CT, GC, or nongonococcal, non-chlamydial urethritis (NGU) during the HIV exposure period. A self-reported history of an STD was associated with less monthly income (78% vs. 60% earned =$4,000 per month, P=0.02) and a higher number of total sex partners during the exposure period (median = 20 vs. 10, P=0.01), but not with age, education, any unprotected receptive anal sex, drug use (amphetamines, poppers, ever injected drugs) or alcohol consumption. The mean HIV viral load (VL) at baseline was 196,000 copies/ml for men with self reported STDs vs. 157,000 copies/ml for those without a history (P=0.50). In 81 patients who underwent universal screening, Beginning January, 2001, we performed universal screening of STDs in 98 participants. Of these, 3% were diagnosed with CT, and 1% with GC and none with syphilis.. Furthermore, 3% had a positive VDRL.

Conclusions: The prevalence of bacterial STDs and the reported history of STDs support current recommendations for routine STD screening in MSM with PHI. High VL during PHI suggests high HIV infectivity, which may be elevated further by concomitant STDs. Additional prospective data, and expanded screening at other anatomic sites such as the pharynx and the rectum are needed to determine the utility and optimal frequency of STD screening in HIV-positive MSM.

0434

Expression of Gonococcal Iron Regulated Genes During Natural Gonococcal Infection

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Objectives: Iron is limiting in the human host and bacterial pathogens respond to this environment by activating genes required for bacterial virulence expression. Most *in vitro* experiments are designed to determine the response of the gonococcus to an absolute unavailability of exogenous iron. However, *in vivo* if gonococci were able to use iron bound to lactoferrin, transferrin, hemin, or hemoglobin, they might not be exposed to such severe iron limitation.

Methods: We describe here studies to examine the expression of gonococcal iron and Fur regulated genes during human mucosal gonococcal infection. Specimens were collected from patients with uncomplicated mucosal gonoccocal infection from the Public Health Clinics at Boston Medical Center and the Medical University at South Carolina. Urethral swabs from male patients and cervical swabs from female patients were placed in a TRIZOL reagent and total RNA isolated. The isolated bacterial RNA was then used as a template to amplify by RT-PCR (Reverse Transcriptase-Polymerase Chain Reaction), gonococcal genes known to be regulated by iron and Fur (*fbp*A, *tbp*A and *fur*). The constitutively expressed *rmp* gene was used as a positive control.

Results: The minimal amount of bacterial RNA required for detection of transcripts by RT-PCR was determined to be 1ng for *rmp*, *fur* and *tbp*A and 2ng for *fbp*A transcript. RT-PCR analysis indicated that of 49 *Neisseria gonorrhoeae* culture positive samples, 44 (90%) were *rmp* positive. Of these 44 samples, 36 (82%) were positive for both the *fbp*A and *tbp*A genes. In addition, we detected a *fur* transcript in 55% of the gonococcal positive cultures. Humoral immune responses to these gonococcal iron-regulated proteins from the gonococcal positive patients was also examined. We observed an increased IgG response to TbpB and Fur antigens in sera of patients.

Conclusions: These results indicate that gonococcal iron and Fur regulated genes are expressed during natural gonococcal infection. Furthermore, these patients mount an antibody response to these proteins.

0435

High Utilization of Reproductive Health Services Among Young Women with a Recent History of Chlamydial or Gonococcal Infection

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Objectives: Barriers to health care are perceived to be greater among adolescents and minorities; such barriers may result in receipt of fewer preventive health services. We sought to assess the 12-month utilization of gynecologic and STD-testing services among young women recently diagnosed with a STD.

Methods: Data were obtained from participants in the DAISY study, an ongoing study of factors associated with acceptability of STD testing. Women aged 14-25 years and with a recent STD were recruited from community- and hospital-based clinics. Subjects were categorized according to whether they paid any money for their clinic visit just prior to enrollment and whether they were using Depo-provera for contraception. After one year, we abstracted charts from all clinics attended by study participants.

Results: One-year follow-up data are available on 55 women (mean age 18.0 years, 78% black). Participants had a mean of 3.2 gynecologic examinations, 2.5 chlamydial tests, 2.3 gonorrhea tests, and 1.0 pap tests during one-year of follow-up. Most (91%) participants had at least one gynecologic examination, and 29% had five or more. Reasons included symptoms (38%), asymptomatic/ contraception (26%), STD checks/ test of cure (22%), and prenatal visits (9%). Participants were significantly more likely to have >=3 gynecologic examinations if there were no costs associated with their last clinic visit (57.1% vs. 29.6%, p=0.04); there was no difference in the proportion receiving >=3 examinations according to Depo-provera use (43.3% vs. 44%).

Conclusion: The young women with previous STDs who were seen at these clinics had very high utilization of reproductive health services. This may reflect their access to free care and emphasis on adolescent health at these sites. Their utilization patterns may not reflect those of young women in other healthcare settings or communities.

0436

Joined-up Action Delivers Increased Uptake of Syphilis Screening and a Stronger Community Sexual Health Promotion Base. The Brighton Syphilis Outbreak Project (BSOP), Brighton, UK.

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Objective: To describe development, implementation and impact of an innovative community syphilis screening programme.

Methods: The BSOP is a syphilis outbreak project involving joined-up action by local genitourinary medicine (GUM) clinics, hospital microbiology laboratory, statutory and voluntary health promotion agencies, primary care trust (NHS), researchers and local gay venues. In the community screening, gay men attending bars/clubs, saunas and public sex settings were offered serological syphilis testing over a 4-week period in autumn 2002. Local health promotion agencies facilitated contacts between GUM staff and venues, commissioned joint campaigns, and organised media coverage, provided outreach workers and a vehicle for outdoor work. GUM staff provided clinical information sessions for outreach workers and venues, and performed on-site testing.

Results: Outreach workers recorded 2345 syphilis-related contacts during the community screening. In total 588 men presented for testing in venues, 541 (92%) did so after speaking to an outreach worker. Compared to the previous month, case detection doubled during the community screening (n= 17) [Community = 9; Clinic = 8]. Overall community testers were similar to clinic syphilis cases in respect to demographic and sexual behaviour variables, however, 64% had not attended GUM services in the last year. All local gay venues supported the programme allowing posters and leaflets to be distributed and 80% (24/30) provided space for GUM staff to undertake syphilis testing.

Conclusions: The screening programme reached the target group of gay men not in routine contact with GUM, however the case detection rate was lower than anticipated prompting questions about cost-effectiveness. Implementation of the community screening provided important lessons for outbreak management techniques and for developing new sexual health promotion initiatives. Voluntary and health promotion agencies are key intermediaries able to facilitate and add materially to acceptable community-clinic activities. Treated as partners, gay venues have much to contribute to collaborative approaches.

0437

Predictors of Acceptance of a Home Screening Test for Chlamydial and Gonococcal Infections

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Objective: Screening for chlamydial (CT) and gonococcal (GC) infections is recommended for young women at risk, yet several barriers prevent regular screening. We sought to determine predictors of returning a self-obtained vaginal swab screen for CT/GC infections.

Methods: Subjects were participants in the DAISY study, an ongoing study evaluating acceptability of STD screening tests among persons with a recent CT or GC infection. Data are presented on 97 participants assigned to receive a home-test kit six months after enrollment. Their mean age was 18.4 years (range 14-25); 78% were black and 12% were white. Participants completed a baseline survey that assessed attitudes and partner treatment, and at six-months had the option to receive a home-screening kit in the mail or to pick up the home-screening kit at a clinic. No additional financial incentive or other communication encouraged return of the test. CT/GC testing was done by nucleic acid amplification. Participants received usual care during follow-up and may have received additional testing from their health care providers.

Results: Most participants (88%) opted to receive their test kit in the mail. 50 (52%) participants returned the home-screening test; 7 (14%) were positive for chlamydial infection and 2 (4%) for gonorrhea. Participants were significantly more likely to return a home-screening test if they chose to have the self-test delivered to their home (vs. a clinic) (58% vs. 8%, p=0.001), if they had told their partners about their baseline infections (57% vs. 35%, p=0.05), or if touching their genital areas was not disliked (60% vs. 34%, p=0.018).

Conclusion: Home screening through mailed test kits is a feasible method of follow-up testing for young women with a recent STD. Delivering the tests directly to the home instead of a clinic eased screening, but secrecy or embarrassment about infections are still barriers to testing.

0438

Quantifying the Drip Rate: Statistical Assessment of Trends in Gonorrhea in California

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Objectives: Recently, gonorrhea rates have increased in California and many places around the world. Using tabular and graphical methods, increases in California have been observed from 1999 to 2002 across gender, age, race/ethnicity and geography/region. In order to assess the statistical significance of these trends, and to explore a multivariate tool that might provide insight into the complex associations of these demographic covariates with gonorrhea rates, we investigated the use of Poisson regression modeling applied to California gonorrhea surveillance data.

Methods: Gonorrhea case data (numerators) are from the California case-based surveillance system. Population data (denominators) are from State of California, Department of Finance. Data are from 1998 to 2002 and include gender, age, region, and race/ethnicity and are grouped into half-year intervals because of a strong seasonal pattern in reported cases. Standard tabular and graphical methods were compared to Poisson regression models. Multivariate adjusted rate ratios and 95% confidence intervals (CI) were calculated based on Poisson regression models.

Results: The observed increases in gonorrhea from 1999 to 2002 are confirmed in multivariate models to be highly statistically significant in both genders, and in almost all regions, age and race/ethnic groups. The overall adjusted increases in men (36% increase from 1999 to 2002, 95% CI 31%-40%) and women (16%, 12%-20%) are highly significant. While African Americans had substantially higher rates than other race/ethnic groups, there was relatively little increase in African American male (6.8%, 1.6%-12%) or female (5.5%, 4%-11%) rates over this period. Conversely, while Asians generally have low rates, the increases in Asian male (84%, 52%-122%) and female (56%, 26%-93%) rates were large. Graphical methods exploring regression goodness-of-fit identified subgroups (e.g. teenage African American females in Northern California, and older white males in San Francisco) with higher rates than expected.

Conclusions: Poisson regression modeling provides an important tool for evaluating the statistical significance of adjusted surveillance time-trend data, and for increasing understanding of complex relationships in case rates across demographic characteristics.

0439

Evaluation of HIV/AIDS Surveillance in St. Kitts & Nevis

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Objectives: To evaluate the surveillance system for HIV/AIDS in St. Kitts & Nevis.

Methods: Like many Caribbean countries, St. Kitts & Nevis is seriously affected by HIV/AIDS with nearly 200 cases reported to the end of 2001. The majority of cases are associated with heterosexual contact and the most affected age group is 25-44 years. Key attributes selected from published guidelines for surveillance systems provided the methodologic basis for this evaluation. Interviews with stakeholders determined the structure and operation of the system, and this information was supplemented by analysis of surveillance data. Timeliness, completeness, acceptability, and usefulness were the main system attributes that were assessed.

Results: In St. Kitts & Nevis, AIDS surveillance is based on physician reporting and HIV surveillance is based on lab reporting. Local labs send HIV positive results to physicians and the Chief Medical Officer (CMO). Physicians are then asked to provide more detailed epidemiological and clinical data for HIV/AIDS cases. Structure and operation of the system are simple, and the timeliness of re-

porting is adequate (delays of 1-4 weeks for lab reports and 1-8 weeks for doctors' reports). Data management is evolving from a paper-based to an electronic system and data completeness is limited for some variables.

Conclusions: The HIV/AIDS surveillance system has a simple structure and good potential for public health action. Underreporting and incompleteness of data are major limitations to its usefulness. Recommendations include implementing written guidelines for data management, supporting doctors to report cases and provide additional information through various incentives, and improving dissemination of results. These improvements will help St. Kitts & Nevis better use surveillance data to guide prevention and control measures and to assess needs for patient care.

0440

Teen And Girl Subculture: Influence On Microbicide Acceptability

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Oobjectives: To describe adolescent specific issues associated with microbicide access which includes ability to obtain a microbicide and having one available at the time of intercourse.

Methods: Adolescent girls, mothers, and medical students were recruited from the local area, and health care providers from a professional meeting. The following number of focus groups were conducted: 3 (n = 21) health care provider, 7 (n = 23) girl, 4 (n = 19) mothers of adolescent girls, and 3 (n = 18) medical students. All groups were videotaped, transcribed, and coded for relevant themes.

Results: Microbicides should be easily accessible in drug/grocery stores, super or discount stores and given out for free at clinics or as part of free samples of "girl" products. Health care providers wanted both prescription and over the counter options for greater financial flexibility. Microbicides should be located near other feminine products and possibly by the condoms. The packaging should be girl-specific and not immediately recognizable as being associated with sexuality; however, girls should be able to find the package on the shelf quickly. Once the product is brought home, the need to be discreet varied on the parent's knowledge of the teen's sexual behavior. The microbicide would be carried in a variety of locations (i.e., purses/backpack, pockets/bras, and cars). Depending on the need for secrecy, it might be disguised as a palm pilot, compact, or cell phone. Ability of the product to sustain these carrying options was a concern of the adults.

Conclusions: To market microbicides to adolescents, they will need to be associated with both adolescent and girl subcultures. This can be accomplished through location of access and in the design of packaging. Ability to be discreet while purchasing is necessary, but once the product is home, the need for secrecy varies based on family relationships.

0441

Routine Surveillance of Sexually Transmitted Infections in Canada: Accomplishments and Future Directions

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Objective: Disease surveillance is the foundation of public health action. It provides the evidence to identify outbreaks, to help plan interventions or health policies, and to evaluate their impact subsequently. Bacterial sexually transmitted infections (STI), including syphilis, gonorrhea and chlamydia, have been reported in Canada since the 1920's. The objective is to highlight the advances in STI surveillance in Canada and examine future directions that will continue to improve the sexual health of Canadians.

Methods: A review of existing documentation and analyses of national STI surveillance data, which is based on a partnership. Data are sent to Health Canada by provincial/territorial health departments.

Results: Routine surveillance has been used to track STI incident rates in Canada by gender, age, province/territory, date of diagnosis and disease. Analyses have highlighted trends and outbreaks while also illustrating data limitations which can be improved upon. Higher rates of chlamydia and gonorrhea in youth ages 15-24 is a persistent trend. To further investigate a vulnerable segment of this population, a program of enhanced surveillance of risk behaviours, STI and blood borne pathogens for street youth was rolled out in 1999. National goals were developed in 1999, providing a target for maintaining or decreasing incidence levels of disease. Epidemiological data were used in the Canadian STD Guidelines in 1998, illustrating populations at higher risk of infection and providing testing guidelines for treating physicians. Future directions include projection and forecasting of trends in routine reports.

Conclusions: Though STI surveillance has limitations, it has continued to develop and provide the foundation for program and policy interventions in Canada. Issues that need to be addressed include continued improvement to submission methods, data completeness, dissemination, and tailoring of reports to ensure their utility. Programs, such as the enhanced surveillance of street youth, are one of the successes of STI surveillance.

0442

Alcohol and Marijuana Abuse was Common Among Youth Attending an STD Clinic and was Associated with an Increased Risk of STDs

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Background: Substance abuse is perceived to be associated with risky sexual behavior and with STDs. Our objectives were to assess the prevalence of substance abuse among young persons attending an urban STD clinic, and to determine the association of substance abuse to risky sexual behavior and STDs.

Methods: The sample was 433 persons aged 15–24 years who attended an urban STD clinic in 2001-2002; 57% were black and 43% were white. Research assistants collected information on demographic factors, sexual behaviors, and alcohol and marijuana use disorders (elicited via structured diagnostic interview). STDs (gonorrhea, syphilis, genital warts, chlamydia, trichomonas, and genital herpes) were assessed by standardized clinical or laboratory diagnosis.

Results: Overall, 43% of participants had current alcohol or marijuana abuse (white male, 53%; black male, 50%; white female, 46%; black female, 26%; p<.01). During the past 12 months, 52% reported ³?3 sexual partners, 43% had sex with someone they just met, and 10% always used condoms. 30% were diagnosed with a new STD; an additional 24% had NGU. In multivariate analysis controlling for race, age, gender, and socioeconomic status, substance abuse was significantly associated with multiple sexual partners (OR, 2.6; 95%CI, 1.7–3.9), having sex with someone just met (OR, 2.4; 95%CI, 1.6–3.6), and a decreased likelihood of always using condoms (OR, 0.29; 95%CI, 0.13–0.63). In multivariate analysis controlling for the same factors plus risky sexual behaviors, substance abuse remained significantly associated with STDs (OR, 1.8; 95%CI, 1.1–2.9).

Conclusion: Substance abuse was remarkably common among young persons attending an STD clinic and was independently associated with risky sexual behavior and with STDs. Research should examine whether detection and treatment of SUDs will reduce the risk of future STD/HIV transmission. In the meantime, STD clinics should consider screening for substance abuse and makeing appropriate referrals.

0443

Sexual Mixing Patterns and HIV Infection Status Among Women Drug Users In New York City

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Objective: To examine sexual mixing patterns of drug using women by HIV infection status, demographic characteristics and drug use patterns.

Methods: In New York City, 138 women who used heroin, crack or cocaine in the past 30 days were recruited 5/02-12/02. Women completed a network survey in which they provided demographic, behavioral and known HIV status information on their 30-day sex partners. Women were HIV serotested.

Results: Index women 105 women with at least one heterosexual partner reported 141 30-day partners: 83 (79%) reported one and 22 (21%) reported two or more sex partners. Women were 99 (94%) black with a mean age of 36 (sd 7). In the past 30 days, women reported crack use (86%), heroin use (50%) and other cocaine use (34%); 30% had injected drugs. 17 (16%) were HIV seropositive. Sex Partners The 141 sex partners were 138 (98%) male, 127 (90%) black, with a mean age of 42 (sd 10). In the past 30 days, sex partners reported crack use (36%), heroin use (25%) and other cocaine use (26%); 10% had injected drugs. Few (6%) were known to be HIV infected. Dyads Among the 141 sex partnerships, 116 (82%) index women were concordant and 25 (18%) were discordant on HIV status with their sex partners: 97% of concordant dyads were HIV negative and index women were HIV seropositive in 80% of discordant dyads. 28 (20%) partnerships were less than one year in duration. Concordance was high on race/ethnicity (87%) and 43% of sex partners were within 5 years of the index woman's age. Concordance on drug usage was low: 36% crack, 21% heroin and 19% other cocaine; 8% had injected drugs.

Conclusion: Patterns of HIV status, demographics and behavioral discordance may be important mechanisms of exposure to infection and high risk behaviors.

0444

Evaluation of a New Rapid Test for Gonorrhea in High Risk Populations in Johannesburg, Republic of South Africa

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Objective: To evaluate the clinical performance of a new immunochromatographic strip (ICS) test for *Neisseria gonorrhoeae* among a high-risk population of men and women in Johannesburg, South Africa.

Methods: Men and women attending sexually transmitted disease clinics in metropolitan Johannesburg from June to December 2002 were recruited to participate in this study. Informed consent was obtained. The performance of the ICS test, with first-void urine from men and provider-collected vaginal samples from women, was assessed. Ligase Chain Reaction (Abbott, N. Chicago, IL) for *N. gonorrhoeae* was used as the reference method.

Results: A total of 407 men with a median age of 27 years and 536 women with a median age of 25 years were enrolled in the study. The gonorrhea prevalence in men and women was 40.7% and 21.3% respectively, and 49.8% of men and 84.9% of women reported having urethral or vaginal discharge. In men, the ICS test had a sensitivity of 91.6% (152/166), specificity of 95.9% (231/241) and negative and positive predictive values of 94.3% and 93.8%, respectively. Among women, the test had a sensitivity of 61.4% (70/114), specificity of 95.7% (404/422) and negative and positive predictive values of 90.1% and 80.5%, respectively.

Conclusions: The sensitivity and specificity of the ICS test for gonorrhea will enable its use in clinical settings in South Africa. Vaginal swab collection in women represents a less invasive sampling method and the test

offers higher sensitivity and specificity than currently used syndromic management protocols.

0445

Expression of receptors for HIV-1 in human cervix

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Objective: In heterosexual transmission of HIV-1 from male to female the virus has to enter and infect cells of the female reproductive tract. The cells in the female reproductive tract that are potential targets for HIV remain poorly defined. HIV infection is a two step process, requiring a primary receptor and a co-receptor. We have started to examine the expression of HIV receptors in the female genital tract and localize the cells that express these receptors.

Methods: Human cervical tissue was obtained from patients undergoing surgery for unrelated reasons, with patient consent. Cells expressing MHC Class-II, CCR5, CXCR4 or DC-SIGN were localized in the cervical tissue by immunohistochemistry and correlated with the stage of the menstrual cycle.

Results: MHC Class-II positive cells were present abundantly in the human cervix and were localized individually throughout the stroma, as well as in groups mostly around cervical glands and blood vessels. The majority of the Class II positive cells had dendritic cell morphology and stained positive with DC-SIGN antibody. CCR5 cells were found in some of the tissues examined. When present, they were interspersed throughout the stroma and in sub-epithelial layers. Some of the CCR5 positive cells were present in close association with the cervical epithelial cells. Very few CXCR4 cells were found.

Conclusions: Previous studies have reported that CCR5 strains of HIV-1 may be the primary type involved in heterosexual transmission. Our studies support this, since we found that CCR5 positive cells are present abundantly in the human cervix. The lack of CXCR4 positive cells may explain why CXCR4 strains of virus may not transmit efficiently. The localization of CCR5 cells in close association with epithelial lining supports the findings that the virus may be transcytosed across the epithelium to target cells underneath. Localization of other important markers (CD4, Gal-Cer, DC-SIGN) is in progress to extend these initial findings and correlate them with hormonal status of the women.

0446

Integrated approaches to HIV surveillance in Mali, West Africa

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Objective: A limitation to HIV surveillance among antenatal clinic populations is the lack of data on core and bridging populations, men, and rural populations. To overcome this lack of data, we integrated HIV testing in a Demographic and Health Survey (DHS+) and instituted sentinel surveillance among core and bridging populations.

Methods: CDC worked with local and international partners to institutionalize three complementary approaches to HIV surveillance –HIV sentinel surveillance among attendees of antenatal clinics (ANC) (every 2 years), HIV testing in men and women in the general population as part of the DHS+ (every 5 years), Integrated STI/HIV and Behavioral Survey (ISBS) among 5 core and bridging populations (conducted every 3 years).

Results: Data from the three tools shows a generalized HIV epidemic with moderate infection levels overall but higher prevalence in urban areas and among core and bridging populations. The DHS+ estimated a national HIV prevalence rate of 1.7% (1.5% and 2.2% respectively in rural and urban areas; 2.0% and 1.3% respectively among women and men). Seventy percent of DHS+ subjects were rural, compared with 16% of ANC subjects. Of 2,662 ANC attendees, 87 (3.3%) were HIV-positive compared with 2.0% of the 3,854 DHS+ females. Median site HIV prevalence for ANC was 3.4%, (range, 2.0%-5.0%). HIV prevalence found in urban core and bridging populations surveyed in the ISBS were: 29.9%, 6.8%, 5.4%, 3.2% and 1.7% respectively in sex workers, female market vendors, young males, truckers, and maids (with maids' prevalence equaling national DHS+ level).

Conclusions: This multi-faceted surveillance model provides data on HIV rates among core, bridging, and general populations and reaches both urban and rural populations. In Mali, these three valuable methodologies complement each other to present a clearer picture of the characteristics and dynamics of the HIV epidemic than any one source could provide alone.

0447

The Rectum as a Reservoir for Vaginal Lactobacillus and its Association with Bacterial Vaginosis

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Objectives: While vaginal colonization by lactobacilli is dynamic, *Lactobacillus crispatus* and *L. jensenii*, H_2O_2-producing species prevalent among women without bacterial vaginosis (BV), are more likely to persist than other lactobacilli. The rectum may be a reservoir for vaginal lactobacilli. Our goals were to identify *Lactobacillus* species colonizing the rectum and to evaluate concordance with vaginal *Lactobacillus* species and BV.

Methods: Vaginal smears and paired vaginal and rectal swabs were collected from 531 sexually active women. BV was diagnosed using the Nugent Gram stain criteria. All lactobacilli were tested for H_2O_2-production by inoculation onto tetramethylbenzidine agar. Lactobacilli isolated from 290 women were identified to the species level using whole-chromosomal probes to *Lactobacillus* ATCC strains.

Results: Co-colonization of the vagina and rectum by H_2O_2-producing lactobacilli was associated with the lowest prevalence of BV (4%), while women colonized in the vagina alone, the rectum alone, or neither were at successively increased risk of BV as shown below.

H_2O_2-positive Lactobacilli Present		Women Colonized (n=531)	Bacterial Vaginosis	
Vagina	Rectum		No. (%)	OR (95% CI)
+	+	194	8 (4)	reference
+	-	129	26 (20)	5.9 (2.4-14.7)
-	+	31	14 (45)	19.2 (6.4–59.1)
-	-	177	124 (70)	54.4 (23.9–128.7)

In the 290 women subset, only 14 (10%) of 145 women vaginally and/or rectally colonized by H_2O_2-producing strains of *L. crispatus* or *L. jensenii* were BV-positive compared to 11 (41%) of 27 women vaginally and/or rectally colonized by other H_2O_2-producing *Lactobacillus* strains (RR 4.0, 95% CI 2.1-7.7, p<.001).

Conclusions: Vaginal and rectal colonization by H_2O_2-producing strains of *L. crispatus* and *L. jensenii* is associated with a decreased prevalence of BV compared to women colonized at only one of these anatomical sites. In the maintenance of normal vaginal flora, the rectum may play an important role as a reservoir for vaginal H_2O_2-producing lactobacilli.

0448

Integrated approaches to HIV surveillance in Mali, West Africa

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Conclusions: This multi-faceted surveillance model provides data on HIV rates among core, bridging, and general populations and reaches both urban and rural populations. In Mali, these three valuable methodologies complement each other to present a clearer picture of the characteristics and dynamics of the HIV epidemic than any one source could provide alone.

0449

A New Immunochromatographic Strip Test for Neisseria Gonorrhoeae

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Objective: To develop a simple and rapid immunochromatographic strip (ICS) test for *Neisseria gonorrhoeae*.

Methods: There is currently no rapid and simple diagnostic device for *Neisseria gonorrhoeae* that is widely available and can be used at the point of care in developing countries. Previous attempts using major outer membrane protein (MOMP) as the antigen target have been unsuccessful. Recently, we identified monoclonal antibody reagents to a new ribosomal protein, L7/L12 (patent pending), which has been demonstrated to have diagnostic utility in the optical immunoassay format. These monoclonal antibodies have now been used to develop a simple and rapid immunochromatographic strip (ICS) test.

Results: The detection limit for the *N. gonorrhoeae* ICS assay was found to be equivalent to 1 x 10^5 CFU/ml (gonococcal strain Mel), and the assay recognized all 92 *N. gonorrhoeae* clinical isolates tested. These isolates, obtained from 11 distinct geographical regions, collectively represent a spectrum of *N. gonorrhoeae* serovars. Other species of *Neisseria*, as well as commensal bacteria commonly present in the urethral and vaginal tracts, did not react when tested at 2 x 10^7 CFU/ml. A retrospective clinical evaluation of the test, compared to the ligase chain reaction as the reference method, demonstrated a sensitivity and specificity in women of 63.6 % (14/22) and 97.6% (205/210), respectively, using endocervical specimens. In men, the test produced a sensitivity and specificity of 97.1% (34/35) and 98.9% (88/89), respectively, using urethral specimens.

Conclusions: The usefulness of the *N. gonorrhoeae* L7/L12 antigen as a target for a simple and rapid assay appears to be promising.

0450

Insertion of a thymine (+T) in the 13 base pair inverted repeat of the Neisseria gonorroeae mtr promoter region and its relation to antimicrobial sustibilities

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Objectives: During our studies of the mechanisms of erythromycin resistance in Neisseria gonorrhoeae we identified a sequence different from those previously reported upstream

of the mtrR gene. We sought to evaluate the effect of this mutation on antimicrobial susceptibilities.

Methods: Isolates: Seventy-five isolates recovered from 1992-2001 from Seattle-King County WA were studied. The upstream region of mtrR was sequenced and because mef(A) and erm genes can influence erythromycin susceptibility, isolates were screened for the presence of mef(A), erm(B), erm(C) and erm(F) genes. Minimum inhibitory concentrations (MIC) were determined by the method of the National Committee of Clinical Laboratory Standards.

Results: Among the 75 isolates, 35 (46%) possessed no mtr mutations, 33 (43.4%) possessed a 1 bp deletion of an adenine (-A), and 7 (9.2%) possessed the insertion of a thymine (+T). The mtr mutations without erm(B), (C), or (F) or mef(A) genes were present in 46 isolates (Table).

		MIC (mg/ml)		
Mtr mutation	N	Erythromycin	Tetracycline HCl	Penicillin G
-A	17	2.0 (0.125-4.0)	2.0 (2.0-8.0)	2.0 (1.0-4.0)
+T	6	0.37 (0.25-1.0)	1.0 (1.0-2.0)	0.5 (0.25-1.0)
None (Wild type)	23	0.5 (0.125-2.0)	0.5 (0.125-1.0)	0.25 (0.125-1.0)

Isolates with tet(M) or b-lactamase plasmids are not considered for the drug of interest.

Isolates with the +T mutation were more susceptible to erythromycin, tetracycline, and penicillin than isolates with the –A mutation ($P<0.05$, each comparison). The susceptibilities to all three agents of isolates with the +T mutation did not differ significantly from the susceptibilities of mtr wild type isolates ($P>0.2$, each comparison).

Conclusions: There was no apparent association between the +T mutation and decreased antimicrobial susceptibility in N. gonorrhoeae.

0451

A Blinded Prospective Study Of The Effect Of Hiv Infection On Treatment Outcome Of Laparoscopically Verified Acute Salpingitis In Nairobi, Kenya

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Objective: To examine the effect of HIV infection on treatment outcome of acute salpingitis including duration of hospitalization, complications, additional surgery and treatment failure.

Methods: 18 to 40 year old previously untreated women with clinical pelvic inflammatory disease (PID) recruited from the hospital emergency unit at Kenyatta National Hospital in Nairobi, Kenya underwent a standard questionnaire, examination, screening for sexually transmitted infections and laparoscopy to confirm diagnosis and determine disease severity. Participants received cefotetan and doxyxline while hospitalized, and an additional week of doxycycline and metronidazole after discharge. The clinical investigators, blinded to HIV-serostatus, followed predetermined criteria for hospital discharge (i.e. afebrile ¡Ý 48 hours and ¡Ý 70% reduction in pelvic/abdominal tenderness score or for a minimum of 3-days).

Results: One hundred and fifty six women were recruited with a clinical diagnosis of pelvic inflammatory disease of whom 136 (87%) had laparoscopically confirmed acute salpingitis: 47% mild, 25% moderate and 28% severe disease (i.e pyosalpinx and tubo-ovarian abscess). Fifty-one (37.5%) of the women with salpingits were HIV-seropositive. HIV-infection tended to be associated with more severe disease ($p = .07$), but not the need for additional surgery ($p = .12$) or change in antibiotics due to treatment failure ($p = 0.5$). Overall, hospital duration was prolonged in HIV-infected (median 5 days, range 2-17) in comparison to HIV-uninfected women (median 4 days, range 2-14; $p < .002$). Women with mild and moderate salpingitis had similar hospital duration (4.0 days, CI 95% CI 3.6-4.5), while women with severe salpingitis were hospitalized on average an additional 2.2 days (95% CI 1.5-3.0). Within the same severity of salpingitis, HIV infection but not the degree of immunosuppression was associated with an additional 0.8 days (95% CI 0.06-1.47 days, $p=0.03$) of hospitalization.

Conclusion: HIV-infected women with acute salpingitis were more likely to have severe disease but did not require additional surgery or change in antibiotic treatment. However, HIV-infection was associated with prolonged hospitalization after adjusting for disease severity.

0452

Herpes Simplex Type 2 Infection in Persons Seeking HIV Testing in North Carolina

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Objectives: Genital herpes can facilitate HIV transmission and acquisition. Because knowledge of herpes and HIV co-infection can guide patient management, we examined the relationship between genital herpes (HSV-2) infection and HIV infection and risk factors for HSV-2 infection in people seeking HIV testing.

Methods: We offered gonorrhea and chlamydia ligase chain reaction tests and HSV-2 serology to all persons requesting an HIV test at a public STD clinic in North Carolina, from December, 2001 through August, 2002. Participants completed a self-administered questionnaire about risk factors (N=937).

Results: 328 (35%) persons tested positive for HSV-2 and infection rates increased with age. Five of the six people who tested positive for HIV also tested positive for HSV-2 (83%). There was no relationship between gonorrhea or chlamydial infection and HSV-

2 infection (OR 1.0, 95%CI 0.7–1.4) In bivariate analyses, several patient characteristics were significantly associated with HSV-2 infection: female sex (OR 2.3, 95%CI 1.7–3.0), black race (OR 3.3, 95%CI 2.4–4.6), uninsured (OR 2.0, 95%CI 1.4–2.8) or publicly insured (OR 3.9, 95%CI: 2.5–6.1) (vs. privately insured), STD symptoms as a reason for visit (OR 1.8, 95%C: 1.3–2.4), previous STD diagnosis (OR 3.2, 95%CI 2.4–4.3), abnormal vaginal or urethral discharge in the past month (OR 2.1, 95%CI 1.5–2.8), open sores on genitals in the past month (OR 2.3, 95%CI 1.4–3.7) and previous HIV test (OR 2.6, 95%CI 1.8–3.8).

Conclusions: Most HIV infected persons who sought testing at this STD clinic had serologic evidence of past HSV-2 infection. Offering HSV serology to people seeking HIV testing would provide the opportunity to identify clients at increased risk for HIV transmission.

0453

Sexual contacts with those of non-UK origin and overseas experience of patients attending 3 UK GU clinics.

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Objectives: To investigate potential routes of importation into the UK of sexually transmitted infections (STI's) resulting from contacts overseas or within the UK from contacts with individuals with overseas origins.

Methods: Patients at 3 UK GUM clinics, (St Stephen's, London, St Mary's, London and Whittall St, Birmingham) were selected at random and interviewed using a pro forma questionnaire. Information gathered included demographic details, and information on national and ethnic origin, previous attendances, sexual orientation, sexual contacts with those born outside the UK, and periods of residence or working outside the UK. At St Stephen's Clinic, information was also gathered on sexual contacts while overseas.

Results: 1063 patients were interviewed. 55% and 53% of heterosexual males and females and 60% of homosexual males attending St Mary's had had partners born or brought up outside the UK; corresponding figures for Whittall St were 22%, 24% and 37%. 38% and 31% of heterosexual males and females and 58% of homosexual males attending St Stephen's clinic had had sex in the previous 2 years in more than one country outside the UK with partners who were not travelling companions; for most heterosexual males and females in no more than 3 countries with no more than 2 non-British nationalities and for most homosexual males in more than 4 countries and with more than 3 non-British nationalities. At the time of these partnerships 40% of heterosexual males, 41% of heterosexual females and 56% of homosexual males were living and working in the countries concerned; 48%, 47% and 33% respectively were on holiday. Experience of living overseas and voluntary/relief work was also recorded.

Conclusions: Patterns of contact and overseas experience varied widely. No single such pattern predominated, providing many potential routes for STI importation particularly those of long duration such as syphilis, HIV or HBV.

0454

Large Increases in Early Syphilis — San Francisco, 2000 & 2002

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Objectives: Early syphilis infection can cause severe neurological complications and facilitate HIV transmission. Reported cases of early syphilis have increased in San Francisco from 71 cases in 2000 to 494 in 2002. To describe demographic characteristics and behavioral trends in persons with early syphilis, we analyzed surveillance data.

Methods: Early syphilis included persons diagnosed with primary, secondary, or early latent syphilis based on a positive lesion by dark-field microscopy, serologic tests for syphilis, and a history consistent with syphilis infection in a San Francisco resident. We compared surveillance data for 2000?2002 using $\div^2$ tests for linear trend.

Results: Among 760 early syphilis cases reported during 2000-2002, 96.3% were male, 59.8% were white, and the median age was 37 years (range 16-67). During 2000-2002, the proportion of cases increased in men who have sex with men (MSM) from 81% (50/62) in 2000 to 92% (391/424; $p = 0.02$) in 2002 and in human immunodeficiency virus (HIV)-infected persons from 41% (24/59) in 2000 to 67% (241/362; $p < 0.001$) in 2002 where sex partner gender and HIV status was known. Among interviewed cases, the proportion that used methamphetamine increased from 8% (5/67) to 26% (109/340; $p < 0.001$). During the period in which infection might have been acquired, the proportion of cases that reported having two or more sex partners increased from 77% (48/62) in 2000 to 89% (302/340; p=0.02) in 2002. The proportion of cases that met sex partners via the Internet increased from 19% (13/67) in 2000 to 31% (109/347; p<0.001) in 2002.

Conclusions: The increase in early syphilis noted in San Francisco during 2000-2002 particularly affected MSM and HIV-infected persons. Prevention measures should target persons at-risk including HIV-infected persons, and those who use methamphetamine and meet sex partners via the Internet.

0455

Identification of Vaginal Lactobacillus Species Among Women of the Rakai District in Uganda, Africa

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Objective: In the US, Europe, and Japan, the most commonly reported *Lactobacillus* species found in the vagina is *Lactobacillus*

crispatus. The purpose of this study was to identify the species of *Lactobacillus* among the women of the Rakai district, Uganda.

Methods: Vaginal swab specimens were collected from 312 women, age 13-49, in communities of the Rakai district, Uganda. Culture methods were used to detect *Lactobacillus* species. Each *Lactobacillus* isolate was plated onto a tetramethylbenzidine (TMB) agar plate to determine hydrogen peroxide (H_2O_2) production. DNA extraction was then performed on all isolates and subjected to repetitive sequence PCR for strain level fingerprinting. Lastly, ^{32}P whole-chromosomal probes were used for species level classification.

Results: Lactobacilli were recovered from 77 of the women. Based on DNA fingerprinting patterns, 137 different isolates were recovered from the 77 women. Of these, 86% were H_2O_2-positive. DNA homology studies to ATCC type strains demonstrated that the most frequent *Lactobacillus* species isolated were *L. crispatus* (n=42), *L. jensenii* (n=11), *L. gasseri* (n=14), and *L. vaginalis* (n=14). The non-H_2O_2 producing *L. iners* was not recovered, probably due to the lack of culture media appropriate for detection of this nutritionally fastidious species. An additional 56 isolates did not have homology with any of the five most common species reported previously.

Conclusion: *L. crispatus* was the most prevalent species of *Lactobacillus* among this group of African women. The low overall prevalence of *Lactobacillus* among women in the Rakai may reflect suboptimal culture detection of lactobacilli. Nevertheless, there is a remarkable consistency in the species of *Lactobacillus*, which constitute the normal vaginal flora among women of reproductive age around the world.

0456

STI sentinel monitoring in a specialized clinic-Manaus,Amazonas,Brazil

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Introduction: "Alfredo da Matta" Foundation(FUAM) is a public institution with a specialized STI Department and is considered to be the main STI Sentinel Centre in this region. In 2002, the introduction of a new case notification form had the objective of improving STI epidemiological monitoring with information about preceding STI infections, risk factors, physical examination data and laboratory results.

Results: Between February and June,1880 cases were notified,1137 of these were male (60.5%) and 743 female(39.5%). 52.4%(985) had a curable STI syndrome (urethral, vaginal or cervical discharge, pelvic pain, genital ulceration without blisters and lymphadenopathy). The respective frequency of each was 48.6%; 57.7%; 15.0%; 9.0%; 13.7% and 1.0%. A total of 1300 etiological diagnoses were also carried out in the same patients, 35.1(456) were curable STI(bacterial and trichomoniasis) and 64.9%(844) were viral. The most frequent diagnosis within the viral STI was warts with33.3%; genital herpes11.2%, and HIV infection0.9%. Within the curable infections were gonococcal 12.6%, syphilis in all of its forms 7.3% and trichomoniasis2.8%. The average age at diagnosis was 22 years and for first sexual relationship was 15 years for both sexes(16 for women and 14 for men).22.4% had previously used an antibiotic before consultation and of these 41.9%had the antibiotic indicated by informal sources. 27.4% of the actual cases previously had another STI, 44.8%had a new partner in the preceding 3 months. Only16.7% of the male cases used condoms regularly.

Conclusions: The new STI case notification form allows information to be collected which is useful for evaluating the main sub populations affected, the distribution of STI syndromes and their etiology, and STI tendencies. Therefore generating adequate information to be used in the recommendation of preventive activities in STI control program.

0457

STD Infection in HIV-Infected Patients in Continuing Care in North Carolina: A Cohort Study

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Objectives: STDs can facilitate HIV transmission, so early detection and treatment of STDs in HIV-infected persons is important. We estimated the prevalence and incidence of STD infections in people receiving HIV care at a public HIV care clinic, in Raleigh, NC.

Methods: We enrolled 157 persons in a cohort study between December 2001 and March 2003. At routine visits, approximately every three months, patients were offered tests for chlamydial infection (Ct) and gonorrhea (GC) (ligase chain reaction), trichomoniasis (trich) (In-Pouch) and herpes simplex type 2 (HSV-2) (Pockit serology) and completed a self-administered questionnaire about STD risk factors . Medical charts were reviewed for past positive HSV-2 serology and cultures, clinician-diagnosed herpetic ulcers and patient-reported history of herpetic ulcers.

Results: Of the 100 males tested at initial visits, a few were infected with GC (4%), Ct (1%), or trich (2%) and many had positive HSV-2 serology (67%). Of the 55 women tested at initial visits few were infected with GC (2%), Ct (4%), there was a high prevalence of trich (25%) and most had positive HSV-2 serology (90%). Only 30% of the men and 29% of the women with positive HSV-2 serology at the initial visit reported a history of herpes infection or had a previous positive herpes culture documented in their medical record. In a total of 124 follow-up visits for men, we detected 1 case each of GC and Ct and 3 new cases of HSV-2 infection. In a total of 66 follow-up visits for women, we detected 1 case of GC, 11 cases of trich and 4 new cases of HSV-2 infections.

Conclusions: These findings support the necessity for routine STD services in HIV clinics. Services should include risk assessment, STD screening and risk reduction counseling that addresses the facilitative effects of STD on HIV transmission.

0458

Use of a Primary Cell Culture System From Reproductive Tract Tissue of Women to Examine Susceptibility to Sexually Transmitted Viral Agents.

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Objective: Extensive efforts have been made to develop preventative strategies against sexually transmitted infections in women. However, these efforts have been largely unsuccessful because of the current lack of understanding of factors that affect the susceptibility of female reproductive tract tissue during heterosexual transmission of viral agents, such as HIV. We have developed an in vitro system, using primary cell cultures from reproductive tract tissue from women that are undergoing hysterectomies, to use as a tool to examine the susceptibility of genital tract cells to viral agents such as herpes simplex virus, type 2 (HSV-2) and HIV.

Methods: Uterine and cervical tissues were obtained from women undergoing hysterectomies, with their informed consent. Following enzymatic digestion of tissue, epithelial and stromal cells were isolated by a series of separations through nylon filters of different pore sizes. Epithelial cells were grown on matrigel–coated tissue culture inserts. The growth kinetics and purity of the epithelial cell cultures was examined.

Results: When grown on matrigel-coated cell culture inserts, uterine epithelial cells formed confluent monolayers after 5-7 of culture. The purity of the epithelial cell cultures and formation of tight junctions was monitored by measuring transepithelial resistances (TER) across the monolayers. High TERs were observed starting Day 5-7 of cultures and were maintained up to 14-20 days post-culture. The cells in the monolayers were predominantly positive for epithelial cell markers, cytokeratin and BerEp4. Vimentin, a marker for stromal cells was localized on a small number of cells. The cultures were further characterized by staining estrogen and progesterone receptors. Both the receptors were found to be distributed extensively on the epithelial cells. Currently the system is being used to study the susceptibility of primary epithelial cells to viral STD agents, HSV-2 and HIV.

Conclusion: We have developed a primary culture system from reproductive tract tissue of women that closely resembles the epithelial cells found in vivo. This system will provide a useful tool to examine the factors affecting susceptibility to sexually transmitted agents.

0459

Characterization of Porin Type and QRDR Mutations in Ciprofloxacin Resistant Strains of Neisseria gonorrhoeae from Israel

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Objectives: Quinolone Resistance Determining Regions (QRDR) in *Neisseria gonorrhoeae* (GC) reside in the DNA Gyrase (GyrA) and Topoisomerase IV (ParC) genes. Specific mutation patterns in QRDR's have been associated with fluoroquinolone resistance. Our goal was to characterize mutations in QRDR's in GC isolated in 2000 in Israel with epidemiological links to Eastern Europe. These had a range of minimum inhibitory concentrations (MIC) to ciprofloxacin. We correlated these data with results of P1B porin typing schemes.

Methods: A P1B porin typing scheme, utilizing loops 1, 3, 5, 6, and 7, was used to categorize related strains. QRDR's were amplified using PCR, subjected to agarose gel electrophoresis, and the PCR products isolated and purified. Automated DNA sequencing methodologies were utilized for direct sequencing and results manually compared to corresponding Genbank sequences. Mutation patterns, MIC's, and porin typing results were then analyzed.

Results: P1B typing results showed resistant isolates represented two subtypes, while one P1B type predominated. Susceptible strains were more diverse. All ciprofloxacin resistant strains showed identical mutations in amino acids (AA)91(Ser®Phe) and 95(Asp®Asn) of GyrA, with the exception of two strains that differed at AA95 (Asp®Gly). All resistant strains had a mutation in ParC at AA86(Asp®Asn). One intermediate strain had one mutation at AA95(Asp®Asn) of GyrA, and susceptible strains showed no mutations. Numbers and types of mutations did not quantitatively correlate with MIC.

Conclusions: Based on typing schemes, this collection of ciprofloxacin resistant GC from Israel represented a clonal outbreak. Mutation patterns were consistent with those characterized in previous studies, and correlation between loop type, MIC and mutation patterns reinforced proposed molecular causes of resistance. This dictates a more prudent use of fluoroquinolones in treatment of GC. The consistency in QRNG mutations suggests that DNA probes can be developed for rapid detection, which would facilitate surveillance of QRDR mutations in GC.

0460

Neurosyphilis — San Francisco, 2002

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Objectives: Neurosyphilis (NS) is a serious complication of syphilis infection, and can result in vision or hearing loss, meningitis, stroke, or dementia. Our goals were to determine the proportion of NS among syphilis cases and to characterize NS cases in San Francisco in 2002.

Methods: To identify NS cases, we reviewed surveillance and medical records for all syphilis cases reported in 2002, and contacted laboratories that participated in syphilis reporting. We classified NS cases into three categories: confirmed, probable and suspect. Confirmed and probable cases met CDC surveillance definitions. A suspect case was defined as treatment for NS in the absence of conditions that met a confirmed or probable NS case.

Results: NS occurred in 10 (2%) of 497 early syphilis cases, and in 4 (4%) of 95 late latent syphilis cases reported in 2002. Of these 14 NS cases, 8 (57%) were confirmed, 3 (21%) were probable, and 3 (21%) were suspect. All patients were male, the median age was 40 years (range 29-69), 10 (71%) were white, 13 (93%) were men who have sex with men, and 11 (79%) were HIV-infected. Common presenting symptoms were visual changes 7 (50%), headache 6 (43%), and hearing loss 4 (29%). Common NS syndromes were meningitis 7 (50%), and ocular syphilis 6 (43%). 13/14 patients were treated with intravenous antibiotics for $^{3}10$ days; however, 3 (21%) had residual neurological symptoms at the end of antibiotic treatment, including blindness and loss of hearing.

Conclusions: Neurosyphilis can be an irreversible complication of syphilis infection, and can occur at early stages of infection. Syphilis is preventable and easily treated, if recognized early. Medical providers should evaluate all patients with syphilis for signs or symptoms of NS, and screen all persons at-risk for syphilis to prevent the serious outcomes of NS.

0461

Is antenatal syphilis screening still cost-effective in sub-Saharan Africa?

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Objectives: To estimate the cost-effectiveness (CE) of on-site rapid syphilis screening and same day treatment added onto routine antenatal care in Mwanza, Tanzania and to combine empirical effectiveness measures with the generic outcome: DALYs saved. The CE of the intervention was compared with other antenatal interventions, specifically prevention of mother to child transmission (PMTCT) of HIV.

Methods: Effectiveness of the intervention was measured empirically in two 26-month cohort studies starting in 1997. Annual incremental economic costs were assessed between 1998 and 1999. CE ratios were obtained for cost per: low birth weight livebirth (LBW) averted, stillbirth averted, and DALY saved. The later was also estimated for previous CE studies of syphilis screening. The intervention's CE at different syphilis prevalence rates was modelled.

Results: The intervention screened 9713 women and 696 (7.2%) were RPR positive and were treated with single dose benzathine penicillin. The intervention averted 31 LBW and 44 stillbirths and saved 127 DALYs with LBW as only adverse outcome or 1321 DALYS including stillbirths. Total economic costs of the intervention were $13,956. Unit costs were $1.44 per woman screened, $20 per woman treated, and $110 per DALY saved (LBW only). When including stillbirth, this estimate improves ten-fold to $10.56 per DALY saved. Cost per DALY saved from syphilis screening studies in Africa ranged from $10.56 to $18.73. CE was modelled for prevalences from 2% to 15% and ranged from $33 to $6 per DALY saved, respectively.

Conclusions: This study uses improved effectiveness measures and shows that earlier studies underestimated CE by 2-3 times. The CE of screening interventions is highly dependent on disease prevalence. Syphilis screening is shown to be at least as cost-effective as PMTCT and many other widely implemented interventions. There is urgent need for scaling-up syphilis screening and treatment in high prevalence areas.

0464

Routine Serologic Testing For Herpes Simplex Virus Type-2 (HSV-2) Antibody In An Urban STD Clinic

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Objectives: Type-specific antibody tests for herpes simplex virus type-2 (HSV-2) now permit assessment of serostatus with high sensitivity and specificity. We report on the prevalence and correlates of HSV-2 infection detected through routine serologic screening in an urban sexually transmitted disease (STD) clinic in the midwestern US.

Methods: We conducted routine serologic testing for HSV-2 antibody among 500 consecutive attendees at the St. Louis County STD clinic between April and June 2001. Testing was included as part of the routine battery of STD screening services provided to all patients, and was performed free-of-charge. Serum was tested using an FDA-approved enzyme immunoassay (MRL/Focus HSV-2 EIA). Patients were notified of test results as part of routine clinical service delivery protocols.

Results: Seropositivity for HSV-2 antibody was documented for 197 (39.6%) of 498 persons. Seropositivity was higher for women compared with men (53.8% vs. 30.2%, $p<.001$) and for African Americans compared with other racial/ethnic groups (41.8% vs.

24.7%, p < .01). Persons testing seropositive were older than other clinic attendees (29.5 yrs. vs. 24.9 yrs., p<.001). HSV-2 seropositivity did not correlate with sexual behavior (number of partners in last 3 months and 12 months) or other STD diagnosis (gonorrhea, syphilis, chlamydia, trichomoniasis, genital warts). History of genital herpes was reported by only 13 patients (6.6% of persons who tested seropositive).

Conclusions: Routine screening for HSV-2 antibody identified a large number of infections among STD clinic attendees. The vast majority of patients testing positive for HSV-2 denied any prior clinical history of genital herpes. Routine serologic testing and counseling of patients for HSV-2 can promote public health goals by identifying infected persons and encouraging risk-reduction strategies among seropositive as well as seronegative individuals.

0465

Predictors of Chlamydia Infection in New York State Sentinel Sites

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Objective: In 1995, the Bureau of Sexually Transmitted Disease (STD) Control implemented *Chlamydia* sentinel surveillance in two public health clinics in an urban city with the second highest rate of gonorrhea statewide. The County STD and Family Planning (FP) clinics were sentinel sites. The objective of this study was to identify factors predictive of *Chlamydia* infection in each clinic population.

Methods: All women screened for *Chlamydia* between January 1, 1997 and December 31, 2001 were included. Routinely collected demographic and clinical information were recorded on a standardized questionnaire. Endocervical specimens were tested using an enzyme immunoassay (prior to August 1, 2000) or nucleic acid amplification test. Stepwise logistic regression was used to identify variables predictive of infection.

Results: 14,204 women were included, 9,090 FP and 5,114 STD clients. Overall prevalence was 4.8% among FP and 10.3% among STD clients. Prevalence was highest among persons under age 20. Multivariate analysis identified age as the strongest predictor of infection. National screening criteria for FP (women under age 25) identified 82% of FP infections with 54% screened. Applying national criteria for STD (women under age 30) to both clinic populations identified over 90% of infections with 69% - 76% screened.

Conclusions: Our data indicate that age is the most powerful predictor of genital chlamydial infection. Furthermore, screening all women under age 30 in our cohort, regardless of clinic, would capture the highest proportion of infections. This adjustment to national recommendations demonstrates the public health importance of local program evaluation.

0466

What Can the Non-human Primate Model Teach Us About Treating PID in Humans?

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PID IN WOMEN: Pelvic Inflammatory Disease (PID) is frequently a consequence of sexually transmitted infections, including *Chlamydia trachomatis*. Factors hampering human studies of chlamydial infection include that more than 70% of human chlamydial infections are asymptomatic and there is limited ability to obtain swabs or tissue samples from the site of infection. Prospective studies of untreated cervical chlamydial infection are unethical and the efficacy of PID treatment regimens are not well established. Chlamydia may persist in tissue despite antimicrobial therapy, causing inflammation and tubal fibrosis. Although such information is vital for improving anti-chlamydial therapy, it is particularly difficult to assess and compare treatment strategies for clearing chlamydia from the fallopian tubes and fimbriae in humans. The *Macaca nemestrina* (pig-tailed macaque monkey) model has been used extensively to study the pathogenesis, treatment and prevention of chlamydial infection.

MODEL DESCRIPTION: The *Macaca nemestrina* has a 28-30 day menstrual cycle; the anatomy and physiology are well characterized and similar to humans; and the macaque is naturally susceptible to the human biovars of *C. trachomatis*. Pretreatment with exogenous hormones or other manipulations are not required to initiate or sustain infection. The immune responses and histopathological characteristics of infection in the model closely resemble those seen in humans.

USES OF MODEL: The model has been used to establish and study cervicitis after single and multiple inoculations, salpingitis occurring after cervical and direct tubal inoculations, the establishment of immunity to heterotypic and homotypic chlamydial strains, effects of antimicrobial and anti-inflammatory agents on the course of PID, and persistence of infection in the upper genital tract. Recent studies have used the macaque model of chlamydial salpingitis to assess the effectiveness of the anti-chlamydial antibiotics doxycycline and azithromycin in reducing chlamydial burden, viability, persistence and immunopathology throughout the female reproductive tract.

0467

Epidemiology of Syphilis in Canada, 1980-2002

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Objectives: Primary and secondary (P&S) syphilis started to decline in 1985 in Canada, and reached its nadir in 1996 at the reported rate of 0.25 per 100,000 population. This rate has subsequently shown a three-fold increase to 0.89 per 100,000 population in 2002 (preliminary data). The objective of this work is to review surveillance data on P&S syphilis in Canada to help put the current rise in perspective.

Methods: Surveillance data from 1980 to 2002 on cases of P&S syphilis, reported by provincial and territorial health departments to Health Canada, were analyzed to show trend and distribution by geographic location, gender and age with population denominators provided by Statistics Canada.

Results: Gender analysis of the data shows that the majority of cases have been among men with the male to female ratio of cases being 8.6:1 in 1982, 1.3:1 in 1993 and 10.6:1 in 2002. The trend of an age-specific rate for females has remained constant with the 20-29 year age group representing the highest proportion of cases. For males, from 1984-1996 the highest rate was in the 20-29 age groups (with the exception of 1985), followed by a shift to the 30-39 age group since 1996. The outbreaks in the 80's and 90's were among heterosexual men and women associated with sex trade in the prairie provinces and western regions. The increase of the last two years has been concentrated in central Canada, which has been predominantly among men who have sex with men (MSM).

Conclusion: Nationally reported P&S syphilis rates have increased almost three-fold since 1996, primarily associated with the outbreaks in high risk groups like people involved in sex trade and MSM. Prevention and control efforts should be strengthened in these high risk groups.

0468

Sexual behaviors explain ethnic differences in reinfection

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Objectives: In previous analyses of high-risk African American (AA) and Mexican American (MA) women in an STD intervention, we found higher rates of infection and more tolerance of nonmonogamy among AA. We sought to further investigate and characterize ethnic differences.

Methods: We used chi-square analyses and logistic regression to estimate associations between attitudes and beliefs about sexual relationships at baseline, sexual risk behaviors over a one-year followup, and rates of reinfection. 149 AA and 328 MA were evenly distributed between study and control groups.

Results: In both ethnic groups, women finding it easy to find a partner, and women who thought it was a good idea to have a man on the side, were more likely to acquire a new partner within 3 months of ending a relationship (43.2% vs. 26.2%, $p < 0.01$, and 58.3% vs. 26.8%, $p < 0.01$, respectively). Among MA only, women who thought there were more available women than men were more likely to have unsafe sex (42.7% vs. 27.6%, $p < 0.01$), and those who initially thought being in a relationship was "one of the most important things in life" were more likely to be mutually monogamous (54.0% vs. 44.2%, $p = 0.08$) and less likely to engage in rapid partner turnover (15.8% vs. 29.3%, $p < 0.01$). The crude OR (95% CI) for reinfection in AA vs. MA was 1.8 (1.2, 2.8). After controlling for behaviors differing by ethnicity (douching after sex, lack of mutual monogamy, rapid partner turnover), the OR was reduced to 1.2 (0.72, 2.0).

Conclusions: Despite some ethnic differences, we found that attitudes and beliefs about relationships were associated as expected with sexual risk behaviors over the study period. The observed ethnic differences in STD reinfection were explained by ethnic differences in composite variables reflecting different aspects of sexual behavior.

0471

Diagnosis of Chlamydia trachomatis (CT) infections in men and women by a new VIDAS Probe CT amplification assay performed on swabs and urines

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Objectives: Because C. trachomatis infections are often asymptomatic and undiagnosed, untreated lower genital tract infections may result in upper tract injury and adverse reproductive consequences. Non-invasive clinical samples tested in nucleic acid amplification (NAA) tests enable screening and treatment strategies. We assessed the performance of the VIDAS PROBE CT assay (Biomerieux) which is an rRNA TMA NAA test adapted to the VIDAS microbiology diagnostic instrument.

Methods: Cervical swabs (CS) and FVU were collected from 557 women. A total of 334 men provided urethral swabs (US) and first void urines (FVU). Samples were tested by VIDAS PROBE CT, Amp CT TMA (GenProbe) and ProbeTec CT strand displacement assay (SDA) (Becton Dickinson).

Results: Using an infected person, determined by a swab or urine being positive in the 2 reference tests, the prevalence of C. trachomatis was 5.4% in women and 5.7% in men. On female specimens the sensitivity

(sens.) and specificity (spec.) of the VIDAS PROBE CT on cervical swabs was 96.8% (31/32) and 99.6% (523/525) when compared to GenProbe TMA; 100% (29/29) and 99.4% (525/525) compared to SDA and 100% (29/29) and 99.6% (526/528) using both TMA and SDA as the reference standard. The sens. and spec. on female FVU compared to TMA was 92.6% (25/27) and 99.6% (528/530). Testing either a CS or FVU by VIDAS PROBE CT provided 100% (30/30) sens. and 99.4% spec. All tests on all male sample types were concordant showing the VIDAS PROBE CT test to be 100% sensitive (19/19) and specific (315/315).

Conclusions: The new VIDAS PROBE CT assay performed very well on swabs and urines for detecting C. trachomatis infections in men and women and provides an alternative diagnostic choice for laboratories with VIDAS instrumentation. *The VIDAS Probe CT assay will not be commercially available until cleared by the US FDA.

0472

Preliminary Characterization of the GC OIA® Rapid Immunoassay of Female Endocervical Swabs and Male Urine Samples From Symptomatic and Asymptomatic Patients

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Objectives: Performance of a new ~30-minute GC OIA immunoassay, which detects an unique ribosomal protein from *Neisseria gonorrhoeae* (GC) (patent pending) in male urine and female endocervical specimens, was investigated in symptomatic and asymptomatic populations. A manual Urine Filtration Device (UFD) concentrates male urine samples, allowing assays without additional equipment.

Methods: GC culture was the reference for all studies. Specimens were collected from 777 women (504 symptomatic and 273 asymptomatic). Symptoms included mucopurulent discharge, vaginal discharge, pelvic inflammatory disease, urethral syndrome and proctitis. Specimens were also collected from 743 men (401 symptomatic and 342 asymptomatic). Symptoms included urethritis, proctitis and epididymitis.

Results: GC prevalence in the symptomatic population was 8.1% and 29% in females and males, respectively, versus 2.2% and 1.2% in asymptomatic females and males. Sensitivity and specificity were 71% (29/41) and 99.4% (460/463) in symptomatic females and 17% (1/6) and 99.3% (265/267) in asymptomatic females. Sensitivity and specificity were 94% (109/116) and 97% (277/285) in symptomatic males and 80% (4/5) and 100% (337/337) in asymptomatic males. The low number of true-positive patients complicated calculation of Positive Predictive Values in the asymptomatic groups. Negative Predictive Values in the asymptomatic group were 98% (265/270) and 99.7% (337/338) in females and males, respectively.

Conclusions: The GC OIA method is a rapid optical immunoassay for *N. gonorrhoeae* in male and female patients not requiring additional instrumentation. Though the low number of asymptomatic GC-positive patients limited assay sensitivity estimation, high assay specificity indicated potential additional utility in POC areas where patient return rate after testing is low.

0473

Homonucleotide Repeats as Potential Regulators of Gene Expression in Treponema pallidum

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Objectives: Homonucleotide repeats (repeats of a single nucleotide, generally seven times or greater) are known to have important functions in gene expression and selection in a number systems related to bacterial pathogenesis. The genome of Treponema pallidum, the causative agent of syphilis, was analyzed for the presence of homonucleotide repeats that could be of importance in gene expression.

Methods: Multiple repeats of this nature were found in the completely sequenced genome of the Nichols strain of T. pallidum; eight of these were chosen for further analysis. Three of the homonucleotide repeats were in reading frames of potential housekeeping genes and were predicted to show little variability (control sequences). The other five sequences appeared to be in genes, and their potential transcriptional control regions, with a greater possibility of variability. The potential variability of these eight repeats was tested by sequencing PCR generated amplicons from two different strains of T. pallidum subspecies pallidum, and two strains of T. pallidum subspecies pertenue. Genes with variable sequences were then tested by RT-PCR for differences in expression when compared to the Nichols control strain of T. pallidum.

Results: No variation in the eight sequences tested was seen in the two venereal strains of T. pallidum (subspecies pallidum), but a potentially significant difference was seen in each of the two strains that produce the endemic disease of Yaws (CDC-2 and Gauthier strains of subspecies pertenue). One of the differences (CDC-2 strain of subsp. pertenue) was a deletion of four bases in a long repeat that could result in a shifting of the reading frame at the amino terminus (Tp0347). The second alteration involved the deletion of several bases and the elimination of a stem-loop structure between the genes Tp0026 and Tp0027 in the Gauthier strain of subsp. pertenue.

Conclusions: Variation exists in the homonucleotide repeat sequences of T. pallidum; the effect of these variations on gene transcription is presently under study.

0474

Partner Concurrency and Sexually Transmitted Diseases

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Objectives: Having concurrent partnerships has been associated with an increased risk of STDs in individuals. To combine data from sexual partners to determine associations between a respondent having a current STD and having concurrent partners, having a partner who is concurrent, and respondents' knowledge of their partner's behavior.

Methods: 96 new sexual partnerships of individuals aged 18 to 30 recruited from STD and family planning clinics in San Diego re-

sponded to a self-administered computer questionnaire and were tested for C. trachomatis, N. gonorrhoeae, and T. vaginalis. Using the Kappa statistic, accuracy of respondents' knowledge of partner's concurrency was assessed. Respondent knowledge of partner's concurrent partnerships, partner concurrency and respondent concurrency were examined in univariate models using chi-square analysis and t-tests and three different multivariate logistic regression models for their association with current STD.

Results: Respondents correctly reported partner concurrency 69% of the time with a low kappa statistic (0.17), suggesting poor overall agreement between respondent and partner reports. Only 26% of respondents with concurrent partners knew. In univariate and multivariate models, respondents' STD was significantly associated with their partner practicing concurrency. In separate multivariate models, partner's concurrency (OR 3.6) and respondents' erroneous knowledge of partner's concurrency (OR 5.7) were significantly associated with STD; however, respondent concurrency was not associated with respondent's current STD. In all models, STD was also associated with living in south San Diego and sexual activity occurring in the partnerships less than one week after meeting.

Conclusions: These data provide empirical evidence for mathematical models that have demonstrated that partner concurrency is as or more important than respondent concurrency in STD transmission. This study also demonstrates the risk of STD acquisition to individuals who have poor knowledge of their partner's behavior.

0475

A Survey of Partner Management Practices for Chlamydia Positive Patients at California Family Planning Clinics

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Objective: Initial and repeat Chlamydia trachomatis infections are associated with increased risk for negative reproductive health sequelae. Many repeat infections are caused by contact with untreated partners. A survey was conducted to determine current chlamydia-related partner management practices at family planning clinics, an important source of care for young women at risk for chlamydia infection.

Methods: Between September and December 2001, 146 clinics out of a possible 153 clinics in California were contacted. A total of 56 community health clinics (CHC), 61 independent family planning agency clinics (IFPA), and 29 county health department clinics (CHD) were surveyed.

Results: Almost all clinics, 97%, always tell chlamydia positive patients to refer partner(s) for treatment. Most, 90%, instruct clients to bring their partner to the clinic. Few clinics, 12%, use the appropriate two-month reference period for determining which partners should be treated; most use a longer time period. No IFPAs report contacting partners directly about potential infection compared to 16% of CHCs and 21% of CHDs. Very few clinics, 4%, always discuss the possibility of sending the client's partner an anonymous letter. Approximately 37% of all clinics reported that 76-100% of partners come into the clinic for treatment. Many clinics, 58%, utilize patient-delivered partner therapy (PDPT). More CHCs, 71%, and CHDs, 61%, follow-up with partner treatment, either by contacting the client or asking them at the next visit, compared to 42% of IFPAs.

Conclusions: Most clinics inform clients that partners need to be treated and offer partner treatment options. Most partner notification is through self-referral by the client, the most successful, expedient method of notification. Working to improve partner notification, increase the use of PDPT, and review best practices identified at some study sites are the next steps in increasing the number of partners treated for clients in California family planning clinics.

0476

Scale free networks and sexually transmitted diseases: a description of observed patterns of sexual contacts in the UK and Zimbabwe

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Sexually transmitted infections are transmitted through a network created by the formation of sexual partnerships. Methods developed in physics describe a wide range of networks described by the distribution of numbers of sex partnerships. It has been claimed that this so-called 'degree' distribution follows a power law and therefore indicates a 'scale-free' network in the Swedish population. Our objectives are to test statistically whether distributions of numbers of sexual partners reported by different populations and over different time periods can be well described by power laws and to estimate their exponents and its implications. We compare maximum likelihood estimates of the exponent of a power law describing reported distributions of numbers of partners and compare these results with the maximum likelihood fit to an exponential null model. Data are taken from 4 population based surveys, three from the UK and one from rural Zimbabwe. We find that the networks are scale free over a number of orders of magnitude. In addition, exponents of the power law differ significantly and meaningfully, with an 'accelerating network' formed between men who have sex with men (MSM). Networks with an exponent indicating the lack of a 'critical spread rate' are found for all populations except for women in the UK. We conclude that our statistical analyses demonstrate that a scale-free network approach provides a reasonable description of distributions of reported numbers of sexual partners. Fur-

ther, if these networks are formed over a short enough time only a very small transmission probability will be sufficient to lead to persistence of infection.

0477

A National Survey of Clinic Sexual History Forms

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Objective: To describe the content of sexual histories elicited in STD treatment settings.

Methods: We surveyed facilities in those cities with populations >200,000 reporting highest year 2000 gonorrhea, chlamydia, and syphilis rates (n = 65). Within each city a public health STD clinic (80% of the sample) or other STD care facility was randomly selected and asked for sexual history form(s).

Results: Most clinics used a checklist format (84%). Common domains included: 1) Reason for visit; 2) Symptoms; 3) Recent sexual behaviors; 4) Prior STD history; 5) HIV risks; 6) Obstetrical-gynecologic history. Three-fourths asked about sex with men and women. Contact periods varied: 39% used a 30-day, 58% a 2 or 3 month, 16% a 6 month, and 26% a 12 month timeframe; 42% used several periods to determine number of sex partners. Two-thirds asked date of last sexual exposure. One-third asked about new sex partners. Forms rarely recorded condom use specifically for vaginal or anal sex (16%) or by sexual partner relationship type (8%). About 40% asked about condoms without specifying type of sex or partnership; of these about half used categorical ("sometimes") and one-third yes/no responses. Few settings assessed risks separately for men who have sex with men, and almost none did so by the sex partner's STI/HIV status. Substance use was ascertained mostly for injecting drug behavior. Three-quarters asked about current, and 40% about ever, pregnancy; only 5% asked about pregnancy intent. Partner notification parameters were not consistently present. Most forms documented whether HIV/STI risk reduction counseling was done, though few included a specific HIV/STI prevention plan.

Conclusions: Sexual histories are highly variable in US STD clinics. Clinical care, surveillance, and STI prevention may be improved through an effort to define and adopt a core set of questions to be used consistently as part of sexual histories.

0478

Genital Chlamydia trachomatis infection and participation in interscholastic sports

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Objective: To determine whether participation in interscholastic sports is associated with a lower prevalence of *Chlamydia trachomatis* infection.

Methods: Data from 585 African American student athletes who received sports physical examinations and 585 non-participants in sports, all tested for chlamydia and gonorrhea by urine ligase chain reaction assays in a Southern United States urban school district were analyzed. Logistic regression with chlamydia infection as the dependent and sports participation as the independent variables of interest was used, controlling for gender, age, grade, participation in school lunch program, sexually transmitted disease (STD) symptoms, gonorrhea infection, participation in after-school activity not sponsored by school, and working to earn money after school.

Results: The prevalence of chlamydia was 3.9% (23/585) among participants compared to 9.4% (55/585) among non-participants in sports (p =.000). Variables significantly associated with chlamydia in logistic regression were gender (p=.007), age (p=.000), gonorrhea infection (p=.000) and the interaction of gonorrhea infection and sports participation (p=.000). Sports participation was not independently associated with *C trachomatis* infection.

Conclusions: The sports physical examination offers clinicians the opportunity to educate adolescents about STDs and to eventually reinforce STD-prevention messages including abstinence, reduction in the number of sex partners, and use of condoms. The role of factors consistently associated with STDs and those that expose adolescents to the risks of STDs need to be recognized and addressed for the reproductive health to derive benefits from sports physical examinations.

0479

Effect of sex hormones on susceptibility of and immune cells in the genital tract, following infection with herpes simplex virs, type 2 in a mouse model

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Objective: Previous studies from our group have shown that sex hormones influence the outcome of sexually transmitted bacterial and viral infections. The objective of this study was to correlate outcome of HSV-2 intravaginal (IVAG) inoculation under different hormonal conditions with susceptibility of the vaginal tissue and changes in immune cell populations in the vaginal tissue in a murine model.

Methods: Ovariectomized (OVX) mice were administered saline (control), estradiol (E_2), progesterone (P_4), or a combination of both E_2 and P_4 and then inoculated IVAG with HSV-2. Immunohistochemistry (IH) staining was done to examine localization of HSV-2 infection as well as distribution of immune cells in the vaginal tissue at different time points after infection.

Results: Extensive infection was seen in the vaginal epithelium of OVX + P_4 group and OVX + saline control mice at 24 hours post-infection. Estradiol–treated animals showed no infection at any time point examined. Mice treated with a combination of both hormones displayed focal infection in the vaginal epithelium within 24 hours that progressed to extensive infection by three days post-infection. In addition, extensive leukocyte infiltration, consisting predominantly of neutrophils, was observed in OVX + P_4-

treated and saline control mice within 24 hours of infection. In the P4-treated group, the neutrophil infiltration persisted up to three days post-infection. Uninfected E_2-treated mice also displayed presence of neutrophils in the vaginal epithelium three days after hormone treatment.

Conclusion: These results show that in the absence of any hormones, vaginal epithelium was susceptible to HSV-2 infection. Estradiol-treatment made the vaginal epithelium resistant to productive infection by HSV-2. Progesterone-treatment correlated with susceptibility as well as a persistent inflammatory response. The results from this study clearly show that hormones affect the outcome of genital HSV-2 infection in the OVX mouse model.

0480

Is Depression Associated with STD and HIV Risk Behaviors?

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Background: STD clinic patients are at high risk for HIV and are a major focus of cognitive behavioral interventions to promote behavior change. High rates of depression have been described in populations at risk for STD/HIV and may impair motivation to change complex behaviors. We sought to define the prevalence of depression among STD clinic patients and to describe associations with STD/HIV risk behavior and with having an STD diagnosis.

Methods: Using audio computer assisted self-interview (ACASI), a systematically selected sample of 671 STD clinic patients were interviewed on sex and drug use behaviors and on symptoms of depression. A subset of patients (n=201) also were evaluated for current major depressive disorder using the Structured Clinical Interview for DSV-IV (SCID IV) as the criterion standard to determine valid gender-stratified cutoffs for depression in screening.

Results: Depression was common among STD clinic patients, occurring in 14% of women and 23% of men. Depression among women was associated with trading sex for money or drugs (OR 7.4, 95%CI 2.5-21.6; $p < 0.01$) and having sex when high on drugs (OR 6.8, 95%CI 1.4-6.0; $p < 0.01$) or alcohol (OR 2.9, 95%CI 1.4-6.0; $p < 0.01$). Depression among men was associated with having sex when high on drugs (OR 3.6, 95%CI 1.5-8.7; $p = 0.05$). Depressed mood was not associated with having an STD diagnosis.

Conclusion: Depressed mood is highly prevalent among patients seeking STD prevention services and is associated with HIV/STD risk behaviors, particularly those sexual risk behaviors that are prominent in those with substance abuse disorders. Innovative counseling and referral strategies to address depressed mood and other psychiatric disorders may be required to improve HIV prevention outcomes in the STD clinic population.

0481

Psychosocial Consequenses of Chlamydia trachomatis testing

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Objectives: To quantify psychosocial consequences for men and women tested positive for urogential *C. trachomatis* and to determine intended future use of contraception.

Methods: A questionnaire was developed based on earlier defined concerns related to *C. trachomatis* positive test results (stigmatisation, problems related to partner and anxiety of infertility). Questions about knowledge of *C. trachomatis* and intended future contraceptive use were added. All men and women tested for *C. trachomatis* in General Practice in Aarhus county, Denmark, between March 18 to May 31 2001 were considered to be included in the study. If the tested individual accepted inclusion in the study he/she received a questionnaire directly from the study center. The questionnaire should be filled out and returned in a pre-stamped, pre-addressed envelope.

Results: A total of 277 individuals (176 women and 101 men) were included in the study. Only for 18.5% of infected women and 32.1% of infected men the rest result had no emotional impact. More infected women than infected men felt a need for someone to discuss the test result with (61.1% vs. 25.0%, p=0.003). Five of the infected women (5/54=9.3%) and four of the infected men (4/28=14.3%) left their partner, or were left by their partner, as a consequense of the test result. Fifty-nine percent (32/54) of the infected women were more anxious about infertility after the test result than before. Among individuals with no regular partner, 56% (5/9) of infected men compared to 90% (19/21) of infected women reported they would use condom more often now than before the test result (p=0.05).

Conclusions: Having a *C. trachomatis* diagnosis has a substantial psychosocial impact on the infected individuals. Men and women react in different ways and this should be taken into account when counselling is provided in connection with a *C. trachomatis* test result.

0482

Risky Sexual Behaviors in Taiwanese Senior High School Students

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Objectives: To determine the occurrence of sexual debut and engagement of high risk sexual behaviors by an anonymous online real-time questionnaire as well as examining the prevalence of genital chlamydial infections in Taiwanese adolescents.

Methods: Students grade 10th and 11th at two senior high schools (n=658) were invited to enroll this study. An anonymous online real-time questionnaire was designed to assess demographic factors, STD/HIV knowledge and sexual behaviors in Taiwanese adolescents. Each participant created his/her own ID and password to login the questionnaire on a computer individually. After completing the questionnaire, students were asked to provide urine specimens for nucleic acid amplification testing for the diagnosis of chlamydial infection that will be performed in the near future. Results: 614 (93.3%) stu-

dents completed the questionnaire and provided urine specimens. 119 (19.4%) participants reported that they have had sexual intercourse. More than half (50.4%) of sexual debut occurred at age of 15 years or younger. A majority of students stated that they have engaged in high risk sexual behaviors: 76.5% did not use condom during every intercourse, 52.1% reported more than one lifetime sexual partner, 21% reported a causal partner, 20.2% had new sexual partners in the past 90 days, and 12.6% reported sex with someone met through the internet. 5(4.2%) students reported that they previously have been diagnosed with STDs. The percentage of students reporting sexual intercourse increased from 13.4% of 15 year olds to 25.9% of 17 year olds. More males (22.3%) reported sexual intercourse than females (17.1%).

Conclusions: Our data illustrated that substantial number of teenagers of both sexes have had sexual intercourse and are sexually active in a society which is thought to be sexually conservative. This young population reported sexual risk factors supportive of a potential hidden epidemic of STDs.

0483

Educating women about the human papillomavirus and cervical cancer: Findings from a national opinion survey with Mexican physicians

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Objectives: Cervical cancer is a leading cause of death among Mexican women. Given the clear link between this cancer and the human papillomavirus (HPV), further research on the potential consequences of casting cervical cancer as an STI is needed to inform effective education and counseling strategies. This study assessed Mexican physicians' knowledge about HPV and cervical cancer and their opinions and practices related to screening and counseling women on these topics. Methodology: In August 2002 we surveyed 1,206 GPs and Ob-Gyns working in a nationally representative sample of public and private facilities in urban Mexico. Eligible physicians completed a self-administered questionnaire. Statistical analyses included chi-square tests and multivariate models. National estimates have a margin of error of +/- 2.73% at a 95% confidence level.

Results: 76% of recruited physicians responded to our survey. While 80% identified HPV as the principal cause of cervical cancer, many lacked detailed knowledge about this association. Ob-Gyns were more likely than GPs to know that HPV types 16, 18, 31 and 45 do not cause genital warts ($p<.01$). Over half (59%) of all respondents said they regularly counsel women about the relationship between unprotected sex and cervical cancer during routine Pap tests. Nearly all respondents (98%) felt that women should be informed that HPV causes cervical cancer, and 75% thought this information could help reduce stigma associated with other STIs. Nevertheless, physicians felt that positioning cervical cancer as an STI could cause problems in partner relationships (60%), confusion (40%) and unnecessary anxiety (32%) among women.

Conclusions: Mexican physicians generally believe that women should know about the HPV-cervical cancer link. However, findings suggest the need to present clear educational messages (emphasizing that only certain HPV types are oncogenic), to consider the conflicts such information might create for couples, and to educate physicians themselves about this topic.

0484

Trichomonas Vaginalis Infection in the Sexual Partners of Infected Women

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Objective: Estimating the prevalence of *Trichomonas vaginalis* infection among male partners of infected women is a means to understanding infection in men and their contribution to recurrent trichomoniasis in women. A multi-center study was conducted to determine the concordance of infection among sexual partners using culture and polymerase chain reaction (PCR) for *T. vaginalis* detection.

Methods: Women with trichomoniasis detected by wet mount or culture and their male partners were recruited from three public STD clinics. Questionnaires were administered to study subjects regarding their clinical presentation and sexual behaviors. Prevalence of infection among male partners was determined using urethral and urine cultures, and urine PCR for *T. vaginalis*. A subgroup of men provided semen in which prevalence was also determined by culture and PCR.

Results: The preliminary analysis included data on 396 women with trichomoniasis. Using a conditional referral method for partner notification, approximately half of the male partners presented to the clinics for treatment and enrollment. Among 158 male partners, *T. vaginalis* was detected in 12% by urethral culture, 11% by urine culture, and 65% by urine PCR. Among 54 male subjects, *T. vaginalis* was detected in 15% by semen culture and 60% by semen PCR. Concordance of infection was estimated to be 66% when defined as a positive urethral culture, urine culture or PCR, and 75% when further defined as a positive semen culture or PCR. Selected demographic, clinical, and behavioral factors of infected women and their partners were not significantly associated with concordance.

Conclusions: Male partners of women with trichomoniasis were found to have a high prevalence of infection detected by PCR compared to urethral, urine, or semen cultures. Concordance of *T. vaginalis* infection does not appear to be correlated with demographic, clinical, and behavioral differences among sexual partners.

0485

Performance of a New, Rapid Assay for Trichomonas Vaginalis

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Objective: Trichomoniasis is the most common non-viral sexually transmitted infection globally, has important sequelae, and is readily treated. Screening and diagnostic testing are limited by the absence of a rapid, sensitive, and inexpensive test that does not require microscopy training. We report on the performance of the XenoStripä-Tv *Trichomonas* test (Xenotope Diagnostics, Inc.), a new, FDA-approved, rapid direct antigen detection assay.

Methods: We performed tests on vaginal swab specimens from 936 women attending STD clinics in Seattle, Washington (n=497) and Birmingham, Alabama (n=439), and compared results to culture (InPouchä, Biomed) and wet preparation microscopy.

Results: Trichomoniasis prevalence was 8.6% (43/497) in Seattle, and 21.0% (92/439) in Birmingham. Compared to the reference standard of culture, the 10-20 minute XenoStrip assay in the Seattle site was 76.7% sensitive (95% CI 61.4, 88.2), 99.8% specific (95% CI 98.8, 99.9), and had a positive predictive value of 97.1% (95% CI 84.7, 99.9) and negative predictive value of 97.8% (95% CI 96.1, 98.9). In Birmingham the rapid assay sensitivity was 79.4% (95% CI 69.6, 87.1), specificity 97.1% (95% CI 94.8, 98.6), positive predictive value 87.9% (95% CI 78.9, 94.1) and negative predictive value 94.7% (95% CI 91.8, 96.7). Wet preparation sensitivity against culture was 66.7% (95% CI 50.4, 80.4) in Seattle and 75.0% (95% CI 64.9, 83.4) in Birmingham; specificity was 100.00% in both Seattle and Birmingham. The XenoStrip assay correctly identified as positive approximately one-third of the wet preparation-negative, culture-positive persons at both study sites (n=5/14 in Seattle, 8/25 in Birmingham). At least one in five women's *T. vaginalis* infections would have gone untreated on the day of clinic visit, using current point-of-service microscopy diagnosis.

Conclusions: The XenoStrip-Tv assay is an improvement over wet preparation microscopy by providing rapid results without need for microscopy equipment or expertise.

0486

Snapshot of the molecular epidemiology of the first decade of tetracycline-resistant Neisseria gonorrhoeae (TRNG) in Canada: temporal and geographic trends

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Objectives: The development of plasmid-mediated resistance to tetracycline in *Neisseria gonorrhoeae* (TRNG) isolates is the result of the acquisition of a 25.2 MDa conjugative, *tet*(M)-containing plasmid (Tet M plasmid). TRNG isolates are the leading cause of tetracycline resistance in most countries. The purpose of the present study is to characterize TRNG isolates from across Canada to ascertain temporal and geographic trends in TRNG prevalence.

Methods: 6,306 TRNG isolates were submitted from nine Canadian provinces between 1986 and 1997 for strain typing and antimicrobial susceptibility confirmation in accordance with NCCLS standards. Subsets of these isolates were characterized by auxotype (A), serovar (S), and plasmid (P) content analysis and the type of Tet M determinant was ascertained.

Results: Temporal trends indicate that TRNG isolations peaked in 1994 (18.5% of isolates tested) and declined subsequently. A subset (n=4,064) of these TRNG isolates was retrospectively typed by auxotype (A), serovar (S) and plasmid (P) content analysis. Eleven auxotype/serovar (A/S) groups comprised the majority (93%) of TRNG isolates and A/S classes NR/IB-2, NR/IB-3, and NR/IB-1 accounted for 75.1% of the TRNG characterized. In addition, 34.1% of TRNG were also penicillinase-producing (i.e. PP/TRNG) and most (94.1%) of these isolates carried Africa-type (3.2 MDa) b-lactamase-producing plasmids. The type of *tet*(M)-containing determinant was established for 670 TRNG by PCR analysis. The American (n=139) and Dutch (n=531) types of Tet M plasmid were both identified.

Conclusions: The incidence of TRNG peaked in 1994 and has declined steadily until the end of the period examined. This decline is probably due to the use of other antimicrobials to treat uncomplicated gonococcal infections and the decreased use of tetracyclines to treat chlamydial co-infections. While both American and Dutch type Tet M determinants were found throughout Canada, the Dutch type clearly predominates.

0487

Risk of ectopic pregnancy in patients with a positive and a negative test result for Chlamydia trachomatis

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Objectives: To compare the proportions of ectopic pregnancies out of normal pregnancies in a cohort tested positive and negative for *Chlamydia trachomatis.*

Methods: The study was based on a cohort of 31,204 women tested for *C. trachomatis* in Northern Jutland County in the years 1984 to 1993. The women were tested by use of an ELISA or immunofluorescence. The unique personal identification numbers (CPR-numbers) of these patients were linked with the hospital discharge registry and the birth registry from 1984 up to the year 2000. Doing so, we identified a total of 12,257 women from the cohort of tested women who had a diagnosis of ectopic pregnancy, induced abortion, or who had given normal birth. Only women tested for *C. trachomatis* before the estimated contraception date of their first pregnancy were included for further analysis. A total of 5,707 women fulfilled these criteria. Proportions between ectopic pregnancy and normal pregnancy were calculated for women tested *C. trachomatis* positive, *C. trachomatis* negative, and for the background

population. Also subanalyses for women having two or three *C. trachomatis* positive test results were done.

Results: The ectopic pregnancy/normal pregnancy proportion was 0.01 for women who had a previous positive *C. trachomatis* test and 0.02 for women who earlier had a *C. trachomatis* negative test. The background proportion was 0.01 and thus similar to the proportion for *C. trachomatis* positive women. Number of performed *C. trachomatis* tests did not influence these findings.

Discussion: Our findings in this cohort study contradicts the results obtained from several previous retrospective seroepidemiogical studies. The level of evidence for a relationship between *C. trachomatis* infection and ectopic pregnancy will be discussed.

0488

Distribution of Chlamydia Trachomatis Genotypes In Symptomatic Patients From Buenos Aires, Argentina

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OBJECTIVE: To analyze the distribution of Chlamydia trachomatis (Ct) genotypes isolated from symptomatic adult patients and neonatal conjunctivitis of Buenos Aires Metropolitan Area

METHODS: 75 samples obtained from symptomatic patients, were studied. The Ct infection was detected employing different techniques: Culture, ELISA and PCR (amplification of de omp-A gene). The genotypes were determinated by Restriction Fragment Length Polymorphism (RFLP) analysis performed on the omp-A Nested PCR amplification products. Products were digested with Alu I (and other enzymes when it was necessary) and then electophoresed through a 13,5% polyacrilamide gel.

RESULTS: The most frequent genotype isolated was the E, representing the 50% from total analyzed specimens (37/75). When genital and conjunctival specimens results were analyzed separately, the same pattern was found: genotype E represented the 65,6 % of conjunctival isolates (21/32), and 37,2 % of genital (16/43). The distribution of the rest of the genotypes was: 9/75 specimens with genotype D, 11/75 with genotype F, 7/75 with G, 5/75 with I, 5/75 with K and 1/75 with H. After separating genital and ocular distributions, the results were: for genital 7/43 with D, 8/43 with F, 3/43 with G, 4/43 with I, 5/43 with K and 0/43 with H. And for conjunctival specimens: 2/32 with D, 3/32 with F, 4/32 with G, 1/32 with I, 0/32 with K and 1/32 with genotype H.

CONCLUSIONS: The significant difference of the frequency of genotype E between genital and conjunctival specimens (odd ratio: 3.22, p value: 0.02) suggest that genotype E could have an special capability to be transmitted from mother to newborn during vaginal delivery, or even to infect conjunctival mucosa.

0489

A role for humoral and cellular immunity in the prevention of Chlamydia trachomatis infection: a prospective human experiment

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Objectives: Epidemiological, animal and invitro investigations suggest development of acquired immunity against *Chlamydia trachomatis* infection. This prospective study was designed to assess the correlation between specific *C. trachomatis* immunologic factors measured at baseline with the risk of subsequent infection in a highly exposed cohort.

Methods: Sex workers in Nairobi, Kenya aged 18 to 35 years old were followed every two months for incident *C. trachomatis* infection. Immunoglobulin (Ig)-G and IgA antibodies against *C. trachomatis* elementary bodies (EB) and heat shock protein-60 (HSP-60) were measured in plasma and cervical secretions. IFN-g and IL-13 were measured in the supernatants of peripheral blood mononuclear lymphocytes stimulated with EB and HSP-60 genotypes 1-3.

Results: Among the 288 women enrolled in the cohort 32 cases of *C. trachomatis* infection were detected in 207 women-years of observation (15.4% annual incidence). Age (Hazard ratio (HR)=.9, 95% CI .8-.95), being single (HR=5.0, 95% CI 2.1-12), ¡Ü 2 years of prostitution (HR=1.5, 95% CI 1.0-2.2), incident *N. gonorrhoeae* infection (HR=8.6, 95% CI 3.4-21.6) but not HIV-infection (HR=.9, 95% CI .3-2.2) were associated with incident *C. trachomatis* infection. Cervical IgA to HSP-60 type-1 (HR=.5, 95% CI .3-.9), plasma IgG to HSP-60 types 1 (HR=.5, 95% CI .2-1.0) and 2 (HR=.3, 95% CI .1-.9), but not antibodies against EB were associated with a reduced risk of *C. trachomatis* infection. PBMC IFN-g secretion after stimulation with HSP60 type-1 (HR=.2, 95% CI .02-1.1) and Il-13 secretion after stimulation with EB (HR=.1, 95% CI .05-.5) correlated with protection against subsequent *C. trachomatis* infection.

Conclusions: To date these are the strongest human data to support a direct role for a *C. trachomatis* specific immune response to prevent infection. If substantiated, these findings suggest that candidate vaccines should target both humoral and cellular arms of the immune system.

0490

Estrogen protects against a primary infection with sexually transmitted HSV-2, but progesterone is important for protection following immunization.

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Objective: We have previously demonstrated that sex hormones have a profound effect on susceptibility to bacterial STDs. Using a mouse model, we examined the influence of

sex hormones on protection against a primary infection as well as challenge following immunization against sexually transmitted herpes simplex virus, type 2, infection.

Methods: Inbred C57BL/6 female mice were ovariectomized (OVX). Two weeks later they were administered either saline (control), estradiol (E), progesterone (P) or a combination (E + P) of both for 3 days. The mice were then inoculated intravaginally (IVAG) with HSV-2. In a second study, hormone-treated, OVX mice were immunized IVAG with an attenuated strain of HSV-2 (TK-) and challenged with wild type HSV-2 two weeks later. The outcome of infection was determined for both primary infection and the following challenge. Vaginal pathology was examined and viral titers were measured in genital secretions.

Results: Following primary infection with HSV-2, E-treated mice were fully protected. These mice did not show any pathology or viral shedding. Progesterone-treated animals developed severe infection and vaginal pathology. This was correlated with large quantities of viral shedding in vaginal secretions. In contrast, progesterone-treated mice immunized with attenuated HSV-2 virus showed complete protection upon HSV-2 challenge. While these mice did not develop any lesions from HSV-2 infection, they did show symptoms of inflammatory responses in the genital tract following challenge. Mice that were immunized following estradiol-treatment failed to protect against an IVAG challenge with wild type HSV-2. Interestingly, 50% of the E+P group were protected from subsequent challenge. Upon further examination, the protection in these mice correlated with productive infection following immunization with attenuated HSV-2. Furthermore, these mice did not show any inflammatory changes following IVAG challenge.

Conclusions: Estradiol-treatment conferred resistance against a primary genital infection with HSV-2. However, for protection against viral challenge following immunization, it was critical that immunization occurred in the presence of progesterone. Treatment with progesterone alone while providing protection against viral challenge, led to inflammatory responses. Vaccination strategies against sexually transmitted infections must take into consideration hormonal influences on susceptibility and immune responses.

0491

Sexual Risk Behaviour of Inmates Inmates In An All Male Prison in The United Kingdom

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Sexual Risk Behaviour of Inmates in all Male District Prison Dr U.Y.Joshi.FRCP. Conifer House for Sexual Health,Hull.U.K. It is well established that younger prisoners commit crimes to finance their drug-related habits. However they also have a high-risk sexual lifestyle with multiple short-term or one off sexual relationships putting themselves at increased risk of sexually transmitted infections. Generally the incidence of chlamydia trachomatis is higher in the under 25 year old age group. This paper describes the risk factors related to sexually transmitted infections in young inmates in an all-male district prison for remand/short term prisoners.

Methodology: Genitourinary medicine specialist offers all inmates attending sexual health clinic in the prison a sexual health service once a week. All inmates are screened for neiserria gonorrhoeae, chlamydia trachomatis and syphilis infections. They are also offered screening for HIV, Hepatitis B and Hepatitis C infection. In addition to routine sexual history, they are asked about their previous sexual experience, smoking and alcohol intake and their injecting drug habits. The majority of the inmates are between 18-35 and are on remand or on a short-term prison sentence.

This paper describes the risk factors and incidence of sexually transmitted infections in the first fifty inmates attending the Sexual Health Clinic in the year 2002. Sixty percent of the individuals were between 18-25 and remaining were between 26-35 age group. Fifty six percent of all the inmates have injected drugs in the past and almost all shared either needles or other equipment required to inject drugs. More than one third of the inmates exceeded the recommended alcohol intake (21 units of alcohol per week) and more than half of the inmates were consuming more than 50 units of alcohol a week. However most of them were non-intravenous drug users. More than two thirds of the inmates were sexually active before the legal age of 16 and just under one half of these started their sexual experience before the age of 14. Twenty percent of the inmates had more than 50 partners in their lifetime and only ten percent of them had less than ten partners in their lifetime. About 60 percent of the inmates had more than twenty-lifetime partners. Ninety percent of the inmates did not use condoms and the remaining inmates used condoms occasionally. Four in five inmates had two or more partners in the preceding six months before they came to the prison. Twenty percent of the inmates had five or more partner in the preceding six months. One third of all inmates screened gave a history of sexually transmitted infections in the past.

The incidence of sexually transmitted infections was as follows:

Chlamydia 18% Genital Wart s 20% Gonorrhoea 02%

Screening for blood borne/sexually transmitted virus infections showed prevalence of 6% in both Hepatitis C infection and Hepatitis B infection, in all the inmates. However no one was found to have HIV infection. All the men denied having sex with men.

Conclusion: The prison inmates are one of the most high-risk populations for acquiring sexually transmitted infections. This study found a higher incidence of sexually transmitted infections than the similar population outside the prison. They were also found to have high-risk sexual lifestyle like earlier age of coiterache, higher number of sexual partners and higher numbers of short-term sexual relationships. All males denied having sex with men probably due to the risk of being victimised in the prison by other inmates or by the prison authorities.

Recommendations: Sexual health screening should be offered to all the inmates in full confidence and they should be encouraged to attend sexual health clinic for excluding infections like chlamydia, HIV, Hepatitis B and Hepatitis C which are usually asymptomatic in earlier stages. They should be offered sex education and advice on safer sex.They also should be offered an opportunity to wean off from their high alcohol intake and/or drug injectin g habits.

0492

Change in Sexual Repertoire in association with Chlamydia and Gonorrhea Infections among Adolescent Women

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Objective: Describe the effects of change in sexual repertoire on chlamydia and gonorrhea infection among adolescent women.

Method: 195 women ages 14-19 years enrolled from primary care clinics. Data were collected from quarterly face to face interviews (4 interviews over 9 months). Data included race (non-black/black), age at interview and STI prevalence at each time point (0, 3 months, 6 months and 9 months). The sexual repertoire change variable was constructed by summing low risk behaviors (e.g. kissing, types of petting, dancing- 4 items, 1 point each), medium risk behaviors (e.g. oral/genital contact-2 items, 10 points each) and high risk behaviors (anal and vaginal sex-2 items, 100 points each) reported over the past 3 months. A random slope growth curve model controlling for initial sexual repertoire was fitted using LISREL 8.5.

Results: The chi-square for the overall model in combination with the other fit indices indicates the model is an excellent fit to the data (X^2= 31.35 (36), P-value=0.69). A significant sexual repertoire slope of 5.14 (t = 24.54) and initial sexual repertoire 10.31 (t=9.89) indicates a change from medium to high risk sexual activities as a group. A significant relationship between change in sexual repertoire and STI at 3 months (â= 0.11, t=3.35) at 6 months (â=0.10, t=4.20) and at 9 months (â=0.13, t=4.72) was established. Change over time was less evident for black subjects than for non-black subjects (â=-0.26, t= -13.67). Older age was associated with initial sexual repertoire (â=0.40, t=4.70). Initial sexual repertoire predicted baseline infection (â=0.17, t=1.91) and change in sexual repertoire (â=1.34, t=21.89).

Conclusions: STI prevalence is associated with change in sexual repertoire. As subjects move from oral/genital contact to anal and vaginal sex the probability of acquiring an STI increases. Prevention efforts should consider the complexity of adolescent sexual development and STI risk.

0493

Prolonged exposure to progesterone prevents induction of protective mucosal responses to HSV-2 following intravaginal immunization.

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Objective: Depo-provera is a long acting progestational formulation that is commonly used as a contraceptive agent, as well as therapeutically for treating women with endometriosis. Depo is also widely used in animal models of STDs to make animals temporarily susceptible to infection. We have recently reported that treatment with Depo, in a mouse model of genital herpes simplex virus, type 2 infection, increases susceptibility by hundred fold. In this study, we examined if treatment of mice with Depo-provera altered immune responses to a genital HSV-2 infection.

Methods: Inbred C57BL/6 mice were immunized with an attenuated strain of HSV-2 (TK-) either 5 or 15 days after a single treatment of Depo-provera. Three weeks later both groups of mice were challenged IVAG with wild type HSV-2. Pathology was scored and genital viral titers were examined following immunization as well as challenge. Protection and local immune responses were also examined.

Results: Mice immunized with TK- HSV-2 following a longer exposure (15 days) to Depo failed to show protection when challenged with wild type HSV-2. In contrast, mice that were immunized shortly after Depo treatment (5 days) were fully protected. The protection in the Depo 5 group correlated with high levels of IFN-g locally in the vaginal secretions following immunization with TK- HSV-2. This response was absent in Depo15 mice. Significantly higher Th1 cytokine responses were measured in local lymph node cell cultures from Depo 5 mice compared to Depo 15 group, following TK- immunization. The lack of protection in Depo 15 mice correlated with poor HSV-2 specific IgG and IgA responses locally in the vaginal washes.

Conclusions: Longer exposure to Depo led to poor innate and adaptive immune responses following IVAG immunization with attenuated HSV-2. This resulted in a subsequent failure to protect against a challenge from wild type virus. These studies have important implication for designing effective vaccine strategies to STIs as well as for women who are currently on hormonal therapies.

0494

Computer-Assisted Risk Assessment & Education:

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Objective: In many settings where HIV/sexually transmitted infection (STI) care occurs, clinician time for risk assessment is limited and staff counselors are unavailable. A computerized HIV/STI risk assessment and counseling tool may improve case detection and prevention. We have developed a CD-ROM that allows clients to receive interactive risk reduction counseling based on the CDC's Project RESPECT.

Methods: '*CARE*' utilizes audio computer-assisted self-interviewing to ascertain risk, and provides personalized feedback to help the client develop personal prevention plan(s). We programmed those plans that were most commonly selected by < age 25 participants from RESPECT-2. A chart review (n = 50) identified common steps used in those prevention plans. A national advisory board reviewed the *CARE* algorithms for content validity. The user may select an avatar guide through the session. Risk feedback summaries and prevention plan options are outlined under four domains: 1) Choosing your sex partners; 2) Talking with your partner; 3)

Using condoms and safer sex alternatives; and 4) HIV/STI testing. Clients create up to two prevention plans. Skills-building videos are offered for men who have sex with men and for heterosexuals: 1) how to use male/female condoms; 2) how to bring up condoms with new and existing partners; 3) dealing with a partner who does not like condoms; 3) sexual initiation/coming out; 4) waiting for sex/abstinence; 5) talking with your partner about HIV/STD testing; 6) safer sex alternatives. Referrals are provided. (An administrative module allows site users to customize local referrals.) A client printout ends the session. Client records are stored anonymously in a unique-identifier-coded database, allowing follow-up.
Results: We will demonstrate the beta version of *CARE* and discuss next steps in tool refinement (including language and Web versions) and effectiveness evaluation.

Conclusions: Computerized HIV/STI risk assessment and counseling may be an effective adjunct in busy clinical settings.

0495

The Use of Multiple Nucleic Acid Amplification Tests (NAATS) to Define the Infected Patient Gold Standard for Assessment of New Diagnostic Tests of Chlamydia trachomatis (CT) Infections

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Objective: NAATs can be used to define the infected patient gold standard (IPGS) for the purpose of designing studies to evaluate the performance of CT diagnostic tests. It is unclear how many test results run by different NAATs and what combinations of specimens comprise the best IPGS. We approached this question using data from a large multi-center clinical trial for the APTIMAÒ Combo2 TMA assay (Gen-Probe Incorporated).

Methods: The two comparison NAATs used in the clinical trial were the Abbott LCx LCR assay and the Roche AMPLICOR PCR assay. Data were available from three endocervical swabs and a urine specimen from 1,412 women. For the purposes of the analysis presented here, results from all three assays were used equally in a rotating fashion to define the IPGS. All possible combinations of 4, 3 and 2 results using two different NAATs were used to define the IPGS for calculation of the swab and urine specimen sensitivity and specificity for the third NAAT. The effect of changing the IPSG definition was determined by constructing receiver operator-like curves using calculated sensitivities and specificities for each test. Inspection of these graphs revealed which definitions resulted in performance estimates closest to the ideal of 100% sensitivity and specificity. These will be presented in detail.

Results: Using the one-of-two-positive-results or two-of-two-positive-results (same or two different assays) IPSG definitions produced low sensitivity or low specificity estimates respectively. If four comparator NAAT results are used, the any-three-of-four-positive definition or the at-least-one-specimen-positive-by-each-of-two-comparator-assays definition appeared to provide the best combinations of sensitivity and specificity estimates. The any-two-tests-positive-out-of-three definition resulted in estimates that were as good or better than the former two definitions.

Conclusion: This analytic approach may provide an objective basis for defining NAAT based IPGS's for use in future studies of new CT diagnostic tests.

0496

Formulation of a risk scoring system for detection of Neisseria gonorrheoea and Chlamydia trachomatis infection in women attending family planning and sexally transmitted disease clinics in Nairobi, Kenya

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Objective: To construct a simple, effective tool to predict N. gonorrhoeae and C. trachomatis infection in women attending STD and family planning clinics in Nairobi, Kenya.

Methods: 1992 women, aged 18-45 years, presenting to one of five clinics in Nairobi, Kenya with a complaint of abnormal vaginal discharge, mild/low abdominal/pelvic pain, STD contact or presenting for family planning services were screened for study eligibility and tested for N. gonorrhoeae and C trachomatis infections. Analysis focused on the prevalence of either infection. Univariate and stepwise multivariate logistic regression were used to build a predictive model, and adjustment for optimism associated with over fitting data was made via a bootstrap procedure.

Results: Prevalence was 6.8% (135 cases; 10 women with both infections). Stepwise logistic regression resulted in a predictive tool based on age (<25 vs. = 25 years), marital status (single vs. not), number of sex partners (=1 vs. >1 in past month), dysuria/urinary frequency (present vs. absent), lower abdominal pain (present vs. absent), partner contact (true vs. false), cervical bleeding (present vs. absent), and vaginal discharge color (yellow vs. not yellow). Weighing the importance of sensitivity and specificity in a 1.5:1 ratio, sensitivity, specificity, PPV and NPV were 76.4%, 42.6%, 9.2% and 90.7%.

Conclusions: In a population with moderate gonorrhea/chlamydia prevalence, demographic and clinical findings failed to accurately identify those with infection. Although the search for inexpensive laboratory tests should be a priority, prevention remains the best strategy.

0497

Predictors of STD Vaccine Acceptability among Adolescents

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Objective: To examine acceptability of STD vaccines to adolescents.

Methods: 153 adolescents (ages 12-17; 69% female) who were accompanied by their parents to medical appointments completed questionnaires. STD vaccine acceptability was measured by summing across 3 items (5-point response scale) which addressed GC, HSV-2, and HIV vaccination. Scores (range=3-15; mean=13.6) were trichotomized to form groups of low, medium, and high acceptors. Potential predictors of acceptability included health beliefs, health behaviors, history of sexual intercourse for self and friends, age, and gender. Data were analyzed using cumulative multiple logistic regression.

Results: The high acceptability group included 81 adolescents who endorsed all 3 hypothetical vaccines at the highest level (i.e., all 5s). The medium acceptability group included 15 adolescents who scored 2 of the vaccines as 5s and 1 as a 4. The low acceptability group included the remaining 57 adolescents. Logistic regression analysis indicated that higher levels of vaccine acceptability were associated with adolescents' anticipation that STD acquisition would lead to experience of negative affect (OR=1.1; 95% CI=1.0-.1.2; P<.01) and with increased reporting of friends having had sexual intercourse (OR=1.3; 95% CI=1.0-1.6; P=.03). Age, gender, health behaviors, perceived vulnerability to STD, and history of sexual intercourse were not significant predictors of acceptability.

Conclusions: Most adolescents indicated high levels of acceptability of STD vaccination. Even among the low acceptability group, 40 adolescents had scores of 12 or 13 out of 15. Concerns about the negative effects of STDs and the sexual/social environment may be important to consider when implementing future STD immunization programs targeted at adolescents.

0498

HIV acquisition associated with genital ulcer disease and herpes simplex virus type 2; A nested case-control study in Rakai, Uganda.

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Objective: To assess the timing of symptomatic GUD relative to HIV seroconversion, and the effects of concurrent HSV-2 infection.

Methods: 248 HIV seroconverting cases and 496 HIV-negative controls were assessed at three sequential 10-monthly contacts; visit 1 preceding case HIV acquisition, visit 2 following case seroconversion, and visit 3, 10-months post-seroconversion detection. Odds ratios (OR) and 95%CI of HIV acquisition were estimated by logistic regression. HIV viral load was measured by RNA-PCR, and HSV-2 serology used HerpSelect EIA with Western blot confirmation.

Results: The OR of HSV-2 seropositivity associated with HIV acquisition was 1.71, 95%CI 1.24-2.37. GUD prevalence was similar among cases and controls pre-seroconversion (visit 1), but was elevated among cases at post-seroconversion visits 2 (OR=3.18, 95%CI 1.93-5.25) and 3 (OR= 2.05, 95%CI 1.08-3.89). HIV viral load was increased in HSV-2 seropositive relative to seronegative cases 5 months post-seroconversion (4.63 versus 4.02 log10 cps/ml, respectively, p = 0.04), and 15-months post-seroconversion (4.53 versus 3.40 log10 cps/ml, respectively, p = 0.02).

Conclusion: HIV acquisition is associated with HSV-2 seropositivity. GUD prevalence is increased post-HIV seroconversion, and HIV viral load is elevated in HSV-2 positive persons newly infected with HIV. This could increase HIV infectivity and suggests a role for HSV-2 treatment in dually infected individuals.

0499

Cost effectiveness of gonorrhea screening in family planning settings

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Objective: In 2000, the median U.S. state-specific gonorrhea prevalence was 0.9% among women 15-24 years in family planning settings. The most recent (1989) published cost-effectiveness analysis of gonorrhea screening found screening to be cost effective at 1.5-2% prevalence. We conducted cost-benefit analyses of gonorrhea screening based on recent costs and newer test technologies.

Methods: Our cost-benefit analyses included only direct costs. The population was non-pregnant women seen in family planning settings. Probabilities of events and costs were determined from published studies and California data. Gonorrhea screening scenarios included: 1) universal screening, 2) no screening, and 3) targeted testing of women with chlamydia. Probabilities included were: prevalence of gonorrhea and chlamydia, test sensitivities and specificities, return for treatment, treatment complications, transmission to partner, partner complications, and PID. We conducted sensitivity analyses over a range of assumptions for probabilities and costs; e.g., test costs from $2-$44, gonorrhea prevalence of 0.5%-10.0%, and PID probability of 10%-25%.

Results: Models were sensitive to the cost of tests, gonorrhea prevalence, and probability of PID. They were relatively insensitive to the cost of treatment, and probabilities of treatment complications, partner complications and PID. If the gonorrhea prevalence

was 1%, "universal screening" had the best cost-benefit only if testing cost $2 or less. If gonorrhea prevalence was less than 6%, both the "no screening" and "targeted testing" scenarios had similar cost-benefit over a range of PID probabilities and test costs. If testing cost $10, then "universal" gonorrhea screening was not the best strategy unless gonorrhea prevalence was at least 8%.

Conclusions: Gonorrhea prevalence is very low in most family planning settings in the U.S. Our findings suggest that most gonorrhea screening protocols in these settings are far from cost effective. Given limited and declining resources, gonorrhea screenings funds may be used more efficiently in other ways to promote women's health.

0500

Network Visualization and Ethnography Characterizes North Carolina Syphilis Outbreaks as Heterosexually-Driven

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Objectives: Robeson County (pop. 123,000) North Carolina experienced the highest attack rate of infectious syphilis in North America in 2000 and 2001 (50 and 73 cases per 100,000 population, respectively). Subsequently, adjacent Columbus County experienced a similarly-driven form of infectious syphilis outbreak. A recent recrudescence, Durham challenges disease investigators to rapidly characterize outbreak dynamics, in an attempt to regain the momentum towards syphilis elimination.

Methods: To visualize syphilis transmission dynamics in Robeson and adjacent counties, more than 20,000 contact tracing records for syphilis and HIV, systematically collected using STD*MIS in eighteen counties since 1994, were matched to identify unique individuals. SAS programming was used to discern groups of individuals connected by a path of some length (network components). SAS and Pajek routines were combined to produce network visualizations of selected components. In addition, contact interviews were analyzed for partner selection patterns and risk configuration. Finally, area economic and criminal data were abstracted to corroborate patterns.

Results: The larger endemic transmission context consisted of 9239 individuals. Network analysis revealed that the largest connected component (N= 628) formed the substrate for the Robeson outbreak, while the second largest component (N= 261) formed the basis for secondary outbreak in Columbus County. Network visualization facilitated identification of "patient zero" for the Columbus outbreak.

Conclusions: Socio-sexual networks, visualized through time, reveal a seldom-seen phenomenon: network configuration of a phase shift from endemic to epidemic transmission. Social networks analysis provides a powerful epistemological tool which, together with ethnographic data, suggest key questions and transmission patterns. Importantly, network insights clearly implicate, as the driving force of this ongoing syphilis outbreak, increasing sexual mixing, within a crack prostitution milieu, between previously sexually separate Native American and African American population subsets in the affected counties.

0501

Re-Screening of Female Chlamydia Cases in California Family Planning Clinics, 1999-2002

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Objective: Repeat infection with Chlamydia trachomatis can increase the risk of PID and adverse reproductive outcomes in women. To prevent complications of re-infection, the CDC 2002 STD treatment guidelines recommend that all women with a chlamydia infection be re-screened at 3-4 months after treatment. We established baseline re-screening practices for female chlamydia cases from 1999 through the guidelines¡' release (May 2002). Repeat infection, STD symptoms, reason for visit, and age were assessed among those cases re-screened.

Methods: Between 1999-2002, thirteen family planning clinics in a statewide chlamydia prevalence monitoring program collected data on women tested for chlamydia. Clinics were geographically and demographically representative of California Project Area family planning populations (which excludes Los Angeles and San Francisco counties). Cases were followed for „d4 months.

Result: Of 42,229 females tested, 1878 (4%) were cases. Almost half (N=913) were tested again during the study period; 222 (12%) were re-screened at 3-4 months. At re-screening, 34% reported symptoms, 40% had a STD-related reason for visit, and 86% were age 25 and under. Positivity at re-screening (12%) was independent of symptoms, STD-related reason for visit, and age. At all other visits (N=57,093), positivity was associated with all three factors ($p<.0001$). Age was not associated with re-screening, and did not confound the relationship between age and positivity in this group. Those re-screened were more likely to cite chlamydia contact (22%) or STD screening (15%) as their reason for visit than all other visits (2% and 6%, respectively).

Conclusions: Re-screening at 3-4 months was not common before the guidelines were established, and results from this prevalence monitoring system can be used to assess adherence to re-screening recommendations. Prevalence of risk factors and infection should be established in the baseline group as a basis for later comparison.

0502

Building capacity for STD prevention in Viet Nam: a multi-national collaboration

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Objectives: In Vietnam, STD care is provided by dermato-venereologists and the NIDV is responsible for the implementation of a national STD prevention plan. This plan includes the development of a sentinel STD surveillance system for syphilis, gonorrhea, chlamydia, and trichomoniasis, as mandated in July, 2002. The NMA, who assists NIDV and HDV with their leprosy elimination program, has recently expanded its support to assist the NIDV and HDV in their STD Control Program efforts. The NMA sponsored two 2-day training programs conducted by staff from the California and Denver PTCs in Ho Chi Minh City and Hanoi in December, 2002.

Methods: The training was comprised of 8 modules, including core components of STD programs, STD surveillance, STD case management (including syndromic approaches), behavioral interventions, risk reduction counseling, partner management, and program evaluation. The training included lectures and small group activities. All modules were presented in English and simultaneously translated by physician interpreters. Slides were presented in both English and Vietnamese.

Results: Approximately 65 senior health staff from 24 southern provinces attended the training in Ho Chi Ming City and 90 senior health staff from 37northern and central provinces attended the training in Hanoi. Participants were predominantly dermato-vernerologists and included medical directors and STD program managers at the provincial level. Participant evaluation indicated that training contents were deemed appropriate for their level of needs. Importantly, the training provided understanding on the part of the trainers regarding specific program needs in Vietnam and identified areas for further collaboration.

Conclusion: Despite cultural differences and limited country-specific knowledge, trainers were able to provide appropriate information and skills training to support STD prevention in Vietnam. While the mission of the U.S. STD/HIV Prevention Training Centers is primarily to provide training domestically within the U.S., expertise from these Centers may be used to build capacity abroad.

0503

Cervical swabs tested by ProbeTec and LCx assays are suitable for identifying women infected with Chlamydia trachomatis and Niesseria gonorrhoeae by testing in the APTIMA Combo 2 assay

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Objectives: Low positive or equivocal nucleic amplification assay results in one assay may benefit from repeat testing in another. Laboratories changing from one commercial test to another require assay-specific collection kits to be replaced in clinics serviced. The objective of the study was to test by the APTIMA Combo 2 assay residual cervical swab material left over from LCx and ProbeTec-specific collection tubes; then to calculate the concordance of the assay results for C. trachomatis. N. gonorrhoeae nucleic acids were simultaneously assayed in the APTIMA Combo 2 assay.

Methods: Swabs previously tested by the ProbeTec CT assay (Becton Dickinson) (n=150) or LCx CT test (Abbott) (n=156) were retrieved from 1 day to 2 weeks at 4oC or frozen, and tested in the APTIMA Combo 2 assay (Gen-Probe Incorporated). The original swab and 200 ul of the remaining transport media were added to the APTIMA Combo 2 tube before processing.

Results: The APTIMA Combo 2 CT assay results were concordant with the LCx results in 91.4% (32/35) of the positives, 100% (121/121) of the negatives and 98.1% (153/156) overall. APTIMA Combo 2 CT results were concordant with 95.2% (40/42) of positives, 99.1% (107/108) of negatives and 98% (147/150) overall with the ProbeTec CT results. Six patients were found to be dually infected with CT and GC. The APTIMA Combo 2 examination of patient charts revealed that 5 of the 6 had been cultured for GC and were positive.

Conclusions: Cervical swab material from the LCx and ProbeTec transport systems provided simultaneous NAA testing for CT and GC by APTIMA Combo 2 and identified 93.5% (72/77) of women who had been C. trachomatis positive in the other assays. GC-positive patients were also identified.

0504

Molecular Epidemiology and Transmission of Chlamydia trachomatis Infection Based on omp1 Genotyping within Sexual Dyads

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Objectives: To determine if both members of a *Chlamydia trachomatis* (CT)-infected sexual partnership (dyad) were infected with the same CT strain, and to characterize the molecular epidemiology of CT infection in two separate study populations.

Methods: To identify CT strains, *omp1* was amplified and sequenced from CT+ specimens collected from Indianapolis and Boston subjects enrolled in two ongoing studies—the Transmission of Incident and Prevalent Chlamydial Infection (TIPCI), and the Midwest STD Cooperative Research Center (STDCRC). Reverse Dot Blot was used to detect mixed-serovar infections, and the genotype data were correlated with dyad data to examine CT epidemiology.

Results: As of October 2002, 161/184 Indy and 32/41 Boston CT+ specimens were genotyped, representing 120 dyads containing at least one CT+ partner. Both partners

were CT+ (CT++ dyads) in 54/120 (45%) dyads. In 11/54 (20.4%) CT++ dyads, *ompl* could not be amplified from both partners. In the remaining, genotyped 43 CT++ dyads, 37 (86%) shared identical *ompl* genotypes. Different *ompl* genotypes were found in 2/43 (4.6%). In 4/43 (9.3%) CT++ dyads, two genotypes were detected in one partner while only one of those genotypes was found in the other partner. Multiple-serovar infections were found in two other dyads, but where only one partner was CT+. Six discrete genotypes were identified from Boston and 21 from Indy; 29% of the patients had genotype E. D and F were also common.

Conclusions: *Ompl* genotyping is a useful molecular tool for characterizing transmission of CT. In genotyped CT++ dyads, 86% had identical genotypes, 4.6% had different genotypes, and 9.3% had mixed-serovar infection (although one serovar in the mixture was shared in common between the partners.) Overall, mixed-serovar infection was found in 6/120 (5%) CT+ dyads. As data accrue, *ompl* genotyping will prove useful for characterizing the epidemiology of CT infection in these populations.

0505

Traditional partner management for syphilis among men who have sex with men provided little intervention: San Francisco, 2001-2002

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Objective(s): In San Francisco, primary and secondary syphilis cases increased from 22 cases in 1999 to 318 cases in 2002 among men who have sex with men (MSM), with the proportion of MSM cases among total cases increasing from 76% to 93% over the same period. To assess the role of partner management in controlling this syphilis epidemic in MSM, we examined the proportion of partners during the infectious period receiving successful intervention in 2001 and 2002.

Methods: Partner management was provided by local Disease Intervention Specialists (DIS) and by DIS from the Centers for Disease Control and Prevention's (CDC) Syphilis Rapid Response Teams. We abstracted and analyzed syphilis partner management interviews of MSM primary and secondary syphilis cases from 2001 and 2002. The infectious period was defined as three months prior to primary syphilis diagnosis and six months for secondary. Successful partner intervention outcomes included: infected and brought in for treatment, not infected, previous treatment, or given preventive treatment.

Results: In 2001, 100 MSM reported 969 (mean 9.7) sex partners during the infectious period; and in 2002, 248 MSM reported 3488 (mean 14.1) partners, a significant increase in partners ($p<.01$). Most partners were anonymous, and the proportion of anonymous partners also increased ($p<.01$). The proportion of infectious period partners with successful interventions declined from 13.3% in 2001 to 9.4% in 2002 ($p<.01$). Outcomes for partner management were the same for local and CDC DIS staff.

Conclusion: Traditional partner management has become less successful in controlling the early syphilis epidemic among MSM in San Francisco as the number of anonymous partners has increased. Our data suggest that a large proportion of persons exposed to syphilis are not aware of their exposure. This explains, in part, why the number of syphilis cases in MSM has continued to increase over the last several years.

0506

Studies Relying on Passive Cohort Data Provide Biased Estimates of Incidence of Chlamydial Infection

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Objective: To assess whether study duration in a passive cohort might affect the estimate of chlamydial incidence, with shorter study periods having higher incidences of infection.

Methods: We analyzed data collected from women 12-24 years of age tested for chlamydia at least twice at six venues in San Francisco between 1997 and 2000. We calculated incidence for eleven study periods of one to four calendar years. Additionally, Poisson regression analyses were performed to examine the effects of age and race as covariates of chlamydial infection.

Results: The overall prevalence of chlamydia among all visits was 9.5%, but varied significantly by site ($p<.0001$), age ($p<.0001$), and race ($p<.0001$). Using observations from 1997 only, the calculated incidence of chlamydial infection was 16.7 (95% CI: 11.3 -23.1) per 1000 person-months of follow-up, while a lengthened study period of 4 years, 1997-2000, showed a significant decrease in incidence to 8.6 (95% CI: 7.6 -9.6). We examined incidence for each single calendar year, 1998, 1999, and 2000, and found incidence to be similar to that observed in 1997: 19.5, 17.1, and 17.2 respectively. Poisson regression analyses showed that study duration and age remained significantly associated with incidence of chlamydial infection.

Conclusions: In an unbiased cohort study, measures of incidence should remain consistent regardless of the study duration period if there is no underlying change in incidence of the population. Our passive cohort data produced declining estimates of incidence with longer study durations. However, estimates were stable when using the same study duration over time, suggesting that there was no decline in community prevalence over time. Our findings suggest higher-risk persons returned for chlamydia screening more quickly than lower-risk persons. While passive cohort studies are easy and inexpensive to conduct, they may have limited epidemiological value given the questionable validity of their findings.

0507

Understanding Successful Condom Use in The Dominican Republic and Mexico

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Objectives: In the absence of cures and vaccines for many STIs, including HIV, the correct and consistent use of latex condoms is a fundamental prevention strategy. Unfortunately, condom use across the globe is quite low, and much current research has focused on understanding only the negative aspects of condom use. Using qualitative methods, our study took a fresh approach to the problem of low condom use by focusing on the concept of successful condom use, and those positive aspects of condoms that facilitate successful use.

Methods: In the Dominican Republic and Mexico, we interviewed over 200 male and female students, factory workers, and sex workers/clients, to identify successful condom users. Using a screening questionnaire containing a 75-point scale, we invited "successful" individuals scoring at least 38 points on this scale to also participate in focus group discussions. We conducted a total of 27 focus groups aimed at understanding how users achieve successful condom use, learning the context and conditions of that success, and exploring how the positive aspects of condom use can be translated into creative interventions.

Results: A content analysis of the transcripts found that while nearly all participants considered themselves to be successful condom users, their definitions of successful condom use varied greatly depending on several contextual factors, including type of partner, and perceived risks for STIs and pregnancy.

Conclusions: Participants' understanding and practice of successful condom use enriches our understanding of successful condom use. These data will inform the development of interventions that empower individuals to correctly and consistently use condoms.

0508

Spatiotemporal Changes in Chlamydial Infection Patterns and Persistence of

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Objectives: We conducted a spatiotemporal analysis and mapping of chlamydial infection to examine changes in the spatial distribution over time and verify the persistence of a spatial core area of infection for Wake County, North Carolina.

Methods: We used chlamydial infection and non-gonococcal urethritis (chlamydial infection) surveillance data reported to Wake County from January 1, 1999 through September 31, 2001. Cases were aggregated by census tract in space and monthly in time. We used Bayesian maximum entropy (BME), a modern geostatistical approach to spatiotemporal analysis and mapping, to estimate a continuous surface of chlamydial infection rates for Wake County. BME enabled us to generate disease estimates based on surrounding observations in both space and time, and hence, to produce a series of temporally dependent disease maps.

Results: Chlamydial infection had low spatiotemporal variability with short term, local neighborhood rates having the greatest influence on the distribution of infection. Chlamydial infection had a primary core area of infection that expanded and contracted over time, and small areas of elevated infection rates outside the core that were likely to signify outbreaks. The primary core area was consistently present over 33 months, verifying its persistence over time.

Conclusions: Monthly to bimonthly fluctuations in the spatial distribution of chlamydial infection suggest that this STD needs to be analyzed fairly frequently. The persistence of a geographic core area of elevated infection over time lends further evidence that core groups of transmitters can be defined spatially. BME is a powerful spatiotemporal analysis and mapping technique that can be applied to epidemiologic investigations exhibiting spatial and temporal dependence reliably.

0509

Risk Behaviour and receptivity to HIV/STI screening and hepatitis vaccination among patrons of Montreal's gay bathouses

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Objectives: To determine risk behaviour and receptivity to a programme of HIV/STI screening and hepatitis vaccination in Montréal's gay bathhouses.

Methods: Anonymous 40-item self-administered questionnaire given to bathhouse patrons in May and June 2002.

Results. 260 respondents; mean age: 40.3; 10,7% bisexual. Visits to bathhouses during last six months: 44.0% of respondents visited bathhouse >1 time/week; 73,6%visited >1 bathhouse in Montréal, 23,0% have been to at least to 1 bathhouse outside Montréal; average duration of visit: 4.2 hours. Behaviour in bathhouses during last six months: 52.5% of respondents had > 6 casual partners (26.7% had > 20 partners); 57,2% had group sex at least occasionally; 59,9% report having had insertive or receptive anal sex with a casual partner at least once (33,1% of them did not always use a condom); 33,6% consumed poppers "half the time or more" at (or just before arriving at) the bathhouse; 31,2%: alcohol; 24,1%: pot/hash; 5,1%: cocaine; 2,7%: GHB. Previous screening/vaccination: 83,6% of respondents had been tested for HIV (24.3% of whom were last tested >3 years ago; 16,4% acknowledged being sero-positive); 73.4% had been tested for STI (27,0% of whom were last tested > 3 years ago); 51,8% received at least one dose of hepatitis B vaccine (29,9% of whom had had 3 doses), 46,5% had received at least one dose of hepatitis A vaccine (44,3% of whom had had 2 doses).
Screening/vaccination to be offered in bathhouse by a male nurse : Perception that it is somewhat or very : "useful": 83,7% of respondents; "acceptable": 79,8%; "feasible": 76,0%; "appropriate site": 73,9%; "not embarrassing": 67,4%. Respondents consuming poppers half the time or more at (or just be-

fore arriving at) the bathhouse were significantly less likely to perceive services as « acceptable », « appropriate site » and « not embarrassing » than respondents never or occasionally consuming poppers. Intention to receive hepatitis vaccine: 74,4%; undergo urine test for gonorrhoea: 71,9%; blood test for syphilis: 71,3%; blood test for HIV: 65,7%.

Conclusion: A HIV/STI screening and hepatitis vaccination programme in bathhouses is pertinent and would be well received by most clients.

0510

Gender Differences in the Associations of Mental Health, Sexual Risk Behavior, and Sexually Transmitted Infections among Adolescents and Young Adults

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Objective: To determine whether young men and women with poor mental health report increased sexual risk behavior and are more likely to have a sexually transmitted infection (STI).

Methods: Sexually active patients aged 14-24 years attending adolescent and STI clinics and an emergency room in Boston and Indianapolis were interviewed regarding their sexual behavior and tested for *Chlamydia trachomatis* (CT) and other STIs. Their sexual partners with CT were similarly interviewed and tested. Associations of Beck Depression Inventory (BDI) score (possible 0-63) and Rosenberg Self-esteem Scale (RSES) score (0-40) with sexual risk behaviors and STI were explored separately by sex.

Results: The 348 women, 326 men were largely black non-Hispanic with no or subsidized insurance. Median number of lifetime sexual partners was 5 for women (range, 1-200) and 11 for men (range, 1-350). Coital frequency was a median 5 times in the past 30 days for both women (range, 1-88) and men (range, 1-62). Approximately one-half of women (48%) and men (53%) were infected with CT, *Neisseria gonorrhoeae* (NG), and/or *Trichomonas vaginalis*. For women and men, respectively, mean BDI scores were 9.1 and 8.3; 11% and 7% had scores >21 (severe symptomatology). Median RSES score was 34 for both sexes. Among women, 19% of those with BDI scores >21 had NG infection vs. 6% of those with lower scores (p=0.02); RSES score below the median was associated with any STI (63% vs. 49%, p=0.01). Among men, higher BDI score was associated with lower coital frequency (p=0.003) and lower RSES was associated with having fewer partners (p=0.03).

Conclusions: Women with greater depressive symptomatology and those with lower self-esteem were more likely to have an STI than other women. In contrast, men who were more depressed and those with lower self-esteem engaged in less sexual risk behavior than other men.

0512

Acceptability of Microbicides to Prevent Sexually Transmitted Infections

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Objectives: Methods to reduce the risk of sexually transmitted infections (STI) that are controlled by women remain a high priority. We assessed microbicide acceptability among a sample of women and their male partners at high risk for STIs.

Methods: Women and their male partners were recruited from three public STD clinics. Questionnaires included an assessment of interest and willingness to use microbicides.

Results: Among women (N=530) enrolled in the study, the mean age was 29.7 years (standard deviation 9.1). Most women were African American (91%) and single (73%). Nearly all women reported interest (92%) in using a product that would protect against STIs (75% very interested; 17% somewhat interested). Most women reported willingness to use a microbicide with every sexual act (78%), if it cost more than a condom (87%), or even if the partner objected to its use (91%). Most women (75-81%) reported willingness to use a microbicide if it increased moisture in the vagina, required a wait of 15 minutes, was effective for only an hour, or was effective against some but not all STIs. Willingness to use microbicides varied somewhat by marital status.
Among partners of enrolled women (N=191), the mean age was 32.6 years (SD 11.2). Most men reported interest (81%) in using a product to prevent STIs. Willingness of the partners to use a microbicide was high with every sexual act (75%) or if it cost more than a condom (81%). Willingness to use a microbicide was generally lower among men if it required a wait of 15 minutes (68%), was effective for only an hour (70%), or was effective against some but not all STIs (52%).

Conclusions: Interest and willingness to use a microbicide was high among women attending STD clinics. Male partners were also willing, although to a lesser extent than the women.

0513

Comparison of STD prevalence by reported level of condom use among women and heterosexual men attending an urban STD clinic

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Objective: To assess the association of various levels of condom use with a variety of STD.

Methods: We performed a computerized medical record review of visits by women and heterosexual men seen for a new problem at an urban STD clinic. Prevalence rates of *N. gonorrhoeae* (by culture), *C. trachomatis* (by PCR or SDA, 1996-2001), *T. vaginalis* (by wet mount exam), recent onset symptomatic genital warts (by exam with symptoms ≤30 days and without a history of warts), 1st episode genital herpes (by exam and history), and molluscum contagiosum (by exam) were

stratified by reported condom use [non-use (0%), inconsistent (25-75%), consistent (100%)] over the past 4 months.

Results: Between 1/1/90-12/31/01, there were 126,220 patient visits, (39% female and 61% male visits), with 46% reporting non-use and 54% any USA
ge (38% inconsistent and 16% consistent use). Any users were riskier than non-users (i.e., new sex partners: 63% vs. 41%; multiple sex partners: 60% vs. 36%). Using logistic regression, the adjusted odds ratios (AOR) of STD by reported condom usage were as follows:

Conclusions: Comparisons of STD between condom users and non-users is confounded by greater sexual risk in users. Comparing consistent to inconsistent users reduces this confounding, revealing protection for both men and women for non-viral STD and for herpes for men.

0514

Testing men who have sex with men (MSM) for STD and HIV in bathhouse settings: the Denver experience

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Objective: To study the feasibility and yield of STD/HIV testing among MSM in bathhouse settings.

Methods: Recent increases in gonorrhea and syphilis among MSM in Denver and anecdotal reports indicating the recruitment of sex partners in bathhouses as a risk factor, have prompted the Denver Public Health Department (DPH) to initiate a bathhouse STD/HIV testing program in 2002. Trained outreach workers conduct testing in each of the three gay baths in Denver on a weekly basis. Testing times are changed regularly to optimize coverage. Tests include RPR and confirmatory FTA for syphilis, EIA serology and confirmatory Western Blot for HIV, strand displacement assay using urine specimens for chlamydia and gonorrhea, as well as gonorrhea cultures obtained from pharyngeal and rectal swabs. Client-centered counseling accompanies the testing process.

Results: To date, 421 MSM have been tested, representing approximately 7% of men present at the time testing was offered. Five of 364 (1.5%) men tested positive for syphilis; of these one had secondary syphilis, two had early latent syphilis, one was previously treated, and one was lost to follow up. Importantly, 23/338 (6.8%) tested HIV positive (compared to 0.7% at the DPH STD clinic and 3.0% at the DPH HIV Counseling and Testing site). Of these, 75% received their results. All but one had never tested positive before. STD testing has been offered since January 2003. Two of 40 men tested (5%) had rectal gonorrhea; one also had pharyngeal and urethral gonorrhea. To date, none of the men tested positive for chlamydia.

Conclusions: STD/HIV screening is feasible in bathhouse settings and may be particularly important to detect new cases of HIV infection. Of all new HIV cases diagnosed at DPH in 2002 (including the HIV counseling and testing site and STD clinic), 20% of cases were detected in the bathhouse program.

0515

Patient- and Clinician-Collected Vaginal Swabs: Performance of the Aptima® Combo 2 Assay for the Detection of Chlamydia trachomatis and Neisseria gonorrhoeae

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Objective: The APTIMA Combo 2 Assay (AC2) (Gen-Probe Incorporated) is a FDA-cleared nucleic acid amplification test (NAAT) using Transcription-Mediated Amplification and Dual Kinetic Assay for the detection of *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (GC) from urine, endocervical swab and male urethral swab specimens. This ongoing investigational study will establish the performance characteristics of this assay using patient- and clinician-collected vaginal swab (PVS and CVS) specimens.

Methods: To date, 904 symptomatic or asymptomatic females were enrolled at eight geographically diverse, high and low prevalence sites. One PVS, one CVS, two endocervical swabs, and one first catch urine (FCU) were collected from each subject. AC2 CT and GC results were generated from the two vaginal swabs, one endocervical swab, and FCU. The second endocervical swab and remaining FCU were tested using BDProbeTec (Becton Dickinson and Company) for CT and GC. Performance was calculated using a multi-test infected patient status algorithm.

Results: Of the 904 subjects enrolled, results are available for the majority. The respective sensitivities and specificities for CT were 96.0% (96/100) and 98.2% (695/708) for the PVS and 96.0% (96/100) and 97.8% (701/717) for the CVS. The respective sensitivities and specificities for GC were 100% (51/51) and 99.3% (753/758) for the PVS and 94.2% (49/52) and 99.2% (759/765) for the CVS. AC2 CT vaginal swab results were in >96.6% agreement for endocervical swab and FCU. AC2 GC vaginal swab results were in >98.3% agreement with endocervical swab and FCU.

Conclusions: These interim findings demonstrate that the performance of the AC2 using the vaginal swab, collected by either clinicians or patients themselves, is sensitive and specific for the detection of CT and GC. Furthermore, the AC2 using the vaginal swab is equivalent to its performance using FCU and endocervical swab specimens.

0516

Trends in Sexually Transmitted Infections aetiology in sentinel clinics in Gauteng

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Objectives: To record changes in the aetiology of genital ulcer disease, urethral and vaginal discharges in clinic attendees in Gauteng province.

Methods: The syndromic surveillance information together with results on syphilis serology by RPR from the sentinel sites during 1996 and 2002 was analysed. Prevalence data on *Neisseria gonorrhoeae* and *Chlamydia trachomatis* in patients with urethral and vaginal discharges from relevant studies were also used to determine trends.

Results: According to the surveillance data, during this period there was a significant (43%) decrease in the number of clinic attendees, coupled with a decrease in the number of patients presenting with vaginal and urethral discharges. The proportions of these infections remained the same but that of genital ulcer disease decreased from 17% to 14%. The rate of positive syphilis serology declined from 18.7% to 8.0%. Other studies done in the Gauteng province have indicated a decline in the incidence of ulcers due to *Haemophilus ducreyi*
Cervicitis was caused by *N. gonorrhoeae* in 32% of cases in 1996 and 21% in 2002. Gonoccocal urethritis showed a reduction from 66% to 40%. Chlamydial infection rates remained similar in both males and females (25% vs. 19% males, 21% vs. 19% females).

Conclusion: Our data show that there is an overall decrease in STD clinic attendees. This may be attributable to various factors such as antibiotic use, health education, partner management and safer sex practices but their roles need to be confirmed. A reduction in the incidence of gonorrhoeae and syphilis was observed whilst chlamydial infections remain common. This may be due to poor adherence to treatment required for Chlamydial infections, while untreated asymptomatic infections serve as a reservoir of infection. Improved access to clinical diagnosis and treatment at family planning, prenatal care and youth clinics can further reduce the prevalence of these infections.

0517

Sex work in the former Soviet Union: responses to societal collapse

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Objectives: To describe the social organizational and spatial patterns, and quantifiable parameters of sex work and its embeddedness within Russian society at the beginning of the 21st century.

Methods: Four qualitative data collection methods were used: semi structured telephone interviews; semi structured face-to-face individual and group interviews with key informants, systematic and unobtrusive naturalistic observations and geomapping.

Results: Identifiable categories of sex work (SW) include hotel SW, brothel SW, street SW, truck stop SW, railway SW, and intermittent SW; the last three categories mentioned may be the most important in the dissemination of STI. Identifiable positions in the social organization of SW include pimps, assistant pimps, guards, drivers, "indicators" and "pluckers." The factor limiting the number of SW-client contacts may be the social organization of SW.

Conclusions: Sex markets have great potential for disseminating STI; social, political, economic disruption tend to enhance sex markets. Improved understanding of STI spread necessitates better description of sex markets, their determinants and consequences.

0518

Oral Shedding Of Herpes Simplex Virus Type 2 (HSV-2)

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Objective: To define frequency and characteristics associated with oral shedding of HSV-2.

Methods: Demographic, clinical and laboratory data of patients with documented HSV-2 infection and at least one oral viral culture obtained were selected from the Virology Clinic database between 1974 and 2002. Chi square tests, and Poisson regression with robust standard errors were used to compare characteristics between groups.

Results: Of 1388 persons with HSV-2 infection, 44 (3.2%) had HSV-2 isolated at least once from their mouth. In comparison with persons who did not have HSV-2 isolated from their mouth, participants with oral HSV-2 were more likely to be male (OR=1.9, 95% CI 1.0-3.7), HIV positive (OR=2.9, 95% CI 1.4-5.95) and men who have sex with men (OR=2.1, 95% CI 1.1-4.2), and to have collected a larger number of oral specimens (median 32 vs. 4, $P<0.001$). Although the risk of HSV-2 shedding was increased in both HIV seropositive persons and men who have sex with men, in stratified analyses HIV infection conferred a greater risk of oral HSV-2 shedding than sexual preference. Of the 58 days with oral HSV-2 isolation, 15 (25%) occurred during primary HSV-2 infection, 12 (21%) during a recurrence with genital lesions, 3 (5%) during a recurrence with oral lesions and 3 (5%) during a recurrence with oral and genital lesions; 25 (43%) occurred during asymptomatic reactivation. Among persons with established HSV-2 infection, HSV-2 was isolated on 43 of 38640 (0.1%) days from the mouth compared with 4958 of 52281(9.5%) of days from the genital area.

Conclusion: Oral reactivation of HSV-2 is rare but occurs occasionally in HIV seropositive persons and men who have sex with men.

0519

Surveillance for High Risk Human Papillomavirus Types in Patients with Negative Pap Smears

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Objective: HPV testing currently serves as an adjunct to cytology for the detection of high grade lesions and invasive cancers and aids in the triage of patients with atypical squamous cells of undetermined significance (ASCUS) Pap smear results. Although screening programs for cervical cancer are in place, there are no surveillance systems in existence for HPV infection. The purpose of this study was to determine the prevalence of high risk HPV types in our patient population.

Methods: Residual specimens from 500 consecutive negative Thin Prep (Cytyc) PAP smears were tested for the presence of high risk HPV types by Hybrid Capture 2 (Digene). The patient ages ranged from 16 – 83 years with a mean of 33.5 years.

Results: The overall prevalence of HPV in our patient population was 34%. Two age groups were associated with greatest percentage of patients from whom high risk HPV types were detected, - 15 – 20 years of age and 46 – 50 years of age. Within the youngest age group, 50% of the individuals tested were positive for high risk HPV types in spite of a negative Pap smear. Overall, all age groups from 15 – 76+ years of age showed a significant percentage high risk HPV type positive, Pap smear negative results ranging from 11% to 50%.

Conclusions: Pap smears have been a reliable but insensitive method for detecting high grade lesions and invasive cervical carcinomas. Our data indicates there is a large reservoir of patients infected with high risk HPV types that demonstrate no cytologic abnormality. The use of HPV testing could be used to better categorize patients into risk strata for more frequent and vigilant monitoring. Contrary to other studies, our data showed no sharp decline in HPV prevalence with increasing age.

0520

Herpes Simplex Virus Type-2 Infection in an Urban HIV Clinic: Unrecognized and Untreated

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Objectives: Genital herpes is among the most common infections in HIV infected patients, and most infections are subclinical. However, current guidelines do not advocate routine serologic testing for HSV-2 and anti-HSV therapy is recommended only for those with symptomatic disease. Our goal was to determine the prevalence of HSV-2 infection, frequency of a prior diagnosis of genital herpes in HSV-2 seropositive persons, and use of HSV antivirals in patients receiving HIV care at a city hospital clinic.

Methods: After providing written consent, participants completed clinical and behavioral questionnaires. HSV-2 antibodies were determined by Western blot.

Results: We enrolled 246 HIV infected patients. Of 246 participants, 208 (85%) were men and 169 (69%) were Caucasian. Risk factors for HIV included: 170 (69%) men who have sex with men, 92 (37%) injection drug users, 38 (15%) with other risk factors and 86 (35%) with multiple risk factors. Overall, 172 (70%) had HSV-2 infection and of those, 108 (63%) were not aware that they had genital herpes. Women (85%, 32/38) were more likely than men (66%, 137/208) to have HSV-2 infection (OR 2.8, 95%CI 1.04-7.7). Age, race, total household income, education, health insurance status, and CDC HIV stage were not statistically significant predictors of the presence of HSV-2 infection or awareness of genital herpes. Among the 64 patients with a known diagnosis of genital herpes, only 20 (31%) received suppressive therapy with anti-HSV medication.

Conclusion: HSV-2 is a prevalent and mostly unrecognized infection in HIV infected persons. The absence of predictors for the presence of HSV-2 and patient awareness of genital herpes suggests a need for routine serologic testing among this population. Even among those with symptomatic disease, few receive suppressive therapy. This lack of recognition and management of HSV-2 may lead to higher transmission rates for both HSV-2 and HIV.

0521

A First Glance at STI rates in Aboriginal people in two Canadian provinces and one territory

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Objective: This is the first that Health Canada has had to examine Aboriginal specific STI data. Although it is not a complete picture of the situation across Canada, we hope that it will serve to empower those serving the Aboriginal population to raise awareness of what we are seeing so far and to lobby for programs and services to fill the gaps.

Methods: STI data on chlamydia, gonorrhea and syphilis were received from British Columbia (B.C.), Alberta (AL.) and Yukon Territory (Y.T.) for the years 1994-2000. These three jurisdictions are home to one third of Canada's Aboriginal population. Of the 75,261 cases of reported bacterial STI, 61.4% had associated ethnicity information. The data was recoded into Aboriginal and non-Aboriginal categories. Annual rates were calculated using 1996 Census data for B.C., AL., and Y.T.

Results: Aboriginal persons comprise 4.2% of the combined population for B.C., AL. and YT. 20% of total reported STIs where ethnicity data are available are among Aboriginal persons. Non-Aboriginal people in these regions are showing rates that are below the national average. The rates of both chlamydia and gonorrhea in Aboriginal persons in these regions for the year 2000 are almost four times the national average. The percent increase in Aboriginal people for these two infections in comparison to the national picture is highly disproportionate. Similarly the Aboriginal population has experienced a significantly greater increase in rates of syphilis in comparison to what we are seeing nationally and are showing rates that are 9 times the national average in the year 2000.

Conclusion: Bacterial STI are affecting the Aboriginal communities disproportionately. High rates of infection among Aboriginal women may be a surrogate marker for even higher rates among Aboriginal men. There is a need for consistent gathering and reporting of ethnicity data to address the gaps in public health services to the Canadian Aboriginal population. High rates of infection are a marker for unsafe sexual practices and indicate a need for targeted messages and culturally appropriate sexual health programs to help reduce STI, HIV and unplanned pregnancies in this population.

0522

Trichomoniasis and HIV-1 Infection: What comes first ?

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Trichomoniasis is the most frequent sexually transmitted infection of the female genital tract and is often associated with a dysbalance of the vaginal ecosystem, also known as bacterial vaginosis (BV). We recently reported that this association is non-linear with a sudden increase at a Nugent Gram stain score of 4 after which it stabilizes. This suggests that *Trichomonas vaginalis* plays a role in inducing ecological dysbalance in the vagina but that after passing the threshold equivalent with Nugent's score 4, this dysbalance runs its own course. In the same study we showed that HIV-1 prevalence has a linear association with increasing Nugent's scores. This indicates that HIV-1 infection precedes *T.vaginalis* infection, which in turn precedes BV. This supported by recent observations on a cohort of 417 pregnant women of whom 110 (26%) were infected with *T. vaginalis* at a gestational age varying from 16 – 20 weeks. Of these110 women, 58 (53%) were HIV infected as opposed to 122 (40%) of the 307 women without trichomoniasis (p=0.02). This significant association could indicate common risk behavior, but also a higher chance of acquisition of one of the two in case of prior infection with the other. Therefore we looked at *T.vaginalis* infection 12 to 16 weeks later at 32 weeks gestation after the *T.vaginalis* infected women had been treated at enrolment. Of the 228 women that came for follow up, 99 were HIV infected. Of these, 20(20%) had acquired trichomoniasis. Of the remaining 129 HIV uninfected, 12 (9%) became infected with *T.vaginalis* (p=0.01). This indicates that HIV infection predisposes to trichomoniasis. In conclusion, although increased acquisition of HIV by women with trichomoniasis cannot be excluded, our work suggests that HIV infection predisposes to the acquisition of *T.vaginalis* infection.

0523

Comparing epidemiologic correlates of Mycoplasma genitalium, chlamydia trachomatis, and Neisseria gonorrhoeae

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Objective: *Mycoplasma genitalium* (MG), *Chlamydia trachomatis* (CT), and *Neisseria gonorrhoeae* (GC) have been associated with similar genital infection syndromes. We compared socio-behavioral characteristics associated with these three organisms.

Methods: From November 2001-February 2003, 398 individuals aged 18-25 attending the Seattle STD Clinic with symptoms suggesting STD underwent an extensive A-CASI behavioral interview based on the National Longitudinal Study of Adolescent Health, and a routine clinical exam. MG was identified by PCR in urine (men) and cervical swabs (women). GC and CT were identified by urethral/cervical culture or urine LCR/PCR.

Results: CT was identified in 8% (30/397), MG in 6% (20/344), and GC in 3% (12/398) of respondents. 8% of women (12/148) and 4% of men (8/196) had MG; 5% of women (8/156) and 9% of men (22/241) had CT; no women and 5% of men (12/241) had GC. In comparing participants with positive and negative assays for specific organisms, MG was associated with younger age (OR 0.8 per year, 95% CI:0.64-0.99), high school education (OR 0.3; 95% CI:0.12-0.77), father ever having been in jail (OR 2.6; 95% CI:0.98-6.78), number partners past year (OR 1.05 per partner; 95% CI:1.01-1.10), and partner with history of jail (OR 2.9; 95% CI:1.17-7.29). CT was associated with currently attending school (OR 0.4; 95% CI:0.14-0.98), being black (OR 3.4; 95% CI:1.82-8.30), identifying as heterosexual (OR 2.7; 95% CI:1.06-6.65), and meeting a sex partner on the internet (OR 2.2; 95% CI:0.98-4.91). GC was associated with being black (OR 4.4; 95% CI:1.38-14.35), identifying as gay or bi-sexual (OR 3.4, 95% CI:1.01-11.40), meeting a sex partner on the internet (OR 6.2; 95% CI:1.92-20.14), and Ecstasy use (OR 4.1; 95% CI:1.22-13.97).

Conclusion: Few sociobehavioral characteristics were shared between people infected with MG, CT, or GC, suggesting these organisms circulate in separate sexual networks.

0524

A randomised placebo-controlled trial of routine monthly antibiotics against gonococcal and chlamydial infections among female sex workers in Ghana and Bénin: intention-to-treat analysis

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Objectives: To determine the effectiveness of routine monthly antibiotics (RMA) in reducing the prevalence of gonorrhea (NG) and chlamydia (CT) among female sex workers (SW) and their clients.

Methods: Two randomisation strategies were used: community-cluster randomisation in Accra, Ghana (n=384) and in peripheral sites of Cotonou and Porto-Novo, Bénin (n=252); and standard 1:1 randomisation for the rest of the eligible population in Benin sites (n=181). SW were enrolled at dedicated clinics. Monthly follow-up was conducted in SW's

communities, alternating with clinic visits at months 3, 6 and 9. Cervical samples collected at clinic visits were tested for NG and CT by PCR. We used the last PCR result of each participant to calculate the final prevalence. RMA consisted of supervised intake of azithromycin (1g) at month 1, and ciprofloxacin (500mg) at months 2 and 3 (or corresponding placebos), with this 3-month cycle repeated twice more over 9 months. Two cross-sectional surveys were conducted among SW's clients in Accra and in peripheral sites of Cotonou and Porto-Novo, before and after the intervention.

Results: Follow-up cervical samples were obtained from 650 (79.6%) participants. NG prevalence decreased from 13.5% to 7.3% (RR=0.59; p<0.001) in the intervention group and from 16.2% to 11.6% (RR=0.72; p=0.04) in the placebo group. The reduction in prevalence did not differ significantly between the groups (RR=0.80; p=0.42). There was no effect of the intervention on CT prevalence among SW (RR=1.22 p=0.70). NG and CT prevalence in clients decreased in both groups (from 3.0% to 1.9% for NG and from 4.2% to 2.9% for CT).

Conclusion: NG prevalence decreased significantly in both groups of SW in a context where a steady decrease had already been documented in the last few years preceding this study. RMA may not be a useful strategy when other control measures have already been successful.

0525

Factors Associated with an Increase in Early Syphilis Rates in Rural North Carolina

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Objective: Columbus County, a rural county with 55,000 residents in southeastern North Carolina, experienced an increase in its primary and secondary (P&S) syphilis rates from 3.7/100,000 in 2000 to 62.1/100,000 in 2001. Columbus County borders Robeson County, which had the highest P&S syphilis rates nationwide for 2000 and 2001. To determine factors associated with the syphilis epidemic in this rural community, we conducted a retrospective chart review of interview records with infected individuals.

Methods: Interview records were reviewed for 61 early syphilis cases reported in Columbus County from January 2001 to February 2002. A chart abstraction form was used to collect data from each record including sexual risk factors during the incubation period for each stage of syphilis. The data were entered and analyzed using Epi-Info 2000.

Results: Forty-five cases of P&S syphilis and 16 cases of early latent syphilis were identified during the study period. Among all the cases, the male to female ratio was approximately 2:1 and the mean age was 35.3 years. Eighty-two percent of the cases were African-American, whereas only 31% of Columbus County residents are African-American. The mean number of sexual partners reported among infected individuals was 2.4, with 38% indicating > 2 sexual partners during the incubation period. Recreational drug use was indicated by 39% of the cases, with 43% reporting crack use and/or sex with a known partner who uses crack. Thirty-one percent of cases acknowledged that they had exchanged sex for drugs or money. Seventy-two percent of the cases had at least one sexual partner with documented early syphilis.

Conclusions: The syphilis epidemic in this rural community was likely related to crack use and exchange of sex for drugs or money. The high proportion of cases with an infected partner suggests that a close, interconnected sexual network may have -propagated disease transmission.

0526

Effect of HIV-1 infection upon the etiology of acute salpingitis in Nairobi, Kenya

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Objectives: Twenty to 70% of pelvic inflammatory disease (PID) cases have unknown etiology. This investigation aimed to determine whether differences exist between the aerobic and anaerobic bacterial flora found associated with laparoscopically confirmed acute salpingitis for women with and without HIV-1 infection.

Methods: Women presenting with £ 14 days of lower abdominal pain with fever, dysuria or rebound tenderness and who had not received any antibiotics in the prior two weeks were recruited. Participants underwent diagnostic laparoscopy, HIV-1 serology, aerobic/anaerobic microbiology and molecular testing for gonorrhea and chlamydia from endometrial and tubal biopsies/intra-abdominal pus.

Results: Forty six (38%) of 120 women enrolled with acute salpingitis were HIV-1-infected. Increased isolation rates of viridans Strep. (38% vs. 19%, p < .03) and aerotolerant Actinomyces (9% vs. 0, p<0.02) and both aerobic (40% vs. 20%, p<.03) and anaerobic Gram-negative rods (36% vs. 17%, p < .03) were detected in endometrial biopsies from women with HIV-1 infection. Similarly, viridans Strep. (22% vs. 3%, p < .01) and aerobic Gram-negative rods (40% vs. 18%, p < .02) were more commonly detected in the Fallopian tube/intra-abdominal pus specimens of HIV-1-infected than

uninfected women. *N. gonorrhoeae* and *C. trachomatis* were detected by PCR in 19 (16%) and 7 (6%), respectively.

Conclusion: Our results suggest that HIV-1 infection increased the risk of infection by aerobic and anaerobic Gram-negative rods that have previously been associated with TOA and pyosalpinx.

0527

Prevalence of Trichomoniasis in the U.S.: Results from a Representative National Sample of Young Adults

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Objective: Trichomoniasis (Tv) may increase the risk for transmission and acquisition of HIV infection. However, the prevalence of Tv in community settings is largely unknown. Recently developed urine-based polymerase chain reaction assays (PCR) allow large scale determination of Tv prevalence. We determined the prevalence of Tv in a representative national sample of young adults living in the U.S.

Methods: The National Longitudinal Survey of Adolescent Health (Add Health) is a multistage, school-based survey, first conducted in 1994-95. The original survey design provided a representative sample of the U.S. in-school adolescent population in grades 7-12. Certain ethnicities, including African-Americans (A-A) with higher socioeconomic status, were oversampled. In 2001-2, participants in the original survey, now aged 18-28 years, were re-contacted. Tv was identified using PCR on urine specimens. Prevalence and 95% confidence intervals (CI) were calculated accounting for the complex survey design, including the oversampling of certain ethnicities.

Results: The weighted sample (N=14322) included 49% females and 51% males. The mean age was 21.8 years (standard error 0.1 years). Among 12449 participants (86.9%) with PCR results, the overall prevalence was 0.023 (95% CI: 0.018, 0.027). The prevalence was 0.028 (0.022, 0.035) in women and 0.017 (0.013, 0.021) in men. The highest rates were observed in A-A [0.068 (0.051, 0.085)] followed by Native Americans [0.025 (0.000, 0.050)], Latinos [0.021 (0.011, 0.031)], Asians [0.017 (0.005, 0.030)], and whites [0.012 (0.009, 0.015)]. The prevalence in A-A females was 0.104 (0.080, 0.128) and 0.032 (0.019, 0.045) in A-A males.

Conclusions: The observed prevalence of Tv in U.S. young adults was higher in women overall and varied by race/ethnicity. The high prevalence in A-A young women is worrisome, especially given the potential increased risk for acquisition and transmission of HIV infection associated with Tv.

0528

Priorities for Local AIDS Control Efforts (PLACE) Method Identifies New Locations That Warrant Increased AIDS Prevention in Bhubaneswar, India

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Objectives: The original application of the Priorities for Local AIDS Control Efforts (PLACE) method in Bhubaneswar led to conflicting reports on the degree of new sexual partnering at specific locations in the city. The discrepancy in sexual partnering reports may be due to face-to-face interviewing, sampling of individuals, and time of year. We repeated the PLACE method using alternative approaches to address these gaps.

Methods: The PLACE method was repeated in 3 areas: the red light area (Area 1) including sex workers and their clients, a slum area (Area 2) including lower income groups, and a college area (Area 3) including students and higher income groups. At each site, "key" individuals, who frequently sought sexual partners at the site, were interviewed. A convenience sample of 20 "non-key" individuals was also interviewed. Sensitive data were collected using a self-administered pictoral questionnaire. Data were collected while colleges were in session, following harvest season.

Results: 1323 individuals were interviewed at 37 sites (8 in Area 1, 18 in Area 2, and 11 in Area 3). One third were "key" respondents in each area. 35% reported seeking sex partners at sites in Areas 1 and 2, and 23% in Area 3. Among individuals with prior sexual experience (N=805), 55%, 46%, and 69% reported seeking sex partners in the 3 areas, respectively. New partners represented 25-50% of partners in the preceding 4 weeks for 15% of individuals in Area 1, 11% of individuals in Area 2, and 15% of individuals in Area 3. Overall, 20% used condoms the last time they had sex. Condom use was lowest in Area 2.

Conclusion: Alternate sampling and interview methods during a season of high sexual activity led to a substantial increase in self-reported sexual partnering rates. College areas emerged as being almost as risky as red light areas.

0529

Using Molecular Techniques to Subtype Treponema pallidum from STD Clinic Patients in 1990-1991, and 2002

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Objectives: Molecular subtyping of *Treponema pallidum* subspecies *pallidum* (Tpp) has been increasingly used as an epidemiological tool. We compared the prevalent Tpp subtypes from patients attending two Baltimore STD clinics during two time periods.

Methods: Touch-prep slides from patients who presented with genital ulcerative lesions in 1990-1991, stored at -20°C, as well as fresh swabs of patients who presented in 2002, were used. Cervical vaginal lavages (CVLs) from patients with secondary syphi-

lis (1990-1991) were also tested. Samples were boiled in 5% Chelex-100. The 15-kDa lipoprotein gene (tpp15) of T. *pallidum* was amplified using PCR, and visualized with gel electrophoresis. Restriction digest of tpp15 confirmed Tpp. Subtypes were classified by amplification and visualization of (a) the variable acidic repeat protein (arp) gene (7 to 21 repeats), and (b) of the RFLP analysis of the tpr gene by MseI.

Results: Compared to darkfield examination conducted at time of clinic visit, tpp15 PCR increased test sensitivity by 20% in 46 slides from 1990-1991. 14 yielded the tpp15 amplicon (78.6% male); all were confirmed subspecies *pallidum*. 11 were subtype 14d. One case, each, of 14a, 14e, and 16e was also identified. Five of six cvls showed bands for tpp15. In 2002, five of 14 swabs were Tpp positive by tpp15 testing (60% male). Two cases, of 13d and 15d, each, were identified.

Conclusions: This technique revealed a clustering of subtype 14d in 1990 and 1991, with different subtypes identified in 2002. Our results also suggest that archived CVL samples from secondary syphilis cases could be tested for Tpp. Thus, molecular subtyping of Tpp can be performed on a variety of archived or fresh specimens, and can be a useful adjunct to public health control measures in defining sexual networks.

0530

Vaginal Douching: A Survey of Normative Beliefs in a STD Clinic Population

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Objectives: Vaginal douching is associated with bacterial vaginosis and cervical infection. It is also linked to serious adverse health outcomes of pelvic inflammatory disease, HIV acquisition, and cervical cancer. The 1995 National Survey for Family Growth reports that 27% of U.S. women between the ages of 15 and 44 years douche. A thorough understanding of women's beliefs about douching and their hygiene practices is necessary to design educational interventions to decrease douching behavior.

Methods: A convenience sample of 292 women attending the Baltimore STD Clinics and consenting to participation in a clinical trial on BV diagnosis between August 2001 and March 2002 completed a short questionnaire regarding douching practices.

Results: Of 292 women, aged 18-60, 206 (71%) reported douching. Respondents were primarily African American (93%). The median age at first douche was 15-18 years. Of those that reported douching, 18 (8%) douched following vaginal symptoms, 27 (13%) douched after sex, and 138 (67%) douched after menstruation. The need to improve cleanliness was reported as the primary reason for douching by most of the respondents (38%), though other reasons were also commonly reported [for odor/discharge (16%), as directed by mother or others (8%)]. Commercially manufactured products were used by 56% of those reporting douching, and home preparations with vinegar, baby powder or plain water were used by 35% of respondents.

Conclusions: Vaginal douching is extremely common in the Baltimore City STD clinic population and may be entrenched in understudied cultural beliefs. The imperative to douche correlates with commercial messages about the need to "feel fresh." Innovative approaches to discourage douching behavior include targeting young pre-teen or teenage girls, and countering false beliefs transmitted from mothers about vaginal hygiene. Future research should examine knowledge, attitudes and normative beliefs about douching within female familial networks.

0531

Another look at Syphilis testing

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Objective: The eradication of Syphilis and the diagnosis of all stages of "The Great Masquerader" depend on reliable test algorithms. We report on the diagnostic efficacy of a recombinant based algorithm and compared it to the traditional one.

Methods: The new algorithm consisted of TrepChek (T/C) as a first line test followed by INNO-LIA Syphilis LIA (LIA) as the confirmatory test. T/C is a sandwich type assay utilizing a cocktail of specific treponemal antigens; in LIA such antigens are singularly applied to a nylon strip. Serologically characterized sera were (re-)tested by this algorithm.

Results: a) 15/16 Darkfield positives were positive by T/C and LIA (1 was "equivocal and LIA+): sensitivity 94 vs 50 % (literature).b) Sequential sera (101) submitted for Western Blot (WB) showed that LIA is less likely to produce "inconclusives" . c) In 138/158 paired sera, changes in RPR titer – to assess efficacy of treatment- paralleled changes in anti 44.5 Kd antibodies. d) 2 confirmed positive sera (RPR and TP-PA) were negative, and 5/25 sera (negative by RPR and TP-PA) to be positive in this algorithm. e) The standard algorithm identified 4 true positives out of 1610 sera from a low prevalence group (+ one false positive); the new algorithm identified an additional 6. Notwithstanding the putative specificity of recombinant treponemal antigens, we estimated that the incidence of "false" positive T/C results in the general population is appr 1%. These sera were shown (by LIA) to contain antibody to a single antigen.

Conclusions: Our data indicate that recombinant based assays can markedly increase the reliability of Syphilis testing. These improvements are likely to have a positive impact on the detection of this deceiving STD.

0532

Maintaining Challenging Cohorts: A Report on the Methods and Success of Following Pregnant, Hepatitis C-Infected Women for up to Two Years in British Columbia, Canada

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Objectives: Loss to follow-up is a vexing problem facing investigators conducting cohort studies, particularly when subjects are transient or from disadvantaged populations. This paper describes methods used to develop and

follow a longitudinal cohort of hepatitis C virus(HCV)-infected women throughout pregnancy and up to 18 months postpartum, and retention success. Methods: Eligible women are identified by an ethically approved linkage between the Canadian Blood Services prenatal and BC Provincial Laboratory HCV databases. Women's prenatal care-providers are sent a mailout requesting patient referral. Other recruitment methods include referral from physicians with HCV practices, in-person recruitment of HIV co-infected women at BC's women and family HIV centre, and website, poster, and media advertisement. The study nurse maintains regular telephone and in-person contact with subjects until 18 months postpartum. Study activities include specimen collection (blood, breast milk, genital tract, cord blood, placenta), questionnaires, and coordination of infant HCV testing.

Results: Between 09/00-12/02, 479 women have been identified through database linkages, 285 of whom have had mailouts sent to care-providers. 124/479(26%) have enrolled, 61% through HCV care-provider referral, 35% from mailouts, and 3% from advertisement. Primary reasons for non-referral/enrolment include woman no longer pregnant and loss of physician contact with patient. 6% have withdrawn and 8% have been permanently lost to follow-up. 77% have delivered, 20 mother-infant pairs have completed the study, and 3% have re-entered the study with a second pregnancy.

Conclusions: Physician referral is our most effective recruitment method. Despite this being a challenging cohort to maintain, we have retained 86% in the study with high rates of complete data collection. Critical to the process is developing trust and rapport between the study nurse and the subjects, who acts as counsellor and advocate in addition to recruiting and collecting data. This method is successful even in the absence of financial incentives for participation.

0533

Diagnostic performance of swab specimens versus FVU for detection of Mycoplasma genitalium and the relationship between M. genitalium DNA load and urethritis.

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Objectives: I) To determine the diagnostic performance of urogenital swab specimens and first void urine (FVU) specimens from male and female patients for detection of *Mycoplasma (M.) genitalium* and *Chlamydia (C.) trachomatis* infections. II) To correlate *M. genitalium* DNA load with symptoms and signs in men with and without urethritis.

Methods: *M. genitalium* and *C. trachomatis* were detected with in-house, inhibitor controlled PCRs; positive results were confirmed in independent PCR assays. A patient was deemed positive if a confirmed PCR result was found in one of the specimens. A newly developed quantitative TaqMan assay detecting a conserved part of the MgPa gene was used to study DNA load in male FVU and urethral swab specimens.

Results: A total of 126 men were *M. genitalium* positive; urethral swab detected 104 (83%), whereas FVU detected 123 (98%) of the infections ($p<0.0001$). For *C. trachomatis*, 246 men were positive; urethral swab detected 220 (89%), whereas FVU detected 242 (98%) of the infections ($p<0.0001$). 51 women were *M. genitalium* positive; urethral swab detected 29 (57%); cervical swab 45 (88%), and FVU 36 (71%). A combination of cervical swab and FVU or urethral swab detected 49 (96%) and 48 (94%), respectively. For *C. trachomatis* infected women (n=73), urethral swab detected 57 (78%); cervical swab detected 63 (86%), and FVU detected 66 (90%). A combination of cervical swab and FVU or urethral swab detected 72 (99%) and 69 (95%), respectively. The TaqMan assay detected < 5 genome copies. Men with urethritis had a higher *M. genitalium* DNA load in urine than those without. A similar correlation was not found in urethral swab specimens.

Conclusions: In men, FVU was the optimal diagnostic specimen. In women a combination of FVU and urethal swab provided the highest sensitivity. *M. genitalium* DNA load in FVU was significantly correlated with urethritis.

0534

Using Y Chromosome PCR as a Biomarker for Sexual Intercourse-Studies of Condom Efficacy

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Objectives: STD biomarkers are not practical in low-prevalence populations. In previous studies, we demonstrated that Y-chromosome PCR (Yc) can be used as a non-disease biomarker of sexual intercourse (SI) , and persists 7-10 days post-coital. Further studies to demonstrate proof-of-principle and to calibrate the assay sensitivity are needed when condoms are used.

Methods: We recruited 27 subjects who abstained from SI for 2 weeks, then had condom-protected SI with their regular partner. Subjects were counseled on correct condom use. Pre and post coital self-administered vaginal swabs (SAVS) were obtained. Swabs were analyzed for Yc PCR using previously described sequences *Y3 5'-GTG TAT TCA CCT CCG GGA G and Y4 5'-ACA AAA GGT TCA ATT CTG TGA G.* To calibrate sensitivity,swabs were also analyzed for Acid phosphatase(AP) , a prostatic enzyme detectable 48 hours post coital. AP was assayed by ELISA format using para-nitro phenyl phosphate substrate Results for AP and Yc were calculated in nanograms per swab. I

Results: In 22/27 subjects (82%) post-coital Yc was either undetectable or at baseline levels. 3 (11%) subjects had small amounts of Yc (0.91-9.4 ng YcDNA), but only trace concurrent AP levels were detected. These are suggestive of condom protection, and need to "down-calibrate" our Yc assay. 2

subjects had Yc (2.78ng, 10.39 ng) and detectable AS, suggesting semen exposure. These findings were stable at 48 hours.

Conclusions: In this preliminary efficacy study using 2 semen biomarkers, 25/27 (93%) of subjects had no detectable semen components using extremely sensitive assays for Yc and AS, demonstrating condom proof-of-principle. This assay, which uses easily collected SAVS, and is inexpensive can be used as a tool to validate sexual behavior self-reports.

0535

Persistance of Genital Human Papillomavirus Infection in HIV-Positive and Negative Women

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Background: Genital infection with human papillomaviruses (HPV) although necessary is not a sufficient cause of cervical cancer. Several studies have shown that persistent HPV infection substantially increases the risk of progression to cancerous lesions. HIV+ women are at an increased risk of HPV infection and cervical dysplasia which may be due to increased persistence of HPV infections.

Methods: 54 HIV+ and 75 HIV- women were followed up by repeat visits, as part of an ongoing cohort .HPV DNA was assessed from cervical swabs using the PGMY09/11 consensus primer system and genotyped using the reverse line blot assay. Infection with the same HPV genotype on two consecutive visits at least 60 days apart was defined as persistence.

Results: The number of follow-up visits in this cohort ranged from 2-12 visits, with the majority of the cohort having two visits. Prevalence of defined persistence was 22.2%, 20.6% and 11.1% for infection with any HPV type, high-risk types and low-risk types, respectively. HIV+ women were at a significantly higher risk of persistent infection with any HPV type, high-risk as well as low-risk genotypes (OR=5.90; CI, 2.28-15.31, OR=5.04; CI, 1.93-13.15, OR=10.00; CI, 2.13-46.88, respectively). Among women with persistent infections, HPV type 16 in the HIV – population and type 54 in the HIV + were the most prevalent genotypes. Persistent HPV infection was significantly positively correlated with risk of cytologic abnormalities on the subsequent visit ($p<0.05$

Conclusion: The results of this study indicate that persistent HPV infection increases the risk of subsequent cervical cytologic abnormalities and that HIV+ women are at greater risk of persistent HPV infections. Women with persistent HPV infection, especially HIV+ women need to be subjected to more intensive follow-up to prevent cervical neoplasm.

0536

Prevalence Of Gonorrhea In The U.S.: Results From A Representative National Sample Of Young Adults

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Objective: National estimates of the prevalence of gonorrhea are based primarily on reported infections and clinic data. We determined the prevalence of gonorrhea in a representative national sample of young adults living in the U.S.

Methods: The National Longitudinal Survey of Adolescent Health (AddHealth) is a multistage, school-based survey, first conducted in 1994-95. The original survey design provided a representative sample of the U.S. in-school adolescent population in grades 7-12. Certain ethnicities, including African-Americans with higher socioeconomic status, were oversampled. In 2001-2, participants in the original survey, now aged 18-28 years, were re-contacted. GC was identified in urine specimens using ligase chain reaction assay (LCR). All positive were confirmed by repeat testing. Prevalence and 95% confidence intervals (CI) were calculated accounting for the complex survey design, including the oversampling of certain ethnicities.

Results: The weighted sample (N=14322) included 49% females and 51% males. The mean age was 21.8 years (standard error 0.1 years). Among the 11689 participants (81.6%) with LCR results, the overall prevalence was 0.0043 (95% CI: 0.0027, 0.0060). The prevalence was 0.0042 (0.0019, 0.0065) in women and 0.0044 (0.0020, 0.0069) in men. The prevalence was much higher in African Americans 0.0211 (0.0132, 0.0290) than Latinos 0.0020 (0.0, 0.0041), and whites 0.0010 (0.0, 0.0021). No gonococcal infections were identified in Native Americans or Asians. The prevalence in African Americans females was 0.0189 (0.0068, 0.0310) and 0.0233 (0.0112, 0.0354) in African American males. In contrast, the prevalence of gonorrhea in white females and males was 0.0013 (0.0, 0.0029) and 0.0007 (0.0, 0.0020), respectively.

Conclusions: The overall prevalence of gonorrhea in U.S. young adults varies dramatically by race/ethnicity. The high prevalence of predominately asymptomatic gonorrhea in African American young adults is concerning. Targeted programs to reduce the prevalence of gonorrhea in this population may be warranted.

0537

Prevalence of Human Papillomavirus in Women with Diverse Risk Profiles

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Objective: Genital infection with Human Papillomaviruses (HPV) is the primary cause of invasive cervical cancer worldwide. The use of HPV DNA testing in conjunction with Pap smears is currently being considered in an effort to better identify those at highest risk for developing cervical cancer as well as examining the potential sexual network that led to the current infection.

Methods: 928 women were enrolled from four clinical settings all in the New Orleans area: (1) 60-routine gynecologic care - low-risk group, (2) 93- local University - intermediate risk group, (3) 624 colposcopy clinic - high-risk group and (4) 151 HIV+ women. HPV DNA was assessed using the PGMY09/11 primer system and genotyping by the reverse line blot assay.

Results : Study subjects were predominantly African-American in the low, high and HIV+ categories, and predominantly Caucasian in the college subjects. The prevalence of HPV infections and cytologic abnormalities were significantly increased by clinical risk category. HPV DNA was detected in 13.3%, 22.6%, 32.7% and 66.9% in the low, intermediate, high-risk and HIV+ women, respectively. The most prevalent genotypes in the low-risk and intermediate risk women were HPV types 66 and 51, types 16 and 18 in the high-risk women, and HPV types 83 and 54 were most prevalent in the HIV+ women. Infection with HPV was significantly associated with concurrent cytologic abnormalities in the high-risk and HIV+ women (OR=4.51; CI, 2.99-6.79 and OR=9.94; CI, 3.79, 26.01, respectively).

Conclusions : The study showed a clear association of HPV infection rates by clinical risk profile. In addition, the predominate HPV genotypes differed in each group implying a lack of social/sexual mixing between the clinics. The use of HPV DNA testing may aid in better identification of populations at highest risk for cervical cancer and aid in tracking HPV genotypes throughout a population.

0538

Impact of Infection With Multiple Human Papillomavirus Genotypes on Cervical Cytologic Abnormalities

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Objective: Genital Human Papillomavirus (HPV) infection is the primary cause of cervical cancer. In spite of high prevalence, the majority of HPV infections are self-limiting with only a fraction progressing to cancerous lesions. Persistence of HPV infection appears to be essential for transformation and maintenance of the malignant phenotype. In addition, infection with multiple genotypes increases HPV persistence. However, few studies have characterized the impact of genital infection with multiple HPV genotypes on cytologic abnormalities.

Methods: Cervical swabs and Pap smears were collected from 1542 women (1278 HIV- and 264 HIV+) attending care clinics in the New Orleans area. HPV DNA was detected using PGMY09/11 consensus primer system and genotyped using the reverse line assay.

Results: HPV DNA was detected in 28.5% of the cohort (24.3% in HIV- and 48.9% in HIV+ subjects). Prevalence of infection with multiple HPV types was 12.3% (9.2% in HIV- vs.27.7% in HIV+, $p<0.001$). Among subjects with multiple HPV types, 4.7% were infected with multiple low-risk types, 45.3% with multiple high-risk types and 50.0% with low and high-risk combinations. After adjustment for age and HIV status, women with multiple high-risk and multiple low-high-risk combinations had an increased risk of cytologic abnormalities (OR=2.08; CI, 1.11-3.89 and OR=2.40; CI, 1.28-4.52, respectively). Models adjusted for age and HIV status also revealed that a unit increase in number of HPV types resulted in a significant increase in risk of cytologic abnormalities (OR=1.85;CI, 1.59, 2.15). Interestingly, HIV status failed to significantly predict abnormal cytology in either model.

Conclusions: These data indicate that infection with multiple HPV types significantly increases the risk of cytologic abnormalities. The lack of increased risk of cytologic abnormalities for HIV+ status in adjusted models may reflect that multiple infections constitute a majority of the risk fraction.

0539

Characteristics and Risk Behaviors of Men Identified as Having Sex with More than One Subject Participating in a Randomized, Controlled STD/HIV Prevention Trial.

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Objectives: A controlled, randomized trial of a cognitive/behavioral intervention for high-risk minority women significantly reduced STD reinfection at 6, 12, and cumulative follow-up (NEJM:340,93,1999). This was accomplished by significantly reducing high-

risk sexual behavior (STD:29,9,2002). During this trial 477 women provided detailed information about their sexual partners. Our objective was to determine whether a group of these men had sex with multiple participants, and to describe their characteristics and risk behaviors.

Methods: We developed a three-stage, iterative matching process using partner initials, ethnicity, and age (stage 1); educational level, employment and marital status (stage 2); and characteristics including circumcision, tattooing, and street drug use (stage 3). After identifying a group of men who had sex with more than one participant, we used chi-square analysis and t-tests to compare their characteristics to those of other men, and to estimate their impact on follow-up infection rates.

Results: Of 893 men reported by women during cumulative follow-up, 78 (8.7%) had sex with more than one woman in the study(up to four). Nearly 10% of study women were involved. This group of men (compared to the others) were more often older than their partners, less likely to be "steady" partners, more likely to use street drugs, were identified more often as the STD giver and reported to have given the woman an STD previously, had a greater number of sexual partners, and were more likely to practice unprotected sex. Significantly, women partnered to these men experienced 34% of all infections during follow-up, and 67% of all gonorrheal infections.

Conclusions: We were able to identify a group of high-risk men described by a cluster of characteristics, including high rates of STD transmission, particularly gonorrhea. This suggests interaction with other high-risk partners. These men also exhibited a cluster of behavioral traits commonly associated with risk of STD transmission, suggesting they impede intervention efficacy. This group may be similar to a core group of STD transmitters.

0540

Epidemiologic Profile of Recidivism Among Patients Attending Public STD Clinics in Los Angeles County

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Objective: Repeated sexually transmitted infections not only pose a significant public health problem, but may also represent missed opportunities for enhanced case management and targeted prevention programs. Our goal is to characterize clients who were repeatedly tested for sexually transmitted infections (STI) in public STD clinics over a 1-year period.

Methods: The public health information system was used to examine all clients tested for STIs in 11 public STD clinics from January through December 2002. Clients who were tested repeatedly were defined as those who tested for Chlamydia or Gonorrhea more than once and at least more than 30 days apart.

Results: A total of 16,651 patients resulted in 20,640 screening tests for STIs in public STD clinics in Los Angeles County in 2002. Among the 2,346 (14.1%) "repeat-testers," 64.2% were male, 58.5% were African American and 30.6% were Hispanic. A majority of the cases were less than 40 years of age (77.8%), with the largest single age group being 20-29 (43.1%). The cumulative rate of Chlamydial infection was 10.5% (480), with 328 cases testing positive once, 71 cases testing positive twice, and 3 cases testing positive three or more times in a 12-month period. The cumulative rate of Gonorrhea infection was 4.2% (207), with 150 cases testing positive once, 54 cases testing positive twice, and 3 cases testing positive three times over a 12-month period.

Conclusions: A relatively large proportion of clients (14.1%) attending public STD clinics in Los Angeles County returned for repeated revaluation of STIs in a 12-month period. Furthermore, among this group, reinfection was common. These clients not only represent a high-risk group, but may also represent a group of core transmitters for chlamydia and gonorrhea infections. Moreover, these clients represent missed opportunities for preventive treatment and counseling – the essential elements of STD-prevention case management.

0541

Genitourinary Symptoms Associated with STDs in Minority Women

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Objective: To test the association of composite genitourinary (GU) symptom constructs with active gonorrhea (GC), chlamydia (CT), and trichomonas (TV) infections in minority women undergoing annual STD screening.

Methods: Composite GU symptom constructs were derived based on stratification of symptom descriptors (amount, frequency, severity, actions taken in response, etc.) into those thought likely to be associated with STD infections (Pathologic) and those thought to be unlikely to be associated with STDs (intermediate). These *a priori* composite symptom designations were then tested on a cohort of minority women with prior STDs undergoing STD testing at 36 and 48 month follow-up in a interventional study to reduce STD recurrence. At each follow-up visit, participants were questioned extensively about GU symptoms and were screened for cervical/vaginal infections by Abbott LCX (GC, CT), culture (TV, candida [CA]), and Gram stain (bacterial vaginosis [BV]). Frequencies of symptoms with each organism were compared to women negative for all organisms. Pregnant women were excluded from all analyses.

Results: Nonpregnant minority women underwent STD screening and symptom analysis at their 36- and/or 48-month follow-up (913

visits) with results below.

	CT+ (n=88)	GC+ (n=24)	TV+ (n=48)	Negative for all (n=345)
Itching	16.3%	21.7%	27.7%	17.1%
Pathologic Discharge	8.0%	12.5%	10.4%	4.4%
Discharge Action	13.6%	20.8% *	20.8% *	7.5%
Pathologic Abdominal Pain	6.8%	8.3%	6.3%	7.8%
Abdominal Pain Action	9.1%	12.5%	10.4%	6.7%
Dyspareunia	13.6% *	20.8% *	6.3%	6.4%
Urinary Symptoms	26.1% *	37.5% *	22.9%	16.2%
Vaginal Odor	22.1% *	21.7%	38.3% *	9.9%

* p<0.05 versus Negative for all

Conclusion: Composite GU symptoms (based on commonly asked descriptors of major GU symptoms) are associated with STD infections in women.

0542

Prevalence Of Chlamydial Infection In The U.S.: Results From A Representative National Sample Of Young Adults

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Objective: National estimates of the prevalence of chlamydial infection (Ct) are based primarily on reported infections and clinic data. We determined the prevalence of Ct in a representative national sample of young adults living in the U.S.

Methods: The National Longitudinal Survey of Adolescent Health (AddHealth) is a multistage, school-based survey, first conducted in 1994-95. The original survey design provided a representative sample of the U.S. in-school adolescent population in grades 7-12. Certain ethnicities, including African-Americans (A-A) with higher socioeconomic status, were oversampled. In 2001-2, participants in the original survey, now aged 18-28 years, were re-contacted. Chlamydial infection was identified using ligase chain reaction assay (LCR). All positive were confirmed by repeat testing. Prevalence and 95% confidence intervals (CI) were calculated accounting for the complex survey design, including the oversampling of certain ethnicities. Preliminary sensitivity analyses were conducted to assess the potential impact of test performance on prevalence estimates.

Results: The weighted sample (N=14322) included 49% females and 51% males. The mean age was 21.8 years (standard error 0.1 years). Among the 12548 participants (87.6%) with LCR results, the overall prevalence was 0.042 (95% CI: 0.035, 0.049). The prevalence was 0.047 (0.039, 0.056) in women and 0.037 (0.028 , 0.045) in men. The highest rates were observed in A-A 0.125 (0.100, 0.150) followed by Latinos 0.059 (0.044, 0.074), Native Americans 0.042 (0.014, 0.070), Asians 0.028 (0.013, 0.043), and whites 0.019 (0.014, 0.024). The prevalence in A-A females was 0.139 (0.110, 0.168) and 0.110 (0.081, 0.140) in A-A males. In preliminary sensitivity analyses, test performance affected most prevalence estimates minimally.

Conclusions: The overall prevalence of Ct in U.S. young adults is high, especially in certain ethnic groups. The high prevalence in this asymptomatic, community-based population supports the need for nationwide Ct screening programs for both men and women.

0543

Mycoplasma genitalium is associated with an inflammatory urethral discharge in men

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Aims: A prospective cross-sectional study to investigate the clinical presentation of *Mycoplasma genitalium* (MG) in men attending departments of genitourinary medicine (GUM).

Materials and Methods: Men attending 3 GUM departments were enrolled. Symptoms of urethral discharge, dysuria and penile irritation and presence of discharge on examination were recorded. Urethritis was diagnosed if the urethral smear contained = 5 polymorphonuclear leucocytes (PMNLs) per high power (x1000) microscopic field (HPF) or if a Gram-stained thread taken from the first passed urine contained = 10 PMNLs per HPF. *Chlamydia trachomatis* was detected by the enhanced enzyme immnoassay (DAKO, IDEIA PCE) and *M. genitalium* by PCR and *Neisseria gonorrhoeae* by culture.

Results: 687 men were evaluated, of whom 308 (44.8%) had urethritis and 335 (49%) had symptoms or signs. *M. genitalium* was detected in 38 (5.5%) men; *C. trachomatis* in 76 (11.1%) and *N. gonorrhoeae* in 31 (4.5%). On univariate analysis *M. genitalium* was associated with urethritis (p<0.001), urethral discharge (p<0.001), dysuria (p<0.001), but not penile irritation (p =0.06). To investigate this further, multivariate analysis was undertaken controlling for confounding by coinfections. Urethritis (OR 9.4, 95% CI 2.7-32.7), and discharge (OR 3.7, 95% CI 1.6-8.6) remained significantly associated with MG. Only three men with MG had no urethritis. We therefore studied the 308 men with urethritis alone. On univariate analysis, *M. genitalium* was associated with urethral discharge (p<0.001) and dysuria (p=0.01). Multivariate analysis was undertaken and the presence of discharge was again associated with the detection of *M. genitalium* (OR 3.9, 95% CI 1.6-9.3).

Conclusions: The detection of *M. genitalium* in men is associated with an inflammatory urethral discharge.

0544

The prevalence of human papillomavirus (HPV) and Epstein-Barr virus (EBV) infection in the tonsil and oral region of healthy and HIV-positive adults.

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Objective: HPV and EBV are oncogenic viruses associated with oropharyngeal and nasopharyngeal tumors, respectively, yet the prevalence of HPV and EBV in the upper aerodigestive tract remains unknown in cancer-free populations.

Methods: HPV and EBV DNA were evaluated from trans-epithelial tonsil biopsy specimens from 598 adults, and for HPV DNA in the oral region from oral rinse specimens. Oral samples were analyzed for HPV DNA by PCR using PGMY09/11 primers and reverse line-blot hybridization. EBV DNA was quantitated by kinetic PCR using BamH-W3W5 primers. HPV-16, -18, and -33 VLPs, HIV, and HSV-1 and -2 seroreactivity were assessed by ELISA. Tobacco, sexual behaviors, and STD history were obtained by interview.

Results: The prevalence of HPV and EBV DNA in the tonsil were 3.1% and 27.5%, respectively. HPV-16 was the most common HPV-type detected. HPV DNA in tonsillar epithelial cells was associated with HIV, HPV, and HSV-2 seropositivity, history of STDs, same-sex oral sex, casual sex, and cigarette smoking. In the multivariate analysis, HPV DNA in the oral region of HIV-seronegative individuals was associated with increasing age (OR=1.09, 95%CI 1.03-1.16), male gender (2.7, 95%CI 1.2-6.4), and HSV-2 seropositivity (2.3, 95%CI 1.0-5.1). Among HIV-seropositive individuals, male gender (2.0, 95%CI 0.9-4.4), HSV-2 seropositivity (3.1, 95%CI 1.1-8.8), oral abnormalities (7.1, 95%CI 2.2-23.3), CD4 count <200 (2.6, 95%CI 1.1-6.4), and $\geq$ two recent oral sexual partners (15.0, 95%CI 3.3-67.5) increased the odds of HPV DNA in the oral region. EBV DNA was associated with HIV-seropositivity (7.1, 95%CI 4.8-10.7), CD4 count <200 (2.2, 95%CI 1.0-4.7), and cigarette smoking (3.0, 95%CI 1.8-5.0).

Conclusions: HPV and EBV DNA were detected in tonsillar epithelial cells of a notable subset of this population. HIV positivity and CD4 count impacted the prevalence of both viruses. Sexual behaviors and oral sex were importantly related to HPV DNA in the tonsil and oral region.

0545

Partnership Types among Men with Recent HIV Infection

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Objectives: To identify the types of sexual partnerships, sexual behaviors and beliefs regarding HIV transmission among men with primary HIV infection.

Methods: 53 men who reported having sex with men in a study of primary HIV in Southern California responded to a self-administered computer interview about their sexual partners and sexual behaviors within different types of partnerships following their HIV diagnosis. Associations were examined between unprotected anal intercourse and partnership type, demographic characteristics, and transmission beliefs in univariate models using Fisher's exact methods and t-tests and multivariate logistic regression models.

Results: Among the 156 last three partners reported by 53 male respondents, 22% were a main partner, 20% an unknown partner, 14% an acquaintance, 11% a friend, 11% a regular partner, and 2% a trade partner. Age, ethnicity, and drug use at last sex were not associated with unprotected anal sex with the last partner. The last partner was reported to be a main partner by 45% men. Among those with main partners, significantly more reported that the serostatus of the last partner was negative versus positive or unknown (67%, 12% 21% respectively). 30% of respondents believed the risk of acquiring HIV was unlikely, 30% likely, and 40% no difference for the insertive partner. Respondent's likelihood to report unprotected anal sex with their last partner was significantly associated with the partner being a main partner (OR 3.73) and believing that it is likely to get HIV for an insertive partner (0.18) after controlling for age and ethnicity using logistic regression.

Conclusions: Men who have sex with men with recently acquired HIV are more likely to report recent unprotected sex with a main partner, most of whom they report being negative for HIV. This suggests a great potential for further transmission from those with primary HIV to their main partner.

0546

Differences in HPV-16 Seroprevalence Rates Between New Orleans, LA and Oklahoma City, OK

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Objective: Human Papillomavirus is the most common viral sexually transmitted disease and has been etiologically linked to anal-genital malignancy. Previous studies have shown that seropositivity to high risk HPV predicts risk of cervical cancer. The purpose of this study is to compare HPV-16 seroprevalence from two urban cities that vary by race, location, and incidence of cancer.

Method: Study participants were women enrolled between 1984 and 1989 in the Vaginal Infection and Prematurity (VIP) Study in New Orleans, LA (n=500) and Oklahoma City, OK (n = 500). Sera were tested for HPV-16 antibodies using a capture ELISA.

Results: Rates of HPV16 seroprevalence were 32.1% and 15.0 % in the New Orleans and the Oklahoma cohorts, respectively. The New Orleans cohort was constituted by predominantly African Americans while the Okalahoma cohort was predominantly Caucasian. The Oklahoma women were more likely to report increased lifetime sex partners and the New Orleans women were more likely to be older, more educated, and single (all $p<0.05$). In bivariate analysis only race in the New Orleans cohort and years of sexual activity (> 5 yrs.), and number of lifetime sex partners (> 5) in the Oklahoma cohort, were significantly associated with seropositivity. Stepwise regression models revealed race and number of lifetime sex partners in the New Orleans cohort and race, years of sexual activity and number of lifetime sex partners in the Oklahoma cohort as significant predictors. The difference in seroprevalence between the two cohorts persisted after adjustment for age, race, and sexual demographics.

Conclusions: The seroprevalence rates observed in the study reflect the observed differences in cervical cancer rates between New Orleans and Oklahoma. These data underscore the utility of seroepidemiology in identifying groups at increased risk for cervical cancer in order to target preventative and vaccination strategies.

0547

Integration of Surveillance Data to Local Service Providers as a Prevention Strategy

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Objective: Rates of STIs including HIV are high in Baltimore City. Greater collaboration among groups and agencies that have as part of their mission HIV and STD prevention is needed. In order to increase collaboration, the Baltimore City Heath Department developed a directory of 180 relevant community-based organizations and service providers. There were several barriers to developing the directory.

Methods: Community-based organizations and service providers listed in the directory were asked to participate in instrumented group interviews. Approximately 30 instrumented group interviews were conducted. Each group lasted approximately two hours and was recorded and transcribed. Providers filled out a survey and participated in a focus group addressing directory use, barriers to participation, and updated directory information.

Results: Preliminary findings suggest reasons for failure to participate: 1) lack of trust; 2) fear of evaluation; 3) competition among organizations; and, 4) clarity of questions. To address issues of trust it should be recognized that relationships are built over time.

Conclusions: Relationship building cannot be rushed. Sufficient time is necessary/crucial to establish the health department as a neutral, honest broker in order to generate sustainable collaborative efforts with local providers.

0548

Evaluating "Stop the Sores," A Community-Led Social Marketing Campaign to Prevent Syphilis Among Men Who Have Sex With Men, Los Angeles County 2002-2003

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Objectives: To address a resurgence of syphilis among men who have sex with men (MSM) in 2001, in which MSM cases increased 80% from 126 cases in 2000 to 227 in 2001, Los Angeles County (LAC) DHS funded "Stop the Sores," a $396,000 social marketing campaign in 2002-03. The campaign was developed and managed by a community organization, AIDS Healthcare Foundation (AHF), in formal collaboration with five other ethnically diverse community agencies serving MSM, and with San Francisco, which initiated a similar campaign. We evaluated the extent to which the campaign was seen and recalled by the target population, and whether the campaign increased testing among MSM who had seen it.

Methods: MSM were surveyed using a street-intercept survey. Surveys were administered to MSM ages 18-60 in neighborhoods targeted by the campaign, and conducted in public places such as coffee houses, parking lots, laundro-mats, and the street. The survey captured campaign recall, campaign appeal, basic syphilis knowledge, risk behaviors before and after campaign launch, and syphilis testing and other actions stimulated by the campaign. Respondents were also asked HIV status, due to the high proportion (56%) of MSM with syphilis who were also HIV-positive.

Results: Between December 2002 and March 2003, 87 MSM completed the survey. Of these, 52 (60%) saw the campaign. Men who saw the campaign were 88% more likely to have tested for syphilis than men who did not see it ($p=.02$). (Data collection is ongoing; additional analysis will be provided on approximately 200 total completed surveys).

Conclusions: A large proportion of MSM surveyed saw the Stop the Sores campaign. MSM who saw the campaign were significantly more likely to have tested recently for syphilis.

0549

Venues Where Syphilis Cases Among Men Who Have Sex with Men Reported Meeting Sex Partners, California, 2000-2002

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Objective: Traditional syphilis control measures have focused on counseling and treatment of locatable sex partners. If partners are anonymous, then partner management may not be an effective control strategy. In the current epidemic among men who have sex with men (MSM) in California, venues for meeting multiple anonymous sex partners play an important role. Our goal is to characterize the trends in these reported venues and describe the refinement of our syphilis control strategy.

Methods: Infectious syphilis cases are interviewed by disease intervention staff (DIS) for patient/partner management and surveillance purposes. Since 1999, interview data are transcribed onto standardized data forms to capture demographic, healthcare access, and behavioral information. These behavioral data include: venues where cases report meeting sex partners (e.g., bathhouses/resorts, sex clubs, the Internet, and bars/clubs), numbers of sex partners, and numbers of "anonymous" sex partners.

Results: Primary and secondary (P&S) syphilis is currently an epidemic among MSM in California with 777 cases diagnosed in 2002, a 105% increase from 2001 (N=379) and a 377% increase from 2000 (N=163). Overall, 78% of P&S syphilis cases were among MSM from 2000 to 2002. Of the 1301 MSM syphilis cases who were interviewed, 22% reported meeting partners through the Internet, 30% in bars/clubs, 23% in bathhouses/resorts, and 9% in sex clubs. The proportion of cases that reported meeting partners over the Internet increased significantly during this period from 11% to 26% ($p < .0001$), particularly among HIV-positive MSM (44% to 68%, $p = .008$).

MSM P&S syphilis cases who reported meeting partners through the Internet, at sex clubs, at bars/clubs, or at bathhouses/resorts reported significantly higher period sex partners than men who did not report meeting partners in these 4 venues (13.9 vs. 5.5, $p < .0001$). DIS initiated fewer partners for counseling and treatment from patients reporting these venues than those that did not (0.9 vs. 1.5, $p= 0.04$).

Conclusions: Specific venues are associated with increased numbers of sex partners among California MSM P&S syphilis cases. In particular, the Internet is an important emerging venue associated with a substantial and increasing proportion of patients. Current syphilis control measures must incorporate these venues for targeted HIV and STD prevention activities.

0550

Epidemic Syphilis among Men Who Have Sex with Men in California

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Objectives: The syphilis and HIV epidemics among gay and other men who have sex with men (MSM) in California are integrally linked: syphilis facilitates both the transmission and acquisition of HIV, and behavioral risk factors are often identical for the two infections. Our objective is to describe the data from our enhanced syphilis surveillance systems and to show how they provide "real time" risk information that can inform targeted intervention efforts and supplement the historical "exposure category" data available from HIV/AIDS surveillance systems.

Methods: Syphilis cases are interviewed by field staff for patient/sex partner management and surveillance purposes. Since 1999, interview data have been transcribed onto a standardized form which captures extensive behavioral, demographic and clinical elements. Analysis and reporting of these case-based enhanced surveillance data are continuous, using automated systems with Web-accessible reports.

Results: In 2002, 1220 cases of early syphilis were reported among MSM in California, an increase of 1600% from the low point of 72 cases in 1999. This increase has been steady and observed mainly in urban areas of all regions of the state, in all age groups, and all racial/ethnic groups. In 2002, 65% of these MSM cases were co-infected with HIV, an increase from 55% HIV co-infected in 2000. Illicit drug use among cases was common (>38% of cases in 2002). Of particular concern was the frequent and increasing use of methamphetamine and Viagra, often in combination. The preponderance of substantial numbers of "anonymous" sexual partners is an important risk factor and limits the utility of standard syphilis control measures. Cases reported meeting partners in bathhouses, sex clubs, clothing optional resorts, "circuit" and private parties, and, increasingly, over the Internet ($p<.001$). Prevention measures have been developed targeting these venues.

Conclusions: The MSM syphilis epidemic in California is a substantial public health problem and exacerbates the HIV epidemic. Risk data and interventions based on syphilis case data provide timely information relevant to STD and HIV prevention and control.

0551

Contraceptive and STD Protection Usage Among High-Risk Minority Women

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Objective: To assess usage of effective contraceptive methods and effective STD protection by high-risk minority women.

Methods: Black and Hispanic women with an active STD were enrolled in a interventional trial to reduce STD recurrence. At enrollment each was questioned about their prior and current contraceptive and condom usage. Women with any history of condom use were further questioned about consistency and problematic use. Pregnant women were excluded from analysis of current contraception, but included for condoms.

Results: 397 nonpregnant women were analyzed for current contraceptive use, of whom 105 (26.4%) used nothing, 177 (44.6%) used hormonal methods, 85 (21.4%) used condoms alone and 30 (7.6%) had undergone permanent sterilization. Of 177 women using hormonal methods, 52 (29.4%) had also used condoms. Overall, 141 women (35.5%) used condoms in the last 3 months. Condom usage was lowest among women using contraceptive methods perceived to be most effective (6/30 Norplant, 2/10 Depoprovera, and 4/30 BTL). 427 of 548 women reported ever having used condoms, of whom 41% reported having experienced problems with use including: breakage, 25%; slippage, 28%; lodged inside vagina, 3%; and placement difficulty, 3%. Other important issues were inconsistent use (65% of women had used condoms in <5 of their last 10 episodes), reliance on obtaining free condoms at clinics (57%), failure to check for complete penile coverage (15%) and use of natural skin condoms or oil-based lubricants (3%).

Conclusions: Neither contraceptive use nor STD protection were optimal in this cohort of high-risk women. Dual method use provides the best overall protection, but was not widely adopted. Among women who used condoms, inconsistent and problematic use were widely reported.

0552

"Stop the Sores": Creating a Community -Led Social Marketing Campaign to Prevent Syphilis AMong Men Who Have Sex With Men, Los Angeles County 2002-2003

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Objectives: Los Angeles County (LAC) experienced a resurgence of syphilis among men who have sex with men (MSM) in 2001, after initial control efforts, including a two-month media campaign, seemed to have controlled a 2000 outbreak. LAC DHS consequently funded a $396,000 social marketing campaign for 2002-03, to increase awareness among MSM regarding syphilis and motivate testing. To maximize effectiveness and buy-in of the affected population, the campaign was developed and managed by a coalition of six ethnically diverse community organizations serving MSM and funded for an entire year. Collaboration with the San Francisco Department of Public Health was also undertaken, to address possible transmission between localities.

Methods: The community coalition reviewed concepts, prototype materials, and focus group responses. The selected concept, Stop the Sores, featured a cartoon format and a recurrent character, "Phil," the syphilis sore. A perceived concept advantage was the use of humor to counteract feelings among MSM of being overwhelmed with negative sexual health messages; attention to this issue was greatly enhanced through community involvement in the campaign. Use of a recurrent character enabled use of serial narratives involving Phil, to sustain interest in the campaign over a long period. A website created for the campaign (www.stopthesores.org), together with the STD Program hotline, provided testing linkages.

Results: The campaign, launched June 20, 2002, has included print ads, billboards, internet ads, Phil squeeze toys, palm cards, posters, and campaign-linked outreach, using a Phil costume, at mobile test sites and key venues. Phil is well recognized in targeted areas, and the campaign has received substantial national attention (e.g., Newsweek, The Daily Show, STD Advisor, AdWeek).

Conclusions: A substantial social marketing effort for MSM was successfully created and implemented through DHS-community and inter-jurisdictional collaboration. Campaign methods and elements may assist other jurisdictions.

0553

Enhanced Gonorrhea Surveillance in California

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Objective: Reported gonorrhea rates began increasing in California in 2000 in both males and females. The current statewide gonorrhea surveillance system collects limited demographic data on gonorrhea cases. By enhancing gonorrhea surveillance, we will better understand the current gonorrhea epidemiology in the state and use the information to design and implement effective disease prevention and control interventions. Preliminary results exemplify the type of information the enhanced system will yield.

Methods: Five local health jurisdictions will participate in data collection. The first 100 male and 100 female gonorrhea cases per jurisdiction per year will be interviewed using a standardized case report form. Approximately one-third of case interviews will be conducted in person and two-thirds over the telephone. The interview includes extensive behavioral elements related to STD risk. Medical providers of cases will be asked for data concerning type of practice, patient symptoms, and treatment. Data collection began October 15, 2002 in the City of Long Beach.

Results: There were 211 gonorrhea cases reported in Long Beach from October 2002 to February 2003, 55% male and 45% female; forty-two (20%) were interviewed in this initial phase. Preliminary data from these 42 interviews indicate 13 (56%) of 23 males were heterosexual and 10 (44%) were men who have sex with men (MSM). All 19 women were heterosexual. Of MSM, 78% reported one or more new partner(s) in the last three months, compared to 54% of heterosexual men and 32% of the women. MSM met the majority of new contacts through the Internet whereas heterosexual men met new partners at known cruise areas and through friends. Women met most new partners through friends.

Conclusions: Enhanced gonorrhea surveillance will provide valuable data for targeted prevention and control strategies. Preliminary data suggest a substantial proportion of male cases are MSM, and support findings from enhanced syphilis surveillance, that the Internet is an important venue for meeting sex partners.

0554

PRIMARY SYPHILIS, TP-HA SEROCONVERSION and THE RISK OF HIV-1 INFECTION IN PUNE, INDIA

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Objective: To determine the incidence of primary syphilis and TP-HA seroconversion and the association with HIV-1 infection rates among a cohort of high-risk STI clinic attendees.

Methods: 2729 HIV-1-seronegative patients attending 3 sexually transmitted disease and 1 gynecology clinic, were enrolled from 1993-2000 in an ongoing prospective cohort study of acute HIV-1 infection in Pune, India. At screening and quarterly follow-up visits, participants underwent HIV-1 risk reduction counseling, risk behavior assessment and HIV/STI screening that included testing for serologic evidence of syphilis by RPR/VDRL and TP-HA confirmation. Patients with genital ulcers were screened with darkfield microscopy and RPR and treated for primary syphilis if either were positive. All participants with serologic evidence of syphilis were treated according to CDC guidelines.

Results: Among 2324 participants who were HIV-1 and RPR seronegative at baseline, 46 participants were found to have clinical and laboratory evidence of primary syphilis during follow-up (1.45/100 py), whereas 126 participants underwent RPR/TP-HA seroconversion during follow-up (3.97/100 py) in the absence of clinical evidence of primary syphilis. Based on a median follow-up time of 11 months, the incidence of HIV-1 was 5.8/100py. Using a Cox proportional hazards model to adjust for known HIV risk factors, the adjusted hazard ratio of HIV-1 infection associated with primary syphilis was 3.71 (95% CI 1.85-7.44; $p<0.001$). The adjusted hazard ratio of HIV-1 infection associated with TP-HA seroconversion in the absence of clinical evidence of primary syphilis was 2.37 (95% CI 1.31-4.31; $p=0.005$).

Conclusions: High incidence rates of primary syphilis and TP-HA seroconversion were observed among STI clinic attendees in Pune. The elevated risk of HIV-1 infection that was observed among participants with either primary syphilis or serologic evidence of early syphilis supports the hypothesis that syphilis enhances the sexual transmission of HIV-1 and highlights the importance of early diagnosis and treatment of syphilis.

0555

Characteristics of African American Female Sex Workers Who Smoke Crack Cocaine

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Objectives: We conducted an exploratory study in order to determine the characteristics of African American female sex workers who used crack cocaine. This was a sub-study of a larger study which collected comprehensive data on sociodemographic variables, sexual behaviors, and drug use behaviors of drug users.

Methods: A sample of 86 female sex workers working in Washington D.C. was recruited. The questionnaire used was the Sexual Risk Reduction Questionnaire. It was developed to measure personal level determinants of condom use.

Results: All of the women reported smoking crack in the previous month and had traded sex for money, with 84% reporting trading for drugs as well. Women reported having sex with lovers, friends, and with customers. Twenty three percent of them reported living in their own homes and the rest lived with someone else or in a shelter or boarding house. Eighty five percent were single and the rest were living as married. On the whole, they were unemployed. The majority (61%) had graduated from high school, with 24% having some college. In addition to using crack, 76 % used alcohol, 48% used marijuana, and 22% used heroin. The mean number of times they smoked crack in the past 30 days was 210 times, and the mean number of times they used heroin was 44 times. The average number of times that the women traded sex for money in the month was 44 times.

Conclusions: This study suggests frequent sexual activity and drug use with both customers and other partners by these crack using female sex workers, with only moderate, inconsistent condom use. These findings strongly argue that interventions targeting sexual risk behaviors, especially unprotected vaginal sex, are sorely needed among African American female sex workers who use crack and other drugs.

0556

Evaluation of a Hepatitis B Virus (HBV) Immunization Program in an STD Clinic

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Objectives: To evaluate acceptance and completion of free HBV immunization in an STD clinic.

Methods: Over a 41 month period, clients attending an urban STD clinic were screened regarding past experience with and current interest in HBV immunization. Immunizations were provided by referral to an adjacent Immunization Clinic or by STD clinic staff. Targeted patients and reminders for follow-up doses varied across 4 time periods: #1: 8/99-7/00 (high-risk patients [HR—gay/bisexual men, injection drug users, and high risk heterosexuals] with reminder via letter or telephone); #2: 7/00-4/01 (HR, no reminder); #3: 5/01-01/14/02 (HR, post card reminder), #4: 1/15/02-12/02 (all clinic patients, post card reminder).

Results: Screening was conducted at 15,403 (39%) of targeted visits, with higher rates after transition from HR (#1-3, 26%) to all patients (#4, 59%). Of those screened, the rate of prior history of HBV vaccine or infection was 39%, with increases from time #1 to #4 (26% to 42%); the increase was greatest in adolescents (50% to 80%) but was also seen in older patients (23% to 34%). Of the remaining 9465 eligible subjects, 3104 (33%) declined, 2398 (25%) agreed but did not present for vaccine, and 3963 (42%) received a first dose. A second dose was received within 60 days by 30% and a third dose within 12 months by 22%. Among HR, second dose completion was higher when reminders were used (#1, 39% & #3, 34% vs. #2, 26%), although rates were lower among all patients even with a reminder (#4, 28%). In a multivariate model, predictors of receiving a second dose within 60 days were white race (OR 1.27), older age (1.04/yr), male gender (1.20), and use of reminders (1.36).

Conclusions: Approximately 40% of STD clinic patients offered free HBV vaccine will initiate immunization. Return for subsequent doses varies by demographic factors and can be improved by simple reminder systems.

0558

Targeted Screening for Trichomonas Vaginalis Using a Two-step Detection Method in Women Presenting for STD Evaluation

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Objectives: Targeted screening practices can be effective in controlling sexually transmitted infections. Delayed inoculation of culture media for *Trichomonas vaginalis* has been shown to be effective in clinical practice and could be applied for targeted screening. To develop predictors for *T. vaginalis* infection for targeted screening purposes, we assessed factors among infected women tested by both wet mount and culture.

Methods: Women presenting to two urban STD clinics were enrolled in the study. Medical history and sexual risk behavior data were collected from study subjects. Clinical specimens including vaginal swabs for wet mount microscopy and culture were obtained for *T. vaginalis* detection. Using culture for trichomoniasis as the dichotomous outcome, bivariate analyses were performed. Factors with a p-value < 0.25 were included in a "full" multivariate logistic regression model. A reduced model was generated using the backward elimination method and likelihood ratios.

Results: Among 2194 women, wet mount microscopy detected 76% of 440 infections and culture detected 88%. Among wet mount negative, culture positive women (N=99), African-American race, contact to trichomoniasis and any drug use were significantly associated with trichomoniasis in the full model. These variables remained significantly associated with the outcome in the reduced model. All three criteria performed with 25.0% sensitivity and 94.9% specificity, identifying 98 wet mount negative women with culture proven trichomoniasis in this population.

Conclusions: The model can be applied for targeted screening of women at increased risk for trichomoniasis using a two-step detection method with delayed inoculation of culture. In settings where routine screening using culture is not available, African-American race, contact to trichomoniasis and any drug use may be used to predict trichomoniasis and guide targeted screening with culture.

0559

Mobile team: an alternative outreach methodology for STI screening and treatment of female sex workers (FSW)

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Objective: To test the performance and acceptability of the outreach methodology for STI screening and treatment of FSW to be used in the Urban Community Randomization Trial of STI Prevention in Peru.

Methods: A mobile team consisting of a nurse and a peer field worker visited sex work settings (SWS) at Huacho city offering STI screening and presumptive treatment with metronidazol (MTZ) 2 gr. Self-administered vaginal swabs were collected for *C. trachomatis* (CT) and *N. gonorrhoeae* (NG)

PCR, TV InPouch® cultures, and slides for Gram stain. Results and additional treatment were delivered during a second visit in the following week.

Results: Thirteen SWS were visited in 8 weeks. Out of 108 FSW approached, 107 consented to participate and provided vaginal swabs, and 102 received MTZ. One was not offered MTZ because of pregnancy and only 4 refused it. CT, NG or TV was diagnosed in 32 (30%) participants, and CT, NG, TV or BV in 50 (47%). During the second visit, the team could re-contact 82%, 48%, 60%, and 57% of the participants in bars, street venues, hotels, and brothels respectively. One out 6 CT and 9 out 20 NG PCR positive participants did not receive treatment because they were not re-contacted. Forty out of 66 participants (61%) re-contacted recalled symptoms attributed to MTZ during the 48 hours following intake, but mostly mild. All of them stated they will take MTZ again.

Conclusions: Mobile team approach is an effective and acceptable methodology to reach FSW for STI screening and treatment. It provides outreach to high risk FSW, as showed by the high STI prevalence of any STI, but additional measures are needed to ensure treatment for all FSW diagnosed with an STI. Presumptive treatment with MTZ is well tolerated, and FSW are willing to take it again despite adverse events.

0560

Assessing the Impact of HPV-Related Diagnoses: Results from a Qualitative Study

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Objectives: HPV is among the most commonly diagnosed sexually transmitted infections in the U.S. Whereas it most often is associated with genital warts, it also is the causative factor in cervical and other genital cancers. Understanding the connection between HPV and an abnormal Pap smear can be difficult for women due to its sexually transmitted nature, its multiple strains, and its oncogenic potential. Consequently, a study was undertaken to assess the impact of receiving an HPV diagnosis following abnormal Pap smear and HPV DNA testing.

Methods: Women who attended three community or university student health clinics were screened with ThinPrep pap smears and Hybrid Capture II HPV DNA tests. Fifty-two women were interviewed after receiving diagnoses of abnormal pap smears (ASCUS+) and positive HPV DNA results, including low-risk, mixed low-risk and high-risk, and high-risk types. The interviews assessed knowledge of HPV and other health-related issues, reactions towards receiving the diagnosis, attitudes towards their present and past sexual partners, and behaviors related to health and sexual history. Data analysis was facilitated through Ethnograph 5.0 software.

Results: Qualitative data demonstrated concerns about provider communication, future pregnancy intentions, apprehension over disclosing HPV status to future partners, lack of knowledge of HPV both prior to and after receiving the diagnosis, and extensive use of the Internet for health information.

Conclusions: The lack of knowledge about HPV and possible consequences of infection make the development of health messages that are clear, easy to understand, and accessible in a variety of settings critical. Making the connection between cervical cancer and HPV becomes increasingly necessary as cervical cancer screening guidelines extend screening intervals. A national education program aimed at women who may delay screening is critical.

0561

Moving Research to the Community: Predicting Cost-Effectiveness of a Behavioral Intervention

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Objective: Previously we have shown using a controlled randomized trial that an intervention could reduce 1-year STD reinfections by 37% in a high-risk population of women. This analysis was to estimate the cost-effectiveness of using the intervention in a non-research setting considering the variability in the baseline risk status of the targeted population.

Methods: We used standard cost-effectiveness analysis. Costs of the intervention were calculated retrospectively ignoring the sunk costs of the research development. The benefits were calculated for the outcomes of averted cases of STD infection, PID sequelae, and HIV/AIDS. Cost-effectiveness was computed using estimates available for costs of the outcomes discounted at 3%. Sensitiv-

ity analysis explored the effect of differences in the risk of the population for the outcomes and the impact of the intervention.

Results: There were 285 women in the invention, with a baseline 1-year reinfection rate of 27% based on the study controls. We assume that a 37% reduction in STD infection also yields a 37% decrease in risk of PID or HIV. Estimated probability of PID was .06 for this population calculated from the infection rate and risk of sequelae in undetected cases, yielding an estimate of $4100 per averted PID case. Using an annual probability of infection for HIV from 0.001 to .02, the cost of the intervention ranged from about $11,000-225,000 per case of HIV averted. This is generally under the discounted lifetime cost of HIV/AIDS estimated at $200,000.

Conclusion: The intervention produces a reduced rate of STD with the projected benefit of reduction in PID and HIV/AIDS. The intervention is cost effective even if only HIV/AIDS is used as and outcome. For populations with a 1-year probability of 0.001or greater for HIV, the intervention is also cost-saving at under $200,000/averted case.

0562

Prevalence Of Sexually Transmitted Infections Among Out-Of-Treatment Substance-Abusing Women

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Objectives: St. Louis, Missouri remains a high-morbidity area for syphilis, gonorrhea, chlamydial infection and other sexually transmitted infections (STI). Community-level prevention of STI can be aided by testing and treatment of individuals at highest risk. We hereby report on the prevalence of STI among substance-abusing women currently not in treatment who are enrolled in longitudinal intervention trials to reduce high-risk behaviors.

Methods: Since 2001, women in St. Louis with self-reported heavy alcohol use in the absence of drug use (A), or recent illicit drug use (cocaine, opiates, amphetamine) as determined by urine toxicology screen (D) have been recruited for a longitudinal community-based evaluation. To date, 820 women have been screened and 700 have been formally enrolled in the studies (267 A, 433 D). Subjects were tested for *Neisseria gonorrhoeae* (GC) and *Chlamydia trachomatis* (CT) by amplified urine probe, and blood samples were tested for syphilis by rapid plasma reagin (RPR) test, HIV antibody, and hepatitis C virus (HCV) antibody.

Results: Participants were predominantly African-American (70.2%), never-married (57.1%), and unemployed (67.6%). Among all women screened, infection prevalence was found to be: CT 5.0%, syphilis 3.8%, GC 2.8%, HIV 1.7%, HCV 20.5%. Rates of infection with GC, CT, and HIV did not vary by cohort membership. Members of the drug-using cohort (D) had significantly higher rates of infection with HCV (24.8% vs. 13.0%, $p < .001$) and syphilis (5.0% vs. 1.8%, $p < .05$), relative to women in the alcohol-using cohort (A).

Conclusions: STI and blood-borne pathogen infections are highly prevalent in out-of-treatment substance abusing women. Screening and treatment of STI in substance-abusing populations, and referral for treatment of blood-borne pathogen infections, can assist community-wide prevention efforts, since these individuals fall outside traditional care networks and may disproportionately spread infections through continued engagement in high-risk behaviors.

0563

Gonorrhea (GC) among men who have sex with men (MSM): the role of negotiated safety

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Objective: Negotiated safety (NS) refers to an HIV risk reduction strategy that includes unprotected sexual intercourse among HIV sero-concordant partners. We examined the relationship of HIV serostatus discussion to the occurrence of gonorrhea among MSM.

Methods: Analysis of MSM records in the Denver Metro Health (STD) Clinic (DMHC) database supplemented with data from an ongoing DMHC MSM project.

Results: Between January 2000 and December 2002, 225 GC cases were diagnosed among 1222 MSM (18.4%). GC diagnosis was associated with being HIV+ (odds ratio [OR] 2.1; 95% confidence interval [CI]: 1.4-3.0); discussion of HIV serostatus (OR: 1.3; 95% CI:1.0-1.6); having sex with an HIV+ partner (OR:1.7; 95% CI: 1.1-2.5); and recruiting sex partners on the Internet (OR:1.5; 95% CI: 1.1-2.2). MSM who recruited sex partners on the Internet, were significantly more likely to discuss HIV serostatus with their partners compared to MSM recruiting sex partners in bath houses or other public sex venues (OR:2.6; 95% CI:1.7-3.9). Still, 21.8% of HIV+ MSM and 49.6% HIV- MSM, as well as 54.1% of MSM who recruited sex partners on the Internet reported sex with a person whose serostatus was unknown in the 4 months preceding their visit to the clinic.

Conclusions: Increases in GC among MSM may in part be due to NS, i.e. allowing unprotected sex after discussion of HIV serostatus suggests sero-concordance. Recruiting partners on the Internet may facilitate HIV serostatus discussion. However, sex with partners of unknown serostatus is common among HIV+ and HIV- MSM in our STD-clinic recruited sample. Further research is needed to unravel the relationships between STD and HIV among MSM and the place of NS as a viable HIV prevention intervention.

0564

Peer referral to identify new cases of HIV among very high risk MSM

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Objective: To describe the organization and initial outcomes of a peer referral program designed to identify new cases of HIV/STD among difficult to reach men who have sex with men (MSM).

Methods: In this ongoing project, we train MSM to be peer recruiters who bring other MSM to an STD clinic for anonymous HIV and STD counseling and testing (C&T). Peer recruiters are enrolled after seeking care at an STD clinic or are referred by an HIV clinic or by community-based organizations. Particular efforts are made to involve MSM of color, methamphetamine users, bisexual or non-gay-identified MSM, and male-to-female transgendered persons. Peer recruiters are paid $20 for each person they refer who accepts HIV testing. Peers referred for C&T receive $10 for being tested and $10 more for receiving test results.

Results: In the first 6 months, 78 MSM were enrolled as peer recruiters. These men referred 80 peers for C&T; the current referral rate is 20 peers per month. A total of 72 (90%) of 80 tested peers completed an audio-computer assisted behavioral interview; 35 (49%) were bisexual or non-gay identified MSM, 37 (51%) were non-white, 23 (32%) were current methamphetamine users, and 5 (7%) were male-to-female transgendered persons. Five peers had never been tested for HIV (7%), and 24 (33%) had not been tested in the preceding year. Peer referral identified 6 new cases of HIV (7.5% of peers), 4 cases of hepatitis C, and one case each of gonorrhea and chlamydial infection. During the same period, no new cases of HIV were identified through partner notification; 71 new HIV infections were diagnosed among 7,409 people tested through the public health HIV C&T program.

Conclusions: Peer referral is a promising means to identify new cases of HIV among difficult to reach, high-risk MSM.

0565

STREET YOUTH & CHLAMYDIA: Are the rates rising?

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Objective: Street youth (SY) are particularly at risk for sexually transmitted infections (STI); minimal interactions with health care systems, substance use and high-risk behaviours are acknowledged as contributing factors. Limited national data on this population lead to the development of The Enhanced Surveillance of Canadian Street Youth; a source of data used to monitor rates of infection and associated risk behaviours in this hard to reach population.

Methods: In 1999 and 2001 a repeated cross-sectional study recruited SY between the ages of 15-24 years, inclusive, who had spent 3 or more nights away from home, from drop-in centres in seven large urban centres across Canada. Questionnaires covering demographics, sexual practices and history, sexual abuse, STI knowledge, condom assertiveness and mental health were administered. Urine samples were collected for standard PCR testing of chlamydia (CT).

Results: 1474 youth were recruited during 2001 data collection (male to female ratio; 1.3:1). 11.5% (95% CI: 10.8, 12.2) of SY tested positive for CT. 1733 youth were recruited during 1999 data collection (male to female ratio; 1.5:1). 8.6% (95% CI: 7.9, 9.3) of SY tested positive for CT. 22.4% reported having been told they had an STI. 56.5% of females and 40.1% of males reported not using a condom in their last sexual encounter with their opposite sex partner.

Conclusion: Enhanced surveillance data indicates that CT rates have increased in the SY population (8.6% to 11.5%) between these two time points. The change could be attributed to sampling differences, although during the same time period rates in the Canadian youth population have risen as well. Further analysis will examine associations between CT and demographics, sexual behaviours and sex trade.

0566

Gonococcal Infection In Family Planning Clinics: Risk Factors And Predictors For Detection

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Objective: Neisseria gonorrheae (GC) infections have been reported as asymptomatic in 70-80% of infected women and predictors of gonococcal infection are not well-studied. Screening strategies are needed for at-risk populations. The objective is to determine predictors of GC infection among women 15 to 24 years of age attending family planning clinics.

Methods: The study population included 31,762 women in Missouri (U.S.A.) enrolled in a CDC study of prevalence and risks associated with GC. Women were universally screened for N. gonorrheae and Chlamydia trachomatis during the visit using nucleic acid amplification technology.

Results: GC prevalence was 0.7 %. Age-race adjusted analyses showed that factors associated with an increased risk of infection included: age (15-17 years; OR=1.9, 95% CI = 1.3 – 2.8), black race (OR=10.0, 7.7 – 12.9), contact to an STD (OR=10.7, 7.5 – 15.4), new partner (OR=2.6, 1.9 - 3.5), multiple partners (OR=4.2, 2.8 – 6.3), cervicitis (OR=5.3, 3.8 – 7.4), cervical friability (OR=4.0, 2.5 – 6.4), and symptoms (OR=4.2, 3.2 – 5.6). A positive chlamydia test also was significantly associated with GC infection (OR=8.4, 6.2 – 11.4). Using the above criteria, 39.4% of the population would be

screened and of this population, 1.5% would be would to be GC postive. Only 0.25% of cases would be missed.

Conclusions: The CDC data set provided a large population for analysis of predictive risk factors found for Neisseria gonorrheae infection among young women attending family planning clinics in Missouri. Notably, co-infection with C. trachomatis was found to be highly predictive of GC infection. Screening of only 39.4% of the population is necessary when the above selection criteria are applied. Only 0.25% of GC cases would be missed. The findings suggest that the risk factors could be used as guidelines in creating cost-effective gonorrhea testing strategies as an approach to increase detection of asymptomatic infection and decrease rates of gonorrhea.

0567

Spatial Heterogeneity of Gonorrhea Rates Measured at Three Levels of Geographic Specificity

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Objectives: To compare the density of heterosexual gonorrhea cases at three different levels of geographic specificity and to explore the potential utility of these analyses for targeting gonorrhea prevention interventions

Methods: We geocoded all female gonorrhea cases reported in King County, WA in 2000 and 2001 (N=885) to the block group, census tract and zip code level, and compared the proportion of female cases and female population ages 15-29 found in the 1%, 2%, 3%, and 5% of block groups, tracts, and zip codes with the highest gonorrhea rates. Gini coefficients and 95% confidence limits were calculated to measure and compare the concentration of gonorrhea cases when aggregated at each geographic level.

Results: The top 1% of block groups, tracts, and zip codes accounted for 9.8%, 5.7%, and 3.8% of female gonorrhea cases, and 0.8%, 0.6% and 0.6% of the 15-29 year old female population, respectively. The gonorrhea rates found in these block groups, census tracts, and zip codes were 60.8, 48.3, and 29.8 per 1,000 persons, respectively. Similarly, the highest 5% of block groups, tracts, and zip codes contributed 35%, 25%, and 25% of cases, respectively. Gini coefficients measured at the block group, census tract, and zip code level were 0.79 (95% CI:0.78-0.81), 0.64 (95% CI:0.61-0.67), and 0.57 (95% CI:0.52 -0.64), indicating decreasing levels of gonorrhea concentration as cases were aggregated into larger geographic areas.

Conclusions: We observed a high degree of spatial heterogeneity in gonorrhea rates within high morbidity areas when examined at different levels of geographic specificity. Interventions focusing on areas defined at the block group level may be more efficient than interventions using less restrictive units of geographic analysis.

0568

Detection of Novel Organisms Associated with Salpingitis using 16S Ribosomal DNA PCR

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Objective: Forty to 70% of salpingitis cases are not caused by well known pathogens Neisseria gonorrhoeae and Chlamydia trachomatis and have unknown etiology. In this study we used broad range 16S ribosomal DNA (rDNA) PCR to detect bacterial DNA in Fallopian tube specimens from women with salpingitis and normal controls.

Methods: Cases and controls were consecutive women with laparoscopically confirmed acute salpingitis or seeking tubal ligation, respectively, at Kenyatta National Hospital, Nairobi, Kenya. The presence of bacterial DNA was determined by rDNA PCR followed by sequencing the resulting PCR products or by detecting common phylotypes by DNA hybridization.

Results: Eleven (24%) of 46 specimens from women with salpingitis and none of 44 normal controls tested positive for bacterial rDNA. Of the specimens containing bacterial rDNA, N. gonorrhoeae was the only phylotype detected in two specimens and S. pyogenes the only phylotype detected in one specimen. A phylotype most related to Sneathia sanguinegens was detected in three specimens: in one as the sole phylotype, in another as the predominant phylotype detected with four others, and in a third specimen detected with 10 other phylotypes. Three additional specimens had 2, 10, and 15 phylotypes detected, many of which were typical of organisms associated with bacterial vaginosis. The remaining two specimens had insufficient sample for phylotype analysis.

Conclusions: Broad host range rDNA PCR allowed the detection and identification of both novel and more typical bacteria from the Fallopian tubes of women with salpingitis. Interestingly, a phylotype most related to S. sneathia, an organism recently found associated with amnionitis, neonatal septicemia, and preterm labor, was identified from three specimens. 16S bacterial ribosomal DNA PCR promises to lead to an improved understanding of the etiology of salpingitis and other reproductive tract infections.

0569

Prevalence of Chlamydia trachomatis and Neisserai gonorrhoeae in Pregnant Women in a Community Outreach Program

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Objectives: Community based outreach programs can be an effective means for the detection of chlamydia and gonorrhea. In an ongoing study, the Healthy Start and Success–by-Six outreach programs target pregnant women in different geographical areas in Baltimore. The intention is to accomplish early detection and treatment in order to prevent infections in infants and to prevent sequelae in pregnant women. The objectives were to determine overall prevalence and geographic distribution of infected women served.

Methods: During home visits, Neighborhood Health Advocates collected urine specimens from pregnant women. Urine specimens were refrigerated and sent via courier for testing by nucleic acid amplification tests. Results were faxed to central clinic locations, where infected women received treatment. Available residential addresses of women served were geocoded to a Baltimore City zipcode.

Results: A total of 1171 subjects have been enrolled over 3 years. CT: Prevalance was 9.6% (113/1171) GC: Prevalance was 2.8% (33/1171) Coinfection: Of CT infected women 11.5% (13/113) GC postitive and of GC infected women 39.4% (13/33) were CT infected. 733 (64%) of address information was available and geocodeable. The highest prevalence of CT/GC infected women was in six zipcodes.

Conclusions: Utilizing community based outreach programs is a successful way to diagnosis and treat current CT and GC infections in pregnant females, as well as control future infections. By studying geographic locations of prevalence, limited resources for future interventions can be appropriately targeted in the community.

0570

STREET YOUTH & Hepatitis B

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Objective: Hepatitis B (HBV) is the leading cause of serious liver infection worldwide, and can lead to chronic infection, cirrhosis, failure and cancer of the liver. Minimal interactions with health and education systems, limited access to vaccination initiatives, substance use, and sexual risk behaviours put street youth (SY) at elevated risk for HBV. The Enhanced Surveillance of Canadian Street Youth was developed to monitor rates of infectious diseases and associated risk behaviours in this hard to reach population.

Methods: In 1999 and 2001 a repeated cross-sectional study recruited SY between the ages of 15-24 years, inclusive, who had spent 3 or more nights away from home, from drop-in centres in seven large urban centres across Canada. Questionnaires covering demographics, sexual practices and history, sexual abuse, sexually transmitted infection (STI) knowledge, condom assertiveness and mental health were administered. Sera were tested for HBV markers and other blood-borne pathogens using ELISA.

Results: 1733 youth were recruited in 1999 (male to female ratio; 1.5:1). 1330 (76.7%) of SY consented to HBV testing. Sera samples were tested for HBV core and surface antibodies to determine SY's exposure to HBV virus and vaccination. 69.5% of SY had no immunity to the HBV virus and yet this group, when compared to those SY with immunity, were significantly more likely to report multiple sex partners. In addition, 20.3% of non-immune SY reported injection drug use (IDU).

Conclusion: As hypothesized, the SY population have low immunity to HBV. Further analysis will examine trends over time and the relation between HBV and sexual behaviour, substance use, body art and other infectious diseases. The enhanced surveillance data indicates the need for HBV vaccination and education initiatives in this marginalized population.

0571

HIV/STD Prevalence and Risk in Developing Countries

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Objectives: To determine prevalent STD and HIV and behavioral risks among a series of potentially high-risk populations in nascent and mature HIV epidemic settings.

Methods: Random samples of populations in a variety of settings were selected and interviews on behavioral risks determined by interview, and STDs by standard assays in: (1) Fouzhou, China – workers in food markets ages 18-40 years; (2) Chennai, India – urban slum dwellers 18-40 years; (3) St. Petersburg, Russia – dormitory students at technical colleges, ages 18-25; (4) Lima, Peru – residents of urban Barrios in three cities; and (5) rural growth point villages in Zimbabwe. Between 1000 and 1750 respondents were surveyed in each country using similar instruments and laboratory assays and methods.

Results: HSV-2 was the most prevalent STD, ranging from 3.2% among Russian youth to 58.3% among women in Zimbabwe. Herpes was 2-3 times higher in women than men. HIV was quite low, generally under 1%, in all sites with the exception of Zimbabwe, which was in excess of 30%. No HIV was detected in China, nor among men in Peru or women in Russia. Chlamydia ranged fro 0.5% among women in India to 10.1% among women in Russia; Syphilis was rare, less than 2.3% in all sites. T. Vaginalis prevalence among women ranged from 0.5% in Russia to 15.2% in Zimbabwe. All married respondents gave a history of sexual activity, while self-reported rates of current sex among unmarried respondents was 36% in China and 90% in Russia. Sex partner numbers ranged widely, but were concentrated in the young. Condom use in India and China were exceptionally low.

Conclusions: Risks for HIV/STD vary tremendously internationally. The risks in India and Peru did not warrant interventions in the proposed populations, but higher-risk venues have been located. Intervention activities began in all sites in 2003.

0572

STREET YOUTH - Sexual Partnering & Risk

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Objective: It is acknowledged that street youth (SY) engage is risky sex and are at increased risk for sexually transmitted infections (STI). Extensive literature has examined the link between social environment and behaviour. SY lack a parental presence that could make social environment even more influential. The Enhanced Surveillance of Canadian Street Youth is able to examine SY sexual partnering in the context of sexual risk behaviours and STI's.

Methods: In 1999 and 2001 a repeated cross-sectional study recruited SY between the ages of 15-24 years, inclusive, who had spent 3 or more nights away from home, from drop-in centres in seven large urban centres across Canada. Questionnaires covering demographics, sexual practices and history, sexual abuse, STI knowledge, condom assertiveness and mental health were administered.

Results: 1474 youth were recruited in 2001 (male to female ratio; 1.3:1). Over 650 SY had sex in the 3 months prior to interview. When questioned regarding sexual partnering in the 3 months prior to interview SY reported the following: 80.4% had partners that smoke cigarettes, 54.5% had partners that drink regularly, 68.4% had partners that use non-injection drugs, 6.5% had partners that inject drugs, 42.5% had partners that are high during sex with them, 10.2% had partners who had been told they had an STD, 8.7% had partners that use sex to make ends meet, and 39.2% had partners that are friends that hangout on the street.

Conclusion: Data from the 2001 enhanced surveillance shows sexual partnering among SY with respect to risk behaviours including substance use, street life, sex trade and STI's. Further analysis will examine the strength of association between sexual partnering and self-reported risk behaviours in SY. Additional research into SY, sexual partnering and risk, will aid in the development of improved prevention and control programs.

0573

Definition of Cure for Bacterial Vaginosis

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Objectives: The most appropriate definition of treatment outcomes for bacterial vaginosis (BV) remains unclear. Draft guidelines for demonstrating cure for BV proposed by the FDA in 1998 (0/4 Amsel criteria and Nugent score <4 at 21-30 days after starting treatment) offer a starting point for discussion. This analysis compares effects of two different metronidazole-containing medications on the individual components that comprise Amsel criteria or Nugent score.

Methods: Eligible women complaining of abnormal vaginal discharge or odor with BV defined by Amsel and Nugent criteria were randomized to metronidazole gel (containing 37.5 mg of metronidazole), or metronidazole/nystatin ovules (containing 500 mg of metronidazole), once nightly intravaginally for five nights. At initial and follow-up examinations scheduled 14, 42, and 104 days after initiating treatment, vaginal fluid was examined by FemExam card test, wet mount, and Gram stain.

Results: Although persistent or recurrent BV by Amsel and Nugent criteria was significantly less common throughout follow-up in those given ovules rates of cure per FDA draft guidance criteria at 10-21 days were only 35% (ovules) vs 26% (gel) (p=0.2). At first follow-up ovules were significantly more effective than gel in eliminating amines, clues cells, and gardnerella, prevotella, or mobiluncus morphotypes from vaginal fluid, but not significantly more effective in restoring lactobacillus morphotypes or in lowering vaginal fluid pH below 4.7. Absence of lactobacillus morphotypes and elevated vaginal fluid pH were correlated and common in both treatment arms.

Conclusions: Whether criteria for cure of BV should include restoration of lactobacilli, with resulting lowering of vaginal pH may depend on whether the longer term prognosis for return of symptoms or complications of BV is related to these indicators (not established in this study). Intravaginal metronidazole, for 5 days in the doses used, may be in sufficient to bring about rapid vaginal recolonization by lactobacillus in many women treated for BV

0574

Measures of self-efficacy over a two-year followup in an STD intervention

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Objectives: In a previous study with a one-year followup, we found a cognitive-behavioral intervention to be successful in preventing STD in high-risk minority women; and we showed that measures of self-efficacy were improved among women in the intervention group relative to women in the control group. The intervention was based on extensive ethnography and an adaptation of the AIDS Risk Reduction Model (ARRM), which posits three stages of behavior change: risk perception, commitment to change (facilitated by self-efficacy), and behavior change. We are currently con-

ducting a separate trial with a five-year followup. In this analysis, we sought to investigate whether the intervention facilitated improvements in self-efficacy measures over a two-year followup.

Methods: In preliminary analyses, we used chi-square analyses to test differences in reported measures of self-efficacy between study women and control women at baseline, 12-month followup, and 24-month followup. In logistic models, we then assessed the effect of the intervention on 12-month and 24-month values, controlling for baseline values.

Results: Logistic models at two-year followup showed that, controlling for baseline values, women in the study group were more likely to be comfortable examining a man for symptoms (OR=1.5 (1.1, 2.2)), putting a condom on a man (OR=1.7 (1.2, 2.5)), or using condoms erotically (OR=2.4 (1.7, 3.4)). Women in the intervention group were also more likely to carry condoms with them (OR=1.7 (1.2, 2.3)).

Conclusions: We conclude that the intervention was successful in giving women the skills and confidence they needed to negotiate safer sex with their partners. More research is needed to further elucidate possible intervention effects within the framework of the ARRM.

0575

Occurrence of Trichomoniasis in College Women

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Objective: There is limited research on trichomoniasis in college women; therefore, we determined the prevalence of trichomoniasis in this population.

Methods: A cross-sectional study using three diagnostic techniques (wet-mount, selective culture media [InPouch TV – Biomed Diagnostics) and PCR [modified Roche Amplicor CT/NG and TV])was used to determine the prevalence of trichomoniais in women visiting a student clinic. Students were invited to participate if they were scheduled for reproductive care and had been sexually active within the past 2 months. Detailed assessments of sexual activity including sociodemographic characteristics, sexual behavior and contraceptive methods were obtained.

Results: One hundred forty-five eligible women were enrolled. The mean age was 22 years (range 17 to 45 years). Seventy-eight percent were white and 17.4% were black . Sixty percent of women reported age at first sexual intercourse as $\leq$17 years. The median number of lifetime sexual partners was 4. Seven women were diagnosed with trichomoniasis: five were diagnosed by all 3 tests while 2 were positive only by PCR. The prevalence rate of trichomoniasis was greater than that of gonorrhea or Chlamydia (4.8%, 1.4% and 2.8% respectively). An abnormal wet mount consistent with bacterial vaginosis or candida vaginitis was found in 13% and 17% respectively. The majority of women did not use condoms the last time they had intercourse (57.9%). Women who used birth control pills (56%) were more likely to report not using a condom the last time they had intercourse (p=0.039). Women who were 23 and 24 were more likely to report using sex toys (p=0.011) than other age groups.

Conclusions: In our population of college women, we found that trichomoniasis was more prevalent than gonorrhea or Chlamydia. The modified PCR technique (GC, CT and TV) appears to be more sensitive than standard TV testing.

0576

Por Variable Region Typing and detection of mixed infections of Neisseria gonorrhoeae from Primary Clinical Samples

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Objectives: Examine the utility of *por* VR typing adapted for use with non-culture based samples.

Methods: Gonococcal (GC) *por* genes were amplified from frozen cervical wicks, swabs and cultures from women attending a public health clinic in Baltimore, MD, and frozen urine from a study of STDs in CSW in Madagascar. Typing with *por* variable region (VR) probes was performed in a checkerboard hybridization assay.

Results: *Por* VR type was determined for all 20 paired cervical wick and swab samples. 9 women (45%) were infected with a PIB strain, 2 (10%) with a PIA strain, 8 (40%) with > 1 strain (4 with two PIBs, 4 with a PIA and a PIB), and 1with a PIA/PIB hybrid. No mixed infections were identified in cultures. Frozen urine from an initial visit and a 2 month follow-up from 72 CSWs were processed for *por* VR typing (n=144). *Por* type was determined for 40 of 94 identified as GC + by LCR (43%), and 3 of 46 LCR – samples (3%). Six had evidence of mixed infection (PIA + PIB, 14%). *Por* VR type was identified for the 1st and 2nd samples for 8 individuals. In 6 (75%), reinfection with an identical *por* type was found. Among the CSW samples, one of 10 PIA *por* types was identified in 27 samples and 11 PIB *por* types in 22 samples. 3 common PIA types and 1 PIB type accounted for 49%. Several *por* types were present in samples from both Baltimore and Madagascar.

Conclusions: *Por* VR typing can be adapted for use with primary clinical samples. Amplification of *por* from frozen stored samples ranged from 100% for cervical wicks and swabs (culture +), to 43% for 2ml of frozen urine (LCR +). A high rate of mixed GC infections was identified using 2 cervical samples.

0577

Performance of the Focus HSV-2 Enzyme Linked Immunoassay in the Detection of Herpes Simplex Virus Type 2 Antibody in Ugandans

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Objective: To assess and optimize the HerpSelect® HSV-2 ELISA (Focus Technologies, Cypress, CA) for samples from a rural Ugandan population with high HSV-2 prevalence in which previous studies demonstrated a high frequency of false positive results.

Methods: Sera (248 HIV+, 496 HIV-) from subjects in the Rakai district, Uganda were used to determine the performance of HSV-2 ELISA. Western blot analysis (WB) was performed on all samples for validation of the ELISA results. Additionally, 167 samples were tested using the inhibition assay to validate the combination of ELISA and WB results.

Results: Based on WB results the prevalence of HSV-2 was 62%. Receiver operator curve analysis determined an optimal index cut off value of 3.4 for the assay (sensitivity 85%, specificity 84%), compared to the manufacturers value of 1.1 (sensitivity 99% specificity 52%). At the cut off value of 3.4 the positive and negative predictive values were 90% and 77% respectively. The prevalence of HSV-2 was higher in HIV-1 positive (71%) vs. HIV negative subjects (59%) $p<0.001$, though the performance of the HSV-2 assay was not affected by HIV status (the median index value for HIV-positive (6.03, n=177) and HIV-negative (6.17, n=282)($p=0.89$). Concordant results for inhibition and WB were found on 89% of samples tested while 4% were WB positive but inhibition negative and 9% inhibition positive but WB negative.

Conclusions: The optimal index cut off value for the HerpSelect™ 2 ELISA is 3.4 for this Ugandan population, higher than the manufacturers recommended value of 1.1. The change of this cut-off value improves the overall performance of the assay, by increasing specificity from 52% to 84%. HIV infection did not affect the performance of the HSV-2 ELISA. Finally, the potential that HSV-2 strain variation caused the discrepancy in ELISA performance in this population needs to be addressed.

0578

Mexican women's knowledge and attitudes on cervical cancer and the human papillomavirus

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Objectives: Cervical cancer is one of the principal causes of mortality for Mexican women. Although medical research has established a clear link between cervical cancer and the sexually transmitted infection, the human papillomavirus (HPV), public information campaigns in Mexico seldom mention this link. Our study sought to learn more about Mexican women's knowledge and attitudes towards cervical cancer and sexually transmitted infections, including HPV, and to explore some of the implications of informing women about this relationship.

Methods: We carried out eight focus group discussions with 25 middle-aged women (45-65) and 25 young women (16-25) in Mexico City. All women were recruited by a Mexican market research firm, "Know How Qualitativa" who also moderated the focus group discussions. Two readers analyzed transcripts of the focus group discussions by coding data according to themes.

Results: Few women knew that HPV is the cause of cervical cancer, although many associated cervical cancer with risky sexual behavior. HPV and other sexually transmitted infections were more stigmatized than cervical cancer. Participants felt that both men and women should be informed about the relationship between HPV and cervical cancer and that this information could potentially lead women to seek Pap testing more frequently since it might lead to greater perceived risk.

Conclusions: Our study suggests that increasing public information campaigns on HPV and cervical cancer would be beneficial in Mexico. In addition, our study provides important information about women's perspectives which could influence the design of policies and interventions to prevent cervical cancer.

0579

Evaluation of the DNA Pap test in primary screening for cervical neoplasia

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Objectives: Women undergoing cervical cancer screening are referred for biopsy if the Pap test shows ³low-grade squamous intraepithelial lesion (LSIL) or the Pap test shows atypical squamous cells of undetermined significance (ASCUS) *and* a test for high-risk HPV DNA is positive. This screening strategy is called reflex HPV testing. The FDA is currently considering approval of a new strategy that involves Pap and HPV DNA testing of women ³30 years, with referral to biopsy based on an abnormal Pap *or* a positive HPV DNA test. This screening strategy is called DNA Pap testing. Our goal was to evaluate the performance of DNA Pap test-

ing and reflex HPV testing of ASCUS for detecting ³cervical intraepithelial neoplasia (CIN) grade 3.

Methods: 4799 women were primarily recruited from Planned Parenthood clinics between December 1997 and November 2001. Women were screened using liquid-based Pap testing and HPV DNA testing by Hybrid Capture 2™ (HC2) (Digene Co., Gaithersburg, MD) and referred for biopsy based on a positive test for high-risk HPV DNA, or a Pap showing ³ASCUS. A random sample of women with negative screening test results was also referred for biopsy.

Results: Among 931 women who were 30-50 years of age, the sensitivity (95% confidence interval) of reflex HPV testing was 53.8% (38.2%-72.3%). The sensitivity of DNA Pap testing was 91% (74.6%-100%), regardless of whether referral to biopsy was based on Pap results of =ASCUS or =high-grade SIL (HSIL). The specificity of reflex HPV testing was 95.1% (93.8%-96.3%). The specificity of DNA Pap testing was higher when the Pap threshold for referral was =HSIL (79.7% [73.9%-83.7%]) rather than =ASCUS (71.6% [66.3%-75.8%]).

Conclusions: Among women ³30 years of age, use of DNA Pap testing with a threshold for biopsy referral of =HSIL or detection of high-risk HPV DNA is a reasonable cervical cancer screening strategy.

0580

Co-occurence of chlamydia and gonorrhea in a high school population

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Objectives: To determine the co-occurrence of chlamydia and gonorrhea among high school students and to compare students testing positive for only one of the two sexually transmitted diseases (STD) to those having both STDs to determine factors possibly associated with dual infection in this population.

Methods: During the school year 1998-1999 in an urban United States school district, 5,877 students in grades 9-12 and aged 14-20 years were screened simultaneously for chlamydia and gonorrhea by ligase chain reaction assays using urine specimens collected during regular school hours.

Results: The prevalence of chlamydia was 7.7% (451/5,877) and that for gonorrhea 2.0% (117/5,877). Overall, 401 tested positive for chlamydia only, 67 tested positive for gonorrhea only, and 50 tested positive for both chlamydia and gonorrhea. The gonorrhea co-infection among students who had chlamydia was 50/451 (11.1%), 14/154 (9.1%) for males and 36/297 (12.1%) for females (p=ns); and the chlamydia co-infection among students who had gonorrhea was 50/117 (42.7%), 14/30 (46.7%) for males and 36/87 (41.4%) for females (p=ns). Co-infection rates by age and grade were also not significantly different. STD symptoms were more likely (p=.01) to be reported by students with both infections (16.0%) compared to those who had gonorrhea only (7.7%) and chlamydia only (5.0%).

Conclusions: The co-infection rates among this student population exceeds those that justify co-treatment in patient-care settings. This study raises the issue of how important the co-occurrence of chlamydia and gonorrhea can be in certain populations whose members are less likely to be tested for STDs. For such populations, simultaneous screening for both chlamydia and gonorrhea remains the first line for intervention and action.

0581

Self-reported Sexually Transmitted and other Infections in a Multi-centre Community Sample of HIV-positive and HIV-negative Gay and Bisexual Men in Ontario, Canada

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Objective: To examine lifetime and current (past 12 months) incidence of sexually transmitted and other infections in a sample of gay and bisexual men.

Method: In 2002 a self-completed survey was conducted in 13 Ontario centres through community venues and groups. Men were asked about 7 categories of STI's and Hepatitis (A, B, or C). HIV status was determined by self-report and analysis of saliva specimens (optional). Lifetime and current infections were cross-tabulated by HIV status. Exploratory logistic regression modeling of current infections included socio-demographic and sexual and drug use behaviour.

Results: Of 5,080 male participants 4,706 (92%) responded to questions on sexual health. Lifetime rates of the 7 STI's ranged from 3.2% to 11.8%, with 28.5% reporting at least one. The reported incidence in the past year of individual STI's ranged from 0.5% to 2.5%. In the past year, HIV+ve individuals reported significantly higher (p<.05) rates for individual infections between 1.1% and 7.2% compared to rates between 0.4% and 1.9% reported by HIV-ve individuals. 16.4% of HIV+ve reported at least one STI compared to 5.7% of HIV-ve individuals (p=.0001). In the past year HIV+ve individuals reported

significantly (p<.05) more rectal and penile gonorrhoea, chlamydia, and genital/anal warts; and syphilis approached significance. The two groups (HIV+ve/HIV-ve) differed significantly on age, education, work status, socializing and sexual behaviour, but not on language or racial origin.

Conclusions: Higher rates of STI's among HIV+ve compared to HIV-ve men raise important health concerns. This finding may be due in part to differences in social characteristics, increased vulnerability to infection among immunocompromised men, and/or because the health of HIV+ve men may be more closely monitored.

0582

Increased Psychosocial Well-Being is Associated with Reduction in Sexual Risk Behaviors in a Controlled, Randomized Trial

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Objectives: A controlled, randomized trial of a cognitive/behavioral intervention for high-risk minority women significantly reduced STD reinfection at 6, 12, and cumulative follow-up by reducing high-risk sexual behavior associated with STD acquisition among study participants (NEJM: 340:93,2002; STD: 29:9,2002). In this study, we sought to determine whether reduction in behavioral risk was accompanied by concomitant intervention-associated increases in five dimensions of psychosocial well-being.

Methods: In multivariate analyses, we evaluated the intervention effect on measures of Depression, Self-Esteem, Self-Denigration, Locus of Control, and Situational Mastery at one-year cumulative follow-up, controlling for baseline values. Self-Esteem, Self-Denigration, Locus of Control, and Situational Mastery were assessed at the 75th percentile. Depression was assessed using a cutoff score of 16, which meets criteria for clinical evaluation for depression. We also determined the degree to which these effects were associated with changes in behavioral risks for STD infection.

Results: Both the intervention and control groups increased significantly beyond baseline values in Self-Esteem (p=.016) and Situational Mastery (p=.048), and decreased in Depression (p=.044). Intervention women improved significantly more than Controls in Self-Esteem (p=.022), Locus of Control (p=.024), and Situational Mastery (p=.040), and somewhat more in Self-Denigration (p=.107). There was no differential change between groups in Depression. Additionally, increases in all measures were positively associated with improvement in three of five behaviors related to STD infection: mutual monogamy, safer sex practices, and taking three months or more between partners (p <.05). There were more modest associations with two other behaviors: compliance with initial infection treatment and reduction in douching after sex (p <.10).

Conclusion: Psychosocial well-being improved to a greater extent among intervention participants than controls on four of five measures. Intervention-related change in sexual risk behaviors was associated in most cases with corresponding increases in measures of psychosocial well-being. Additional investigation into the relationship between depression and contextual aspects of behavioral change associated with intervention is necessary.

0583

Predictive Factors for Successful Partner Notification

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Objective: To determine and evaluate predictive factors for success in partner notification (PN) for chlamydia and/or gonorrhea infection.

Methods: Disease intervention specialists (DIS) conducted PN services for men who tested positive for chlamydia and/or gonorrhea as part of demonstration screening project in eight Baltimore City school-based health centers and a free municipal youth clinic. Locating information and relationship characteristics of infected men's sexual partners in the preceding 60 days were collected; including length of relationship, frequency of sex, date of last sex, type of partner at last sex (main or casual) and condom use at last sex. DIS conducted follow-up to locate, notify and ensure treatment of partners.

Results: Partner notification was provided to 431 of 449 (96%) young men who tested positive. Of those 431 who provided sufficient partner locating information, a total of 544 partners were named. DIS attempted to locate 368 (68%) partners (.85 per index) and successfully notified 322 partners (.75 per index). Univariate analyses testing association between relationship characteristics and successful partner location were conducted. Results suggested that more frequent sex (> 2), more recent sex, and main partner at last sex (as opposed to casual partner), were associated with successful partner location. After controlling for length of contract time (number of days agreed upon for index to notify partner or DIS will begin investigation) during investigation, multivariate analysis showed that frequency of sex and main partner at last sex remained significant predictors of successful partner location.

Conclusion: Traditional methods of PN can be effective in locating partners with whom there has been frequent sex or who are considered main partners. Developing new methods of locating single incident sex partners or casual partners needs to be developed beyond traditional methods.

0584

Gonococcal Infection Induces Immunosuppression and NF-kB Dependent Reactivation of HIV

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Clinical studies indicate that gonococcal infection is often asymptomatic, fails to induce protective immunity, and is coincident both with increased shedding of HIV, and increased risk of seroconversion. Here we propose a mechanism which may in part, explain these observations, and as such, may enable more effective therapeutic interventions.

We have demonstrated that ligation of the ITIM receptor CEACAM1 inhibits both the activation and proliferation of $CD4^+$ T lymphocytes, and that similar effects could be demonstrated in primary and immortalized cell populations. CEACAM1 expression increased in response to IL-2, LPS, or via ligation of the T cell receptor, and was also expressed in response to gonococcal infection. In all instances, expression of CEACAM1 was inversely related to lymphocyte activation as indicated by expression of CD69. In addition, tyrosine phosphorylation was universally inhibited coincident with ligation of CEACAM1, further confirming the diminution of cellular activity. In all instances, the inhibitory effects described herein occurred irrespective of bacterial viability and, critically, without induction of apoptosis or necrosis among the lymphocyte population. Where tested, inhibitory effects occurred in a dose-dependent manner, and in primary cells could be mimicked by antiserum directed against CEACAM1 while control antiserum had no comparable effect. In addition., CEACAM1 associated with the tyrosine phosphates SHP1 and SHP2, suggesting a mechanism for the observed inhibition of lymphocyte function coincident with gonococcla infection Finally, we have determined that gonococcal infection results in the induction of HIV-LTR mediated transcription in an N-kB dependent manner. Consequently, we propose that these combined (and possibly synergistic) pathological correlates, may be contributing to STI related morbidity and mortality, in particular in regions where adequate health screening and effective primary care are largely unavailable.

0585

Prevalence of Human Papillomavirus Infection in HIV-positive Men

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Objective: It is well described that human papillomavirus (HPV) causes cervical cancer in women, but less is known about HPV infection in men, particularly HIV+ men. The prevalence, risk factors, and site of infection was determined in HIV+ men attending a care clinic in New Orleans, LA, USA.

Methods: Patients were recruited from the HIV Outpatient Program. After informed consent, a questionnaire was administered evaluating sociodemographic data and sexual activity. Dacron swabs were collected from the urethra, glans penis, coronal sulcus, penis shaft, scrotum, perianal area, the rectum and any genital lesions of 12 HIV seropositive men. DNA was extracted using the Qiagen DNA Mini Kit, amplified by PCR using the PGMY09/11 generic primers, and all HPV positive samples were genotyped using Roche's reverse line blot assay.

Results: 11 patients had amplifiable DNA. Overall, 8 of 11 (72%) men were HPV positive with a total of 19 positive samples. Of these, 8 were high-risk types (types 18, 45, 55 and 58), 6 were low-risk types (types 11 and 53), and 5 were positive but untypable. One patient was positive for two different types on a scrotal swab. Of the 4 patients who carried high-risk types, 2 had CD4 counts below 200/l, 3 had a detectable HIV viral load, 3 had a history of any STD, and all reported more than 30 lifetime male partners. Of the 8 high-risk isolates, 5 were recovered from the rectum or the perianal area.

Conclusions: A significant proportion of HIV+ men had detectable HPV DNA with the rate of high-risk types being worrisome. High-risk types occur more frequently in men who have sex with men and patients with high-risk sexual behavior. Larger number of men is currently being enrolled to assess risk factors and compare the HPV genotypes detected to similarly risked HIV+ women.

0586

Inhibitory Effects of Vaginal Microbicide Products on Nucleic Acid Amplification Testing of Urine For Neisseria gonorrhoeae and Chlamydia Trachomatis

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Objective: To investigate the inhibitory effects of vaginal microbicide products and placebo gel in urine specimens using nucleic acid amplification tests for *N. gonorrhoeae* (GC) and *C. trachomatis* (CT) detection.

Methods: Simulated specimens were prepared in urine using serial dilutions of GC and CT cultures (final concentrations: 10^5-10^1 colony/inclusion forming units (CFU or IFU) per ml urine). The microbicide products: pro2000(P), buffergel, and pro2000 placebo were added to the simulated urine specimens to achieve final product concentrations of 5%, 2%, 1%, 0.5% and 0.1%. Specimens were processed and tested for CT/GC using the Ligase Chain Reaction (LCR) and ProbeTec ET Strand Displacement (SD).

Results: LCR: Significant inhibition was found at all concentrations of pro2000(P) for the LCR testing of GC and CT but not with any concentrations of Buffer Gel and pro2000 placebo. Heating the samples, a freeze/thaw step, and dilutions of the samples did not remove the inhibitory effect of pro2000(P). SD: GC/CT was not inhibited by pro2000(P) at concentrations of 2% for CT and 1% for GC or lower. No inhibition was found for buffergel or pro2000 placebo.

Conclusions: Although the *in vivo* effects of microbicide products on urine nucleic acid amplification testing for GC and CT are unknown, *in vitro* testing revealed significant inhibition on the urine LCR test for CT/NG by pro2000(P). The SD test for GC/CT was not appreciably inhibited by any of the microbicide products tested. Future microbicide clinical trials will need to consider the potential inhibitory effects on testing for GC/CT when deciding on the methodology used for detection.

0587

Youth United Through Health Education (YUTHE): A Community-based, Peer-Led STD/HIV Prevention Education Model

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Objective: To increase the number of adolescents who are screened for STDs in a high STD morbidity community.

Methods: In 1997, the San Francisco Department of Public Health – STD Prevention and Control Services established a peer education program, Youth United Through Health Education Program (YUTHE), to address the high rates of STDs among African American adolescents. STD staff collaborated with researchers at a local university to assist in the development and evaluation of the program including developing and standardizing a training manual, recruitment protocol, risk assessment, and evaluation survey. STD staff recruited four YUTHE peer educators from the targeted community. Peer educators received 60-hours of standardized training with ongoing booster training on how to conduct street and venue-based outreach intervention; single session STD/HIV prevention groups, collect urine specimens, conduct brief behavioral risk assessments and prevention messages, and to distribute STD prevention materials.

Results: Since 2001, 835 adolescents socializing in the target community received STD screening and 2000 behavioral risk assessments. 25,000+ condoms and lubricants were distributed. Over a 16-month period, 38 (4.6%) screened persons were identified with either chlamydia and/or gonorrhea All persons with an infection were treated. Since the start of the program, three peer educators have been retained, with a turnover of 14 individuals. Lessons learned include, recruiting and hiring high school graduates between age 18 –22 years; change job position to permanent status; and require previous experience in working with youth. Characteristics of youth remaining in the program include, altruism, leadership and empowerment skills.

Conclusions: A community-based peer-led STD prevention education model is a promising approach for conducting STD prevention activities with adolescents residing and socializing in a high STD morbidity community. Dedicated staff, thorough recruitment, screening, and professional standardized training are essential elements to conducting community-based peer led STD education programs.

0588

The benefit of 10 years screening programme for Chlamydia trachomatis infection in Czech women

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Introduction. The aim of the study was to evaluate Chlamydia trachomatis prevalence in group of women in Czech republic and to compare it with prevalence in 2002 after screening programme and following therapy strategy was introduced in our country.

Methods. 648 and 260 women were included in the study; they were monitored at the 1st Department of Gynecology – Obstetrics from September 1993 to June 1997 and from January to December 2002. The total group was divided into five subgroups: infertile women, patients before artificial termination of pregnancy, pregnant women approx. 4 week before delivery, women with cervicitis and pelvic pain. The group of infertile patients was further divided into subgroups, according to their diagnosis. All patients were clinically examined, and all clinical and epidemiological data were recorded in special form. For all women examined, two smears from cervix were taken for antigen detection using a direct immunofluorescence method (DIF - DFA, Chlamyset Orion), and using an immuno-enzymatic method (ELISA - Wellcozyme set, Murex). From a blood sample, a level of IgA and IgG anti-Chlamydia antibodies was ascertained. For 200 serum-positive or antigen-positive women we performed tests of the serums preserved, using specific micro-immunofluorescence tests (MIF) (SeroFia, MRL, Labsystem Savyon). Second large group of 2002 was examined by DNA testing using LCx reagent set (Abbott, USA). We determined a prevalence of antigens, IgA and IgG antibodies, and Chlamydia DNA in individual groups and subgroups of women. We compared both serum-diagnostic methods and determined the prevalence of specific antibodies for individual species of Chlamydia in the groups and sub-groups. For statistical evaluation chí square and ANOVA was used.

Results. A high prevalence of active Chlamydia infection (11%) was ascertained in the total group of women, while the highest prevalence was in the youngest women, up to 25 years of age. The occurrence of IgG anti-Chlamydia antibodies was statistically significantly higher in the group of infertile patients, i.e. 63.5%, compared to 49.5% in the group of fertile women. In the subgroup of infertile women with tubar infertility factor, IgG anti-Chlamydia antibodies were diagnosed in 92%, compared to 40% in groups with other causes of infertility. MIF method has a lower sensitivity then ELISA. For women with tubal infertility factor, 90% of MIF IgG positive serums were positive for Chlamydia trachomatis. During laparoscopy we detected the presence of chlamydial RNA only in patients with tubal damage. Chlamydial plasmid DNA in endometrial tissue was diagnosed only once. Results of all treatment protocols were similar. There was evident decrease of prevalence in group of women tested in 2002.

Conclusion. We can conclude from the results of our study that Chlamydia trachomatis infection had high prevalence in the groups examined. Thus we recommended a screening program to provide early recognition, treatment and prevention of complications related to Chlamydial infection. The results from 2002 seem to confirm good effect and benefits of such diagnostic and therapeutic programme. Chlamydia trachomatis is the most frequent agent of tubal damage. Species-specific IgG antibodies or Chlamydia DNA test would be a useful supplementary initial examination of infertile patients.

0589

Sexually Transmitted Disease (STD) Prevalences from the 2002 National Household-Based General Popualtion Survey of Young Uurban Adults in Peru

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Objectives: To assess the prevalence of STD among young adults of mid-sized Peruvian cities.

Methods: A household random sample of 18 to 29 year old residents of 24 mid-sized Peruvian cities was selected. Participants answered demographic and risk behavior questionnaires and provided samples for STD detection. Blood was collected for HIV ELISA (confirmation by WB) and syphilis RPR (confirmation by TPPA). Participants not willing to provide blood were asked to provide oral fluid for HIV tests. Urine samples were obtained for N. gonorrhoeae (NG) and C. trachomatis (CT) screening by PCR. Vaginal swabs were collected for NG and CT PCR, T. vaginalis cultures and to determine the Nugent's score for bacterial vaginosis. Urine was collected from males, and self-applied vaginal swabs (SAVS) or urine from females.

Results: On average, 480 blood samples were collected in each city. The observed HIV prevalence ranged from 0% to 1%, and syphilis prevalence from 0% to 3.5%. Only one out of 1607 oral fluid samples was positive for HIV. SAVS, obtained from an average of 280 women in each city, showed prevalence ranging from 3.5% to 11% for CT, 0% to 2.6% for GC, and 1.1% to 14.4% for Trichomonas infection. From an average of 334 urine samples collected in each city, 1.1% to 7.8% were positive for CT and 0% to 1.1% were positive for GC. CT prevalence in SAVS was 6.8%, and in urine was higher for males than for females (4.0% vs. 2.9%). GC prevalence in SAVS was 0.8% and in urine did not differ by gender (0.2% vs. 0.2%). The highest prevalences for HIV infection, syphilis and CT in SAVS were found in two cities located in the amazon basin.

Conclusions: Two amazon cities were identified as having high risk for syphilis, HIV infection, and for female chlamydial infection.

0590

Association of Mycoplasma genitalium and Chlamydia trachomatis in men with nongonococcal urethritis in New Orleans

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Objective: We have previously reported a small study of MG in men with urethritis seen in our STD clinic. We report here a prospective study of men with NGU.

Methods: One hundred eighty five men older than 17 years presenting to the New Orleans STD clinic from February through December 2002 were enrolled based on Gram stain criteria for NGU. Urine and urethral swab specimens were obtained and tested for the presence of MG by PCR and a dot blot assay. CT and *Neisseria gonorrheae* (NG) were detected in urine using strand displacement DNA amplification. *U. urealyticum* (UU)was detected by culturing urine on modified A7 ureaplasma agar. (Becton Dickinson Inc.) Demographic, clinical and behavioral variables were compared among men infected with only a single organism or no organism.

Results: Seven men were excluded because of a positive NG test leaving 178 for analysis. The mean age was 28 (18-51) and more than 95% were African American. Infection rates for CT, MG and UU were 28.1%, 18.5% and 44.4% respectively. The MG infection rate in men with CT infection was 24% (12/50) compared to 16.4% (21/128) among men without CT (p=0.24). UU rates in men with and without CT were exactly the same. The mean ages of men infected with CT, MG, UU and no organism were 23, 27.2, 27.2 and 30.3 years respectively. There appeared to be no significant differences in clinical or behavioral variables between these four groups.

Conclusion: We have confirmed our previous observation of a high co-infection rate between CT and MG in men with NGU. Our data differ in this respect from all previous reports of MG and male urethritis. Our study population is predominately African American with a high endemic rate of STD's which may explain this difference. However, further research into MG's role as an STD pathogen is needed.

0591

Prevalence of HIV infection among young adults in the U.S.: Results from a representative national sample

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Objective: National estimates of the prevalence of HIV infection are based primarily on reported infections and clinic data. We determined the prevalence of HIV in a representative national sample of young adults living in the U.S.

Methods: The National Longitudinal Survey of Adolescent Health is a multi-stage, school-based survey, begun in 1994-95. The original survey design provided a representative sample of the U.S. in-school adolescent population in grades 7-12. Certain ethnicities, including African-Americans with

higher socioeconomic status, were oversampled. In 2001-2, participants in the original survey, now aged 18-28 years, were re-contacted for a third follow-up interview. Consenting respondents were screened for the presence of antibodies to HIV-1 in oral mucosal transudate specimens using repeated micro-enzyme-linked immunosorbent assays, followed by confirmatory Western Blot. Prevalence and 95% confidence intervals (CI) were calculated accounting for the complex survey design, post-stratification response rate adjustment, and test performance. Preliminary sensitivity analyses were conducted to assess the potential impact of test performance and non-response on prevalence estimates.

Results: The weighted sample (N=14322) included 49% females and 51% males. The mean age was 21.8 years (standard error 0.1 years). Among the 13192 participants (92.1%) who provided usable specimens, the overall prevalence was 1.0 per 1,000 (95% CI: 0.6, 1.6), with nearly identical rates by sex. The prevalence among African-Americans was 4.3 per 1,000 (2.2, 6.1), significantly higher than the 0.28 per thousand (0.01, 0.46) among Non-African-Americans. In preliminary sensitivity analyses, test performance and non-response rates had minimal effects on the prevalence estimates.

Conclusions: The prevalence of HIV in U.S. young adults in this representative sample is lower than most current estimates, and substantially lower than the prevalence of other sexually transmitted infections (STI). The strikingly higher prevalence among African-Americans, consistent with the epidemiology of other STIs, remains disturbing.

0592

Conducting STD Screening for Adolescents and Young Adults in a High STD Morbidity Community: A Detection of Geographic Mixing of Social and Sexual Networks

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Objective: To conduct chlamydia and gonorrhea screening along with rapid treatment of infections among adolescents and young adults, ages 14 – 25 years residing in a high STD morbidity community.

Methods: The San Francisco STD Prevention and Control Services – Youth United Through Health Education (YUTHE) Peer-led Program collaborated with a faith-based agency to conduct this initiative. YUTHE staff trained four faith-based peer education staff. The faith-based staff provided street outreach, and contacted adolescent service agencies to obtain access to their clientele for screening. YUTHE staff conducted the urine-based screening for chlamydia and gonorrhea. Participants received two movie passes as an incentive. All individuals infected with chlamydia and/or gonorrhea were notified by telephone and received field delivered therapy of a single dose of azithromycin and/or cefixime, as appropriate. They were offered sexual partner treatment packs, prevention information and condoms.

Results: 557 adolescents socializing in the target community were screened for chlamydia and gonorrhea between May through November 2002. Of the total screened, 368 (66%) were residents of the target community. The screened non-residents were sex partners or part of the social network of community residents. Of these individuals, 21 (3.8%) screened persons were identified with either chlamydia and/or gonorrhea. The prevalence among females was 3.8% (8/21) and 6.2% (13/21) among males. All persons with an infection were treated, and five accepted treatment packs for their sexual partners.

Conclusions: In San Francisco, adolescents residing in a high STD morbidity community have social and sexual networks with youth that live in other geographic areas. These broader networks should be considered when designing community interventions. Collaboration with a faith-based agency and peer staff facilitated buy-in from the community for participation in STD screening.

0593

Methodology for the 2002 National Household-Based General Population Survey of Risk Behavior and Sexually Transmitted Diseases (STD) Prevalence in Peru

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Objectives: A community-based randomized trial to test the impact of STD/HIV prevention interventions will be implemented in 20 to 24 Peruvian cities in 2003. A general population survey was conducted to provide baseline data on STD prevalence and risk behavior frequency for the trial, and to determine the structure of sexual networks.

Methods: A two-stage cluster sample, based on 2000 census data, was used to randomly sample 18 to 29 year old residents of 24 selected cities with population >50,000. A consecutive sample of their sex partners was also selected. Consenting participants completed a face-to-face demographic questionnaire, and a self-applied sexual behavior questionnaire (questionnaire II). The latter was completed privately with the aid of a portable voting cabinet and locked voting box. Participants were requested to provide blood for HIV and syphilis tests or

oral fluid for HIV test. Men also provided urine, and women provided self applied vaginal swabs (SAVS). Women not willing to provide SAVS were requested to provide urine.

Results: Of 18,488 households selected, the existence of an eligible participant could not be confirmed in 1,393, and in 228, the selected person was never found at home upon repeated visits. Of 16,867 selected persons, 1,608 (9.5%) either refused to participate (n=877) or interrupted their participation before completing the questionnaires (n=731), for an overall participation rate of 90.5%. Of 2,663 sex partners invited to participate, 2347 (88.1%) consented to participate. Of the 15,259 participants in the random sample completing the questionnaires, 176 (1.2%) returned questionnaire ll blank. Of these 15,259, 12,817 (84.0%) provided blood (n=11,407) or oral fluid (n=1,410). Of 7,485 men in the sample, 6,515 (87%) provided urine. Of 7,774 women, 6,531 (84.0%) provided SAVS (n=5,945) or urine (n=586).

Conclusions: High participation rates are attainable through household behavioral and biomarker surveys in Peru.

0594

Utilizing Behavioral Science To Enhance Syphilis Prevention And Case Management Tools: The Development Of A Computer Aided Visual Case Analysis (Cavca) Software

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Objectives: A primary tool for investigating syphilis cases is visual case analysis (VCA), which allows the mapping of syphilis epidemiology between partners. In collaboration with CDC behavioral scientists, CAVCAsoft, Inc. developed a computer aided visual case analysis (CAVCA) software. This presentation describes the behavioral science approaches used to assess feasibility and acceptability, as well as the collaborative efforts involved in developing the CAVCA software as a syphilis case management tool.

Methods: Software development process included demonstrations in high syphilis morbidity areas in the US, beta testing with public health advisors (PHAs), and product evaluation in health departments. Data were collected qualitatively observers, beta test participants and health department staff members.

Results: CAVCA features included accelerated VCAs and associated sexual network displays. Collaborations between behavioral scientists, PHAs and the software developers, ensured fidelity with public health ideology, enhanced software utilities, and addressed misconceptions of CAVCA features. Misconceptions such as the software requiring data entry in addition to health department's standard STD data entry, were resolved by clarifying CAVCA's ability to interact with databases like STD*MIS and analyze existing data. Also highlighted, was the importance of accurate data collection, timely data entry and the time saved conducting VCAs if efforts were invested in tailoring CAVCA for the site's specific data and intervention needs.

Conclusions: Prevention tools developed using new technology and behavioral science approaches can enhance syphilis prevention efforts. However, technology introduction should include familiar and user friendly methods that can facilitate immediate implementation. CAVCA software will be available for demonstration.

0595

Sex in Peru: Sexual Behaviors in a Nation-Wide Population-Based Survey OF URBAN YOUNG ADULTS

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Objectives: A survey of sexual behaviors and STD/HIV prevalence in young adult population of 24 cities in Peru was performed in 2002. Methods: 18 to 29 years old adults from randomly selected households completed a face-to-face demographic questionnaire, and a self-administered questionnaire for sensitive sexual behavior questions. Interviewees privately completed the questionnaire, sealed it in an envelope, and deposited it in voting boxes.

Results: 7,485 men and 7,774 women completed the behavioral questionnaire. The median age at sexual debut was 18 years for women and 16 years for men. The median lifetime number of sexual partners for women and men were 1 and 3 respectively; sexual activity during the past 12 months was limited to zero or one partner for most men (76%) and women (96%). On average, sexually experienced women were 4.4 years younger than their last partner's estimated age. For 31% of men the last partner was considered casual, compared with 6% for women; 28% of sexually active men and 12% of sexually active women reported starting having sex within a month of meeting their last partner. 1,574 women (30%) reported believing their last partner had another partner while only 824 men (15%) reported that. 915 men (12%) reported ever having sex with other men and 3265 (44%) reported sex with female sex workers. 171 females (3%) reported exchanging sex for money/or favors with last partner. Consistent condom use with last partner was reported by 9% of women and 16% of men with regular partners; 24% of men, and 11% of women with casual partners, and by 45% of men with FSW and 32% of men with other male partners.

Conclusions: Risky behaviours identified frequently included short courting period, low frequency of condom use with casual partners, FSW and high percent of men having unprotected sex with men.

0596

Standardization and Validation of Five International Laboratories for the Dignosis and Reporting of STDs in the NIMH Collaborative HIV/STD Prevention Trial

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Objectives: To assess the accuracy of testing for common sexually transmitted diseases (*C. trachomatis* (CT), *N. gonorrhoeae* (NG), HSV-2, HIV, and syphilis) at international laboratories by retesting a 20% sub-sample from each site at a U.S. Reference Laboratory.

Methods: The laboratory staff from 5 countries, China, India, Peru, Russia, and Zimbabwe, was trained using standardized

procedures and similar equipment for the NIMH HIV/STD Prevention Trial in 2001. To assure the consistency of laboratory testing, monthly conference calls and periodic site visits of the laboratories were conducted by the U.S. Reference Laboratory. CT/NG PCR, HSV-2 EIA, and syphilis TPPA testing were performed using kits from the same manufacturers (Roche, USA; MRL, USA; Fujirebio, Japan). The HIV EIAs, Western Blots, and syphilis RPR tests were similar but varied by product availability within each country. Quality assurance of the laboratories was performed by retesting a 20% sample (n~300) of the approximately 1500 participants evaluated at each site by the JHU International STD laboratory. To further evaluate the performance of the laboratories, all sites tested a quality control panel of known positive and negative samples for each pathogen.

Results: The sensitivity and specificity (%) for accuracy of the laboratories as compared to the Reference Laboratory is shown below:

Country	HIV EIA	HIV WB	HSV2	RPR	TPPA	CT PCR	GC PCR
China	NA/97	100	92/92	89/97	100	100/100	77/100
India	69/98	92	100/100	82/100	100	98/100	100/100
Peru	100/100	50	96/92	88/100	100	100/95	50/100
Russia	86/86	100	98/93	100/99	100	100/95	100/98
Zimbabwe	97/90	100	98/96	90/98	96	100/98	100/99

Conclusions: Standardization of international laboratories and monitoring reliable STD results is important for valid and consistent results. Technology transfer, documentation of training, site review, and continued quality assurance testing are integral parts of establishing a standardized network of international laboratories performing STD diagnostic assays.

0597

Genotyping of strains of Mycoplasma genitalium detected in men with non-gonocoal urethritis

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Objectives: *Mycoplasma genitalium* is strongly associated with non-gonococcal urethritis (NGU) in men with acute disease. The organism is extremely difficult to cultivate; thus it is not possible to compare strains using classical microbiological techniques. Since we had strains detected by the polymerase chain reaction (PCR) targeting the MgPa adhesin gene we sought to determine whether the sequences of the various strains differed and if such differences could be used in to identify strains detected in a study of NGU in Seattle.

Methods: The PCR product was a portion of the MgPa gene. PCR products from positive specimens were purified and sequenced. The sequences were aligned and compared using the CLUSTALW program to group the strains into clusters.

Results: Sequences of PCR products from 28 positive specimens were compared. Sixteen showed distinct sequences. Three clusters were detected. Group A (7 strains) differed from the prototype by 2 or 3 base changes and 1 or 2 amino acid changes, group B (6 strains) showed at least 10 base changes with 5 or 6 amino acid changes and group C (3 strains) differed from the prototype by 20 or more bases with 9 or more amino acid changes. No strains were identical to the prototype strain G-37. Sequences remained stable during serial transfer of strain G-37 and one Seattle strain that grew in broth culture.

Conclusions: Sequence analysis of a select portion of adhesin gene showed that unique strains could be identified and differentiated from the prototype commonly used as control DNA. The genetic heterogeneity seen in strains detected in Seattle suggests that *M. genitalium* is endemic in Seattle and infections are not due to the dissemination of a single strain.

0598

Intravaginal Metronidazol Gel Versus Metronidazol/Nystatin For Bacterial Vaginosis: A Randomized Controlled Trial

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Objective: Intravaginal preparations are commonly used in developing countries for the treatment of abnormal vaginal discharge. We compared metronidazole/nystatin ovules containing metronidazole 500 mg and nystatin 100,000 U with an FDA-approved medication, metronidazole 0.75% gel, for intravaginal treatment of bacterial vaginosis (BV).

Methods: In a single-blinded randomized controlled trial, eligible women complaining of abnormal vaginal discharge or odor, with FemExam card test showing pH „d 4.7 and amines in vaginal fluid, were randomized to gel or ovules, once nightly intravaginally for five nights. At initial and follow-up examinations scheduled at 14, 42, and 104 days after initiating treatment, we examined vaginal fluid by card test, wet mount, and Gram stain, and cultured for Trichomonas vaginalis. Intent-to-treat analyses of those with BV by both Nugent and Amsel criteria at enrollment employed product limit estimates of survival without BV and Wilcoxon test for difference in survival.

Results: Of 184 eligible women randomly assigned to either arm, 151 had BV by both Amsel and Nugent criteria, of whom 138 (91%) returned at least once. Persistence or recurrence of BV by both criteria at 14, 42 and 104 days was estimated at 0.20 (95% CI 0.10-0.29), 0.38 (0.25-0.48), and 0.52(0.37-0.63) in the metronidazole gel arm, and 0.04 (0.00-0.09), 0.17 (0.07-0.26), and 0.33 (0.21-0.46) in the metronidazole/nystatin ovules arm (p=0.01). Intercourse without condoms > 21 days after treatment also predicted recurrence, independent of treatment (p=0.05).

Conclusion: Metronidazole/nystatin ovules were more effective than metronidazole gel ¡V perhaps because ovules delivered a higher daily dose of metronidazole.

0599

Control and Condom Use: a Prospective Study among Zimbabwean Women

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Objective: To evaluate the effect of a condom negotiation/HIV risk reduction counseling intervention on reported control over condom use and condom use, and to evaluate the association between these outcomes.

Methods: We enrolled 339 HIV-negative women aged 18–50 into a prospective study of the acceptability of barrier contraceptive methods for HIV/STD prevention. Women were recruited from family planning clinics in Harare from January 1999–December 2000. At baseline, women received HIV test counseling and a counseling intervention focusing on condom negotiation skills, which was reinforced as a booster one month later. Socio-demographic and sexual behavior data, including control over using condoms (scale 0%-100%) and condom use during the previous 2 weeks were assessed at baseline and at 3 and 6 months following the intervention.

Results: Mean age was 29 and 97% of participants were married. At baseline, 19 % of the women reported having 100% control over condom use, and 39% of the women reported using condoms 100% of the time. The mean percent control per woman was 60%. Six months following the intervention, the percentage of women reporting 100% control over condom use rose to 31%($p<0.05$) and the percentage of women reporting 100% condom use rose to 61%($p<0.05$). The mean percent control per woman increased to 80%($p<0.05$). In the multivariate model, an increase in control over condom use predicted an increase in condom use: a 20% increase in control corresponded to a 1.5 fold increase in the proportion of protected sex acts (95%CI=1.2,1.7), controlling for age, having own income, marital status, and education.

Conclusions: Control over condom use and condom use increased following the intervention. An increase in control over condom use corresponded to an increase in condom use. Interventions focusing on improving condom negotiation skills may help to increase condom use in this population.

0600

Responding to Sexual Health Needs of Commercial Sex Workers: Soutoura Clinic, Bamako, Mali

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Objectives: Soutoura, a confidential clinic for commercial sex workers (CSW) in Bamako, Mali provides a range of services including peer education, sale and promotion of lubricants and condoms, and STI diagnosis and treatment. An analysis of the clinic's database was performed to identify unmet needs.

Methods: Demographic, medical, and social data from patients (both CSW and their partners) seen at Soutoura clinic are collected via individual interviews, medical exams, and STI test reports. An analysis of data for the 1828 CSW attending the clinic was conducted using Epi Info v.6.

Results: The median age of CSW is 27 years (range 15 to 32). Among CSW, 67% are Nigerian, 19% Malian, and 7% Ghanaian. The median age of first commercial sex is 18 years. Forty three percent of women reported current contraceptive use; among these, 70% use hormonal contraceptives, 32.4% male condoms alone, 12% IUD, and 2% other methods. The median number of clients is 9 per week, with 93.5% reporting condom use during last sex with client. Condom use during last sex with husbands/steady boyfriends is 14%. Sixty seven percent of CSW have had at least one abortion; the mean number reported was 3. Fifty percent of women presented to the clinic with STI symptoms. Fifty-four percent (54%) of CSW have ever had an HIV test. Of these, only 14.7% know their serostatus (3.3% HIV-positive, 11.4% HIV-negative); 85.2% of those tested did not receive their test result.

Conclusions: CSW attending Soutoura clinic have high rates of condom use with clients. Contraceptive use is low and abortion rates are high, indicating a need for expanded family planning services. Low rates of HIV testing and very low rates of knowledge of HIV status among those tested suggest a need for on-site HIV voluntary counseling and testing using rapid test kits.

0601

Congenital Syphilis in Russia: the Value of Counting Epidemiologic Cases and Clinical Cases

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Objectives: State reporting for congenital syphilis in the Russian Federation includes only infants with symptoms, persistent serologic changes, or confirmed syphilitic stillbirth. Russian policies stipulate that infants of inadequately treated or untreated mothers should receive prophylactic penicillin treatment. We assessed risk factors and consequences for reported cases of congenital syphilis and for infants who should have received prophylactic treatment.

Methods: A review of records from Maternity Houses in five sites identified 715 syphilis-infected women who gave birth. We examined whether risk factors and consequences for epidemiologic cases of congenital syphilis (infants of inadequately treated mothers) resembled those of clinical cases and differed from those of non-cases (asymptomatic infants of adequately treated mothers).

Results: Among infants of the women with maternal syphilis, 11% (n=81) were clinical cases, 53% (n=379) were epidemiologic cases, and 36% (n=255) were non-cases. Compared to non-cases, maternal risk factors for epidemiologic cases included non-residence ($p<.01$), late syphilis ($p<.01$), unemployment ($p<.01$), no prenatal care ($p<.01$), and syphilis testing at >28 weeks ($p<.01$). Each of these was also significant for being a clinical case. Associated consequences of congenital syphilis infection for

the epidemiologic cases included increases in stillbirth (p<.01), preterm birth (p<.01), low birth weight (p<0.01), transfer to a pediatric hospital (p<.01), and abandonment (p<.05). Each of these except stillbirth was significantly elevated among clinical cases. Nearly one half of the epidemiologic cases had no record of any penicillin treatment. Almost half of clinical cases and two thirds of epidemiologic case had no clinical and/or laboratory follow-up.

Conclusions: In Russia, maternal risk factors and perinatal consequences for non-reported epidemiologic cases resembled those of reported clinical cases of congenital syphilis. Expanding national reporting to include epidemiologic cases would strengthen congenital syphilis prevention and monitoring, providing a more valid measure of incidence of the disease and risk factors.

0602

Male sex workers in the United States: Patterns and mobility

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Objectives: To report the results of a multimethod investigation of the characteristics, drug use, and sexual behaviors associated with HIV risk and travel patterns of drug using male sex workers (MSWs) in Houston, Texas.

Methods: This was a mixed method study. Data were collected using quantitative interview and qualitative interviews. Three hundred and ninety-nine MSWs responded to a quantitative behavioral interview. Fifty MSWs participated in in-depth interviewers. These interviews were triangulated with ongoing conversations with MSWs and gatekeepers and with project staff.

Results: MSWs reported high rates of drug use and large numbers of sexual partners. All MSWs reported using an illicit substance. Ninety-six percent reported smoking crack cocaine and 38% injecting drugs. Of those who injected, 39% shared syringes and 14% were HIV seropositive. MSWs reported more than 20,000 sex partners in the month before being interviewed. Most sex partners were male, although approximately 2,000 were female. Fifty-seven percent of MSWs who had anal sex and 27% who had vaginal sex reported consistent condom use. Condom use varied by partner type, sexual orientation, and serostatus. Qualitative data found that MSWs solicit money for sex in Houston for a relatively short time. Reasons for stopping sex work in the city include taking a "rest," being sent to prison or jail, and moving on to another city. Qualitative interviews suggested that men traveled between cities in recognizable patterns. Cities frequented tended to be along a route bisecting the southern part of the United States, called the I-10 corridor, or to follow a route between 3 cities in Texas, called the Texas Triangle.

Conclusions: MSWs engage in extremely high risk drug use and sexual activities with large numbers of male and female partners. HIV risk behaviors include both needle use and sexual risks. While MSWs encounter large numbers of male and female partners, they remain in sex work for a relatively brief time. Men move out of sex work in Houston through a variety of means, each of which has the potential to put the men in contact with populations not involved in sex work. The movements of MSWs in and out of sex work in Houston have the potential to bridge diverse and disparate populations.

0603

Why HIV Is not a Threat in the Middle East Region?

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Objective: The objective of the present study is to identify the range of variables in the Middle Eastern culture considered to be the risk factors for HIV infections by comparison with high prevalent regions.

Methods: Sex is not an expression of love and emotional feelings but also the source of reproduction in the mankind race which has crossed to the level of about 6 billion on this planet. Two major potential health consequences are unintentional pregnancy and sexually transmitted diseases (STDs), including HIV infection, posing a serious problem in most part of the world which could leave to long-term health consequences that are often reversible and are costly in both human and economic terms. The millions of people have already been infected and can pass on the virus to many millions more. These harmful consequences can be dramatically reduced through effective prevention programs and by openly confronting these problems on a global level. The implementations of STDs public awareness programme and behaviours interventions to promote safe sex have got some success. Currently, the public health departments are oriented towards diagnosis and treatment but not prevention by behavioural intervention. Of all human behaviours, sexual behaviour is one of the most complex and least well studied. A function of physical, cultural, social, economic and political as well as a personal factors and conditions, human sexuality is in many ways a mirror of a society, family and individual experience. Local history, traditions, values and patterns of social organization all play a role. The ages at which sex is considered appropriate, type of partners, and circumstances are all in same way or another dictated by these forces and conditions.

Results: As the prevalence of disease varies from region to region. Therefore, to address these issues effectively, we should consider range of variables in these regions. Lets take an example of the Middle East, where HIV as an STD is non-existent, therefore, for any successful approach to the epidemic will require a full recognition of the important social, cultural aspects towards the disease. Only in this way, we will be able to devise effective and humane public policies for other parts.

0604

High HIV and STI prevalence among indirect sex workers in Cambodia: Results from a pilot intervention study among "beer-girls" in Battambang, Cambodia

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Background: In Cambodia, beer distributors employ women to promote alcohol sales at restaurants and bars. Many "beer-girls" also work as indirect sex workers (IDSWs), and may have high-risk behavior and elevated HIV prevalence. We implemented a pilot sexually transmitted infections (STI) treatment and education intervention to reduce HIV and STI infection risk among beer-girls employed in Battambang, Cambodia.

Methods: In February 2002, all beer-girls in Battambang were invited for baseline interviewing, HIV/STI screening, and treatment. Blood specimens were tested for syphilis (RPR/TPHA) and HIV (EIA). Self-collected vaginal swabs were tested for trichomonas (Trich In-Pouch) and bacterial vaginosis (BV-blue) and for gonorrhea and chlamydia by PCR. Subjects were treated for STI two weeks post-baseline and participated in 3 education sessions on HIV, STI, and reproductive health over a period of 6 months and were invited back for repeat interviews and HIV/STI testing.

Results: 92/114 (81%) beer-girls, with a median age of 22 years, were enrolled. HIV prevalence was 26%. STI prevalences were 43% for bacterial vaginosis, 14% for chlamydia, 12% for trichomonas, 3% for gonorrhea, and 0% for syphilis. A history of sex work was reported by 82%; condom use with clients was reported by 39%. Increased number of partners and self-reported vaginal discharge and genital rash were significantly associated with HIV infection. After 2 weeks, 39/46 (85%) women with STIs returned for treatment. After 6 months, only 37% of the beer-girls remained in Battambang. Among those, no new HIV infections were detected and the prevalences for bacterial vaginosis (33%), chlamydia (12%), trichomonas (3%) and gonorrhea (0%) were lower.

Conclusion: These data show high sexual risk among a group of IDSWs in Cambodia. One in four were infected with HIV, and one in two were infected with an STI. Due to rapid job turnover, targeted and frequent HIV and STI interventions are urgently needed among IDSWs in Cambodia.

0605

Pooling urine specimens for the detection of C. Trachomatis & N. Gonorrhoeae in men attending public STD clinics in Mumbai, India

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Objectives: Pooling of specimens for the detection of C. trachomatis (CT) and N. gonorrhoeae (NG) by nucleic acid amplified tests is an attractive alternative to individual testing. Although potentially cost saving, this procedure has not been utilized in developing countries. We evaluated the use of pooling first catch urine (FCU) specimens for the detection of CT and NG by PCR in Mumbai, India.

Methods: FCU, urethral smears and swabs were collected from 470 men seen at public STD clinics. All laboratory testing occurred at LTMG Hospital in Mumbai. Gram stain smears and culture isolation for NG were performed. FCUs were tested individually and in pools using Roche PCR for CT, NG and an internal control (inhibition). Specimen pools consisted of five consecutively processed FCUs combined into an amplification tube. An OD reading of > .20, defined a pool where individual testing was required.

Results: Prevalence by PCR was 2.1% (10/470) for CT and 4.5% (21/470) for NG. Compared to individual FCU results, pooling for CT and NG had overall sensitivity of 96.8% (30/31) and specificity of 100%. Pooling missed one CT positive specimen. PCR identified 91.3% (21/23) of NG positives, whereas smear/culture identified 82.6% (19/23). Pooling specimens decreased the inhibition rate and resulted in reagent cost savings of 47%.

Conclusions: In resource-limited countries, using pooling to detect CT and NG by PCR is a simple, accurate and cost effective procedure compared to individual testing.

0606

Study of Bacteria, Fungal and Herpes Virus Infection of the Genital Tract in Tehran, Iran

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Genital tract infection is one of the most prevalent problems in third world countries and constitutes great expense to their respective health care systems. In most cases the cause of infection is either bacterial or fungal rather than viral. Thus, treatment protocols should be of an antibacterial and antifungal nature. The change in antibacterial treatment trends results in difficulty in controlling infections. Immigration patterns from neighbouring countries must also be considered. Samples were taken from a total of 100 patients with possible genital infection. Direct methods and culture tests for detection of bacteria and fungal infection were carried out. Serological tests for detection of antibody for Herpes simplex virus (HSV Type I and II) were also performed. A total of 80 females and 20 males were enrolled in this study. The mean age for females was 29+-11 and for males 28.5 +- 8 years. The following bacteria and fungi were isolated from vaginal discharge: Staph. epidermidis, Staph. aureus, E. coli, Staph. saprophyticus, Enterococcus, Klebsiella, Coliform, Diphteroid and Candida albicans. The most prevalent of them was Staph. epidermidis. Among fungal infections, Candida albicans was the most highly detected in the vaginal discharge. Staph. epidermidis, E. coli, Coliform, Enterococcus and Neisseria Conorroeae were detected from uerthral discharge of males. A sensitivity of 92.5% to Ceftizoxime in vaginal infection and 100% to tubramycin was demonstrated in males and antibody (IgG and IgM) titre for HSV Type I and II were determined in female cases. Although all patients were asymptomatic, about 15% of cases showed a positive antibody titre (>1:10) for IgG but showed no IgM antibody.

0607

Self-collected vaginal swabs as a STI screening approach among indirect sex workers in Cambodia

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Objectives: Few data exist on sexually transmitted infections (STI) among indirect sex workers (IDSWs) in Cambodia. STI programs in Cambodia rely exclusively on syndromic case management. Most IDSWs, however, do not seek medical treatment for STI symptoms, but commonly report self-medication with antibiotics. Thus, most cervical infections among IDSWs remain undetected and untreated. We piloted the use, feasibility, and acceptability of self-collected vaginal swabs for the detection of STIs in a group of IDSWs, known as beer-girls, participating in a pilot intervention study of STI treatment and education.

Methods: Beer-girls from all 5-beer companies in Battambang, Cambodia were invited for interviewing, HIV/STI screening, and STI treatment. Participants were instructed on proper self-collecting procedures for vaginal swabs. The swabs were tested for trichomonas (Trich In-Pouch) and bacterial vaginosis (BV-blue) and for gonorrhea and chlamydia by PCR. After STI screening, participants were queried on the feasibility and acceptability of self-collected vaginal swabs.

Results: 92/114 (84%) beer-girls, ages 18 to 30, were enrolled; 90 (98%) provided self-collected swab specimens for STI testing. The overall prevalence of STI was 51%. Prevalences were 43% for bacterial vaginosis, 14% for chlamydia, 12% for trichomonas and 3% for gonorrhea. STI symptoms in the past 3 months were reported by 75%, and 62% reported self-medicating with antibiotics. Participants unanimously reported that self-collected swabs were easy to perform, preferable over speculum examinations, and that they would test more frequently if the self-swabs were a widely available STI screening approach.

Conclusion: Self-collected vaginal swabs were enthusiastically accepted among IDSWs with high STI prevalence and low rates of STI medical care. Given the limitations in speculum examinations and public health infrastructure in Cambodia, self-collected vaginal swabs offer an easily implemented and less invasive STI screening alternative for detection of STI that would otherwise remain undetected and untreated in this high-risk population.

0608

Performance Of The Aptima Ct Assay For Chlamydia Trachomatis And Aptima Gc Assay For Neisseria Gonorrhoeae Using

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Objective(s): To assess the performance of Gen-Probe Incorporated's APTIMA CT Assay (ACT) for *Chlamydia trachomatis* (CT) and APTIMA GC Assay (AGC) for *Neisseria gonorrhoeae* (GC) using patient- and clinician-collected vaginal swab (PVS and CVS) specimens. . ACT and AGC target rRNA sequences different from those of the commercially available APTIMA Combo 2 Assay (AC2). The three assays use the same procedures.

Methods: Females are being enrolled at eight geographically diverse, high and low prevalence sites. First catch urine (FCU), one PVS, one CVS, and two endocervical swabs were collected from each subject. ACT and AGC were done on PVS, CVS, FCU, and one endocervical swab. AC2 was done on the same FCU and endocervical swab tested by ACT and AGC. The second endocervical swab and FCU were tested using BDProbeTec (Becton Dickinson and Company) for CT and GC. Subjects were considered infected if two FDA-cleared tests on FCU or endocervical swab were positive.

Results: Of 904 subjects enrolled, results are available for most. There were 97 CT and 50 GC infected subjects (respective prevalences of 12.3% and 6.3%). ACT sensitivities and specificities were 96.9% (94/97) and 97.7% (674/690) for PVS and 96.9% (94/97) and 96.0% (675/703) for CVS. AGC sensitivities and specificities were 98.0% (49/50) and 99.2% (748/754) for PVS and 98.0% (50/51) and 99.2% (757/763) for CVS. ACT vaginal swab results were in >95% agreement with FCU and endocervical swab results. With AGC, agreement was >98%. Further testing is being performed to determine whether the false positives (FP) are true positives (TP). Previous evaluations of ACT have found that its exquisite sensitivity results in apparent FPs that are shown to be TPs by repeat testing.

Conclusions: These interim findings demonstrate that ACT and AGC using vaginal swabs are sensitive and specific for the detection of CT and GC, respectively.

0609

Consumption of Antimicrobials used for treatment of Gonorrhea and Chlamydia for the Province of British Columbia

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Objectives: Population-based data on antimicrobials used for treatment of sexually transmitted diseases (STD) are rarely described. This study evaluated consumption of antimicrobials used to the treatment of STDs in British Columbia (BC) 1999-2001 and compared it to the number of cases reported in the province of gonorrhea and chlamydia infections.

Methods: The computer database at the British Columbia Centre for Disease Control (BCCDC) captures data on all antibiotics used for treatment of STDs. Cefixime and ciprofloxacin use were evaluated for treatment of N.gonorrhea while azithromycin, doxycycline and erythromycin use were evaluated for treatment of chlamydia infection. A ratio of antibiotic usage versus the number of cases reported of gonorrhea and chlamydia infection was calculated for each of the years.

Results:

	1999	2000	2001
Total number treatment courses used of cefixime and ciprofloxacin for gonorrhea	18,300	19,700	15,226
Number of cases reported of N. gonorrhoeae	878	724	618
Ratio of antibiotics/cases	21	27	24
Total number treatment courses used of azithromycin, doxycycline, and erythromycin for chlamydia	29,919	24,572	26,627
No. of cases reported of chlamydia	5355	6193	5887
Ratio antibiotics/cases	6	4	5

Conclusions: The large ratio of antibiotics to cases suggests that a large portion of cefixime and ciprofloxacin use is for syndromic treatment and contacts of N.gonorrhea cases rather than actual case management. The ratio is much lower for antibiotics used in chlamydia treatment suggesting there is less use of these antibiotics for non-laboratory confirmed cases and contacts.

0610

Knowledge, attitude and practices (KAP) study among the young adult students in Fiji.

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Objective: A questionnaire-based study was carried out to determine the level of awareness among the high school and tertiary institutes students about the STIs, their interaction, and preventive measures to avoid their contraction.

Methods: A total of 50 students were recruited for this study from high schools (25) and tertiary institutions (25), taking into account the variables like age (18-24 yr.), sex, race (Indigenous Fijians, Indians, and others), and level of education. Copies of questionnaires were hand delivered to them, and collected a week later. Opportunity to the students was given to seek any clarifications on the contents of the questionnaire.

Results: A very high degree (100%)of awareness was found among the students, regarding the commons STIs. All agreed it that STIs are fast becoming a major health problem in Fiji. There was low level of awareness about interactions among the different STIs, especially gonorrhea, Syphilis, and HIV (~5%). There was also a low level of knowledge about the modes of transmission and common symptoms of STIs (~10%) and role of condom in STI prevention (42%). It was also agreed by most that very little awareness efforts are made at the high school and tertiary institutions by the authorities.

Conclusions: Fiji is a relatively open society in practice, 40% of the students in this study group were sexually active with stable relationship, as well as had other partners. About 28% had stable relationship with no other partner. However, it was found that it is still considered a taboo to discuss sex issues in the open. At family level these issues are actively discouraged, particularly for the religious and cultural fears. General feeling of the participants was that there is an overall low level of efforts by the authorities to address these issues, even though STI statistics and high incidence of teenage pregnancies indicate low level of preventive practices.

0611

Psychosexual dysfunctions in sexually transmitted diseases clinic attendees in india

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Objectives: Psychosexual dysfunctions are associated with significant physical and psychological morbidities. This study was designed to determine the pattern and prevalence of psychosexual dysfunctions among patients attending a sexually transmitted diseases (STD) clinic in North India.

Methods: Retrospective analysis of patients record attending our STD clinic (1990-2002) was carried out.

Results: Of the total 2300 patients seen, 388 (17%) (males –374, females-14) were diagnosed having psychosexual dysfunctions. The age range was 18-44 years (mean 25 ± 3.1 years). Amongst the males, Dhat syndrome was the most common problem (30.5%) followed by erectile dysfunction (23.6%), papular eruptions (pearly penile papules/ectopic sebaceous glands, neavi) over genitalia (23.6%), premature ejaculation (16.5%), burning sensation in meatus and glans penis and/ or urethra (9.6%), persistent erythema of glans penis (7.2%), transient erosions over glans penis (6.4%) and impotence (2.7%). Other presenting complaints were curvature of penis, short penis, scrotal erythema and pain and lower abdominal pain in relation to ejaculation or micturition in variable number of patients.

Among the women, the abnormalities found were vaginismus and dyspareunia. Psychosexual dysfunctions in females are often poorly recognized, and are usually left untreated because of social stigma in society like ours.

The common psychosomatic symptoms were weakness, fatiguability, palpitations sleeplessness, depression and anxiety neurosis. A significant proportion of patients had guilt and attributed the symptoms subsequent to contact. All possible relevant tests were carried out to rule out any associated / related organic cause wherever indicated before labeling them as having psychosexual dysfunctions.

Conclusion: There is a substantial prevalence of psychosexual dysfunctions among patients attending STD clinics in India, its implications on the total management of which need to be addressed.

0612

HPV Testing in Cervical Cancer Screening and Management

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Objective: Review current data on the indications for testing for high-risk HPV (HR-HPV) types, the causative agents of cervical cancer and its precursors.

Methods: Literature review.

Results: HPV testing is useful in the following clinical situations:

1. the triage of women with ASC-US (borderline) Pap test results;

2. primary screening for cervical cancer and its precursors HSIL/CIN;

3. detecting post-treatment residual/recurrent SIL/CIN;

4. following women with positive Pap test but negative colposcopy and histology.

Reflex HPV DNA testing of women with an ASC-US Pap is the preferred option over cytology and immediate colposcopy, when cellular samples are obtained for cytology and HR-HPV DNA test in one sitting. Only women with positive HPV results are sent to colposcopy, i.e. 50% as opposed to 70%, and 100% when the repeat cytology programme and immediate colposcopy are used, respectively. The high prevalence of transient infection with HR-HPV and low prevalence of HSIL/CIN in women younger than 30 years old mandate that primary cervical cancer screening programmes use HPV testing only in women 30 years of age and older. The sensitivity of HPV testing for detecting HSIL/CIN is on average 20% greater than cytology in a primary screening mode, and that women with HPV-negative Pap tests have a 100% negative predictive value allowing for the first time, increased screening intervals, safely. The combination of repeat cytology and HPV testing detects close to all post-treatment residual/recurrent HSIL/CIN. Women with an abnormal Pap test but negative colposcopy/histology are likely to benefit from HPV testing as part of their follow-up protocol.

Conclusions: Current data support the clinical role of HR-HPV testing in combination with liquid-based cytology for the detection of pre-existent or subsequent cervical cancer and its precursors. The appropriate routine use of molecular technology for screening and management of women at cervical carcinoma risk mandates for clear guidelines.

0613

Improving access to essential STD services for people at higher risk of STD and HIV transmission in urban areas in China through community health services

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Introduction: the epidemic of STD and HIV is an increasingly serious threat to public health in China. The overall incidence rates of STD for China more than doubled between 1995 and 2000 and it is estimated there may be up to 10 million cases of HIV in China by 2010. Sexual transmission of HIV is increasing and reported cases in sex workers increased 66 fold between 1995–2000. STD control is a priority measure for HIV control. The purpose of this project is to promote syndromic management as an acceptable method of STD treatment in China, and to produce replicable programme management guidelines for STD care through community health services. Project activities include site selection, mapping of risk and services, development of syndromic managament packages, training of project workers, implementation of clinical and outreach services and laboratory surveillance. This presentation will focus on the mapping stage.

Methodology: The mapping aimed to identify and describe the demographic and geographic characteristics of each site; define the high risk areas around the site; assess the services based in the high risk areas; conduct qualitative interviews with sex-workers, migrant workers and private service providers. Project workers were trained in mapping techniques and a pilot of the methodology was conducted in one city. The steps were: interviews with health care staff at the community location; preparation of a map of the city with details of the project community; map the community in detail by observations taken on foot or by car; conduct qualitative interviews to identify high risk areas which were not established from the mapping exercise, current STD care seeking behaviour, knowledge of preventive practices for STD behaviour, barriers to care seeking etc. The
process will be repeated annually to update the STD service provision.

Results: 20 Community Health Services (CHS) were identified in 8 cities across china. The populations of the communities ranged from 30,000 – 70,000 and the ratio of permanent to mobile averaged 1:3.8. CHS averaged 2 doctors and 2 nurses and 17/20 CHS had full facilities for STD examination including wet mount, gram stain and RPR testing. All CHS had access to a referral center. The surrounding area of each community mapped between 30 – 50 high risk venues and between 3-10 pharmacies. Data was not available on private services. As yet qualitative interviews with high risk individuals have not taken place.

Discussion: the information already gathered will allow the project to start setting up an effective, acceptable and accessible STD service in the project sites. The additional information from qualitative interviews will enable CHS to further tailor services to the needs of specific groups e.g. evening/early morning opening times for truck drivers or sex-workers, possible outreach locations for delivery of services.

0614

HIV Drug Resistance: A Growing International Problem

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Objective: HIV drug resistance is responsible for treatment failure but its impact in viruses of different geographic origins is not well understood. This is important since the public health aspects of HIV drug resistance are becoming increasingly evident, and it is now estimated that as many of 25% of all new cases of HIV infection in North America and Western Europe involve the transmission of viruses that harbor at least one drug resistance-associated mutation. This creates problems for the selection of appropriate drugs for first-line regimens and argues for the use of combination regimens in which some of the drugs employed will have high antiviral potency while others must have a high genetic barrier for resistance.

Methods: We performed sequence analysis of viral isolates.

Results: We have identified a previously unrecognized V106M mutation that is selected by efavirenz (EFV) among clade C but not clade B viruses. This is due to the fact that subtype C variants contain a valine codon 106 polymorphism (GTG) that facilitates a V106M transition (GTG®ATG) after selection with EFV. In contrast, subtype B viruses encode V through a GTA codon at position 106 that is most likely to mutate to GCA (A), which encodes resistance to nevirapine (NVP). Moreover, the V106M but not the V106A substitution confers broad cross-resistance to all currently approved NNRTIs.

Conclusions: The field of HIV drug resistance testing is becoming increasingly complex and mutational analyzes will be shown to be variable among viruses of different subtypes.

0615

Preliminary results of the study of the prevalence of STD/HIV-infection and viral hepatitis among injection drug users, Moscow, Russian Federation

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Introduction: A lot of works have been devoted recently to the study of HIV and viral hepatitis epidemiology among injection drug users (IDUs). HIV epidemic process in the Russian Federation draws much attention of research workers to the problem of HIV and IDUs. According to the information some authors give, about 90% of the HIV-infected in the Russian Federation belong to the category of IDUs. In spite of the fact that the spread ways of HIV and some sexually transmitted infections (STIs) are similar, the number of works devoted to the problem of sexually transmitted diseases among IDUs is not sufficient for making judgment of sexually transmitted diseases epidemiology in this population group. There is also little information concerning prevalence of viral hepatitis B and C among IDUs. Interaction of HIV, HVB, HVC, STIs and behavioral risk factors among IDUs explains the importance of studying the epidemiology of the above-mentioned infections in this population group.

The object of investigation: To study the prevalence and incidence of HIV, HVB, HVC and STIs (such as syphilis, gonococcus, chlamydiae and trichomonas infections) among IDUs who come to the anonymous gratuitous medical center (AGMC) attached to the Central Research Institute for skin and venereal Diseases (CRISVD). To estimate the influence of the principal behavioral factors on the epidemic process of HIV, HVB, HVC and STIs in this population group.

Materials and methods: IDUs are attended in the AGMC from June 18, 2001 till June 18, 2003. All the patients are tested for HIV, HVB, HVC (Elisa method), syphilis (serological test RPR), gonococcus and trichomonas infections (urethral, cervical and vaginal Gram's stain smears) and chlamydiae infection (IFD microscopy). Besides, all the people who called the hotline of the AGMC in connection with the problem of STIs and HIV and all those who came there for medical help were interrogated in accordance with a uniform questionnaire.

Results: For the period from June 18, 2001 till February 15, 2003 we had 234 calls from IDUs, which made one tenth of all the calls. The sex ration M/F-1.2; the mean age is 24.2 (18 – 50). The main sources of information about the hotline and the AGMC were organizations such as AIDS service NGOs-98 (37%) friends and relatives-66 (25%). The following sources of information made a considerably smaller part: the group of mutual aid for IDUs, directory inquiry service, Internet. 70 (27%) people called again and asked for informational and medical help. 113 (48%) people who called the hotline were given consultations in the AGMC. The sex ratio (M/F) among the people who came there made 1.26; the mean age is 25 (19 – 42). 55 (49%) people examined lives in Moscow, 25 (22%) lives in the Moscow region, 21 (18%) lives in other regions of the Russian Federation, 21 (18%) refused to answer this question. Majority of people who came to the AGMC were HIV-infected - 36 (32%) and/or HVC-infected – 65 (57%) correspondingly. The number of the NVB-infected made 18 (16%). As a result, the investigation revealed: HVC – 11 (10%); gonorrhea – 9 (8%); syphilis – 3 (3%); HIV – 3 (3%); HVB – 3 (3%); Chlamidia – 3 (3%); bacterial vaginalis – 1 (1%); herpes - 1 (1%). 68 (60%) people came to the AGMC because of "an unprotected sex contact" and/or "high risk sex partner" and/or "presence of STIs symptoms". 46 (39%) confirmed the use of injection drugs during the period the first consultation took place. 34 (30%) gave an affirmative answer to the question about having occasional sex partners during the past 6 months. 57 (50%) answered that they had not used a condom during the last sex contact.

Conclusion: The preliminary results show great role of the IDUs group in the epidemic process of both HIV and STIs. High level of risk factors (use of injection drugs, occasional unprotected sex contacts) in combination with the great total number of the HIV-infected create favorable conditions for prevalence of STIs, HIV and viral hepatitis among IDUs and for carrying them from this group to the rest of the population. Establishment of medical centers adapted to the modern conditions and the needs of IDUs can influence positively the epidemic process in this population group and indirectly among the rest of the population.

0616

Chlamydial DNA in the prostatae tissue

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Chlamydia trachomatis (C.t.) infection has been detected in the prostate tissue removed by trans-rectal resection using LCR method.

Case report: A 64-year-old patient underwent a diagnostic biopsy of the prostate due to elevated PSA level and enlargement of the gland, which revealed hypertrophy and prostatitis. Fifteen years earlier the patient had a dysuria episode, but he was neither diagnosed nor treated then. A year later he was noted to have erytrocyturia, which was found in periodic urine tests. He gave a history of knee and ankle pains of 8 years¢ duration. He received no antibiotics within the previous 3 years.

Epidemiologic history: The patient has been a widower for over 30 years. He had a few accidental sexual relations with no protection, the last one 7 years ago. His wife died of postpartum PID, 1 preterm labour, 1 child died due to congenital defects.

Laboratory tests: *Tests for C.t. infection* – direct tests (LCR) – urethral smear (-), EPS (-), prostate tissue (+); anti-C.t. IgG antibodies in serum (ELISA) – (-); *EPS* – 5-10 PMN/per hpf (Gram stain), N.gonorrhoeae (-), M.hominis (-), U.urealyticum (-), Candida sp. (-), T.vaginalis (-) (cultures); *PSA* – 8.9 ng/ml, *H-P* – benign prostatic hyperthrophy, chronic prostatitis; *USG* – enlarged prostate of homogenous structure; *Urine test* – eytrocyturia.

Investigations to measure the titer of C.t. IgA antibodies in serum and IgA and IgG in semen will be performed.

0617

Seroprevalence of Sexually Transmitted Diseases (STD) and

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Objectives : To study the prevalence rates of Sexually Trasmitted Diseases (STD) and Acquired Immunodeficiency Syndrome (AIDS) among foreign workers in Thailand

Methods : The serological survey was conducted to determine the prevalence of STD and AIDS among 11,108 foreign workers, from Myanmar 8,860 (79.76 %), Loas 1,645 (14.81 %) and Cambodia 603 (5.42 %), respectively in Bangkok and neighbour provinces during December 2001 to March 2002.

Results : With the accelerating migration of foreign workers, Thailand are increasingly confronted with the serious problems which cause affect for the health, economics and social development. Sexually Trasmitted Diseases (STD) and Acquired Immunodeficiency Syndrome (AIDS) are posed to be public health importance, particularly of risk foreign workers. All foreign workers aged 24.57 ± 1.4 years in average and included 7,827 (70.46 %) females relatively higher than males, 3,281 (29.54 %). The STD prevalence was detected in 99 (0.89 %) cases, including Myanmars 70 (0.63 %), Cambodias 18 (0.16 %) and Loas 11 (0.10 %), respectively. Out of the 864 foreign workers who were randomly selected and serologically examined for the presence of incident AIDS, there were Myanmars 295, Cambodias 293 and Loas 276, respectively. Of these, it was found to be 11 (1.28 %) positive cases, including Cambodias 5 (0.58 %), Myanmars 4 (0.46 %) and Loas 2 (0.23 %), respectively. Seropositivity of both diseases among these groups can be a diagnostic index for the prevalence and distribution of the diseases, in areas where uncontrolled population migration and internally displaced expatriates in Thailand are high. Such findings of the serological prevalences among foreign workers will be urgently needed for the international public healths of foreign migrants and particularly be essential for further sentinel surveillance for preventing and controlling the emergence of the diseases.

0618

The Occurrence of Circulating Filarial Antigenaemia in Sentinel Populations in Thailand: Concurrant HIV and Wuchereria Bancrofti Iinfections

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Objectives : To study on epidemiological assessment of *Wuchereria bancrofti* infection with the filarial antigen survey by using ICT Filariasis and Og4C3 ELISA, in both border and imported bancroftian filariases, in sentinel population in Thailand.

Methods : Circulating filarial antigens (CFA) assays in terms of test performance efficiency and discrepancy of ICT Filariasis and Og4C3 ELISA were validated to detect actively *Wuchereria bancrofti* infection between 212 endemic local Karens (exposed to nocturnally subperiodic form), 221 cross-border Myanmars (exposed to nocturnally periodic form) and 93 Thai HIV patients from *W. bancrofti*-nonendemic, and hence determining infection prevalence and intensity.

Results : Interestingly, of the only 3 (1×4%) Myanmars with concurrent HIV and *W. bancrofti* infections, 2 subjects harbouring antigen loads tended to have CFA clearance (r = -0×732, P = 0×039) after diethylcarbamazine (DEC)-therapeutic diagnosis, compared with findings in Myanmars harbouring high antigen loads (r = -0×781, P = 0×022). Findings demonstrated that the CFA was clinically diagnostic and epidemiologic indication for both forms present in Thailand and, particularly CFA clearance in a concurrent infection, suggested its value to evaluating response to macrofilaricidal effect of DEC treatment as well as in a single infection.

0619

Mycoplasma genitalium: optimal method of treatment

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Background: Mycoplasma genitalium was first isolated from men with non-gonococcal urethritis more than 20 yars ago. Furthermore, M. genitalium may be strongly associated with epididymoorchitis, reactive arthritis, cervicitis, endometritis, and serologically with salpingitis and tubal factor infertility.

Objective: The aim of the present study was to assess the treatment efficacy of azithromycin in males with M. genitalium.

Material and methods: The polymerase chain reaction was used. Urethral samples from 127 male (aged 19-42) sexually transmitted disease patients with and without urethritis were studied. Among all antibiotics, azithromycin was chosen because it showed the highest bactericidal activity for against Ì. genitalium (MIC in vitro is 0,0005-0,001 mg/L). All patients were given azithromycin in pills (single 1 g dose) an hour before meal. The testing was repearted by PCR in 2-3 weeks after treatment.

Results: Ì. genitalium PCR was demonstrated in 32/127 (25%) of the urethral swabs. Treatment efficacy was 93.8% (2/30). Side effects (nausea, stomachache, dyspepsia) developed in 2 (6.3%) males.

Conclusions: This clinical experience shows high activity of one dose of azithromycin (single 1 g dosè) in treatment of M. genitalium monoinfection. All patients reported drug regimen compliance and good tolerance. Due to of its pharmacokinetics, azithromycin can be used in one dose (single 1g dose). Azithromycin is recommended for treatment of M. genitalium as an optimal antibiotic therapy.

0620

Antimicrobial susceptibility of Neisseria gonorrhoeae isolated from Bangladesh (1997 – 2002): rapid shift to fluoroquinolone and multidrug resistance.

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Objective: To monitor the change in antimicrobial susceptibility of N. gonorrhoeae in Bangladesh.

Methods: A total of 1033 gonococcal strains isolated from males and females from general population as well as high-risk behavior groups in Bangladesh during 1997 to 2002 were studied. Minimum inhibitory concentration of penicillin, tetracycline, ciprofloxacin, ceftriaxone and spectinomycin for the isolates was determined by agar dilution method. Isolates were also tested for the presence of penicillinase producing N. gonorrhoeae (PPNG) and plasmid-mediated tetracycline resistance N. gonorrhoeae (TRNG). Isolates resistant to >3 drugs were defined as multiple drug-resistant N. gonorrhoeae.

Results: 9% of the isolates from 1997 were resistant (MIC ³1.0 mg/ml) to ciprofloxacin, while 39%, 49%, 73%, 78% and 90% of the isolates from 1998, 1999, 2000, 2001 and 2002 were resistance to ciprofloxacin respectively. The prevalence of PPNG, TRNG and both PPNG and TRNG has also been steadily on the rise. While in 1997 no isolates tested possessed plasmid-mediated resistance to both penicillin and tetracycline, in 2002, 30% of the isolates did. Approximately 60% of the isolates from 2002 were resistant to >3 drugs compared to none in 1997.

Conclusion: Periodic monitoring of antimicrobial susceptibility of N. gonorrhoeae is essential for early detection of emergence of drug resistance and for determination of optimal treatment regimens.

0621

Application of a molecular typing system for Treponema pallidum to syphilis-endemic and outbreak situations

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Objectives: Syphilis remains a major public health problem in many developing countries, especially in sub-Saharan Africa, and in some industrialized countries. Our goal was to determine the discriminatory ability of a molecular typing system for syphilis by characterizing *Treponema pallidum* strains obtained from syphilis-endemic areas and in a defined outbreak situation.

Methods: 201 clinical specimens containing *T. pallidum* DNA were obtained from patients seen in South Africa and 21 specimens from patients seen in Madagascar between 1995 and 2000. In addition, 28 specimens (7 blood, 19 genital ulcer exudate, 1 placental tissue, and 1 brain tissue) were obtained from patients with syphilis during a heterosexual outbreak of the disease that has been occurring in Vancouver, Canada, since 2000. Typing was performed using PCR-RFLP analysis for the *tpr* gene and PCR amplification of the 60-bp repeat region of the *arp* gene.

Results: Of the 201 specimens from South Africa, 161 were typeable, revealing 36 *T. pallidum* subtypes. Among 21 typeable specimens from Madagascar, 8 subtypes were identified. Twenty-two of the 28 specimens from Canada were typeable, revealing only 3 subtypes (14*d*, 13*d*, and 15*d*). Subtype 14*d* predominated in all sites, accounting for 27.3% (44/161) of strains in South Africa, 52.3% (11/21) in Madagascar, and 90.9% (20/22) in Canada.

Conclusions: The typing system was able to discriminate among strains obtained from two syphilis-endemic settings and an outbreak situation. As expected, only a few *T. pallidum* strains were responsible for the syphilis outbreak in Canada compared with a diversity of strains detected in syphilis-endemic areas. The typing system is a promising tool for use in molecular epidemiological studies on syphilis.

0622

Prevalence Of Cervical Neisseria Gonorrhoeae And Chlamydia Trachromatis In Indonesian Female Sex Workers Using Amplified And Non-Amplified Nucleic Acid Tests

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Objective: To determine the prevalence of *Neisseria gonorrhoeae* (NG) and *Chlamydia trachomatis* (CT) cervical infection among Indonesian female sex workers (FSWs) using a nucleic acid amplified test (NAAT) (APTIMA COMBO 2, Gen-Probe) and a non-amplified DNA test (PACE 2, Gen-Probe).

Methods: Cervical swabs from 1000 FSWs were collected at an STI clinic in Surabaya, Indonesia during a ten month period. Swabs were frozen at -40°C within a month of collection, then tested by PACE 2 for NG and CT and re-frozen. An additional 200 cervical swabs were obtained from FSWs in Jayapura, Indonesia and frozen at -40°C within 7-10 days of collection. Frozen samples (800/1000) from Surabaya and from Jayapura were tested at UCSF with APTIMA COMBO 2 for NG and CT.

	Aptima Combo2			Pace2		
	NG%	CT%	Both%	NG%	CT%	Both%
Jayapura	98/198 (49.5)	128/197 (65)	66/195 (33.8)	na	na	na
Surabaya	425/685 (62)	467/685 (68)	333/685 (48.6)	273/1000 (27.3)	150/1000 (15)	85/1000 (8.5%)

Prevalence of NG and CT varied monthly (p=.0002) with peak infection seen in March for NG (75%) and in February for CT (80%). Compared to NAAT, PACE 2 sensitivity did not vary significantly by storage conditions.

Conclusions: We found extremely high rates of NG and CT in Indonesian FSWs attending these STI clinics by NAATs. The lower sensitivity of PACE 2 compared to COMBO APTIMA 2 suggest that local strategies for treatment of STIs in FSWs are best determined using more sensitive NG and CT tests. Given the high prevalences we found, these FSWs should receive routine universal treatment for cervical NG and CT rather than syndromic management or treatment based on less sensitive laboratory results.

0623

Prevalence Of Cervical Neisseria Gonorrhoeae And Chlamydia Trachomatis Among Women Seeking Reproductive Health Care In Jakarta, Indonesia

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Objective: To determine the prevalence of *Neisseria gonorrhoeae* (NG) and *Chlamydia trachomatis* (CT) cervicitis among sexually active women attending Obstetric and Gynecology clinics in Jakarta, Indonesia as a function of age and occupation. To compare results between non-amplified and amplified DNA tests for NG and CT.

Methods: Cervical swabs and epidemiological information were collected from sexually active women attending OB/GYN clinics at the University Hospital in Jakarta, Indonesia. Swabs (held at rm temp < 8hr, then 4°C for 1-5 day) were tested within one week using non-amplified DNA tests for NG and CT (PACE 2, Gen-Probe) in Jakarta. Swabs for amplified DNA testing were frozen at-70°C within 5 days of collection, sent to UCSF and tested by Abbott LCx for NG and CT. Test results were compared and correlated with subject symptoms, age, occupation, husband's occupation and condom use.

Results:

Pace2		LCx	
NG%	CT%	NG%	CT%
9/783(1.1)	25/780 (3.2)	7/800(0.9)	40/797 (5.0)

Chi-square tests for occupation, marital status and years in school were not significant. There was no difference in GC infection rate by age (18-30 yrs=1.13% vs >30 yrs =0.68%). Women <30 years (24/330, 6.78%) were almost twice as likely to be CT infected as women >30 years (15/421, 3.44%) [OR=1.9, 95% CI=1.04-3.69]. Less than 2% (15/800) women reported condom use with last intercourse.

Conclusions: In this population, patients were asymptomatic with a low prevalence of NG and/or CT. Overall, 60% more CT infections were detected by LCx. However, this was not significant due to the small number of positives. Subject age, occupation, husband's occupation were not predictors of infection. Condom use is rare in this population.

0624

CHSP60-IgG-ELISA MEDAC: EVALUATION OF A NEW RESEARCH ASSAY FOR DETECTION OF IGG ANTIBODIES TO CHLAMYDIAL HEAT SHOCK PROTEIN 60

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Objective: To evaluate the new, commercially available cHSP60-IgG-ELISA medac concerning precision, suitability for automation and quantitation, and to assess the possibility to discriminate between cHSP60 antibody prevalence in healthy individuals and various patients cohorts.

Methods: The test runs were performed according to the manufacturer's instructions. For evaluation of precision data, each 22-fold determinations of six sera of different reactivity were performed for intra-assay variance, and each 11 independent test runs of seven sera for interassay variance. For assessment of the accuracy of end-titer calculation twelve sera were titrated. Automation suitability was investigated using the DIAS in parallel to manually performed test runs. Intra-assay (10-fold determination) and interassay variance (11 independent test runs) as well as 31 different sera from the cohorts below were measured. Furthermore, 12 sera were tested manually and on the BEP III in parallel. In a small pilot investigation antibody prevalence was determined in the following cohorts: 100 blood donors, 37 children, 68 female infertility patients (secondary sterility or laparoscopically diagnosed TFI), and 44 patients with reactive arthritis.

Results: cHSP60-IgG-ELISA medac demonstrated a good reproducibility concerning intra-assay and interassay variance (<10.5%) for both manually and automatically performed investigations and good correlations between manually and automatically performed test runs (r=X,XXX). Reliable end-titers can be calculated from a single OD measurement. The comparison of antibody prevalence in blood donors and children with various patient groups revealed distinct differences between blood donors and children (14% and 8%) and the infertility group as well as the patients with reactive arthritis (60% and 64%).

Conclusion: The technical performance of cHSP60-IgG-ELISA medac seems to be promising concerning future comparable results which could not be obtained with the current in-house methods. Studies in larger cohorts are needed for establishment of the diagnostic value of cHSP60 antibody determination in sequelae of chlamydial infections.

0625

A Geographic Analysis of High STI Transmission Areas in Cumberland County, North Carolina

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Objectives: The PLACE method (Priorities for Local AIDS Control Efforts) uses community informants to identify areas for intervention. We sought to determine whether the same

information could be obtained from STI clinic patients and whether infected patients actually meet new partners in those areas.

Methods: Community informants named sites where people meet new sexual partners. In the first clinic phase (February-August 2002), patients at the Cumberland County Health Department STI clinic named sites where people meet new partners. In the second clinic phase (October 2002-January 2003), patients named sites where they met their 2 most recent new partners. All reported addresses were plotted onto digitized maps of Cumberland County. We defined geographic units of analysis by placing a 1 km by 1 km uniform grid over the county. We examined clustering of sites, overlap ratios between maps, and capture ratios using MatLab.

Results: Ninety-three community informants reported 80 unique sites (308 site reports). In the first clinic phase, 681 patients reported 208 unique sites (1576 site reports). Plotting areas by number of site reports showed geographic clustering. Clinic patients in the first phase identified 65% of sites identified by community informants (map overlap ratio of 50%). In the second clinic phase, 210 clinic patients were interviewed, of which 80% had a new sexual partner in the past year. Of these, 107 reported plottable site addresses and 20% had an STI. Forty-two percent of the 24 sites identified by infected patients were identified in the first clinic phase (map capture ratio of 53%).

Conclusions: Clinic patients and community informants provided similar information. There is a strong geographic overlap between where clinic patients from the first phase report people meet partners and where infected patients from the second phase report meeting sexual partners.

0627

Role of HPV infection as a cause of human cancers

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Objective: To review the role of human papillomavirus (HPV) infection as a potential cause of human cancers.

Method: Literature review.

Results: HPVs are DNA viruses with an approximately 8000 base-pair genome size. There are more than 100 HPV types, of which about 40 infect the anogenital and upper aero-digestive tracts (UADT). HPV infection is the most common of sexually-transmitted infections; most sexually active women eventually acquire it at least once over a lifetime. The same is probably true for men also. Condylomata acuminata, cervical cancer, and most malignancies of the anogenital tract are caused by specific HPV types. Risk of cervical cancer is strongly linked to persistent infection. The relative risks of cervical cancer following HPV infection are in the 20 to 100+ range. Virtually all cervical carcinomas contain HPV DNA, which suggests that HPV infection is a necessary cause of cervical neoplasia. This is the first instance in which a necessary cause has been demonstrated in cancer epidemiology. Detection of HPV infection of the oral mucosa occurs in 5%-20% of asymptomatic adults and several studies have shown that HPV DNA is found in biopsies of 20%-60% of UADT carcinomas, which suggests an etiologic role for these viruses, particularly in oropharyngeal and tonsillar carcinomas. Certain non-mucosal HPV types are frequently found in skin carcinomas but are also ubiquitous in normal skin, hair follicles, and benign proliferative cutaneous conditions.

Conclusions: The etiologic role of HPVs in cervical and some other anogenital cancers has been unequivocally established. Results from large ongoing epidemiologic studies may be able to confirm that HPV plays a causal role also in some UADT subsites. At present, a role for HPVs in skin cancer is largely based on circumstantial evidence but research in this field is progressing rapidly.

0628

New HIV Diagnoses Among Men Who Have Sex with Men Attending STD Clinics in the United States, 2001-2002

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Objectives: Recent syphilis outbreaks among men who have sex with men (MSM) and reported increases in unprotected anal sex suggest a possible resurgence of HIV in this population. The purpose of this analysis is to determine HIV screening coverage among MSM at STD clinics in four U.S. cities and the proportion of MSM newly diagnosed with HIV infection.

Methods: Four cities participating in the MSM Prevalence Monitoring Project (Chicago, IL; District of Columbia; Philadelphia, PA; San Francisco, CA) submitted data from 26,847 STD clinic visits (14,696 men) during 2001-2002. Data were collected during routine patient care and included self-reported HIV status and HIV test results. Median STD clinic-specific percentages and ranges were calculated.

Results: Overall, 13.8% (8.9%-16.9%) of MSM reported previously testing positive for HIV. Among MSM not previously HIV positive, 41.2% (4.7%-67.5%) were tested, and 7.4% (4.1%-10.8 %) had a new HIV diagnosis at that visit. MSM aged $\leq$ 40 years were more likely to have a new HIV diagnosis compared with men aged > 40 years (5.9% versus 4.0%; $p<0.05$); Blacks (13.2%), "other" race (11.3%), and Hispanics (6.9%) were more likely to have a new HIV diagnosis compared with Whites (3.6%) and Asian/Pacific Islanders (1.7%)($p<0.0001$). Similar findings by race were seen when stratified by age.

Conclusions: New HIV diagnoses are frequent among MSM attending STD clinics, especially among those $\leq$ 40 years, Blacks, and "other" race groups. Effective HIV prevention activities addressing MSM are needed in STD clinics and elsewhere and should include increased HIV testing.

0629

Prevalence of symptomatic and asymptomatic infection with chlamydia trachomatis and neisseria gonorrheae among Israeli soldiers

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Objectives: Asymptomatic gonorrhea and chlamydia are prevalent in military populations. Since military service in Israel

is nearly universal, STD rates in active duty soldiers would represent population-based prevalence. Our objective was to evaluate the prevalence of genital *Chlamydia trachomatis* (CT) and *Neisseria gonorrheae* (NG) in active-duty Israeli Defense Force (IDF) personnel.

Methods: We conducted a pilot study between March 2002- March 2003 at IDF medical facilities. Subjects were recruited from clinics where persons at high risk for STD (e.g. Urology, acute GYN) and from low STD risk clinics (e.g. General Medicine, Orthopedics). After consent, subjects completed a behavioral and symptom survey and provided urine for testing by AMPLICOR® PCR assay for CT/NG. Subjects with positive test results were notified and treated.

Results: Overall, 310 volunteers age 17.5-45 years were enrolled; 52% were females and 48% males. 67% of females and 23% of males reported genital symptoms at study visit or during the previous month ($p<0.001$). Only 10 samples (6 females, 4 males) were positive for CT (3.2%) and 5 (all females) were positive for NG (1.6%). CT was present in 6.1% (3/49) of subjects who reported genital symptoms on the day of the clinic visit, in 3.2% (3/95) of those symptomatic in the previous month and among 2.4% (4/166) of asymptomatic. The corresponding figures for NG were 0, 3.1% (3/95) and 1.2% (2/166) respectively and those for either NG or CT were 6.1% (3/49), 6.3% (6/95) and 3.6% (6/166) respectively. The difference between the positivity rates in the various groups was not statistically significant, although the numbers were small.

Conclusions: In our pilot study CT and NG prevalence is low even when using the highly sensitive tests. There were no behavioral or epidemiological correlates of GC/CT infections, although the sample size was small.

0630

Hepatitis C in the STD

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Objectives: To know the seroprevalence of Hepatitis C and the epidemiological characteristics of the patients assisted in the out patient clinic.

Methods: Antibodies against HCV by ELISA (immunoenzymatic assay) was offered and measured in patients attended with STD in the year 2001. Other exams like VDRL, antibodies against HIV and Hepatitis B also were offered.

Results: Of 1204 patients analyzed for Hepatitis C, 52 was positive, median age was 35 years old (from 14 to 71) In this positive group, 19 were female and 33 were male, their reasons for the search in the service were 17 due to HPV infection, 2 patients with genital ulcers, 1 with urethral discharge, and 32 were directed of other services for confirmation diagnostic.

Conclusion: During the year 2001 we established that our population with Hepatitis C was predominantly male and adult. Hepatitis C is also an infection sexually transmitted, despite the sexual behavior is not the big responsible for the Hepatitis C transmission like patients submitted to transfusions and users of intravenous drugs, an active search, notification and epidemiological inquiry of the case and his communicants bring a definition of the importance of this infection.

0631

The Application of Geographic Information Systems to investigate an outbreak of Neisseria gonorrhoeae in the Capital Health Authority Region, Alberta, Canada

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Objectives: To describe the determinants of a *Neisseria gonorrhoeae* outbreak that occurred between 1999 and 2002 in the Capital Health Authority (CHA) Region, Alberta (population = 856,137) by linking geographic information with the sexually transmitted infections database at Alberta Health and Wellness.

Methods: Differences in selected variables were compared using the chi-square test and, where appropriate, the Fisher's exact test. Odds ratios were calculated, as required. Confirmed gonorrhea cases were geocoded by the reported residential postal codes and assigned to one of 17 sub-regional boundaries within the CHA Region. The rates for each sub-region were calculated and compared to the regional average rates through the generation of probability maps.

Results: During 1998, the rate of gonorrhea in the CHA Region was 15.8/100,000 population. During 1999, this rate increased to 21.3/100,000 and by 2002 it was 53/100,000 population. Significantly associated with the outbreak were increased proportions of cases among Aboriginal persons, compared to the Caucasian population and among males, compared to females ($p=0.04$, OR=1.5 and $p=0.03$, OR=19, respectively). Outbreak demographics found that 65.5% of sexually active individuals were between 14 to 29 years if age and 92.1% of reported cases among Aboriginal females were in this age group. In contrast, among men, 48.2% of reported cases were >30 years old and of

these cases, the majority (55%), were Caucasian. The rates were between 2 to 4-fold higher in the Central sub-region (comprising of the downtown core of Edmonton) when compared to the regional average. A visible relation was also apparent between higher infection rates and low socio-economic status.

Conclusions: While the traditional methods of outbreak investigations are useful to inform control and institute prevention measures, the application of geographic information systems technology significantly contributed to our understanding of the gonorrhea outbreak in the CHA Region. The limitations of our data and interventions that have been initiated in response to these findings will also be discussed.

0632

EXPLORING WHY IMPROVED MANAGEMENT OF SEXUALLY TRANSMITTED INFECTIONS (STIs) AND BEHAVIORAL INTERVENTION DID NOT REDUCE HIV INCIDENCE IN A RURAL COHORT IN SW UGANDA

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Objective: To assess STI treatment seeking behavior in STI/behavioral community-randomized trial (CRT) and explore whether this could explain why interventions did not reduce HIV transmission.

Methods: A three-arm CRT targeting about 96,000 adults residing in 18 communities was conducted between 1994-2000 to reduce HIV transmission. Group A was behavioral intervention, group B same behavioral intervention and improved STI management and group C was comparison. Intervention impact was assessed using three knowledge, attitude, behavior, practice (KABP) questionnaire and serological surveys (baseline [R1], round 2 [R2] and round 3 [R3] in a subset of the population.

Results: Overall adjusted HIV incidence ratio was 0.94, p=0.72 for group A Vs group C and 1.00, p=0.98 for group B Vs group C. Among those reporting genital ulcer, the proportion who sought appropriate treatment (in a government or private health unit) was 43.4% at R1 (43.3% group A, 43.0% group B, 44.1% group C), 40.0% at R2 (39.3% in arm A, 49.9% in arm B, 27.5% in arm C) and 39.2% at R3 (32.3% group A, 51.2% group B, 30.0% group C). After adjusting for age, sex, R1 HIV-1 prevalence, and treatment at previous round, there was evidence of an effect in group B (prevalence ratio 1.55, p=0.013) but no effect in group A (prevalence ratio 1.05, p=0.69).

There were similar findings among those reporting vaginal discharges. The number of events was too small to estimate the impact of either intervention among men reporting urethral discharges.

Conclusion: Improved treatment seeking behavior was associated with STI and behavioral interventions, but not with behavioral intervention alone. Poor treatment seeking behavior was not the reason interventions did not reduce HIV transmission in this large trial.

0633

A strategic approach to capacity building of STI care services in Karnataka, India

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Objective: To study the practices of medical practitioners (MPs) in the provision of care for STI and HIV/AIDS in the public and private sectors in Karnataka State, southern India.

Methods: All MPs in the districts of Dharwad and Bagalkot were enumerated using a variety of sources and their practices briefly profiled. Those reporting seeing more than 5 STI cases per month were interviewed.

Results: We interviewed 1118 MPs from rural and urban areas, including both allopaths (53% in Dharwad and 36% in Bagalkot) and non-allopaths. Only 19% had ever undergone any training in STI/HIV/AIDS. HIV testing was commonly practised (64% of STI patients), but rarely accompanied by pre- or post-test counseling. 20% of MPs offered antiretroviral therapy, but often prescribed only mono-therapy for a short duration. More MPs revealed HIV test results to the family only (39%) than to the patient alone (14%). 53% of MPs were not aware that HIV could be transmitted through breast-feeding, and 27% of those who said they knew a lot about HIV did not know about the window period of infection. Only 9% and 25% of MPs in Dharwad and Bagalkot respectively reported seeing more than 5 STI patients per month. All allopaths and 74% of non-allopaths used allopathic medicines, and only 16% overall had heard of syndromic STI case management. Only one-third of MPs reported that they advised condom use to STI patients and only half of these advised consistent condom use. Very few MPs ever demonstrated condom use.

Conclusions: A minority of practitioners in the public and private sector routinely treat STI patients, and these can be identified and mapped. Considerable training is required to upgrade knowledge and practice, and we propose developing training and support systems for STI management that focus on these practitioners, thus maximizing the impact of programmatic inputs.

0635

Absence of predictors for Chlamydia trachomatis infection in young men in high prevalence settings compared to men in low prevalence settings

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Objectives: Chlamydia trachomatis infections in men are often asymptomatic. Compared to women, less is known about effective screening strategies in men. The objective of

this study was to estimate the risk factors for infection among young men in lower and higher-risk settings in one city in Canada.

Methods: 336 consecutive men aged 16 to 30 attending 1) family physician offices (n=38), 2) college and university student health clinics (n=115), 3) a sexually transmitted diseases (STD) clinic (n=72), and 4) community-based clinics/centres (street health centres) providing services to homeless youth and adults (n=111) were tested. A first-void urine sample was tested by ligase chain reaction, and men completed a questionnaire on demographics and sexual history. Univariate analyses were used to determine predictors of C. trachomatis in lower (1 and 2) and higher (3 and 4) risk settings. Significant variables were entered into a logistic regression model. Pooling of samples was attempted, to reduce testing volume.

Results: The prevalence of C. trachomatis in the low-risk settings was 3.3% (5/153), compared to 7.7% (13/183) in the high-risk settings. Significant predictors in the low-risk settings were 5+ lifetime partners (OR=4, p=0.04), less than high school education (OR=11.7, p=0.03), painful urination (OR=15.6, p=0.01), history of C. trachomatis (OR=15.3, p=0.01), recent contact with C. trachomatis (OR=10.2, p=0.02), or recent contact with someone with a sexually transmitted infection (OR=9.0, p=0.03). No variables remained significant in the multivariate model. The only significant predictor in the high-risk settings was painful urination (OR=5.1, p=0.03). Pooling could not be done efficiently in the high-risk settings due to the higher prevalence of infection.

Conclusions: Predictors of C. trachomatis were identified in low risk settings that were not found in the high-risk settings. All men should be screened when attending high-risk setting such as an STD clinic or street health centres.

0636

A comparison between conventional and self-sampling methods for detection of Trichomonas vaginalis in women.

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Trichomonas vaginalis is one of the most common STIs worldwide and the infection has been linked with an increased risk of HIV transmission. We present comparison between conventional collection and testing methods with self-collected swab and urine tested by polymerase chain reaction (PCR) for detection of T. vaginalis. A total of 205 remote Australian indigenous women presenting to health clinic requiring a women's check up consented and participated. Women collected a first-catch urine and a self-collected low vaginal swab which was tested by PCR for T. vaginalis. This was followed by a speculum examination where two practitioner-collected swabs were taken for examination by PCR and microscopy and culture respectively. Overall prevalence of T. vaginalis in this population by any method was 24%. The prevalence was higher in the women under 24 years old (34%) compared with women 24 – 36 years (24%) and women over 36 years (16%). PCR showed a significantly higher sensitivity to Culture or microscopy 96% vs. 72%. Urine samples tested by PCR showed only 74% sensitivity, where as self-administered swab and clinician collected swab tested by PCR showed a 94 and 96% sensitivity respectively. Overall, this study demonstrates that self-collected specimen followed by PCR to be a more sensitive and specific method for collection and detection of T. vaginalis infection in women living in remote areas.

0637

Syphilis Control and Prevention in Jamaica from 1987-2001: A Success Story

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Objectives: To document syphilis in Jamaica from 1987-2001 and review contributing programmatic changes.

Methods: Incidence of reported primary and secondary syphilis (P&SS) cases at public STI clinics and of congenital syphilis (CS) at hospitals was documented from 1987-2001. Prevalence of serologic syphilis in antenatal women and in STI clinic attenders was determined. Changes in syphilis control activities, as part of an integrated HIV/STI programme, were reviewed including: 1) Increased number of STI care centres; 2) Introduction of TRUST testing and decentralization to on-site screening with same day treatment for STI and antenatal clinic attenders; Improved and increased: 3) Surveillance for CS; 4) Syndromic management; 5) Condom promotion; 6) Contact investigation service; 7) STI training of health staff; 8) Behaviour change activities involving NGOs; 9) Operational research; 10) Monitoring and evaluation; 11) External funding and assistance.

Results: Between 1987 and 2001, STI centres increased from 6 to all 13 parishes. TRUST testing became available at all centres. P&SS incidence fell from 90 to 6 per 100,000 population. CS cases increased from 36 to 68 by 1994, then fell to 21. Total antenatal seroreactivity increased from 6% to 17% by 1990, and then fell to 1.5%. Antenatal seroreactivity *f*r1:8 fell from 3.2% in 1994 to 0.5% by 2001. Contact investigators increased from 10 to 40 during the period, and P&SS cases interviewed by them rose from 43% to 94%.

Conclusions: Syphilis control appears to be a success story in Jamaica. The challenge is to avoid that the programme will be eradicated before the disease.

0638

Study of the frequency of high-risk HPV types in patients with suggestive diagnosis of HPV infection assisted at STD/AIDS ambulatory,São Paulo, Brazil

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Objective: To establish frequency of high-risk HPV types in patients with HPV clinical or subclinical lesions.

Methods: Samples were collected from 97 patients (50 women and 47 men) with clinical or subclinical HPV infection and was submitted through hybrid capture assay, Digene do Brasil kit, that uses RNA highly specific probes to detect 18 HPV types through two probes pools. One of the probes had 5 low-risk HPV types (6, 11, 42, 43, 44), named "Group A", and the other had 13 high-risk HPV types (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68) "Group B". The collection sites in women were endocervix, ectocervix, walls and introitus of the vagina. In men, in terminal urethra, acorn, foreskin and scrotum.

Results: Of the total women, 40 (80%) were positive to hybrid capture assay. Of those, 5 (12.5%) were positive to Group A, 9 (22.5%) to Group B and 26 (65%) to Group A and Group B. Of men, 16 (34.1%) had a positive result. Of those, 6 (37.5%) were Group A, 2 (12.5%) Group B and 8 (50%) Group A and Group B. Median age of patients was 25 years.

Conclusion: Among the 40 women with positive results, the frequency of high-risk HPV types was 87.5% (34 women) and, among the 16 men with positive results, this frequency was 62.5% (10 men). These results mark the importance of detection of high-risk HPV types in patients with suggestive diagnosis of HPV, through the hybrid capture method, as screening, to prevent genital cancer, in reference services for treatment of patients with STDs.

0639

HIV Infection and Demographic, Behavioral, and Clinical Characteristics of Women Seeking STI or Gynecologic Care in Yaounde, Cameroon

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Objective: To describe individual characteristics and HIV status of women seeking gynecologic or STI care in 4 primary health centers in Yaounde, Cameroon.

Methods: Socio-demographic and behavioral characteristics were collected through interviews of 631 women seeking care at four primary health care settings. The women underwent a clinical exam and HIV testing using EIA; risk factors for HIV were assessed using bivariate analysis. Cervical infection was diagnosed by culture and EIA.

Results: HIV antibodies were detected in 13% of the women. Reasons for care-seeking included vaginal discharge (78%); a check-up, consultation or STI/HIV testing (22%); gynecological problems (12%), genital ulcers (1%). Mean age was 27.9 years; 73% of the women were married or lived with a partner, 80% had at least some secondary education. A history of spontaneous abortion was reported by 22%; induced abortion by 42% of the women. Agents to dry/tighten the vagina have been used by 8% of the women. Referring to the preceding 3 months, 16% of the women reported a new sex partner; 11% reported >1 partner, 8% a partner with genital discharge; 6% a partner with genital lesions. While 14% reported that their stable partner does not have sex with others, 58% said they did not know. Characteristics associated with HIV included cervical infection (OR 1.7, 95% CI 1.0, 3.1); problems conceiving (OR 1.7, 95% CI 1.0, 2.9); wanted to ask a partner in past month to use a condom but didn't dare (OR 1.6, 95% CI 0.9, 3.0); partner refused to use condom in past month (OR 1.6, 95% CI 0.9, 2.7).

Conclusions: HIV prevalence was high in these care seeking women. Voluntary HIV counseling and testing should be promoted and appropriate strategies developed to prevent more effectively STI/HIV and unwanted pregnancies. Dual protection prevention strategies should target young women and men.

0640

Cervical Infection Management Strategies for Women Seeking Primary Health Care in Cameroon

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Objective: To identify individual risk factors for cervical infection and develop effective treatment strategies for women seeking primary health care in Yaounde, Cameroon.

Methods: Socio-demographic, behavioral, and clinical characteristics were assessed in 631 women presenting for care at four primary health care settings. Gonococcal and chlamydial infections were diagnosed by culture and EIA respectively. Five risk-based treatment strategies for cervical infection (due to gonococci and/or chlamydia) management were developed and their performance examined.

Results: The prevalence of gonorrhea, chlamydia, and cervical infection was 9.9%, 5.4%, and 14.7%, respectively. Risk factors for cervical infection identified in bivariate analysis include age <26 years (OR 1.5, 95% CI 1.0, 2.4), woman reported that primary partner has sex with other people (OR 1.4, 95% CI 0.8, 2.7), cervical friability (OR 1.7, 95% CI 0.9, 3.3), cervical mucopus (OR 1.2, 95% CI 0.7, 2.1), and >5 leucocytes in vaginal smear (OR 3.5, 95% CI 2.0, 6.4). Sensitivity of risk-based strategies ranged from 48% to 88%, specificity from 24% to 84%, and positive predictive value from 16%

to 25%. Decision analytic techniques will be used to compare different strategies, including risk-based management and presumptive treatment, to account for factors such as cost and strategy effectiveness.

Conclusions: These results are a first step in improving the management of cervical infection for women seeking care in primary health care settings in Cameroon that lack effective laboratory diagnosis capacity.

0641

An Evaluation of the Relative Sensitivities of VDRL and TP-PA Among Patients with Darkfield-Confirmed Primary Syphilis

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Objectives: Because non-treponemal tests are less expensive and easier to perform than treponemal tests, they are often used as first-line diagnostic tests for syphilis. However, in primary syphilis, the sensitivity of serology tests may be low. We sought to compare the sensitivities of VDRL and TP-PA in primary syphilis and to determine the added value of performing a TP-PA when the non-treponemal test is negative.

Methods: Case reports and interview forms of all primary syphilis cases reported in San Francisco, California, January 1 through December 31 2002 were abstracted. Cases were defined as darkfield-confirmed with no prior history of syphilis when both a treponemal and non-treponemal test were obtained on the day of treatment. Data were analyzed to determine the most sensitive approach using these tests to diagnose primary syphilis.

Results: Of the 106 reported cases of primary syphilis, 39 darkfield-confirmed cases were included in the study group. VDRL was reactive in 30 (77%, 95% CI 61-89%) cases; TP-PA was positive in 37 (95%, 95% CI 83-99%) cases. There were no patients who had both a non-reactive VDRL and negative TP-PA. Using a strategy of first testing with a non-treponemal test then proceeding to a treponemal test only for patients in whom the non-treponemal test is positive, only 72% (95% CI 55-85%) of cases would have been detected. Using a strategy of obtaining both a non-treponemal and a treponemal test would have detected 100% (95% CI 91-100%) of cases.

Conclusions: The TP-PA alone provided higher sensitivity than VDRL alone for these patients with darkfield-confirmed primary syphilis. Our findings highlight the added sensitivity of obtaining a treponemal test in addition to a non-treponemal test in patients with a genital or rectal ulcer for whom a first diagnosis of primary syphilis is being considered, particularly in settings where darkfield is not available.

0642

Prevalence and Risk Factors of Sexually Transmitted Infection Symptoms in Jamaica: Population Based Survey

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OBJECTIVE: To determine the social and behavioural factors associated with Sexually Transmitted Infections (STI), prevalence of STI symptoms and perceived STI infection risks.

Methods: Using a structured behvioural surveillance questionnaire four national cross sectional surveys were conducted between June 1999 to September 2000. The survey population included 4488 persons;youth ages 15-19 years, Female Sex Workers, and Informal Commercial Importers (petty traders).

Results: The prevalence of reported Sexually Transmitted Infection symptoms ranged from 9% to 50% for abnormal genital discharge and 9% to 11% for genital ulcers. Awareness of STI symptoms range between 39% to 75% for the different subgroups. Adolescents with reported STI symptoms in the last 12 months were less aware of STI symptoms compared to adolescents with no STI symptoms,($P<0.005$). Individuals who reported current STI symptoms had non-stable sexual partners than those with no STI symptoms ($P<0.001$). There was statistically significant differnce in the reported STI symptoms in women compared to men, ($P<0.0001$). Overall consistent condom use with regualr sexual partner in the sample population range between (4%) to (9%). 13.6% of the respondents with current STI symptoms did nothing for their complaint.

Conclusion: Assessment of riskfactors and developing risk scores to screen clients for STI are essential diagnostic tools for the clinician in syndromic STI management. Properly designed behvioural surveys among vulnerable target groups provide national STD programs information to direct prevention messages and track contributing factors to the STI and HIV epidemic.

0643

Epidemiological situation on HIV/AIDS in Uzbekistan

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The major aim of this investigation was to study spreading HIV/AIDS in Uzbekistan on period 1987-2002 take into account age, sex, ways of transfer of HIV-infection among Uzbekistan population and foreign citizens, who was staying in Uzbekistan. It was examined 17879651 individuals. Among of them there are 1760 HIV-positive individuals. First HIV positive Uzbekistan citizen detected in 1989. At present their total amount 1704. 42 individuals are citizens of different countries. 99,5 % or 1704 individuals compose adult and 0,5 % or 8 individuals-children. Mans compose 87,1% (1484 individuals), women – 12,9% (220 individuals). Until 1998 gain mode transfer of infection was heterosexual way. But at the last 5 years was observed significant increase HIV-positive cases by increasing amount infectious drug addict. In 64,6 % 1137 individuals cases transfer of HIV infection come is result of intravenous injection, whereas by heterosexual way in 11,4 % cases (200 individuals). The way of transfer of infection from mother to enfant (vertical) registered in 7 cases. Infection by homosexual contacts detected in 0,7 % (12 individual) cases. Conclusion. In last years in Republic of Uzbekistan observed tendencies to increasing amount official registered HIV-positive individuals and 80-90 % of them are individuals taking intravenous drugs. This investigation show on necessary enhancement prophylactic proceedings to warm development of spreading of AIDS in Uzbekistan.

0644

STD Management By The Society Under A Developing Country Scenario

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Objective: In Bangladesh health services centers still could not find out a comprehensive STD treatment. In a developing country major reason for spreading STD is social stigma. A major portion of STD patients is un-willing to take services for STD in fear of social vulnerability. Society is very much aching to accept STD patients and if the patients is a female her family even isolated from mainstream. Due to this social taboo it rather increase the number of STD patients instead of reduce.

Method: A comprehensive program need to chalk out for STD management, which eventually contributes in HIV prevention. A health center can be a focal point for STD related issues across the country. People irrespective of age and status could discuss about STD issue. Target people can be divided by their age or status in the society for free discussion. The center not act only for STD issue but it could be center for other health issues according to need of a particular area. Target populations can manage the DICs with technical support from NGOs and government.

Result: It is seems challenging but in a country where NGOs in collaboration with government has been implementing health service delivery including family planning, it would be another dimension in perspective of STD/HIV. It also contributes in building a consensus on STD/HIV issues among policy makers, donors, community people, and other influential bodies. A significant impact will be created on target populations in come out from social taboo on STD/HIV.

Conclusion: In developing country openness on STD issues is not easy unless respective society can be mobilized in route of STD issues. A comprehensive STD management including educations through society manage center will contribute in STD prevention and social changes towards openness on sexual issues.

0645

Increasing resistance to antimicrobials among Neisseria gonorrhoeae isolates in Pune, India.

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Background and objective: Increasing antimicrobial resistance among *N. gonorrhoeae* isolates in many developing countries in recent years has become a major global public health concern. This study reports the trend of antimicrobial resistance profile of *Neisseria gonorrhoeae* in a high-risk population in Pune, India.

Methods: Gonococcal isolates from consecutive male and female patients with urethral / cervical discharge attending 4 STD clinics over 7 years through 1996-2002, were tested for antimicrobial susceptibility to penicillin, tetracycline, norfloxacin and ceftriaxone by disk diffusion method using NCCLS guidelines. MIC's were determined for resistant strains by the agar dilution technique. Penicillin resistant isolates were tested for lactamase production by nitrocefin method. Linear yearly trend in the proportions of resistant strains to individual antibiotics was studied by trend chi-square test using the statistical package, EPI INFO 2000.

Results: 277 N. gonorrhea isolates were obtained during the period of seven years. Resistance to penicillin was observed in 63(22.74%) of which, 31 (44.2%) were penicillinase producing *N. gonorrhoeae* (PPNG). 137 (49.45%) of the isolates were resistant to tetracycline of which 73 (43.9 %) were tetracycline-resistant *N. gonorrhoeae (TRNG, MIC >/=16 ug/Ml)*. A significant increasing trend in the resistance to penicillin and tetracycline ($p< 0.001$) was observed over the seven years. Resistance to norfloxacin was seen in 40(14.44%) of strains with an increasing prevalence of resistant strains observed though not significant ($p=0.2$). Overall 10(3.6%) isolates showed resistance to ceftriaxone by disc diffusion technique.

Conclusion: An overall increase in N. gonorrhoeae strains resistant to the commonly used antimicrobials was observed. The high percentage of GC isolates resistant to quinolones and the emerging resistance to ceftriaxone highlights the need for periodic susceptibility monitoring and proper patient management

0646

Baseline Data From A Study To Investigate Of The Role Of Hsv-2 In Hiv Transmission Between Sex Workers And Their Clients In Rural Zimbabwe

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Objectives: The objectives of this study were to (i) determine the effect of aciclovir on genital shedding of HSV-2 and HIV using a placebo controlled randomised trial (RCT), (ii) determine the acceptability of, and adherence to daily suppressive antiviral therapy.

Methods: 214 of 363 high-risk women who were taking part in a study examining the feasibility of periodic presumptive treatment for STDs were recruited to this sub-study. Women were eligible if they worked on specific farms or mines in rural Zimbabwe, and reported ever having exchanged sex for money or gifts. All women seen at baseline

had samples taken for HIV antibody, HSV-2 antibody, plasma HIV viral load (PVL), CD4 count and bacterial STDs, in addition to genital swabs and a cervico-vaginal lavage sample for detection of genital shedding for HIV, HSV-1and HSV-2. Women were randomised to aciclovir 400mg bd or matching placebo and were seen weekly for 12 weeks for assessment of genital shedding of HSV-2 and HIV.

Results: Results focus on 124 women with dual HSV-2 and HIV infection. At baseline, 21%, 23%, 18% and 32% of women had a PVL of <10,000, 10-49,999, 50-99,999 and >100,000 copies/ml respectively. CD4 counts were <200 in 23% women, 200-500 in 49% and >500 in 22%. 100/124 (81%) women were shedding HIV from their genital tracts, 29/124 (23%) were shedding HSV-2 and 1/124 (0.8%) HSV-1. At baseline, 51% of those shedding had <50 copies/ml of HIV detectable, 19% had 50-399 copies/ml, 17% had 400-3,000 copies/ml and 13% had >3,000 copies/ml. Genital HIV shedding was not increased in women who were shedding HSV-2 (p=0.42). More detailed analyses of the impact of aciclovir on HIV and HSV-2 genital shedding during the follow-up data will be presented.

Conclusions: High rates of HIV genital shedding were observed among women dually infected with HSV-2 and HIV.

0647

PARTNER NOTIFICATION POLICIES AND PRACTICES FOR STIs IN WESTERN EUROPEAN COUNTRIES

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Objectives: To characterise and compare partner notification policies and practices for sexually transmitted infections in Western Europe. Methods: Cross-sectional questionnaire survey of STI surveillance leads in European Union (EU) countries (excepting Luxembourg) and Norway, as part of a European Commission-funded project on European Surveillance of STIs (ESSTI).

Results: Considerable variations in partner notification practices for STIs exist in Western European countries. Contact tracing is obligatory in Norway and Sweden and voluntary in most other countries. In most countries, contact tracing is usually undertaken for Chlamydia, syphilis and gonorrhoea, and less frequently for genital warts and herpes. Patient referral is used for partner notification in all countries, while provider referral is also practised in the UK, Sweden, Finland and Norway. In general, treatment of sexual contacts of index patients is carried out on the basis of results of clinical examination and laboratory tests, while in some countries, including the UK, Portugal and Belgium, epidemiological treatment of contacts is sometimes practised. Medication is given to index patients to pass onto their contacts (patient-expedited therapy) in about 5-10% of cases in Denmark, Sweden, Norway and Portugal, usually for chlamydial infections. The proportion of sexual contacts of index STI patients reached for testing and treatment, where known, is estimated at between <10% and >75%, and the proportion tends to be lower for syphilis than for Chlamydia and gonorrhoea.

Conclusions: The results suggest that some opportunities are being lost for contacting and treating sexual partners of STI index patients in Western European countries. Practices such as epidemiological treatment and patient-expedited therapy, which do not require clinical examination, laboratory tests, or repeat clinic visits, may increase the proportion of sexual contacts reached, so decreasing onward STI transmission and reinfection rates.

0648

Prevalence and typing of Human Papillomavirus from matched cervical and vaginal specimens from South African women

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Objectives: To compare the prevalence and types of human papillomavirus (HPV) in cervical samples and matched vaginal samples from South African women.

Methods: Four hundred and seventy women from a Community Health Centre in Gugulethu, Cape Town were enrolled in a cross-sectional study. Cervical brushings were collected, by a clinician, from all the women. In addition the women were randomised to use either tampons or vaginal swabs for self - sampling. Samples were tested using the Digene Hybrid Capture (DHC) which detects 13 high-risk HPV types. Specimens from the first 200 women were also tested using the reverse line-blot assay (RLBA) (kindly provided by Roche Molecular Systems) which detects and types 18 high-risk and 9 low-risk HPV types.

Results: DHC detected HPV in 36.0% of the cervical brushings, 35.4% of the tampons and 36.5% of the vaginal swabs. RLBA detected HPV in 45.1% of the cervical brushings, 45% of the tampons and 53% of the vaginal swabs. Twenty-six different HPV types were detected and only HPV-57 was not found. In the cervical brushings HPV types 16, 18, 35, 45, 52, 58, MM7 and 53 were each present in more than 5% of the women with the most prevalent types being HPV-45 (7.5%) and HPV-58 (7%). More than one HPV type was detected in 51/91 (56.0%) of HPV positive cervical specimens.

Conclusion: This study provides novel information on the prevalence and HPV types present in this community and compares the types detected in three different sampling methods.

0649

Resurgence of Syphilis in Europe

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Objective: To describe the clusters of infectious syphilis that are reported by many European countries in the late 90's. To in-

vestigate the epidemiological data that suggest that these clusters occur in subgroups and in association with HIV infection.

Methods: Reported clusters of infectious syphilis are studied in addition to an in-depth analysis of cases from France, Germany, Netherlands and United Kingdom. Epidemiological data is used from reported infectious syphilis cases of GUM clinics (UK), STI clinics (France, Netherlands), municipal health services (Netherlands) and laboratory reports (Germany).

Results: In recent years, a number of outbreaks of infectious syphilis cases was reported, suggesting a dramatic increase in certain sub-groups. Approximately 70-95% of these cases are diagnosed in men having sex with men (MSM). Cases are associated with high risk behaviour, European white ethnicity and HIV co-infection. Country of birth is mostly European for MSM, whereas for heterosexuals countries outside Western Europe and countries with a high HIV prevalence are reported. The mean age of syphilis cases is > 35 years. The proportion of cases that are actually co-infected with HIV is unknown as the serostatus is unknown in many cases; in reported clusters the proportion may as high as 55%. Behavioural questionnaires in France, United Kingdom and the Netherlands show high risk sex behaviour in MSM, in particular unsafe oral sex.

Conclusions: The ongoing outbreak of syphilis in Western Europe reflects a trend of increasing risk behaviour among MSM. This trend is extremely worrying because of the link with HIV-infection and its synergetic effect on the transmissibility of infections. The outbreaks suggest a need for refined surveillance of syphilis and for alternative health promotion campaigns among MSM and HIV-infected individuals.

0650

Enhanced surveillance of STI in the Netherlands

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Objective: To develop a new surveillance system to assess trends in the occurrence and risk factors in order to fill the gap that existed since abolishing the STI notification system in 1999.

Methods: Data were evaluated from the former notification system, the registration at Municipal Health Services (MHS) and STI clinics. Specific STI surveillance objectives were formulated using the CDC evaluation guidelines, including the value for policymaking and the cost efficiency. A selection of data sources was made, in order to create a 'STI sentinel surveillance system' that would meet the surveillance objectives. Finally an infrastructure for data collection was designed.

Results: The proposed sentinel covers on average 80% of all consultations and 88% of all STI diagnoses at MHS, including all major risk groups. The STI sentinel consists of 5 STI clinics and 9 MHS throughout the country. The reporting of consultations is facilitated by a web based application (SOAP). Individual reports contain epidemiological, clinical data and test results on a wide range of STI. Reporting delays are observed to be as short as 1 day, depending on the clinic's organisation. Laboratory surveillance of 3 bacterial STI was implemented as part of the electronic Infectious diseases Surveillance Information System (ISIS). The population under surveillance is increasing steadily as more laboratories are included. Trends are reported by rate of positive test results, by rate per 100.000 inhabitants, by age, sex, region. Interpretation of trends is hampered by the lack of historical data. Future plans include the involvement of general practitioners and the implementation of behavioural surveillance.

Conclusions: Enhanced STI surveillance is currently put in place in the Netherlands. The system was well-received by the participants in the sentinel network. Formal evaluations need to be performed to establish the representativeness, sensitivity, specificity and timeliness of the whole system.

0651

Comparison of non-invasive sampling methods for detection of HPV and Chlamydia trachomatis in rural African women.

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Objective: to find a way of obtaining adequate samples from rural women for clinical and epidemiological data collection where a speculum examination and cervical sampling is not always logistically feasible or acceptable to the participants.

Methods: A cohort of 360 women from the rural community in The Gambia, West Africa was sampled. The women were first instructed to take a self-administered vaginal swab, this was followed by a pelvic examination when a cervical brush sample was taken, finally the women were asked to leave in place a tampon for one hour. DNA was extracted from all samples using Qiagen columns. B globin PCR was run to check for the presence of human DNA, HPV PCR was run using GP5+/6+ primers and HPV typed using specific probes. Chlamydia trachomatis (CT) PCR was run using the Amplicor system.

Results: 359 self administered swabs, 284 tampon samples and 268 cervical brush samples were obtained, 70 women refused tampons and 92 pelvic examination. 8 (3%) of brush samples contained no human DNA compared to 21 (7%) of tampon samples and 33 (9%) of self-administered swabs. For HPV, of the 26 brush samples that were positive 14 were positive from tampons and 16 from self-administered swabs. For CT four samples were positive from the cervical brushes and tampons, 3 from self-administered swabs.

Conclusions: self-administered swabs were the most acceptable sampling method, tampons were less accepted but in a society where tampons are not known tolerability was good. Both non-invasive methods lack sensitivity for HPV detection and would not be suitable for clinical diagnosis but could be useful for epidemiological studies.

0652

Connecting And Communicating With Street Involved Persons Who Are At Risk For Syphilis And Other Sexually Transmitted Diseases

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Background: Since 1997, reported syphilis cases have increased in Vancouver. Traditional contact tracing methods were not effective in limiting the outbreak in the Downtown Eastside, the poorest urban neighborhood in Canada. The Street Nurse Program has since implemented new methods of reaching these high-risk individuals, positive cases and their contacts.

Description: The BCCDC Street Nurse program is a preventative nursing program focusing on direct outreach to marginalized populations using the philosophy of harm reduction. Using non-traditional contact tracing techniques, we have enhanced our existing connections to reach individuals who have otherwise been inaccessible. This has involved employing peers and learning to communicate more effectively with sex trade workers, injection and inhalation drug users, pimps and drug dealers and taking note of their social networks. With these techniques, we have gathered information which has made us more efficient in targeting specific areas and individuals who may be infected with syphilis and other STDs. In individualizing our communication approach, we have empowered individuals to participate in their health, make choices and help create an equal partnership. This has resulted in clients feeling safer and a greater willingness to get tested.

Conclusion: Marginalized populations continue to pose challenges for mainstream health programs. In excluding the marginalized client from the decision making process, we exclude their social networks and this could result in further spread of syphilis and other STDs. As a team we have long emphasized the client as an individual at the centre of our work , with the involvement of peers and using the improved communication and social networking techniques, this has resulted in an even deeper connection, trust and understanding of the clients to whom we serve. Consequently this has resulted in faster identification of high risk individuals and more timely testing and treatment.

0653

Phenotypic and genotypic characterization of prolyliminopeptidase-negative Neisseria gonorrhoeae isolates in Denmark

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Species confirmation of *Neisseria gonorrhoeae* is commonly based on enzymatic reactions in different commercial kits for instance API NH, which among other reactions relies on a biochemical identification of the enzyme prolyliminopeptidase (PIP). The enzyme is considered as almost universally present in *Neisseria gonorrhoeae* strains.

Objectives: To phenotypically and genotypically characterize prolyliminopeptidase-negative *Neisseria gonorrhoeae* isolates (n=10) in Denmark and to investigate the possibility of an emergence and circulation of one PIP-negative strain in the Danish community.

Materials & methods. PIP-negative *N. gonorrhoeae* isolates (n=10), cultured between August 2002 and February 2003, from nine patients in Copenhagen, Denmark were included. Phenotypic characterization was performed by using antibiotic susceptibility testing and serovar determination. Genetic characterization was performed by means of DNA sequencing of the entire *porB* gene of the isolates and pulsed-field gel electrophoresis (PFGE) with the restriction enzymes *Spe*I and *Bgl*II. Phylogenetic trees were constructed with TREECON v1.3b by using Neighbor-Joining method.

Results. The *N. gonorrhoeae* isolates were all designated as serovar IB-4 and similar MIC values were identified in the antibiograms of the isolates, differences within ± 0.5 $\log_2$. Two distinguishable PFGE fingerprints were identified among the 10 isolates by using either of the restriction enzymes. However, all isolates were considered as closely related or probably related according to the fingerprints. The isolates displayed three slightly different (one to two nucleotide substitutions) porB1b gene sequences. The phylogenetic tree analysis of the porB1b sequences, however, suggested that this represented ongoing evolution of the porB1b sequence of the isolates.

Conclusions. The results of the molecular epidemiological examination, by means of PFGE and porB gene sequencing, in combination with phenotypic and epidemiological information indicate a circulation of one N. gonorrhoeae prolyliminopeptidase-negative strain of the serovar IB-4 in the Danish community. Minor genetic changes in the genome of some of the isolates of the strain have occurred, however, this probably only reflecting the ongoing evolution.

0654

Activity of commercial garlic NHPs against Neisseria gonorrhoeae and other pathogenic bacteria

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Objectives: Garlic natural health products (NHPs) are used by a wide proportion of the population. Research suggests these NHPs may act synergistically or antagonistically with antibiotics, which could lead to adverse clinical outcomes. With this in mind, our goal was to characterize the antimicrobial activity of selected commercially available products against the human pathogens *Neisseria gonorrhoeae* (NG; Gram negative) and *Staphylococcus aureus* & *Enterococcus faecalis* (SA & EF; Gram positive).

Methods: 24 garlic NHPs (powdered capsules, gel caps, garlic oil caps, and fresh garlic) were extracted in water and 55% etha-

nol to equivalent concentrations of 200 mg/ml, and centrifuged to remove particulate matter. The aqueous extracts were held at room temperature for 5, 10, and 15 mins before centrifugation. Stock solutions were stored at -70°C until used. The Minimum Inhibitory Concentration (MIC) of these extracts towards NG strain WHO V, SA strain ATCC-29213 and EF strain ATCC-29212 were determined using a modified method of broth microdilution in 96 well microtitre plates. After 20 hours incubation, the optical density was measured using a microplate reader (595 nm). Where warranted, Minimum Bacteriocidal Concentrations (MBCs) were also determined.

Results: Between 21% and 58% of the aqueous extracts exhibited noticeable activity against the three strains (defined as MIC of #100 mg/ml). In general, NG was more susceptible than SA or EF, and more products showed activity against it. Among identified active extracts, the MBC was the same or within a 10-fold concentration of the MIC. Interestingly, most of the active extracts shared similarly high levels of allicin and allyl thiosulfinates.

Conclusions: Our data indicates a significant portion of our tested garlic products possess antibacterial activity and suggests that allicin and/or allyl thiosulfinates are responsible. Garlic thus represents one of a growing number of NHPs known to inhibit the growth of bacteria through as yet unidentified mechanisms.

0655

Quantitative detection of HSV2 shedding in commercial sex workers in The Gambia

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Objective: HSV2 has become more prevalent over the last decade. The dynamics of this infection are reciprocal with HIV infection, HIV enhancing HSV2 expression that in turn enhances HIV infectiousness and spread, driving the epidemic forward. This study aimed to develop methods for quantitation of virus shedding in commercial sex workers in relation to HSV2 serostatus, clinical evidence of herpetic lesions and the presence of coinfections.

Methods. Cervicovaginal lavage specimens (10 mls PBS; aspirated after 1 minute) were collected from 70 commercial sex workers. DNA was extracted using Qiagen columns. A quantitative PCR system was developed in an ABI 5700 sequence detection system using primers (Pol1 and Pol2) targeting a 92bp sequence in the HSV 2 DNA polmerase gene. Standards were prepared from dilutions of PCR product containing known gene equivalents of HSV2, in herring sperm DNA. Copy numbers per sample were estimated using these standards with a SyBr green real time detection system. Clinical symptoms of active or recurrent genital ulceration were recorded as well as anti HSV2 IgG serology (Kalon test)

Results: A product corresponding to the HSV2 target sequence in the lavage specimens was detected in 18(26%) of 70 subjects. Only 1 of these subjects had a visible herpetic lesion. 61 of the 70 subjects had antibodies to HSV2 by the Kalon test, including 16 of the 18 women in whom shedding was detected. Estimated numbers of copies of HSV2 target per ml of lavage fluid ranged from 1 to 106 , and had a negatively skewed distribution with a predominance of low values(<100 copies per ml).

Conclusions: The relationship between this detectable low level shedding of HSV2 and possible infectiousness is unknown. The technique may be useful in investigating this, and the role of coinfections in HSV 2 shedding and transmission

0656

Increased Incidence of Infectious Syphilis in Ottawa, an Epidemiologic Review

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Objective: This study was undertaken to describe the epidemiology of an outbreak of infectious syphilis in Ottawa, Canada, which began in late 2001.

Methods: All cases of infectious syphilis underwent follow-up with the City of Ottawa Dept of Public Health. Charts were reviewed for those cases identified between January 2001 and December 2002.

Results: Of the 24 cases of infectious syphilis, 8 (33%) were primary cases and 15 (62%) were secondary cases. There was one case of early latent syphilis. Virtually all of the diagnoses were in men (23 of 24) with a mean age of 42 years. The first case of the outbreak occurred in October 2001 with the peak incidence (58% of cases) occurring in the first six months of 2002. The majority of cases (75%) occurred among men who have sex with men with multiple partners. Of the 24 cases, three (12%) were HIV+, seven (29%) were HIV-, and the serologic status of 14 (58%) were unknown. Of the 21 persons who provided information with respect to sexual activities, all but one reported engaging in unprotected oral sex. One third of all cases reported engaging only in oral sex. Among heterosexuals engaging in rectal or vaginal sex (66%) and among men who have sex with men engaging in rectal sex (66%), consistent condom use was more prevalent in homosexual than in heterosexual cases (64% vs 0%). A recent sexual partner outside of Ottawa was reported by 50% of the men who have sex with men.

Conclusions: The peak incidence of infectious syphilis in Ottawa occurred in the first six months of 2002 primarily among men who have sex with men. Multiple sexual partners, unprotected oral sex and movement between major cities were the predominant risk factors.

0657

Refining surveillance to understand transmission dynamics and target prevention interventions.

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Objectives: To critically examine the role and utility of enhanced surveillance programmes for monitoring the determinants and evolution of infectious syphilis outbreaks, and informing the development of targeted prevention and control interventions.

Methods: An evaluation of the structure, process and outcomes of the London enhanced surveillance programme for infectious syphilis, established in August

2001 to collect information from 36 STD clinics. Expanded demographic, behavioural and clinical data were collected on incident cases, including ethnicity, sexual orientation, HIV status, potential site(s) of acquisition, travel history, links to other outbreak sites and high-risk social and commercial transmission networks.

Results: By end 2002, data on 790 cases of infectious syphilis were reported on the enhanced surveillance scheme (compared to 322 cases for the whole of England in 2000), 71% (564) of who were men who have sex with men (MSM). Data from the enhanced surveillance programme proved to be more timely, sensitive, and representative than data collected in other routine STI surveillance systems. It confirmed the existence of two distinct transmission networks (among heterosexuals and MSM) and the unique and sustained contribution of HIV positive MSM to disease transmission. In addition, the programme provided empirical evidence for targeted interventions including: oral sexual transmission of syphilis and other STIs; routine out-patient syphilis screening of HIV positive MSM; condom provision in high risk social venues; and targeted work with internet site owners. Data from the surveillance programme have supported ethnographic research, nested analytic studies, as well as mathematical modelling.

Conclusions: Good surveillance programmes should be fit for purpose and provide information for action. This surveillance programme was extended to the rest of England and Wales in 2002, and a similar system has started in Scotland. Data from these programmes continue to refine the nature and range of syphilis control activities.

0658

Chlamydia trachomatis and Neisseria gonorrhoeae Infections Among Female and Male Wisconsin Family Planning Clinic Clients: Prevalence of Infection and Performance of Selective Screening Criteria

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Objective: We conducted a study to determine the current prevalence of Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (NG) infections in females and males attending family planning clinics (FPC) in Wisconsin and to evaluate the effectiveness of existing selective screening criteria (SSC).

Methods: Sexually active female and male clients seeking services during June 2001 - February 2002 at ten selected FPCs were invited to participate. During the study period the patient services protocol at these clinics was changed from selective to universal screening of all participants for CT and NG infection. Cervical swab specimens were collected from female participants scheduled to receive a pelvic exam; urine specimens were collected from all other females and male participants. Specimens were tested for CT and NG by a Strand Displacement Amplification assay (Becton Dickinson ProbeTec). Standard treatment and follow-up guidelines were used for all participants testing positive for one or both infections. The sensitivities of existing SSC were calculated using the results of universal testing as the gold standard.

Results: 6,585 (81.2%) of eligible female clients and 550 (75.8%) of eligible male clients participated. Symptomatic illness or sexual contact with a person with an STD was the reason for the clinic visit for 14.1% of females and 45.0% of males. The prevalence of CT infection was 6.5% in females and 18.7% in males, and prevalence of NG infection, 1.8% in females and 8.6% in males. The sensitivities of current SSC for CT infection were 83.8% in females and 93.2% in males, and for NG infection, 89.2% in females and 100% in males.

Conclusions: Existing SSCs for these infections perform well in FPC settings. Evaluation of existing SSC can help focus limited STD testing resources. The impacts of STD screening programs and changing cultural practices on rates of STDs make it necessary to evaluate SSC.

0659

Reduction in Attendance and Detection of STD/HIV Morbidity After Institution of Fees For Service in an STD Clinic

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Objectives: The Denver Metro Health Clinic has provided free comprehensive STD evaluations on a walk-in basis since the 1970's. Recent budget constraints led to the implementation of fees for initial clinic visits based on county of residence ($15 for counties supporting services and $65 for other counties). Comparisons of clinic demographics and STD diagnoses were made before and after the institution of fees in order to assess program impact.

Methods: Computerized medical records were analyzed for the number of clinic visits and STD diagnoses during the immediate pre-fee (8/02-11/02) and immediate post-fee (12/02-3/03) periods, and, to correct for seasonality, 1 year pre-fee period (12/01-3/02). A survey of income level and insurance type conducted 6 weeks prior to and 6 weeks post fee collection was also analyzed.

Results: Compared to the immediate pre-fee period, there were reductions in the post-fee period in visits by heterosexual men (28%), gay men (26%), and women (36 %). Decreases were larger in adolescents versus adults (40% vs. 29%, $p < .01$). There were reductions in all categories of STD diagnoses: gonorrhea in heterosexual men (36%), gay men (38%), and women (11%); chlamydia in men (29%) and women (44%); trichomoniasis in women (51%); first episode genital herpes (36%); early syphilis (75%); PID (22%); hepatitis C (61%); and HIV (55%). Similar reductions were seen compared to the 1 year pre-fee period except for a smaller decrease in early syphilis (16%). The income/insurance survey indicated a decrease in the proportion of clinic attendees whose

income was < 100% of the poverty level (61% to 37%, p< .001) and without health insurance (70% to 62%, p <.05).

Conclusion: Implementing fees for STD clinic services creates a barrier to care, especially among adolescents and those with low incomes, and substantially decreased the number of cases of STD/HIV detected.

0660

HPV16 Prevalence and Risk Factors for Infection among Young Women in Lima, Peru: Implications for an HPV Vaccine Trial Design

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Objective: To determine the HPV16 prevalence and the risk factors associated with HPV infection among 18-26 year-old women from community-based and students samples that could potentially be included in HPV vaccine trials.

Methods: Between August 2001 and March 2002, 2447 women were interviewed, of whom 1,474 provided blood for testing by a competitive radio-immune assay for HPV16 antibodies, and genital samples for testing by a PCR-based method for HPV16 DNA.

Results: Among sexually experienced women, 6% of students and 5% of community women were positive for HPV16 DNA. The genital HPV16 DNA prevalence rose among students and fell among community women with increasing age. Among students, HPV16 seroprevalence increased from 5% for ages 18-20 years to 17% for those ages 24-26; and among community-based women from 13% for ages 18-20 to 16% for ages 24-26. In a multivariate analysis of potential risk markers and risk factors for antibodies to HPV16, the difference between the woman's current age and the age of her oldest male sex partner was the strongest predictor.

Conclusions: Compared to the student sample, 18-26 years old women from the community-based sample were more often married and sexually-experienced, had a higher prevalence of HPV16 antibodies for ages 18-20, but lower age-specific increases from ages 18-26 in prevalence of HPV16 antibodies or DNA. This community-based sample of 18-26 year-old women would not be ideal for an HPV16 vaccine trial. Young women with partners four or more years older may have greater risk of acquiring HPV16 infection.

0661

Chlamydial Infection in Young Males Attending a Public STD Clinic

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Objectives: Selective screening programs for chlamydial infection have been demonstrated for women, but less extensively for men. To define a target male population at increased risk for infection, we conducted a retrospective chart review of male patients selectively screened for *Chlamydia trachomatis* at an STD clinic using ligase chain reaction (LCR) detection.

Methods: Charts were reviewed for men who presented for an STD evaluation to the health department in Durham, NC. During the 12 month study period, all men < 25 years of age were screened with urethral swabs for *C. trachomatis* LCR, and some men > 25 years of age were tested if suspected to be at high risk for infection by the clinicians. Information abstracted from the charts included demographics, sexual histories and clinical signs/symptoms.

Results: The analysis was conducted on 571 male patients who underwent testing for *C. trachomatis* with a mean age of 22 years (CI: 21.5-22.5). The overall prevalence of chlamydia in this population was 24%; among asymptomatic men, the prevalence was 13%. In the preliminary bivariate analysis, factors associated with an increased likelihood of chlamydial infection included the presence of any signs/symptoms of urethral infection (OR = 2.18, CI: 1.09-4.38), > 50% condom use (OR = 1.46, CI: 0.57-3.78), contact to gonorrhea (OR = 2.28, CI: 0.99-5.26), and contact to trichomoniasis (OR = 2.50, CI: 0.73-8.25). In the multivariate analysis, the factor most strongly associated with chlamydial infection was having penile discharge on examination (OR 3.3, CI: 1.60-6.98).

Conclusions: Screening for chlamydial infection among men < 25 years is imperative considering the high prevalence of infection in both symptomatic and asymptomatic men. These findings confirm the importance of empirically treating men with discharge for *C. trachomatis*, and suggest a possible association between trichomoniasis and chlamydial infection that merits further exploration.

0662

Hepatitis C Virus (HCV) Screening Activities in Sexually Transmitted Disease (STD) and Other Public Health Clinics

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Objectives: To evaluate HCV screening activities in existing Denver Public Health (DPH) clinics.

Methods: HCV screening was initiated at 3 DPH clinics in early 2000: STD clinic and HIV Counseling and Testing (CTS) site (targeting persons with past injection drug use, blood transfusions before 1992, and HCV+ sexual partners) and Denver County Jail (DCJ) Outreach Clinic (targeting all interested inmates). A questionnaire for known HCV+ persons was implemented in September 2002 to determine prior receipt of medical and preventive services.

Results: Through February 2003, HCV screening was accepted by the majority of eligible persons at the STD (1428/2167, 66%), CTS (676/995, 68%), and DCJ (1492/1807, 72%) sites. At each site, rates of HCV positivity were higher among IDU versus non-IDU (STD 41% versus 9%, CTS 48% versus 12% and DCJ 58% versus 8%). The majority testing positive received their results and were counseled about need for preventive and

medical services (68% in STD, 67% in CTS and 85% in DCJ). Prior receipt of services for HCV infection was assessed in 89 persons attending these clinics previously diagnosed HCV+. Overall, 61 (69%) had received some HCV-related medical care: 53% liver enzyme testing, 21% liver biopsy, and only 3% HCV treatment. The most common reasons for not receiving treatment included being told it was not needed (68%), still using drugs/alcohol (18%), being incarcerated (13%), and treatment being too expensive (12%). Stated health care needs included hepatitis vaccines (71%), drug/alcohol treatment (29%), medical treatment referral (60%), HCV treatment (25%), and HCV education (57%).

Conclusions: HCV screening can be successfully integrated into a variety of public health clinics. Because the benefit of such programs largely depends on subsequent receipt of preventive and medical services, strategies to enhance referral for such care, and programs to evaluate these strategies are increasingly important priorities.

0663

Preventing HIV in Ontario Injectors of Illicit Opiates: Success of Needle Exchange Based Low Threshold Methadone Programs in Reducing Risk Behaviours & Illicit Drug Use

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Objectives: To measure changes in HIV risk behaviors after enrolment in low threshold methadone programs at two Ontario needle exchanges following a harm reduction philosophy, not requiring abstention from illicit drugs.

Methods: All program entrants are invited to enroll in a prospective cohort study, completing interviewer administered questionnaires at baseline, and six monthly follow-ups, including an HIV risk questionnaire. Intensive efforts are made to follow all participants, continuing in the program or not. Mean number of days using each drug in the past month at baseline and follow-up are compared using paired t-tests. McNemar's test is used to compare proportions of participants using each drug and with each risk behavior at baseline and follow-up.

Results: After two years of study enrolment, there are 180 participants, of whom 119 have become eligible for 12 month follow-up, with 17 of these lost to follow-up (14%). In the month prior to program entry, 97% had used illegal substances, with about 40% using heroin, 90% another opiate, and 40% cocaine. Most had injected at least once a day;10% had indirectly shared injections through frontloading/backloading/splitting, while 20% had shared needles, 30% had shared other drug paraphernalia and 42% had injected in a shooting gallery. After 6 months, significantly ($p<0.05$) fewer individuals had used heroin, other opiates, and cocaine in the previous month, and mean number of days of drug use had declined significantly ($p<0.05$) for each, and also for multiple substance use. There was also a significant drop in the proportion of IDU reporting needle or paraphernalia sharing, indirect sharing, and shooting gallery use.

Conclusions: There is a significant drop in HIV risk behaviors and use of heroin, other opiates, and cocaine sustained for at least the first year after enrolment in low threshold methadone programs provided through two Ontario needle exchanges.

0664

Designing and implementing a partner notification system: the experience of Ceará state, Northeast Brazil

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Objectives: Since 1995 Ceará State has implemented specialized management and care for Sexually Transmitted Infections (STI) in 17 public health units. In September 2001 a pilot project was initiated to develop a partner notification system.

Methods: The intervention is currently taking place in eight STI reference units. Partner referral activities were initiated based on the national recommendations; referral cards were created and distributed, a training course was promoted for the health teams, cue cards were designed, supervision to the health units are being provided, and bimonthly meetings of the health teams are being organized to provide continuing education as well as sharing of experience. Analysis of data generated by the referral cards as well as analysis of the epidemiological forms adopted at the STI reference units are used to observe the evolution of partner referral activities. The other STI reference units are playing the role of control group. Results: Since March 2002 data has been collected from the referral cards used in the STI units. Overall, 48% (376/786) of the partners notified by the index-patients

through the cards were seen on consultation at the reference units. For index-patients presenting with cervicitis or urethritis 47% of the notified partners attended consultation at the reference units, while for genital herpes 33%; for Syphilis 48%; HPV Infection 50% and trichomoniasis 21%. Analysis of the epidemiological forms showed a significant difference in terms of percentage of clients referred by their partners, between the intervention units (58%) and controls (42%), after the year 2001. (OR=2,5; CI=1.88-4.12; p=0.000).

Conclusions: Results of the data analysis suggest that the intervention can contribute to improve the quality of partner referral activities. A final evaluation will be done at the end of 2003. The actions considered effective will then be presented to the institutions for dissemination to other municipalities/ states.

0665

Morphological and cytological aspects of the uterine cervix among HIV positive women in Cameroon

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Objectives: Evaluate abnormal findings in the uterine cervix and cervical smears of women attending a major HIV clinic in Douala, Cameroon

Methods: We recruited 108 women , determined their HIV status, examined the macroscopic characteristics of their cervices, identified cytological abnormalities in their cervical swabs (Papanicolaou stain) and looked for the presence of the HPV6, HSV1 and HSV2.

Results: Of the 108 women, 34 were HIV+ (31.5%) and 74 HIV – (68.5%). The median age was 33 years. Macroscopically , 23/34 (67.7%) of the HIV+ women as against 35/ 74 (48.7%) of the HIV negative had an abnormal coloration of the cervix ($p < 0.007$); contact bleeding was noticed in 23 (67.7%) HIV+ vs. 30 (40.5%) HIV- ($p < 0.007$); condylomata in six (17.7%) HIV+ against two (2.7%) HIV- ($p < 0.006$). Microscopically, inflammation of the cervix was in 33 of the HIV+ women against 68 of the HIV negative women ($p = 0.311$). Metaplasic lesions were in 9 of the HIV+ as against 5 of the HIV negative ($p < 0.005$) and dysplasia in 12 HIV+ as against 6 HIV- ($P < 0.0005$). Concerning viral markers, HPV6 was seen in 21 of the HIV+ (62%) and 23 of the HIV- (31%); HSV markers were not found.

Conclusions: Cervical lesions are more common in HIV+ women and they appear to be related to HPV. The Pap smear needs to be done in HIV+ women in order to identify those that might benefit from early treatment of cervical lesions.

0666

Patterns of Douching Among Adolescent/Young Adult Women Attending a Variety of Clinical Services

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Objective: To describe douching patterns among women enrolled in a *Chlamydia trachomatis* transmission study.

Methods: Sexually active patients aged 14-24 years were recruited from adolescent/ young adult primary care, a sexually transmitted disease (STD) clinic, and a pediatric emergency room in Boston, and an STD clinic in Indiana. Enrolled females completed a structured interview using 30-day calendar recall method. Data collected included demographics, drug/sex behavior, and douching frequency.

Results: 348 women enrolled over 29 months (median age 19yrs; 59% black, 21% white, 12% Hispanic). 73/348 (21%) reported douching on at least one day in the prior 30 days (21 women douched on >1 day) for a total of 132 douching events over 11,535 calendar days (1.1%). Douching was reported around the time of sex in 32/3045 sexual events (1.05%): 2 before, 18 after, 12 both. In a multivariate regression model, women who douched were more likely to be Hispanic (OR=3.13) or black (OR=2.36) compared to white, report alcohol/drug use in the 30 days prior (OR=1.11), report more years sexually active (OR=1.14), and were more likely to report no prior STD (OR=1.96). There was no significant difference between clinic, age, age of sexual debut, number of recent and lifetime sex-partners, coital frequency, condom use and measures of socioeconomic status. In univariate Chi-square test, previously pregnant women were more likely to douche than women who have never been

pregnant (25% vs. 16%, p = 0.03), however this was not significant in multivariate regression.

Conclusions: Although more than one in five young women reported recent douching, the frequency was low (1.1% of calendar days) and only 1/3 of douching events occurred around the time of sex. Douching was significantly associated with race, alcohol/drug use, years sexually active and not having a prior STD. Douching proportion was stable across clinic settings, measures of socio-economic status, and current sexual risk-behavior.

0667

Assessment of Components of Delay in Receiving Treatment for a Positive Chlamydia Trachomatis (Ct) Test

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Objective: To understand the distribution of components of delay between testing and treatment for Ct-infection.

Methods: Sexually active patients aged 14-24 years attending clinics in Boston were recruited to a sex-partner dyad study over 30 months. Consenting participants were interviewed regarding contact details, preferred contacting method, sex-partner/s contact information and were tested for Ct. Researchers monitored Ct-test results to expedite treatment for index cases and allow prompt recruitment of exposed sex-partner/s. Time delay was assessed between: 1) specimen collection/enrollment date and Ct-test result date ("SC-test"), 2) Ct-test result date and notification date ("test-notification"), 3) notification date and treatment date ("notification-treatment"), 4) total time between specimen collection and treatment ("total"). The amount of effort for notification was recorded.

Results: 93/506 participants were Ct-test(+) (mean age 20yrs; 60% female). Index participants consisted of: 1) those who were Ct-test(+) who returned for treatment and were enrolled (n=11), 2) those who had a urethritis/cervicitis syndrome who were enrolled/empirically-treated on the same day (n=34), and 3) those who enrolled, subsequently found to be Ct-test(+) and then notified/advised to return for treatment (n=46). In the latter group, the median (range) number of days was 3 (1-9) for "SC-test", 1 (0-12) for "test-notification", 5.5 (2-18) for "notification-treatment"; for a "total" of 7 (1-22). 82/93 subjects were successfully notified. In 56 subjects with details available, contact efforts included 26 phone conversations, 47 voice-mail messages to 31 subjects, 25 phone messages left with 19 house-hold members, 8 pages to 4 subjects, 3 e-mails, 24 return phone calls, 6 responses to index-initiated paging, and 4 face-to-face clinic conversations; for an average of 2.6 activities per subject.

Conclusions: Avoidable treatment delay may result in unnecessary complications in index subjects or their exposed sex-partner/s. In this study design, maximum notification efforts resulted in a median delay of 7 days between specimen collection and patient treatment.

0668

HIV/AIDS in South Africa: A President in the midst of controversy

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Objective: To gain a better understanding of the context of President Thabo Mbeki's controversial views on HIV/AIDS and the intense reaction to them.

Method: A political economy approach was used to analyze a broad spectrum of literature on HIV/AIDS in South Africa including a review of statements made by Thabo Mbeki and the response to his views in the media and in the medical literature.

Results: Strong international reaction resulted when, in 2000, the media reported that President Thabo Mbeki of South Africa questioned the link between HIV and AIDS. The circumstances which led Mbeki to question the science of HIV/AIDS are examined. South Africa had its first reported case of AIDS in 1982 and by 1998 was reported to have a severe epidemic of HIV. The nature of HIV/AIDS in the country is intricately linked to its history and is closely associated with many social and economic problems including entrenched economic disparity, a two-tier system of health care services, history of racial discrimination, and globalization. Mbeki's response, however inadequate, arises coincidentally with some of the divergent views of medical science and social science as solutions to control the pandemic are sought. Discussion of the issues involved, within and between disciplines, would benefit leaders in health as they strive to promote social justice and to ensure the development and maintenance of public health systems that can adequately respond to communicable diseases such as HIV/AIDS.

Conclusion: There is increasing recognition that inherent social problems associated with HIV/AIDS need to be resolved. The primary focus is still on medicine, vaccine and changing individual behaviour. The ability to create and implement a vision of social change remains elusive.

0669

Success of Partner Notification and Treatment using "Contract-Referral" in a Chlamydia Trachomatis (Ct) Dyad Study

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Objective: To describe the outcomes of partner notification efforts and predictors of success using a "contract-referral" model of partner services for Ct-infection.

Methods: Clinic-based study personnel offered enrollment to sexually active patients aged 14-24 years, performed a partner-elicitation interview and obtained specimens for Ct-testing. Participants contracted to notify sex-partner/s if Ct-test(+), whereby "provider-referral" was initiated if the index case did not perform "self-referral" within 72 hours. Categories for quality of partner contact information (complete, insufficient, and incomplete) were created by reviewing partner information forms in test-negative participants. The success of partner notification was assessed by strata of quality-of-information and the amount of provider effort was reported.

Results: 93/506 participants were Ct-test(+) (mean age 20yrs; 60% female) and named 130 partners in last 60 days. Ten partners notified the index prior to enrollment. 80% of named-partners had "complete" quality-of-information, 10% "insufficient", and 10% "incomplete". Notification was achieved in 86/120 sex-partners (85%, 50% and 65% respectively). Partners with complete information were more likely to be notified (RR=1.56, CI95% 1.08-2.25, p=0.0007). 80/86 notified partners were treated; 42 confirmed, 38 unconfirmed. 41 partners were notified by "self-referral", 31 by "provider-referral" and 13 by both. For 34 partners not notified, no effort reported by the index, 24 had insufficient information for "provider-referral", and "provider-referral" was unsuccessful in 10. Overall, study staff performed 25 phone notifications, 33 unsuccessful phone calls, 43 phone calls where a message was left, 8 notifications at a clinic visit, 2 home-visits, and 8 disease intervention specialist referrals.

Conclusions: The majority (80%) of participating adolescents provided complete sex-partner locating information so that, using "contract-referral", 45% of partners were notified by "self-referral", 37% by "provider-referral", and 28% were not notified. We identified a minimum set of sufficient locating information so that partner services might focus on high-yield efforts. "Provider-referral" was chiefly by phone-call, a time-efficient method.

0670

Patterns of use and factors affecting consistent use of the male condom in Rakai district, Uganda

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Objectives: HIV and other STIs are among the most important causes of years of healthy life lost in Uganda. Condoms can reduce this burden. This study was carried out to describe patterns of use of the male condom, identify predictors to consistent condom use, and assess the attitude and constraints to consistent condom use in sexually active age groups in Rakai district.

Methods: Quantitative data was derived from a longitudinal study, of 14,607 individuals, for Community HIV Epidemiology Research conducted by the Rakai project (April 1999-February 2000). Qualitative information was sought using Focus Group Discussions and Key Informant interviews. Quantitative data was analyzed using SPSS and EPI INFO version 6 programs.

Results: 36% of the sexually active people had "ever used" a condom. 27% had used a condom at least once in the six months period. Of these, 34% used them consistently. Consistent use was highest with casual partners (79%). The following variables were positively associated with consistent condom use by multivariate analysis: being unmarried, "low risk" occupation, one sex partner, frequency of sex (< 3 times a week) and high partner-risk perception. Negative attitudes especially among older age groups (> 35 years) included; perceived risks, reduction in sexual pleasure, association with promiscuity and lack of efficacy. Constraints included; lack of privacy at outlets, incompatibility between clients and distributors, lack of consensus among couples, parental attitude, and lack of knowledge on correct condom use. Women were shy about negotiating for condom use and unable to determine whether their partner is wearing a condom.

Conclusions: Condom use was higher with casual partners, among adolescents and the unmarried. However STI prevention by male condom remains a "male affair". Health education to address misinformation and negative attitudes, encourage correct condom use, get active participation of women, change parental attitude and provide privacy at condom outlets would increase condom use.

0671

The Role of sodC in Heme Acquisition in Haemophilus ducreyiEYI

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Objectives: The periplasmic SodC protein of Haemophilus ducreyi is unique among bacterial Cu,Zn-superoxide dismutases in exhibiting heme-binding activity. As *H. ducreyi* is a heme dependent organism, we speculated that H. ducreyi SodC participated in heme acquisition.

Methods: An *H. ducreyi sodC* isogenic mutant was constructed by insertional inactivation with a selectable antibiotic marker. To examine the role of sodC in heme transport, the sodC mutant was functionally complemented in *trans* with three *H. ducreyi sodC* constructs displaying either wild-type, hem^+sod^-, or hem^-sod^+ phenotypes. Growth kinetics were measured by both cell population and optical density in the presence of 5 mg/ml hemin and 50 mg/ml hemin.

Results: No difference in growth was observed between the wild-type and *sodC* mutant under low heme conditions. In contrast, the growth of the mutant was impaired in assays conducted at 50 mg/ml hemin. The growth kinetics of the *sodC* mutant complemented by either the hem^+sod^- or hem^-sod^+ plasmid constructs were equivalent to that obtained in the mutant complemented by wild-type *sodC*.at both low and high hemin concentrations.

Conclusions: These results indicate that *H. ducreyi* SodC is not involved in heme acquisition, but suggest that SodC diminishes heme promoted cellular toxicity. The precise physiological function of SodC in the heme metabolism of *H. ducreyi* awaits further elucidation.

0672

STD/HIV Prevention in Cyberspace

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Since the identification of a syphilis outbreak related to a single AOL chatroom in 1999, the San Francisco Department of Public Health has been using the internet as a means for STD and HIV prevention and control.

I will review recent internet-based prevention methods including public-private and public-community partnerships, websites, online outreach, moderated chats, hosted content and Q&A pages, banner advertisements, hot links, posted warnings, profile adjustments and online STD testing. In addition, I will review internet-based partner management. Many these activities have been evaluated with process measures. These outcomes will be discussed.
The need for continued innovation and evaluation is evident when using the internet for disease prevention and control activities. Enhancing partnerships with internet service providers is also critical.

0673

Prevalence of Antimicrobial Resistant Neisseria Gonorrhoeae in Montego Bay, Jamaica

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Objectives: To determine the prevalence and antimicrobial susceptibility of N. gonorrhoeae in patients with genital discharge attending the STI clinic in Montego Bay, and demographic and behavioural characteristics of infected patients.

Methods: Men with urethral and women with cervical discharge presenting consecutively at the STI clinic in Montego Bay, between June 1998 and October 1999. Genital material was cultured for N. gonorrhoeae and E Test done to various antimicrobials.

Results: A total of 532 patients (254 men and 278 women) were enrolled in the study. N. gonorrhoeae were isolated in 139/251 (55.4%) of men, and 29/274 (10.6%) of women ($p < 0.01$). Intermediate to complete resistance were for: penicillin 74/118 (62.7%), tetracycline 62/117 (59.0%), ceftriaxone 10/117 (8.5%), norfloxacin 9/118 (7.6%), spectinomycin 7/118 (5.9%), azithromycin 2/54 (3.7%), and ciprofloxacin 3/118 (2.5%). Syphilis tests were reactive in 21/529 (4.0%), and antibodies to HIV detected in 20/529 (3.8%) of patients. HIV antibodies were significantly associated with positive tests for syphilis ($p < 0.001$). The mean age for gonococcal infection was 26.5 for men and 23.2 for women. Men waited an average of 11 days, women 39 days before seeking care for their complaint ($p < 0.001$). Men had an average of 4 compared with women who had an average of 5 lifetime episodes. Condoms were used 50% or more of times by 134/253 (53%) of men and 78/259 (30.1%) of women ($p < 0.001$).

Conclusions: The results of this study suggest that STI clinic attenders in Montego Bay have a high prevalence of gonococcal strains which exhibit unacceptable levels (>5%) of resistance to antimicrobials commonly recommended for therapy. There is a need for targeted behaviour change interventions.

0674

An investigation on the efficacy of absorbancy of Borrelia persica antigens in serodiagnosis of syphilitics using FTA-Abs test

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Infection with Trepeonema pallidum results in production of two types of antibodies, specific and non-specific types. Assays for non-specific antibodies are routinely used as screening test for evidence of syphilis infection and it is because of their low-cost and technical simplicity. Since these test are relatively of low specificity, positive results are confirmed by detection of specific anti-T.pallidum antibody. FTA-Abs test is an indirect immunofluorescent assay capable of detecting specific and non-specific Treponeme (Treponema reiteri) with exclusion of false-positive results. This study intended to evaluate the efficacy of a sonicated suspension of Borrelia persica as a substitute absorbant for Treponema reiteri. The results showed that FTA-Abs test with this new absorbant could detect nearly 100% of positive cases. The specificity and sensitivity of this new absorbent is about 100%.

0675

The impact of stigma on informal caregivers of AIDS patients in Ghana

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Objectives: The purpose of this study was to explore the experiences of informal caregivers of AIDS patients in Accra, the capital city of Ghana. The specific objectives of the project were to: 1) Identify the psychological and economic factors that influence informal caregiving; 2) Explore the experiences of informal caregiving from the perspective of the informal caregiver; and 3) Identify possible areas for integration of formal and informal care giving best practices.

Methods: An interpretative, descriptive approach was used to guide the study and in-depth interviews were used to collect the data. Data collection was carried out between May and August 2002. Caregivers were recruited using convenience sampling at the HIV outpatient clinic of a large teaching hospital in Accra. Fifteen interviews were completed with 11 informal caregivers, including wives, mothers, boyfriends, daughters, sons and brothers of AIDS patients.

Results: Stigma emerged as one of the major themes identified in the experiences of the caregivers in this study. Caregivers and their patients experienced wide-spread stigma that was manifested in negative attitudes of close neighbors, relatives and health care workers. Patients also reported the loss of jobs and employment opportunities due to stigmatizing attitudes. Stigma resulted in the social isolation of both patients and their caregivers and forced them to live in secrecy. Caregivers went to great effort to "hide" not only their patient, but also their care giving activities. Frequently, caregivers did not share the patient's diagnosis with extended family members, and therefore received limited support from extended family.

Conclusions: The stigma experienced by informal caregivers has implications for policy, nursing practice, education, and research in Ghana. To minimize feelings of stigma among caregivers, policy makers must provide incentives for caregivers, including cash and annual awards to recognize exemplary caregivers. In addition, education programs must be initiated in nursing practice settings to increase nurses's sensitivity to the plight of informal caregivers, and their patients with AIDS. Finally, strategies to reduce the social stigma associated with AIDS must be investigated.

0676

HIV infection in Lithuania

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The first case of HIV infection in Lithuania was detected in 1988. 361 cumulative HIV positive cases were diagnosed by May 1, 2002, a third of those detected among young men tested when entering the prison system—most of them drug injectors. This number is significantly lower than in the other two Baltic States, which have many factors in common with Lithuania, such as a dramatic increase of drug abuse and a compromised transition economy—in Latvia 2091 cases were diagnosed by July 15, 2002 and in Estonia 2527 cases by August 2, 2002. Thus, in stark contrast with Estonia and Latvia, over the past three years the number of newly registered HIV cases in Lithuania remained stable and low, averaging below 68. However, between May 1 and August 20, 2002, 321 new cases were detected, almost doubling the cumulative number of cases in less than four months to 682. 284 cases were located in a closed facility where the residents are placed under strict control of the state: a "high security regime prison colony." As of December 2002, 735 HIV infections have been registered in Lithuania While the first Lithuanian injecting drug user was diagnosed with HIV in 1994, sexual transmission remained the dominant mode of transmission until 1997. Reportedly, HIV started spreading among IDUs in 1996. In 1997, 70 % of all HIV-registered cases were associated with drug injecting. By August 2002 the proportion of IDUs had increased to 78%.

0677

Can P. hominis be present in the vagina: presentation of two cases

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Helen Weiss,
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David Mabey,
London School of Hygiene and Tropical Medicine, United Kingdom
Anne Buvé,
Institute of Tropical Medicine, Belgium

Objective : To demonstrate the presence of *Pentatrichomonas hominis* in the vagina.

Method: A total of 3079 self-administered vaginal swabs from young girls of Mwanza, Tanzania, were tested for the presence of *Trichomonas vaginalis* DNA and *P. hominis* DNA by specific PCR assays.

Two PCR tests were used for the *T. vaginalis* detection, one PCR assay as described by Kengne, and the other was a modified PCR assay described by Shaio. We developed a sensitive and specific PCR assay for the detection of *P. hominis* DNA. The positive results were confirmed by a universal PCR assay described by Felleisen.

Results: 840 (27.3%) specimens were positive in both *T. vaginalis* PCR assays. Two specimens were positive for *P. hominis* but negative for *T. vaginalis*. The specimens were from 2 young women with the following characteristics.

Conclusion: It is believed that *T. vaginalis, P. hominis* and *T. tenax* are 3 very distinctive Trichomonas species, with a habitat strictly limited to respectively the genitourinary tract, the intestines and the oral cavity. With the introduction of new molecular diagnostic assays, this theory, based on culture and microscopy, should be questioned. As shown, *P. hominis* can be present in the vagina. How the vagina becomes infected with *P. hominis* and if this is of any clinical importance, is not yet known.

0678

Clinical and public health related effects of home sampling for population based screening of Chlamydia trachomatis

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Objectives: The nucleic acid amplification technology (NAAT) allows people to take a sample for chlamydia testing in the privacy of home and mail it directly to a diagnostic laboratory (home sampling). This ease the population based screening of young apparently healthy individuals. The clinical and public health related effects of home sampling as a screening approach is currently under evaluation in several projects including the DAISY Study (Pittsburgh, US), The Class Study (Bristol, UK), and the Danish Chlamydia Health Technology Assessment (DCHTA). This presentation will focus on Danish data for home sampling in a health technology assessment (HTA) perspective.

Methods: Several methods were used and included clinical trials, patient interviews, mathematical simulation models, and dynamic cost-effectiveness models.

Results: In the DCHTA it was found that screening with home test is accepted by 26% of all men and 33% of all women. Home sampling to partners of chlamydia infected index patients will increase the proportion of last male partner tested from the present 41% to 74% and increase the proportion of last female partner tested from the present 13% to 47%. If screening **and** identification of partner with home sampling are introduced, it is expected that the frequency of disease can be reduced from approx. 5% to less than 1% over a 10-year period. In Denmark (population size 6 millions) 57,000 complications (PID, ectopic pregnancy and infertility) and 251,000 cases of an asymptomatic chlamydia infection in women will be avoided over the 10 years. If only screening and not partner testing by home sampling is introduced the effect in terms of better infection control and

reduced number of complications would be considerable less. The total cost of screening and identification of partner will be USD 54.3 million over a period of ten years. At the same time USD 34 million will be saved as a consequence of fewer complications. The cost will thus be USD 20.3 million over 10 years. If reduced loss of production in the form of fewer sickness days and less absence due to sickness is taken into account another USD 53.7 million is saved and USD 33.4 million will be saved over 10 years.

Conclusions: Home sampling as a strategy for population based screening and partner testing improve infection control, reduce number of complications and is cost saving. It is crucial for the effects that partner testing is introduced together with population based screening.

0679

Of Mice and Men: Lessons from a Mouse Model of Trichomonas Vaginalis

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Despite the advances in antibiotic and antiviral therapies, control measures for sexually transmitted infections focus on reactive strategies. This in turn may control pockets of infection but true control will require successful vaccination. Vaccine work is hampered by lack of success, lack of findings and a perception that failure is inevitable in disease which can recur naturally. The Objective is to show that protection from *T. vaginalis* (TV) can be achieved by a vaccine strategy.

Methods: Balb-c mice 22-24 gm receive an injection of 10^6 TV in freund's adjuvant on day –56 and again on day –28 but with incomplete freunds. Controls receive no vaccination. All mice receive B-estradiol (day -7) IM and lactobacillus acidophilus vaginally (day –7, -6). Day zero, all mice receive 10^6 TV vaginally. Washes are performed on days 3, 7, 14, 21, 28.

Results: Using a Balb-c mouse model of vaginal *T. vaginalis* infection we have shown that *T. vaginalis* subcutaneous or IM injection with *T. vaginalis* can induce protection against subsequent vaginal infection which cannot be induced through natural infection. This work has shown that protection is related to inocculum size, requires two injections a month apart and correlates with serum and vaginal IgG levels. Mouse model consistency is a problem and appears to require fresh isolates for pathogenicity.

Conclusion: This work shows that vaccine strategy could protect against *T. vaginalis*. Reducing this parasitic disease will have a clear benefit on premature labor, postpartum infection and HIV transmission.

0680

Non-Hormonal Contraception and HIV Acquisition: An Update

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Objective: To describe our current knowledge regarding the effect of non-hormonal contraception (physical barrier methods, chemical barrier methods, and intrauterine devices) on the risk of HIV acquisition.

Methods: Both published and unpublished literature examining the association of non-hormonal contraception and HIV acquisition were reviewed. The quality of the different studies was assessed according to the U.S. Preventive Services Task Force criteria. The greatest weight in deriving inferences from these studies was based on level 1 evidence. Recent conclusions from consensus conferences examining the bodies of data were also factored in.

Results: Because of ethical implications, most studies used observational (level 2) designs. These studies are limited in their methodologic quality, including ascertainment of exposure to HIV, ascertainment of contraceptive use, laboratory measures of HIV, and statistical analysis approaches to determining risk. When used correctly and consistently, male condoms protect against transmission of HIV. Though data are sparse, the female condom should also protect against HIV under similar circumstances. Spermicides containing nonoxynol 9 do not provide any protection against HIV, regardless of formulation or dosage. Current data are inconsistent as to whether IUD use affects HIV acquisition risk. Data on combination contraceptive approaches indicate a trade off between contraceptive effectiveness and the percentage reporting consistent condom use as a dual method.

Conclusions: Male and female condoms provide good protection against HIV, but only if used consistently and correctly. Currently available spermicides provide no protection. While IUDs provide no protection against HIV, they do not carry any greater risk of acquiring HIV than if no contraceptive methods were used. Finally, the frequency of reported condom use as a second method in women choosing other primary contraceptives decreases as the effectiveness of the primary contraceptive increases.

0681

Chlamydia diagnosis: "do we really have what we want or do we really want what we have?"

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Chlamydia diagnostics have been under intense research for the past 25 years, evolving from a few laboratories performing cell cultures, to many using commercial kits for detecting C.trachomatis antigens and nucleic acids. As new approaches have evolved, we have also seen dramatic increases in sensitivity and approaches to deal with specificity. Nucleic acid amplification (NAA) procedures have enabled the testing of novel noninvasive specimens, which need to be applied to screening programs to identify asymptomatic infected women and men. Our goal is to identify and treat lower genital tract infections to prevent upper tract complications. The ideal test would have high sensitivity and specificity, be short and simple and inexpensive. High volume testers would add a desire for higher throughput with some form of automation. Currently, we still have direct fluorescent and enzyme immunoassays for detecting antigens, and nucleic acid hybridization tests without amplification, but it is difficult to justify their use because they lack appropriate sensitivity on noninvasive samples. They are, however, much cheaper than NAA assays. The current NAA tests (Amplicor PCR, ProbeTec Strand Displacement Amplification, APTIMA Transcription Mediated Amplification and LCX Ligase Chain Reaction) have all demonstrated good sensitivity and specificity. The Hybrid Capture 2 Assay employs a rapid capture system and signal amplification to boost sensitivity. The strengths and weaknesses of the assays, such as hands-on-time, throughput, susceptibility to amplification inhibitors, reproducibility, internal controls, specimen compatibility between assays, and costs will be discussed

to determine what they have that we want, and what we want that they might not have for different diagnostic settings.

0682

Introduction to Mycoplasma genitalium

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Objective: To describe our current knowledge regarding the effect of non-hormonal contraception (physical barrier methods, chemical barrier methods, and intrauterine devices) on the risk of HIV acquisition.

Methods: Both published and unpublished literature examining the association of non-hormonal contraception and HIV acquisition were reviewed. The quality of the different studies was assessed according to the U.S. Preventive Services Task Force criteria. The greatest weight in deriving inferences from these studies was based on level 1 evidence. Recent conclusions from consensus conferences examining the bodies of data were also factored in.

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0683

Hepatitis B virus Infection in Human Immunodefiency Virus Seropositive Patients at the University Teaching Hospital: Interrelationship.

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(abstract unavailable)

0684

Protecting women against HIV/AIDS and other STDs with microbicides

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Globally, 340 million new cases of STDs occur annually. Today, 42 million people (19 million women) worldwide are infected with HIV. The consistent and careful use of male condoms represents an effective barrier against sexually transmitted infections (STIs), but unfortunately, their use is not widespread. More attention is now given to female-controlled methods for the prevention of STIs since many women are unable to negotiate condom use. Beside the female condom which is not widely used, there are no other female-controlled means of protection. Microbicides are substances (vaginal or rectal) that can reduce STIs transmission. They may be in the form of a gel, cream, suppositories, film, foam or sponge. Today, several microbicides which are under investigation have different modes of action. Some, such as surfactants and acidifying agents, destroy or inactivate the invading pathogen. Others, such as anionic polymers, prevent the pathogen from attaching to and fusing with its cellular targets. Most microbicides are at the research phase. Few products are ready for large scale clinical investigation. Anionic polymers including carrageenan, Pro 2000, dextrin-2-sulfate and cellulose sulfate have successfully undergone Phase I and/or II safety clinical studies. Others that successfully completed safety clinical studies include: BufferGel, an acidifying agent that reduces vaginal pH and keeps it low even with the alkaline ejaculate; Lactobacillus suppository that recolonizes the vagina with lactic acid- and hydrogen peroxide-producing bacteria and the Invisible Condom™, a polymer formulation containing SLS that offers both a physical and a chemical barrier against STIs. Carrageenan, Pro 2000 and BufferGel are scheduled to enter phase II/III or phase III efficacy studies this year. It is predicted that the first-generation microbicides could be marketed by 2007. Epidemiological modeling suggest that even a partially effective microbicide could have a substantial global impact in averting HIV and other STIs.

0685

Outbreak of infectious syphilis in men who have sex with men - Toronto, 2002

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Jo-Ann Ackery,
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Objectives: Canada has been experiencing an increase in syphilis since 1998. In Toronto, the annual number of infectious syphilis cases increased six-fold between 2001 and 2002 (30 cases to 179 cases). In addition to characterizing the outbreak, Toronto Public Health worked with community partners with a goal of reducing disease transmission.

Methods: Syphilis reports for 2002 were analyzed. Enhanced case surveillance was instituted in the spring of 2003. Meetings were held with community partners to further understand the outbreak and develop prevention and control strategies.

Results: Most cases in 2002 have been in men (98% of cases) with 91% MSM (for those whose sexual behaviour was known). In individuals with known HIV status, one-third of cases in 2002 were co-infected with HIV. Increasing risk behaviours, the use of anonymous venues, safer sex fatigue, the impact of HIV therapy and drug use have all likely had some impact on the increase in syphilis cases. A number of educational and outreach strategies were implemented in late 2002 and early 2003.

Conclusions: Toronto is now experiencing a syphilis outbreak in its MSM community similar to other Western cities. The HIV

co-infection rate is of particular concern. There is an ongoing need to work with community partners to develop effective interventions.

0686

An outbreak of infectious syphilis in men who have sex with men, Toronto, Canada

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Objectives: A marked increase in the number of reported cases of infectious syphilis cases was noted in Toronto, Ontario in 2002. The increase was predominantly in men who have sex with men (MSM) and a high proportion of the cases were co-infected with the human immunodeficiency virus (HIV). An investigation of this outbreak was undertaken in order to identify the population at risk and to determine high-risk sexual behaviours in order to better target public health interventions.

Methods: Toronto Public Health's paper and electronic records for infectious syphilis cases were analyzed.

Results: A total of 179 cases of infectious syphilis were reported in 2002 (6.8 cases per 100,000 population): 175 (98%) were male and the age range was 19-58 years (mean 37 years). Of males whose sexual behaviour was known, 91% (146/160) were MSM. Risk behaviour data was collected inconsistently; however, MSM more often reported having oral or anal sex without a condom ($p<0.001$) and meeting partners in bathhouses ($p<0.001$). Only 3% of MSM (4/145) and no heterosexual males had had a previous episode of syphilis. One-third of the patients with syphilis were co-infected with HIV, all of whom were male. HIV seropositive cases were more likely to be MSM than heterosexual males ($p<0.001$).

Conclusions: This outbreak, which is ongoing, reflects increasing high-risk sexual behaviour among MSM. Meeting anonymous partners in bathhouses and through internet chatrooms is an increasingly common practice and makes tracing of sexual contacts difficult. Enhanced surveillance has been established in a sexual health clinic whose clients are primarily MSM. Interventions are planned to increase the awareness of syphilis in the MSM community and to reinforce safer sex messages.

0687

HIV Infection of CD8+ T cells is Associated with Altered Cellular Function

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CD8+ T cells have been previously demonstrated to be infected by HIV-1 in vivo. We have assessed HIV replication in CD8+ T cells in individuals infected with HIV using PCR on both DNA and cDNA templates. Further, using CD8+ T cells of infected individuals, virus could be amplified and detected by p24 ELISA in response to treatment with PHA. The susceptibility of CD8+ T cells to infection in vitro was also performed using primary peripheral blood-derived CD8+ T cells. Susceptibility to infection was observed for T cell-tropic and macrophage-tropic clinical isolates and the macrophage tropic laboratory strain HIVADA, however, the laboratory strain HIVIIIB replicated most efficiently. The production of p24 by infected cells was strongly reduced in the presence of AZT. The CD8+CD45RO+ memory phenotype supported higher levels of HIV replication than naive CD8+ T cells. Further, infection resulted in significantly enhanced production of IFN$f\times$. This observation was supported by significantly increased cytolytic activity of HIV infected CD8+ T cells as measured by mixed lymphocyte reaction. Infection with HIV also resulted in increased apoptosis of CD8+ T cells. These results suggest that infection with HIV-1 modulates the function of CD8+ T cells. Further research on the effect of CD8+ T cell infection on cellular function is required since these cells are major effectors against HIV infection.

0688

Old and New Approaches for Diagnosing HPV Infection

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Objective: To review detection methods for human papillomavirus (HPV).

Methods: Literature review.

Results: HPV diagnostics have evolved from inadequate morphological methods to the accurate molecular tests of today. Cervical cancer is rare in the absence of HPV and typically takes 8 to 10 years to develop from a persistent infection. Hence, accurate HPV detection may offer increased protection against cervical cancer while improving cost-effectiveness secondary to longer screening intervals. HPV is best detected by targeting the DNA of carcinogenic types, employing tests such as Hybrid Capture 2 (HC2) and polymerase chain reaction (PCR). Under ideal laboratory conditions PCR has a lower analytical limit of detection than HC2, however, this does not translate to a greater clinical sensitivity for neoplastic lesions. Both tests appear to have similar unadjusted screening clinical sensitivity and specificity of approximately 95% and 93% respectively and very high negative predictive values (99.9%). A key difference is that HC2 is a rapid, relatively simple test that can be executed by technicians or cytology staff with minimal special training. In contrast PCR for HPV must be performed by experts to obtain reliable results. HPV DNA testing compares very favorably to the Papanicolaou test (sensitivity of only 50 to 80%). A criticism of HPV DNA testing for routine screening is that most infections do not progress to cancer and careless use could lead to excessive interventions. Some have argued that cell-cycle markers such as p16 may replace HPV testing. However, these ideas overlook the inability of p16 tests to identify the HPV infected pool at risk for future high-grade disease.

Conclusions: HPV diagnostics are best performed by DNA tests, these are flexible, accurate and much more sensitive than the Pap test for cervical cancer screening.

0689

NAA Tests for Chlamydia Diagnosis in STI Patients: From Bench to Bedside

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Individuals attending a diagnostic centre for sexually transmitted infections (STI) may ask for chlamydial diagnosis for different reasons such as clinical symptoms in the lower or upper genital tract, contact tracing, and monitoring for an STI infection because of tubal sterility, partner control or an occasional sexual contact. In order to prevent further spreading of the infection it is important to use a sensitive and specific diagnostic method for the diagnosis of C. trachomatis at an early stage. The use of nucleic acid amplification (NAA) assays for routine diagnosis of chlamydial infections has enhanced the sensitivity of diagnostic procedures and enables to get a better knowledge on the infectious status of STI patients and their partners. It has been shown that, by using NAA assays for diagnosis, transmission of C. trachomatis to the asymptomatic partner and ascension to the upper genital tract occur more often than known until now. However, a higher degree of technical expertise is required for the performance of NAA assays to minimize the risk of contamination and of false positive results. This requires the access to a confirmation test for positive results. It has also been demonstrated that the presence of amplification inhibitors especially for urine may cause false negative results for NAA assays in a various degree. Strict quality control procedures have therefore to be included. Furthermore, the dependance on technical equipments has to be considered when organizing diagnostic strategies for chlamydia.The higher costs of NAA assays may still avoid a large scale use of NAA assays for chlamydia diagnosis as a routine test in many diagnostic centers in Europe and other parts of the world.

0690

Surveillance of Sexually Transmitted Infections (STI

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Background: In Austria, gonorrhoea and syphilis are the most common venereal diseases and reportable by law to the Publish Health Office (PHO). In contrast, other bacterial and viral STIs are not legally reported and therefore only data collected in few specialized diagnostic centers are available. Objectives: To determine the frequency of reported cases of syphilis and gonorrhoea in Austria and to evaluate the resistance pattern of isolated N. gonorrhoeae (NG) strains over the period from 1999 to 2002.

Methods: For reported syphilis cases diagnosis was mainly based on serology and for gonorrhea on culture methods. The nationwide reporting system includes only an anonymous differentiation between infections in men and women but no additional demographic o clinical data are available. For further evaluation, a total of 134,626 patients were screened for the presence of gonorrhoea and other STIs in 3 diagnostic centers in Vienna. An overall of 728 isolated NG strains were tested for resistance to quinolones, cephalosporins, penicillin, macrolids, and tetracycline by the disk diffusion test.

Results: A nationwide 2.3-fold increase of syphilis (from 184 to 420 cases) and of gonorrhoea (from 434 to 985 cases) was observed over a 4 years period. QRNG raised from 3.9% in 1999 to 33.6% in 2002 with a total of 108 strains resistant to all quinolones tested. Penicillin resistance increased 4.8-fold, while resistance to cephalosporins and macrolids was seen only in rare cases.

Conclusion: The increase of venereal diseases and the change of the resistance pattern for NG demonstrate the importance of a legally established surveillance system including demographic data and the proof of the antibiotic

0692

The Cervical Cancer Screening Trial: HPV Testing versus Pap Cytology in Screening Cervical Cancer Percursors

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Objectives: To compare the efficacy and cost-effectiveness of human papillomavirus (HPV) testing and Pap cytology in primary screening for cervical cancer and its precursors.

Methods:. Women over the age of 30 are being recruited in Montreal and St. John's to participate in a randomized controlled trial comparing HPV DNA testing and conventional Pap cytology. All subjects receive both tests but are randomized as to the order in which they are done. All women with an abnormal result in either test undergo colposcopy and biopsy, as does a 10% random sample of women with a negative result in the index test in each arm to derive unbiased screening performance estimates of sensitivity, specificity, and predictive values to detect high grade lesions. Lesions detected by the second test in each arm are ignored for analyses but, for safety reasons, they are considered for treatment decisions.

Results: Over 20% of the target 12,000 study participants have been enrolled into the study by mid-2003. Subject characteristics and preliminary estimates of test performance will be presented using histologically confirmed lesions as the gold standard.

Conclusions: The Pap test has contributed significantly to reduce the incidence and mortality of cervical cancer; but rates have leveled off in the last decade. Since HPVs have been causally linked to cervical cancer and its precursors, tests for HPV infections have been proposed as adjuncts or replacements to Pap cytology. Studies comparing the performance of the Pap smear to HPV DNA testing for primary screening of cervical cancer have shown that the latter test can have acceptable performance while being more amenable to automation and quality control. This trial will provide much needed information on the efficacy and cost-effectiveness of these two screening tests when used in a community setting for screening of cervical cancer and its precursors.

0693

High prevalence of HSV-2 infection and high rates of sex partner concurrency among Peruvian men who have sex with men (MSM)

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Methods: 254 high-risk HIV-negative MSM were recruited in Lima, Peru during 2002, and tested for HIV, syphilis (RPR), and HSV-2 (Focus HerpeSelect-2 EIA). Sex partner concurrency was defined as any temporal overlap between first and last sexual exposure to greater than or equal to 2 partners reported during the past 90 days. Univariate and multivariate OR were calculated to describe factors associated with HSV-2 infection and recent behaviors by HSV-2 seropositive and seronegative men.

Results: HSV-2 prevalence was 60.6% (154/254) and was associated in multivariate analysis with years of sexual experience (ORadj 1.1 each year, 95% CI 1.06-1.14), being the receptive partner ("bottom") (ORadj 1.9, 1.1-3.2) and being a transvestite (ORadj 4.7, 1.9-11.7). HSV-2 infected men (27.3%) were more likely to be RPR reactive than HSV-2 negative men (5%, $P<0.001$). HSV-2 infected men reported more sex partners (median 5, range 0-325) in the past 3 months than did HSV-2 negative men (median 3, range 0-60, $P<0.05$). Men with HSV-2 infection (61.8%) more often reported concurrent sexual relationships than did HSV-2 negative men (47.8%, $P<0.05$) and were more likely to report receptive unprotected anal intercourse (UAI) with greater than or equal to 2 concurrent partners (22.1% vs. 8.9%, $P<0.05$). HSV-2 positive MSM (61.2%) more often believed that greater than or equal to 1 of their male partners had female partners than did HSV-2 negative men (41.6%, $P<0.05$).

Conclusions: HSV-2 seroprevalence was high among HIV-negative Peruvian MSM and was associated with serologic evidence of past or current syphilis. When compared to HSV-2 seronegative MSM, HSV-2 seropositive MSM had recent history of more sex partners, more often had concurrent sex partners, and more often had receptive UAI within these concurrent relationships. Peruvian MSM with concurrent partnerships are more likely to be infected with HSV-2 and syphilis, and have possible bisexual partners, thus representing potential efficient "bridgers" for STIs within their sexual networks of male and female partners.

0694

What's new in the management of pelvic inflammatory disease.

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Pelvic inflammatory disease (PID) is a common and morbid disease, associated with infertility, chronic pelvic pain, and PID recurrence. The management of PID is complicated by difficulty in making the diagnosis. We have shown that the most sensitive marker of PID is adnexal tenderness, whereas specificity can be gained by findings of abnormal cervical/vaginal discharge and N gonorrhoeae or C. trachomatis cervicitis. Whereas once, PID was universally managed with intravenous antibiotics in the hospital, increasingly, treatment focuses on antibiotics administered in the outpatient setting. Fortunately, our recently published, PID Evaluation and Clinical Health (PEACH) randomized clinical trial, comparing inpatient and outpatient strategies, provides an evidence base showing that the long-term morbidities of infertility, chronic pelvic pain, and recurrence, are no more common among women assigned to outpatient cefoxitin/doxycline treatment. High rates of post-treatment endometritis and chronic pelvic pain in both treatment groups raised concerns about the potency of either antibiotic regimen in reducing long-term morbidity. However, in a further analysis of PEACH data, we showed that endometritis did not predict these gynecologic morbidities. Further, women in the PEACH study have, at most, modest elevations in infertility as compared to women in a national sample, but chronic pelvic pain is a major source of physical and mental disability. Finally, barrier contraception, and particularly consistent condom use, prevent the morbid sequelae following PID. All women with an episode of PID should be encouraged to use condoms.

0695

Mema Kwa Vijana, A randomised controlled trial of an adolescent sexual and reproductive health intervention programme in rural Mwanza, Tanzania: 1. Rationale and Trial Design

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Rationale: African adolescents are at high risk of adverse reproductive health outcomes, including HIV, other STIs and unwanted pregnancies. However, there is little empirical evidence to guide the implementation of effective interventions.

Trial Design: A community-randomised trial was conducted in 20 rural communities in Mwanza Region, Tanzania to assess the impact of an innovative adolescent sexual and reproductive health intervention. The main target group were adolescents in Years 5-7 of primary school. Using data from a prior population-based survey of 9,445 15-19 year olds, the communities were grouped into strata at low, medium and high HIV risk, and restricted randomisation was used to allocate communities to intervention and comparison arms ensuring balance on HIV and chlamydia prevalence. Ten communities (59 primary schools, 18 health facilities) received the intervention during programme Phase 1 (January 1999-December 2001), the other ten (62 primary schools, 21 health facilities) acting as comparison communities. Extensive internal and external process evaluation of the intervention was conducted during the trial. Impact of the intervention was evaluated in a cohort of 9,645 adolescents aged 14 years and over (mean 15.7 years) at the start of intervention in January 1999, who were about to enter Years 5-7 of

primary school. The cohort was followed for a total of 23,919 person-years until the final follow-up survey in October 2001-April 2002. An interim follow-up survey was conducted in February-June 2000. The trial was designed to have 80% power to detect a 50% reduction in expected HIV incidence. Pre-defined primary trial outcomes were HIV seroincidence and HSV2 seroprevalence. Secondary outcomes included six further biomedical, five behavioural, one attitudinal and three knowledge outcomes.

Conclusions: This is the first randomised trial in a developing country to measure the impact of an adolescent sexual and reproductive health intervention on biomedical as well as behavioural outcomes.

0696

Future Perspectives on Chlamydia Diagnostics

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The nucleic acid amplification tests (NAATs) represent the most sensitive diagnostic tests we have ever had for detecting Chlamydia *trachomatis* infection. The tests continue to evolve and have become the more sensitive in the ten years since they were introduced. Continued improvement is anticipated. Features to look forward to include: better media for specimen transport and preparation; increased automation of specimen preparation, amplification and detection. Inhibitor detection systems will be more meaningful as methods that are capable of detecting specific inhibition of amplification of chlamydial targets are introduced.

The ways in which NAATs are used are also evolving. We will see increased use of vaginal swabs as a specimen. There will be further evaluation of specimens collected from other anatomic sites beyond the typical cervical/urethral/urine specimens that have already been cleared for use, by the FDA. The way we use NAATs has been complicated by CDC guidelines that call for confirmation of positive results when the predictive value is less than 90%. This assumes a firm understanding of the specificity of these tests, and we do not really know how to accurately measure NAAT specificity. Further, the options among the suggested methods to be used to confirm positive results are not easily implemented. The issues related to confirmatory testing will be further discussed.

0697

Mema Kwa Vijana. A randomised controlled trial of an adolescent sexual and reproductive health intervention programme in rural Mwanza, Tanzania: 2. Intervention and Process Indicators

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Intervention: The intervention primarily targeted adolescents in the last three years of primary school (Years 5-7). It aimed to improve adolescents' knowledge, attitudes and skills to enable them to protect their sexual and reproductive health through decreased sexual risk taking, and to improve their access to, and use of, sexual and reproductive health services. It had four major components: (i) community activities to develop ownership and support; (ii) teacher-led, peer-assisted sex education with an average of twelve 40-minute sessions per year, using role-plays, dramas and other innovative teaching methods; (iii) training and supervision of health workers to provide "youth-friendly" STD and family planning services; (iv) peer condom social marketing for youth (from 2000).

Process Evaluation: The initial week of community mobilisation helped in the acceptance of the intervention, although additional meetings with religious leaders were needed in some communities. Annual youth health weeks organised by the ward development committees included inter-school competitions with a sexual health theme. Checks on students' exercise books showed that over 85% of planned sessions were taught during each year of the trial, reaching at least 25,000 students. External evaluations of the in-school component by national and international sex education experts rated the intervention very highly. The proportion of students in July 2002 passing a written examination on reproductive health knowledge and attitudes at the end of Year 7 was much higher in intervention (84%) than comparison schools (50%). More than 60,000 condoms were sold in 2000-2001. However, about one-third of youth condom marketers stopped work within 12 months. Tape-recorded visits to health facilities by young people (simulated patients) showed that health workers in intervention communities made fewer judgemental comments and were more welcoming.

Conclusions: This innovative, multi-component intervention is feasible and potentially replicable, and improved students' knowledge and reported attitudes, and health workers' youth-friendliness.

0698

Mema Kwa Vijana. A randomised controlled trial of an adolescent sexual and reproductive health intervention programme in rural Mwanza, Tanzania: 3. Results: Knowledge, Attitudes and Behaviour

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Objectives: To measure the impact of the intervention on reproductive health knowledge, reported attitudes and reported sexual behaviour.

Methods: 7,040 of 9,645 eligible cohort members (73%) were seen at final follow-up. Knowledge, reported attitudes and reported sexual behaviour were measured through a face-to-face questionnaire administered by a young, same-sex interviewer. Three knowledge outcomes (HIV, STI, pregnancy prevention) and one attitudinal outcome were assessed as the proportion reporting the correct or desired response to all of three questions for each outcome. All analyses took account of the community-randomised trial design, and were adjusted for age-group, sex, ethnic group and lifetime number of partners reported at baseline.

Results: The intervention had a statistically significant impact on all knowledge and attitudinal outcomes in both males and females (prevalence ratios (PRs) from 1.28 to 1.77). Among those sexually active, condom use during follow-up was reported by 38% in intervention (I) and 28% in comparison (C) communities, and this difference was significant in both males (PR=1.41) and females (PR=1.30). Among males, significantly fewer reported sexual debut during follow-up (I:60%, C:72%, PR=0.84, 95%CI: 0.71-1.01) or having multiple sexual partners during the past 12 months (I:19%, C:28%, PR=0.69, CI:0.49-0.95), but little difference was seen among females. The proportion of cohort members reporting STI symptoms during the past year was significantly lower in intervention communities (PR=0.59, CI:0.48-0.72), but there was no significant difference in the proportion of those with STI symptoms who reported visiting a health unit for treatment (PR=0.91, CI:0.64-1.29). For most outcomes, there was a trend towards greater impact among students enrolled in Standard 4.

Conclusions: The intervention substantially improved knowledge, reported attitudes and reported condom use in both sexes, and reported sexual behaviour in males. The data suggest a dose-related effect with greater impact among those receiving two or three years of the in-school programme.

0699

Mema Kwa Vijana. A randomised controlled trial of an adolescent sexual and reproductive health intervention programme in rural Mwanza, Tanzania: 4. Results: Biomedical Outcomes

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Objectives: To measure the impact of the intervention on rates of HIV, other STIs and pregnancy.

Methods: 7,040 of 9,645 eligible cohort members (73%) were seen at final follow-up. Primary trial outcomes were pre-defined as HIV incidence and HSV2 prevalence at final follow-up. Secondary biomedical outcomes were prevalence at final follow-up of syphilis, Chlamydia trachomatis (CT), Neisseria gonorrhoeae (NG), and (in females) Trichomonas vaginalis (TV) and pregnancy (by urine test). In addition, women were asked about incidence of pregnancy during follow-up. All analyses took account of the community-randomised trial design, and were adjusted for age-group, sex, ethnic group and lifetime number of partners reported at baseline.

Results: Among females, there were 16 HIV seroconversions in intervention communities and 24 in comparison communities, giving an adjusted rate ratio of 0.76 (95%CI:0.35-1.65). There were only five HIV

seroconversions in males. Overall prevalences of HSV2 were 11.9% in males and 21.0% in females, with adjusted prevalence ratios (PRs) of 0.92 (CI:0.69-1.22) and 1.05 (CI:0.83-1.32) respectively. There was little evidence of impact on other biological outcomes, with adjusted PRs varying from 0.78 for syphilis in males to 1.66 for NG in females. Overall PRs for the three secondary biological outcomes with data from both sexes were 0.86 for syphilis (CI:0.60-1.24), 1.28 for CT (CI:0.93-1.75) and 1.80 for NG (CI:1.19-2.74). In females, the PR for TV was 1.13 (CI:0.92-1.37), for pregnancy by urine test 1.09 (CI:0.85-1.40) and for reported incidence of pregnancy 1.03 (CI:0.88-1.21). A trend towards greater beneficial impact among students enrolled in Standard 4 was seen for some but not all biomedical outcomes.

Conclusions: HIV incidence was lower in the intervention communities, but neither HIV nor HSV2 (the primary trial outcomes) showed a statistically significant impact. No consistent impact was seen on the six secondary biomedical outcomes.

0700

Mema Kwa Vijana. A randomised controlled trial of an adolescent sexual and reproductive health intervention programme in rural Mwanza, Tanzania: 5. Summary and Implications

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Background: Trials of behaviour change interventions to improve the sexual health of adolescents in industrialised countries have reported disappointing results, most failing to show improvements even in reported behaviour. In many African countries, where risks are much higher and there is a paucity of pre-existing information available to adolescents, the potential for intervention impact may be much greater. There is an urgent need to identify effective and affordable interventions in such countries.

Results: This trial has demonstrated the feasibility of introducing an innovative adolescent sexual health intervention programme, using existing government staff and structures, at a cost that would allow large-scale implementation. The intervention led to substantial improvements in reproductive health knowledge, reported attitudes and reported sexual behaviours in Tanzanian adolescents. Behavioural effects were stronger in males than females, possibly because young women are exposed to older male partners who have not benefited from the programme. There was no consistent impact on biomedical outcomes including HIV incidence, prevalence of other STIs, and pregnancy. For some outcomes, the data suggest a dose-related effect with greater impact among those receiving two or three years of the in-school programme.

Implications: We conclude that interventions similar to the MEMA kwa Vijana programme, involving skills-based in-school sexual health education, condom social marketing, youth-friendly health services and community-wide activities, should be widely promoted in sub-Saharan Africa. In the short-term, this should lead to improved sexual health knowledge and attitudes. Interventions may need to be sustained for several years to achieve measurable reductions in rates of HIV, STIs and pregnancy, and we plan to examine this hypothesis in a further survey of youth in the trial communities in 2005/6. To maximise impact it may be desirable to extend the interventions, targeting norms and beliefs of adults as well as youth, and including special activities for out-of-school youth.

0701

Maximizing the Benefit: A tool to prioritize HIV prevention interventions using cost-effectiveness

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Background: The goal of HIV prevention is to prevent as many new infections as possible. Tools are needed to help local communities select the best combination of strategies to address their local epidemics. We developed a tool that allows users to compare estimates of the cost-effectiveness across a wide variety of HIV prevention strategies.

Methods: We used Bernoulli and proportionate change models to develop a spreadsheet that compares the cost-effectiveness of 26 HIV prevention strategies, including individual behavior-change, biomedical, and structural interventions. Users can input local data on the size and HIV prevalence of the target group, intervention effectiveness, and local costs. We also conducted sensitivity analyses to assess the robustness of the cost-effectiveness comparisons across different populations and using various assumptions.

Results: The most cost-effective strategies with low prevalence populations (e.g. heterosexuals) were structural interventions (e.g. mass media, condom distribution), while individual, small-group interventions, and STD screening and treatment were still relatively cost-effective when targeted at high prevalence populations, particularly MSM and HIV-positives. Among the most cost-effective strategies were showing videos in STD clinics and raising alcohol taxes. School based HIV prevention programs were among the least cost effective. Needle exchange and needle deregulation programs were cost effective when IDUs had a high HIV prevalence, but not where IDUs HIV prevalence is low. When other implementation factors are considered, local communities may generate different portfolios for their HIV prevention programs.

Conclusions: Comparing estimates of the cost-effectiveness of HIV interventions provides insight that helps local communities maximize the effectiveness of their HIV prevention resources.

0702

A COMPARISON OF SNaPSHOT AND MICROARRAY-BASED DETECTION OF gyrA AND parC MUTATIONS IN CIPROFLOXACIN-RESISTANT N. GONORRHOEAE

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Objectives: Specific single nucleotide polymorphisms (SNPs) in *gyr*A and *par*C genes of *N. gonorrhoeae* have been shown to contribute to ciprofloxacin-resistance (Cip^r). We have adapted two technologies to characterize SNPs contributing to the Cip^r phenotype: i) the ABI PRISM SNaPshot system, based on a single base extension reaction followed by capillary electrophoresis; ii) DNA array technology.

Methods: Ciprofloxacin-resistant *N. gonorrhoeae* (MIC's of 1-32 mg/mL) and a ciprofloxacin-susceptible control (FA1090) were selected based on their *par*C and *gyr*A genotypes as determined by DNA sequencing. Primers were selected based on published *gyr*A and *par*C sequences that were capable of priming the PCR-based amplification of amplicons encoding Cip^r associated SNPs. Oligonucleotides encoding relevant SNPs were designed using two different strategies, one for SNaPshot detection and the other for array-based analysis. Oligonucleotide primers intended for SNaPshot analysis were designed such that their 3' end terminates one base upstream from a particular SNP. These oligonucleotide primers were then used to prime a single-base extension reaction using differentially fluorescent-labelled dideoxynucleotides. The single base-extension reaction labels the oligonucleotides such that, when subjected to capillary electrophoresis on an ABI PRISM genetic analyzer, the analyzer's fluorescent detection system is able to identify the nucleotide added at the position of polymorphism. Array-based SNP detection was performed by spotting oligonucleotides encoding either the wildtype or Cip^r genotypes onto glass slides. Fluorescent-labelled targets encoding the relevant SNPs were amplified and hybridized to the SNP detection arrays. Multiplexing of the amplification of fluorescent-labelled *gyr*A and *par*C targets for hybridization allowed for the analysis of more than one target region in a single reaction.

Results: G*yr*A and *par*C mutations, as scored by the single-base extension platform, were consistent with results from microarray-based interrogation and slower throughput but more conventional DNA sequencing analysis.

Conclusions: The SNaPshot and microarray-based technologies for SNP analysis successfully identified SNPs associated with the Cip^r phenotype in *N. gonorrhoeae*. These methods for SNP-detection have also been extended to other loci within the *N. gonorrhoeae* genome. The full potential of either system cannot be realized until both are multiplexed to see how many different target SNPs can be analysed simultaneously.

0703

Impact of sex partner treatment without mandatory prior clinical evaluation on recurrent/ persistent infection in patients with gonorrhea or chlamydial infection: a randomized trial

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Objectives: Persons treated for gonorrhea (GC) or genital chlamydial infections (CT) experience high rates of recurrent/persistent infection after treatment. We sought to determine whether treating sex partners of patients with GC or CT without the partners' prior clinical evaluation would decrease these rates of infection.

Methods: Women and heterosexual men with GC or CT (index patients) receiving public health partner notification services were randomly assigned to expedited or standard partner treatment. Expedited partner treatment involved either giving patients medications for their sex partners or having public health staff arrange for partners to receive free medication at a commercial pharmacy. Standard partner care required partners to see a medical provider prior to treatment. The presence of recurrent/persistent GC or CT by LCR in index patients 10-18 weeks following treatment was the primary study outcome.

Results: A total of 647 men and 2108 women were enrolled. As of May 12, 2002 1805 (66%) persons have completed the study, 870 (32%) had failed to return for follow-up and been dropped from the study and 84 (3%) people are awaiting follow-up. At time of follow-up, infection was found in 181 (12%) of 1544 persons originally diagnosed for CT, and 22 (6%) of 353 patients originally diagnosed for GC; 36 (9%) of 386 men and 164 (12%) of 1419 women had recurrent/persistent infection. Investigators remain blinded to the study's primary outcome.

Conclusions: Recurrent/persistent gonorrhea and chlamydial infection are common in both men and women 10-18 weeks following treatment. Data to be presented will assess the impact of expedited partner treatment on recurrent/persistent infection.

0704

Evidence-based Planning for HIV/AIDS Control Programming: Experience from India

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Background: HIV/AIDS control programs should be strategically designed on the basis of locally obtained information, and planned in such a way as to integrate relevant program elements.

Methods: We developed an intervention model consisting of a "foundation" with three elements: information gathering; enhancing the enabling environment; and building institutional and organizational capacity; and five "pillars": information, education and communication; focused prevention programs; voluntary counselling and testing; management of sexually transmitted infections (STIs); and care and support. In the state of Karnataka in southern India, with a population of approximately 55 million people, situation assessments were conducted to identify program gaps and areas which required particular attention. Data were rapidly collected on HIV prevalence and vulnerability through expanded state-wide sentinel surveillance; on institutional and individual response capacity through a systematic training needs assessment; on STI service delivery and quality through surveys of STI care providers and their clients; on the nature and magnitude of sex work through an ethnographic assessment and a state-wide mapping exercise, followed by a representative sex worker survey; and on community-level HIV risk through a qualitative community assessment and a population-based household survey.

Results: On the basis of this information, we have designed an intervention program focused on geographic areas and populations with high vulnerability. Data will be presented on program activities designed strategically to build response capacity with respect to the "foundation" and "pillars" noted above, and on the development of demonstration projects designed to address questions of scale-up of programs and services in urban and rural areas.

Conclusion: It is feasible, even in the context of a large population, to rapidly collect good quality information on which to strategically plan, implement and evaluate HIV/AIDS control activities. With increased resources to support personnel and program costs, it should be possible to expand programs to sufficient scale to achieve significant impact.

0705

Immune Correlates of Protection in HIV-Exposed but Uninfected Individuals

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Background: Despite multiple, repeated exposures to HIV-1, some individuals never seroconvert. Multiple mucosal and systemic immune mechanisms are likely to be involved in this phenomenon.

Methods: Cellular and humoral, systemic and mucosal immune parameters were analysed in peripheral lymphocytes, cervico-vaginal and urethral swabs, and seminal fluid of 40 recently HIV-1-exposed uninfected heterosexual women and men (ESN), 37 HIV-seropositive patients, and 40 healthy controls.

Results: 1) env- and gag-specific IFN_-producing CD4+ and CD8+ lymphocytes are present in peripheral blood and in mucosal swabs of ESN and HIV-seropositive patients; 2) HIV-1-specific IgA can be detected in cervico-vaginal and urethral swabs of ESN and HIV-seropositive patients; 3) mucosal HIV-specific IgA of ESN neutralize in vitro infection of target cells with primary HIV strains; block transcytosis; and recognize an epitope in gp 41 (QARILAV) that is different from the epitopes seen by IgA of HIV-infected patients. Additionally in ESN: constitutive a defensin production by peripheral CD8 is augmented; a defensin-expressing peripheral and mucosal CD8 lymphocyte are more numerous; and a defensin mRNA as well as a defensin-expressing cells are augmented in cervical biopsies. Finally, recent results suggest that a particular genetic background can be recognized in ESN.

Conclusions: Multiple, complex immune mechanisms are activated in exposed, uninfected individuals; these mechanisms should be reproduced in vaccine design.

0706

Effectiveness of a point-of-care test for the diagnosis of Chlamydia trachomatis in women presenting for voluntary termination of pregnancy.

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Objective: To determine if a point-of-care (POC) test is effective for the diagnosis of Chlamydia trachomatis (Ct) in asymptomatic women presenting for voluntary termination of pregnancy (TOP).

Methods: Women presenting to 2 TOP clinics were interviewed using a standardised questionnaire. A cervical swab was collected for the diagnosis of Ct using the CT Amplicor PCR (Roche Diagnostic Systems, USA) and a POC assay, the Clearview Chlamydia MF (Unipath, UK). A vaginal swab was collected for the diagnosis of bacterial vaginosis using the Nugent score, on a Gram-stained smear.

Results: Of 1036 women recruited, 86 (8.3%) were Ct positive by PCR and 37 by Clearview. Using PCR as the reference standard, the sensitivity and specificity of the Clearview test were 43% and 99% respectively, for a positive predictive value of 79% and a negative predictive value of 95%. Risk factors for Ct infection in this study population were BV (OR 4.4, 95% CI 2.5-7.8), casual sex (OR 3.4, 95% CI 1.9-6.1), history of Ct (OR 1.8, 95% CI 1.0-3..0), history of STD (OR 2.84, 95% CI 1.5-5.4).

Conclusions: The prevalence of Ct in women presenting for TOP is 8.5%. Although the Clearview test showed excellent specificity compared to PCR, its sensitivity was not ad-

equate for the diagnosis of Ct. Given the serious sequelae associated with undiagnosed Ct in women undergoing TOP and the need for POC tests at many TOP facilities, the development of improved POC tests for Ct screening is a priority.

0707

Challenges to Clinical Management of Syphilis and HIV co-infection

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Overview: Conflicting data exist regarding the clinical presentation and therapeutic response of syphilis among HIV-infected patients. Cases of rapid progression from early syphilis to neurosyphilis in HIV-infected patients have been reported even after appropriate therapy. Whereas some associations between accelerated ulcerating syphilis and advancing HIV disease have been reported, no association between HIV stage and syphilis progression or treatment failure was found in a prospective treatment trial. In this session, a review of the clinical manifestations of syphilis, particularly among HIV-coinfected individuals will be presented and the data published with regards to challenges in clinical recognition, diagnosis, and treatment will be discussed. Current recommendations for diagnosis and treatment, and the basis for these recommendations, will be reviewed.

0708

HIV and STD in men who have sex with men, New York City, 1990-2002 - An old connection fuels resurgent epidemics

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Objectives: To describe trends and convergence of STD and HIV among New York City men who have sex with men (MSM).

Methods: Analysis of multiple sources of surveillance and research data on STD/HIV incidence, prevalence and comorbidity.

Results: AIDS incidence and HIV prevalence increased exponentially between 1985 and 1993; AIDS incidence then declined gradually, while overall AIDS mortality and HIV prevalence in MSM presenting for diagnosis and treatment of STD declined dramatically through 2001. Racial disparities that were first identified in 1987 persisted throughout the period of observation, as did associations between prevalent HIV and incident gonorrhea. The rate of primary and secondary syphilis in NYC reached a post-World War II low in 1998. Between 1998 and 2002, the number of P&S syphilis cases grew from 82 to 434, with MSM as the predominant risk factor. Increasingly, HIV infection has been self-reported during routine case interviews (61% in 2002). A case-control study performed in 2002 identified HIV as the dominant risk factor for incident syphilis, with a mean time from HIV to syphilis diagnoses of over > 6 years. During the same period high incidence density was observed in young MSM surveyed at public venues and through the HIV/AIDS reporting system, suggesting that twin resurgent HIV/STD epidemics are being fueled by the practice of risk factors common to all STD. Anecdotal data indicate that new contact settings such as internet partner solicitation and private anonymous party circuits as well as unmonitored public venues provide new opportunities for acquisition and transmission of infection.

Conclusions: The availability of highly active antiretroviral therapy, a decade of aggressive safe sex promotion and declining AIDS incidence and mortality have not led to durable control of STD and HIV. The high rates of HIV testing by NYC MSM and foreknowledge of positive HIV serostatus in persons with new STD suggest that behavior is not the result of ignorance of transmission risk. New prevention paradigms are urgently needed to avert a return to the epidemic growth observed in the first decade of AIDS.

0709

The control of syphilis among the gay community- is it working?

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Over recent years the epidemiology of syphilis is developed countries has been characterised by sporadic outbreaks on an otherwise low level of background disease. This report outlines the epidemiological details of patients diagnosed with syphilis that presented to the Genitourinary Medicine Department in Edinburgh, Scotland and how it was managed.

From February 02 to May 2003, twenty one cases of syphilis were identified. Twenty were white males and one was a black female. Eighteen were gay men, one was bisexual male and two were heterosexuals. Clinical signs were present in eleven patients which included rash, painless and painful genital and oral ulcers and condylomata lata. Six were HIV positives all gay men. There were 107 sexual contacts in previous six months of these 24 were contact traced.

In response to this an outbreak control team was formed. Additional men's clinics were started. Health promotion team organised a preventive campaign encouraging sexual health screening for gay men, a local radio broadcast and funding applied for on-site testing in bars, saunas and public sex venues. One hundred people came forward for syphilis test. Now in its sixteenth month the epidemic seems to be coming under control.

0710

Drug demands, Harm reduction and HIV/AIDS prevention (Prevention Strategies)

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Introduction: The deteriorating socio-economic factors have led to a large number of people living on the margins of society who use licit and illicit drugs to cope with their harsh reality. Due to stigmas, limited resources and gaps in information the public and social sector has not been able to address the needs of this growing population. Homeless street children, female sex workers and Afghan refugees now represent a significant portion of street drug users in Quetta Pakistan.

Objective: To reduce drug and drug related harm on the streets (in particular indictable drug use and related harm) and prevent the HIV and other blood borne diseases among drug users and related vulnerable population groups.

Methodology: Baseline study and Situation assessment of HIV and hepatitis c among street children of Quetta, Pakistan January to April 2003.

Results: Studies carried out suggest a high incidence of needle and syringes sharing among injecting drug users (64% and 73% respectively). The relationship between injecting drug use and transmission of blood borne diseases is clearly established by fact that in both the studies incidence of HIV is low (1%) among this group. Although there is evidence in other parts of South Asia that new patterns of drug use and shifts to injecting in particular, is an important factor contributing to rapid increases of HIV infection among drug users. The recent shift to injecting in Pakistan is therefore an early warning sign for an HIV/AIDS epidemic.

Recommendations: A small window of opportunity to maintain low levels of HIV infections in this high risk group exists and a National level integrated model of street out reach services needs to be implemented as a matter of urgency.

0711

SURVEILLANCE OF SEXUALLY TRANSMITTED INFECTIONS (STIs) IN AUSTRIA: CAN IT BE IMPROVED?

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Background: In Austria, gonorrhoea and syphilis are the most common venereal diseases and reportable by law to the Publish Health Office (PHO). In contrast, other bacterial and viral STIs are not legally reported and therefore only data collected in few specialized diagnostic centers are available.

Objectives: To determine the frequency of reported cases of syphilis and gonorrhoea in Austria and to evaluate the resistance pattern of isolated *N. gonorrhoeae* (*NG*) strains over the period from 1999 to 2002.

Methods: For reported syphilis cases diagnosis was mainly based on serology and for gonorrhea on culture methods. The nationwide reporting system includes only an anonymous differentiation between infections in men and women but no additional demographic o clinical data are available. For further evaluation, a total of 134,626 patients were screened for the presence of gonorrhoea and other STIs in 3 diagnostic centers in Vienna. An overall of 728 isolated *NG* strains were tested for resistance to quinolones, cephalosporins, penicillin, macrolids, and tetracycline by the disk diffusion test.

Results: A nationwide 2.3-fold increase of syphilis (from 184 to 420 cases) and of gonorrhoea (from 434 to 985 cases) was observed over a 4 years period. QRNG raised from 3.9% in 1999 to 33.6% in 2002 with a total of 108 strains resistant to all quinolones tested. Penicillin resistance increased 4.8-fold, while resistance to cephalosporins and macrolids was seen only in rare cases.

Conclusion: The increase of venereal diseases and the change of the resistance pattern for *NG* demonstrate the importance of a legally established surveillance system including demographic data and the proof of the antibiotic resistance for *NG*.

0712

Establishing National Behavioural Surveillance In England: Early Lessons

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Objective: To facilitate, support and develop the national coordination and implementation of behavioural surveillance in England.

Methods: Internal activities (within CDSC) included a critical review of behavioural data collected in routine and enhanced STI and HIV surveillance programmes; production of surveillance data derived prevention indicators. Collaborative activities with key external stakeholders included: identification of ongoing and previous behavioural surveillance and research programmes in England; establishing and formalising collaborative links with academic and service providers; collation of data derived from ongoing local and national sexual behavioural surveillance and research programmes. A behavioural surveillance working group, involving key partners from academic, service and community organisations, was established, to define current gaps in provision and to prioritise areas for future development.

Results: Minimum data on behavioural determinants of STI/HIV transmission are currently collected in a number of existing surveillance programmes. However these vary in their definition and completeness. Although a number of behavioural surveys are currently ongoing in England, these are predominantly with men who have sex with men. While young people and the general population have been the focus of some surveys, other groups at disproportionate burden of HIV and other STI, such as migrant communities have no established behavioural surveillance surveys. Specially designed behavioural surveillance programmes are therefore required to fill the current gaps and this is best achieved through partnerships with external collaborators. Work is also required to develop a nationally agreed set of core behavioural indicators, which draw upon existing validated survey instruments. This will improve comparability of data from diverse sources at both national and local level.

Conclusions: National coordination and development of behavioural surveillance activities is feasible but requires the establishment of robust collaborative partnerships with a diverse range of key stakeholders; clear objectives, and a strategic approach for success.

0713

Promoting Condoms as Part of Public Health

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Inconsistent results regarding the effectiveness of condoms for various STIs have diluted public health messages regarding their promotion. One possibility is that further, more rigorous research is needed. However, methodological challenges inherent to research regarding condom efficacy make the need for additional studies questionable. More importantly, such issues may have contributed to variable results. These include problems in ascertaining accurate self-report of sensitive behavior. As with most infectious diseases, there is not a perfect correlation between exposure and infection. Exposure through unprotected sex does not always results infection, and there is currently no ideal biological marker of condom use. Finally, in spite of uncertain effectiveness, ethical issues preclude conducting a randomized controlled trial comparing condoms to nothing.

However these issues are not unique to prevention interventions, as no interventions are 100% effective. Another possibility is that for reasons unrelated to science, condoms are being held to a different standard than other public health interventions. In addition to empirical data that supports their protective effect, the biological plausibility of condom effectiveness combined with a proven track record for safety warrants their widespread and continued promotion. For example, they are currently the most effective protection from sexual transmission against HIV. Caveats about their pathogen-specific effects are likely to weaken such promotional messages.

0714

Delivering on the Evidence: Barriers to implementation of prevention programmes

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Despite centuries of use of condoms for STD prophylaxis and more recent evidence of their effectiveness in reducing HIV transmission, achieving high population level uptake of prevention initiatives to slow HIV /STI transmission remains elusive in many settings.

This paper will consider economic, social, cultural and political factors which may impinge on the ability to deliver successful condom programmes at individual and societal levels. It will draw on data from different settings which provide evidence for the success or failure of increasing condom uptake and the factors which may contribute.

The discussion will consider some of the implicit and explicit contradictions which may exist between stated Public Health goals and the political and social values which may impede progress towards them.

0715

Intranasal Immunization with Inactivated Human Immunodeficiency Virus plus CpG oligodeoxynucleotides generates immune response in genital tract

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Objective: The objective of this study was to determine the ability of intranasal (i.n.) immunization with inactivated gp120-depleted HIV-1 immunogen plus CpG oligodeoxynucleotide (ODN) to induce local immune responses in the genital tract and protection against intravaginal (IVAG) challenge using recombinant vaccinia viruses (rVV) expressing gag from different clades of HIV-1.

Methods: Inbred female mice were immunized and boosted i.n. with inactivated gp120-depleted HIV-1 immunogen alone or mixed with CpG ODN or control non-CpG ODN as an adjuvant. Local HIV-specific immune responses in the genital tract were assessed, including lymphocyte proliferation, interferon-$f\times$ (IFN$f\times$) and fÒchemokine production. Further, cross-clade protection was assessed using an IVAG challenge model employing rVV expressing HIV-1 gag from different clades.

Results: Lymphocytes isolated from the iliac lymph nodes (ILN) and genital tract of mice i.n. immunized with HIV-1 immunogen plus CpG generated significantly higher levels of HIV-specific proliferation and production of IFN$f\times$, RANTES, MIP-1fÑ and MIP-1fÒ than mice immunized with HIV-1 immunogen alone or mixed with non-CpG ODN. Importantly, mice immunized with HIV-1 immunogen plus CpG were protected against rVV expressing HIV-1 gag from clades A, C and G, but not B.

Conclusions: Mucosal (i.n.) immunization with inactivated HIV-1 plus CpG ODN induced strong local T cell-mediated immune responses in the genital tract and cross-clade protection against IVAG challenge.

0716

Effectiveness Of Condoms In Preventing Sti Transmission: What Do We Know?

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No protective method is 100 percent effective, and condom use cannot guarantee absolute protection against any STD. In order to achieve the protective effect of condoms, they must be used correctly and consistently. Laboratory studies have demonstrated that latex condoms provide an essentially impermeable barrier to particles the size of STD pathogens. Latex condoms, when used consistently and correctly, are highly effective in preventing the sexual transmission of HIV, the virus that causes AIDS. Latex condoms, when used consistently and correctly, can reduce the risk of transmission of gonorrhea, Chlamydia, and trichomoniasis. Correct and consistent use of latex condoms can reduce the risk of genital herpes, syphilis, and chancroid when the infected area or site of potential exposure is protected. Condom use has been associated with a lower rate of cervical cancer, an HPV-associated disease. Available empirical evidence on the effectiveness of condoms in preventing STI transmission is not perfect. Issues of study design and measurement error introduce random and systematic error into measures of strength of association (MSA). Recent mathematical modeling work suggests that measurement errors may bias the MSA towards the null. Interpretation of results condom efficacy/effectiveness studies necessitates consideration of potential bias.

0717

Treponema pallidum in VIH-infected

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Background: syphilis prevalence has decreased from the onset of the use of antibiotics. In the last years has shooted among persons infected with human inmunodeficiency virus(HIV). Due this virus has changed the natural history of sypfilis, the dosage and duration of treatment required. Prospective controlled studies are not available to respond to many of these questions.

Objective: studying treatment for syphilis among HIV-infected persons. Methods: review on the problem in a worldwide basis is done.

Outcome: management of syphilis in patients with HIV infectión is complex problem. For primary syphilis is suitable the treatment for primary syphilis independetly from HIV infection. Azithromicin has a lot of characteristics to be a suitble treatment, is activ in vitro, has got efficacy in the rabbit model, reach high levels in tissues and its mean life is long. Ceftriaxone is activ in vitro, has got efficacy in the rabbit model, reach high levels in tissues, has a good penetration in CSF and its mean life is long too. It might be considered a alternative to penicillin in case of alergie and in syphilis in pregnant women who has not alternative. Some studies observed neurologic relapse after administration of high penicillin doses

Conclusions: in spite of suspecting HIV infection complicates the treatment of syphilis, doses remains the same in patients with or vithout HIV infection. Ceftraixone may be a reasonable alternative.

0718

Gonococci and fluoroquinolones

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Background: Antimicrobial agents used for treatment of gonorrhea have decreased their efficacy due to the Neisseria gonorrhoeae capacity for developping resistance mechanisms. Gonorrhea incidence derceased in the last years due to the fear to human inmunodeficiency virus.Now is shooting.

Objective: studying resistence of Neisseria gonorrhoeae against fluoroq uinolones. Methods: review on resistence of Neisseria gonorrhoeae against fluoroquinolones in a worldwide basis is done.

Outcome: at present microbological agents recommended are the cephalosporins: cefixime 400 mg, orally as a single 400 mg tablet and ceftriaxone 250 mg/day, Ml as a single inyection. Others agents are fluoroquinolones: ciprofloxacin 500 mg, orally as a single dose and ofloxacin 400mg/day, orally as a single dose, what make compliance. At the momeent resistant conococci to cephalosporins has not been found, gonococci resistant to quinolones are a big problem. This is in relation to the prostitution.

Conclusions: we must help to prevent implantation of gonococci to fluoroquinolones and to keep them as election antimicrobiological agent. For that their epidemiological conditionsis essential, performing microbiological studies in every case suspicious with culture.

0719

Delivering on the Evidence: Barriers to implementation of prevention programmes

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Despite centuries of use of condoms for STD prophylaxis and more recent evidence of their effectiveness in reducing HIV transmission, achieving high population level uptake of prevention initiatives to slow HIV /STI transmission remains elusive in many settings.

This paper will consider economic, social, cultural and political factors which may impinge on the ability to deliver successful condom programmes at individual and societal levels. It will draw on data from different settings which provide evidence for the success or failure of increasing condom uptake and the factors which may contribute.

The discussion will consider some of the implicit and explicit contradictions which may exist between stated Public Health goals and the political and social values which may impede progress towards them.

0720

Detection of Chlamydia trachomatis and Neisseria gonorrhoeae in residual clinical samples by the Abbott M1000 automated magnetic sample preparation instrument and multiplex homogeneous real time PCR.

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Objectives: Control of Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) will require sensitive and specific diagnostic assays capable of detecting nucleic acids in non-invasive specimens. Performance can be enhanced by controlling the risk for falsely positive and negative results. We have developed a rapid automated magnetic sample preparation system (M1000) and homogeneous real-time PCR for the multiple diagnosis of CT and GC. Performance concordancy was compared on archived first catch urines (FCU) tested by APTIMA Combo 2 (GenProbe) and ProbeTec CT (Becton Dickinson); and on residual swab samples (RSS) tested by ProbeTec CT.

Methods: The M1000 magnetic sample preparation technology removes both inhibitors and fluorophores. DNA is captured generically using a silica based magnetic particle, washed, and eluted with water. The PCR amplification and detection method uses DNA amplification primers with fluorescence-quenched DNA detection probes. Hybridization of the probe to specific amplicon results in conversion of the probe from a quenched to a fluorescent state. The homogeneous assay format allows for multiplex detection of CT and GC, and an internal control that is added during sample prep to monitor for DNA recovery and inhibition of amplification. Amplification and detection is performed on an ABI Prism 7000 (Applied Biosystems Inc.) with FAM, NED, and VIC labeled probes. PCR amplicon contamination is eliminated through amplification and detection in an entirely closed system. A total of 369 FCU and 199 RSS were compared.

Results: Concordance of the new test with the BD ProbeTec CT test was 98.3% (116/118) for positives, 98.8% (80/81) for negatives and 98.5% (196/199) overall. Concordance with the Aptima Combo2 Chlamydia result was 93.5% (43/46) for positives, 99.1% (320/323) for negatives and 98.4% (363/369) overall. With the Aptima Combo2 Neisseria gonorrhoeae result the new test concordance was 96% (25/26) for positives, 100% (343/343) for negatives, and 99.7% (368/369) overall.

Conclusions: This Abbott M1000 magnetic sample preparation system combined with homogenous PCR technology provides a rapid, sensitive, and specific methodology for detection of CT and GC with negligible risk of PCR product contamination. The system delivers 288 multiplex results in under 8 hrs and 384 in 9.5 hrs. Total hands-on time per 96 samples is currently 30 minutes. Preliminary studies using residual swab and archived urine samples show good promise for the reliable diagnosis of CT and GC.

0721

A tale of two states: differentiating between epidemic phase and transmission dynamics in the Indian states of Rajasthan and Karnataka

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Background: There is now a widespread consensus that HIV prevention strategies should be appropriate to the phase of the epidemic. Epidemiological criteria have been adopted to determine the epidemic phase, and broad guidelines developed to guide program strategies. However, such an approach does not consider that variability in transmission dynamics will yield different epidemic trajectories, and warrant different prevention strategies regardless of the epidemic phase. In this paper we examine differences in the epidemiology of HIV in the Indian states of Karnataka and Rajasthan, and explore sociodemographic and behavioural factors to better understand whether the extent to which these differences relate to the epidemic phase or transmission dynamics.

Methods: We use descriptive analyses based on data from unlinked anonymous HIV seroprevalence surveys, population-based behavioural surveys, qualitative behavioural studies, social mapping studies and census reports.

Findings: The prevalence of HIV is substantially higher in Karnataka (1.7% among antenatal women) than in Rajasthan, but that there is also substantial variability within Karnataka. The high prevalence in Karnataka is ecologically associated with poverty, migration and widespread female sex work. Furthermore, many rural areas have a more severe epidemic than large urban areas, suggesting that local transmission factors are driving the epidemic rather than a gradual epidemic diffusion from large population centres. Although Rajasthan also has a high degree of poverty and migration, female sex work does not appear to be as common.

Conclusions: Differences in the prevalence of HIV between Rajasthan and Karnataka are not due solely to epidemic phase, and different prevention strategies are warranted.

0722

Evaluation of British Columbia's Syphilis Mass Treatment Intervention

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Background: From mid-1997, British Columbia (BC) experienced an outbreak of heterosexually-transmitted infectious syphilis. Targeted mass treatment using oral azithromycin was implemented with temporary success.

Objective: Mass treatment objectives included decreased syphilis incidence and improved syphilis knowledge, attitudes and behaviors among participants.

Methods: The qualitative evaluation used focus groups and stakeholder interviews. The quantitative evaluation used a post-intervention cross-sectional study comparing 212 mass treatment participants with 211 eligible non-participants.

Results: There was overwhelming support for the intervention among target groups but not healthcare workers. Sex trade workers (STWs) were comfortable taking azithromycin to regular but not non-regular partners ('secondary carry'). Participation was associated with being female (OR=2.2, $p<0.001$), being a STW (OR=2.6, $p<0.001$), not being a STW customer (OR=2.1, $p<0.01$) and a history of syphilis (OR=2.4, $p=0.01$). Mass treatment participants were more likely to know that a person can have syphilis without symptoms ($p=0.052$), had increased condom use with STWs (OR=3.9, $p<0.05$), had >5 partners in the last month (OR=1.5, $p<0.05$) yet they decreased their number of partners (OR=2.1, $p=0.001$) and unprotected oral sex (OR= 2.1, $p<0.05$). Decreased number of partners was associated with mass treatment (adj. OR=1.9, 95%CI 1.2-3.1) and being a STW (adj. OR=2.6, 95%CI 1.5-4.5). We diagnosed 20 infectious syphilis, 6 gonorrhea and 30 chlamydia infections but there were no statistically significant differences between the two groups. Infectious syphilis incidence was associated with age <30 years (adj. OR=4.3, 95%CI 1.5-12.3) and being a STW (adj. OR=7.8, 95%CI 1.8-34.2).

Conclusion: Targeted mass treatment was viewed positively by the target population but healthcare providers had reservations. One-year post-intervention, there were positive changes in knowledge, attitudes and behaviors among participants but not fewer bacterial STDs. This reflects the reality that STWs and their customers have limited control over their risk. They cannot simply abstain from the sex trade or change their behavior to totally eliminate their risk.

0723

Declining Sexually Transmitted Disease and HIV Prevalences among Antenatal Clinic Attenders in Nairobi, Kenya, 1992 - 2002

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Background: An HIV/STD surveillance program was established in 3 health centres in Nairobi, Kenya, to monitor the impact of an intervention program in the clinics and their catchment areas consisting of: 1) improved primary level STD treatment and counselling services; and 2) community HIV/STD prevention programs focusing on female sex workers.

Methods: Nine survey rounds were completed from 1992-2002 with samples of about 200-300 female ANC clients per centre per round. A questionnaire was administered, cervical specimens were collected for gonorrheal culture, and blood was drawn for syphilis, HIV & chlamydia serology.

Results: Trends in STD/HIV prevalence are shown in the table below. Declines are statistically significant ($P< 0.001$) for gonorrhea, chlamydia and syphilis, and for HIV in women under 20 from Surveys 2-9.

Behavioural changes were also observed, including significant declines in women reporting selling sex, declines in numbers of reported sex partners, and increases in condom knowledge and use. Women's perception of risk was very highly conditioned by their views on the behaviour of their main partner (generally their husbands), and uncertainty as to the sexual behaviour or their husbands increased over time. This led to a greater degree in mis-judging their risk status, particularly among HIV positive women. In the most recent survey, only 9% of HIV positive women felt that they were at risk of HIV (prior to being tested), and 55% did not know if they were at risk or not.

Conclusion: In this population, the prevalences of several STDs and of HIV infection in young women have declined, probably due in part to the intervention programs that have been implemented, and suggesting a transition in the phase of the STD/HIV epidemic. The decline in the curable (short-duration) STDs was dramatic and sustained, and is consistent with reported behavioural changes, but the decline in HIV prevalence was not as marked. As the HIV epidemic reaches equilibrium, an increasing proportion of HIV transmissions are likely to occur in long-term partnerships. A substantial proportion of married women remain at risk for HIV infection, and their reported perception of risk is alarmingly low. The most feasible way of preventing infection in this context may be through behaviour change among married men, including extra-marital partner reduction and increased condom use in commercial and other extra-marital partnerships.

0724

The changing risks of sexually transmitted infections within the UK population: a modelling analysis

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Background: Within the UK there is currently a growing epidemic of bacterial sexually transmitted diseases which is placing considerable stresses on sexually transmitted disease clinics. Concomitantly, reported HIV infections are growing in number. Incidence amongst men who have sex with men (MSM) remains stable but reported infections amongst heterosexuals has increased to outstrip the numbers amongst MSM in recent years. Thus, current STD patterns suggest that STIs and HIV are in a growth phase.

Methods: To explore the impact of increased pressure on health services we have developed a mathematical model of bacterial STD infection and treatment patterns where the likelihood of seeking care and the timeliness of that care is inversely related to the incidence of STIs. In addition on the basis of sexual behaviour patterns in the UK we have created a model of HIV spread where we explore the influence of local versus remote transmission of the virus.

Results: The decrease in timely care associated with pressure on STD services itself leads to an increase in the prevalence of infectious individuals within the population and a consequent increase in the incidence of infection. When treatment services are severely over-stretched, an inadequate increase in provision of treatment has very little impact on the incidence of infection in the population, because only a small proportion of infections are treated. However, as treatment provision is increased further, there is a rapid decline in incidence of infection, as infections are treated rapidly before they are able to be transmitted to a significant degree, and as the proportion of patients lost to treatment due to delays is diminished. Current patterns of HIV reports and model results suggest that HIV would not be in a growth phase amongst heterosexuals if they were in isolation. However, significant numbers of infections can be expected because of the growing background prevalence of HIV. Additionally small changes in risk could dramatically alter the number of new HIV infections.

Discussion: The growth phase of an epidemic of treatable STDs places many challenges on the provision of services which are currently being experienced in the UK. The results of our model illustrate the need for a rapid and considerable increase in resource provision when STDs enter this growth phase. The contrast with HIV in this setting, where there is slow growth and a need to maintain prevention efforts to stop the epidemic growing out of control, illustrates the importance of biological variables such as the transmission probability and infectious period and how they dramatically influence the epidemiology of infections.

0725

Establishing National Behavioural Surveillance In England: Early Lesson

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Objective: To facilitate, support and develop the national coordination and implementation of behavioural surveillance in England.

Methods: Internal activities (within CDSC) included a critical review of behavioural data collected in routine and enhanced STI and HIV surveillance programmes; production of surveillance data derived prevention indicators. Collaborative activities with key external stakeholders included: identification of ongoing and previous behavioural surveillance and research programmes in England; establishing and formalising collaborative links with academic and service providers; collation of data derived from ongoing local and national sexual behavioural surveillance and research programmes. A behavioural surveillance working group, involving key partners from academic, service and community organisations, was established, to define current gaps in provision and to prioritise areas for future development.

Results: Minimum data on behavioural determinants of STI/HIV transmission are currently collected in a number of existing surveillance programmes. However these vary in their definition and completeness. Although a number of behavioural surveys are currently ongoing in England, these are predominantly with men who have sex with men. While young people and the general population have been the focus of some surveys, other groups at disproportionate burden of HIV and other STI, such as migrant communities have no established behavioural surveillance surveys. Specially designed behavioural surveillance programmes are therefore required to fill the current gaps and this is best achieved through partnerships with external collaborators. Work is also required to develop a nationally agreed set of core behavioural indicators, which draw upon existing validated survey instruments. This will improve comparability of data from diverse sources at both national and local level.

Conclusions: National coordination and development of behavioural surveillance activities is feasible but requires the establishment of robust collaborative partnerships

with a diverse range of key stakeholders; clear objectives, and a strategic approach for success.

0726

Large Social Networks and Sexually Transmitted Diseases

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Sexually transmitted diseases are spread within identifiable regions of larger social networks. That is, sexual contact resulting in transmission of pathogens often occurs through links with a social as well as a sexual component. Hence, it is important to understand the structure of these larger social networks to develop more effective control programs. By analogy, valuable ore bodies are often found within distinctive geological structures. These are detectable precisely because a great deal is known about a broad range of more common structures (many of which contain no ore).

Some structural properties of a large social network consisting of over 6,000 persons (in Canberra, Australia) are discussed here. These include density, reachability, centrality, and distances (shortest graph-theoretic paths) between network nodes, including eccentricities (radius, diameter). The latter encompasses 'degrees of separation' in a real-world population. Also considered is social/economic position in relation to distances to others. These and other features of networks constitute a significant dimension of the environments that allow sexually transmitted pathogens to spread.

0727

Hormonal contraception, antiretroviral therapy and clinical trials: next steps

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In the era of highly active antiretroviral therapy, HIV-infected persons, including women, are living longer, healthier lives. As such, the issue of contraception for these women is now a relevant topic. This presentation will focus on what do we know or do not know about the interactions between contraceptives and antiretroviral drugs. For example some hormonal contraceptives increase or decrease the concentration of antiretrovirals and vice versa. What types of guidance can be given regarding use of contraceptives for HIV-infected women? The CDC has provided some guidelines, but other countries such as France have taken a different approach. What are some of the specific issues regarding contraception for participants in clinical trials? Depending upon the FDA criteria classification of the medication for risk to the fetus, women of child-bearing age may be excluded, required to use 2 forms of contraception, but in all cases must use some form of contraception if they engage in sexual activity. The differences between contraceptive choices and antireoviral therapy in developed as opposed to developing countries will be explored.

0728

Interventions aimed at sex workers in Cotonou, Benin (West Africa): ongoing decline of STDs over a decade

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At the meeting 'Phase-specific strategies for the control and elimination of STDs" (Rome, October 2000), we presented data on female sex workers (FSW) attending a confidential, specialised STD clinic set up by the SIDA-1/2/3 project (Canadian International Development Agency) in Cotonou, the largest city in Benin and a major port. Evaluation of time trends in STD/HIV prevalence from serial cross-sectional studies (1993, 1995/6 and 1998/9) demonstrated that HIV prevalence remained stable over time, whereas there was a highly significant decrease in syphilis and *Neisseria gonorrhoeae* (GC) prevalence, and a non-significant decrease in *Chlamydia trachomatis* (CT) prevalence.

Here we present further more recent data on STD/HIV prevalence in FSW in Cotonou, and, for purposes of comparison, baseline data on FSW from other cities in Benin, where the SIDA-3 project has recently started implementing interventions. We also discuss in more detail the situation in Cotonou, where STD/HIV prevalence and risk behaviour among FSW vary within the same city, according to type and location of prostitution venue.

Data from serial cross-sectional studies carried out in 2001 and 2002 indicate further declines in GC prevalence over time in FSW, from 20.5% in 1998/9 to 14.0% in 2002 (cf. 43.2% in 1993, $p<0.0001$, chi-square for trend). This is mirrored by a further increase in condom use rates with clients (mean percentage of condom use with clients during the last week), from 80.7% in 1998/9 to 97.1% in 2002, $p<0.0001$ (cf. 62.2% in 1993). HIV and CT prevalences have remained fairly stable over this time period (36.7% in 2002 cf. 40.6% in 1998/9 and 4.8% in 2002 cf. 5.1% in 1998/9, respectively). While, given the long incubation period of AIDS, a stable HIV prevalence may well indicate a decrease in incidence over time, the stable CT prevalence compared to the decrease in GC prevalence may indicate a phase-specific effect of the intervention. In contrast to GC infection, the differential between CT prevalence in high risk groups and the general population is very small in Cotonou, and CT may therefore be in a more endemic phase than GC, where transmission among the low-risk population may account for persistence, even in the presence of reduced transmission among high-risk groups.

Baseline GC prevalence in FSW recruited in three other smaller cities of Benin (March 2002), before implementation of interventions, was 31.0% while HIV prevalence was 49.6%, and CT prevalence, 8.0%. Both GC ($p=0.0007$) and HIV ($p=0.03$) prevalences were significantly higher in these smaller cities than in Cotonou at the same moment (2002), but similar to those found in the latter city in 1995/6 (HIV: 49.4%; GC: 30.7%; CT: 7.4%).

A study of male clients of FSW carried out in Cotonou in 1998 indicated significant heterogeneity in HIV/STD prevalence and sexual risk behaviour among men recruited at prostitution venues in different areas of Cotonou, particularly between Jonquet, a relatively affluent downtown area with a high concentration of larger prostitution bars and brothels, and more peripheral, generally poorer areas of the city, which have a more diffuse presence of smaller prostitution bars and brothels. Per sex act prices paid to FSW are significantly higher in Jonquet than in the peripheral areas of the city, and educational level of clients is significantly lower. In 2001 and 2002, data from FSW themselves were also differentiated by location of prostitution site, and show similar but even more striking differences than for the clients. Data from 2001 indicate that FSW outside Jonquet were older (median 36 vs. 27 years) and more frequently Ghanaian (57.1%), whereas the majority of FSW in Jonquet were Nigerian (61.4%); mean percentage of condom use with clients during the last week was 92.0% in Jonquet and 82.0% outside Jonquet; while HIV rates were 28% and 64.1%, and GC rates 9.0% and 24.5%, respectively.

Interestingly however, CT prevalence tended to be higher among FSW in Jonquet than outside Jonquet in 2002 (6.9% vs. 3.0%), increasing from 2.2% (p=0.08) in Jonquet in 2001. This may in part be related to a fairly dramatic decrease in age of FSW in Jonquet (median 22 in 2002 cf. 27 in 2001) and consequent increased susceptibility to CT infection, as well as possibly, as discussed above, a phase-specific effect of the interventions on GC vs CT prevalence.

The data presented above demonstrate the importance of carrying out detailed 'mapping' of STD/HIV rates and risk behaviour among FSW even within the same city, in terms of understanding the risk environment and targeting appropriate interventions where they are most needed and are likely to have the greatest effect. In addition, while our data indicate that appropriate interventions targeting FSW can have significant effects on both STD rates and sexual risk behaviour, much remains to be done, including intensification of interventions in areas where HIV and STD prevalence is highest.

0729

Male clients of female sex workers (FSW) in Cotonou, Benin (West Africa): contribution to the HIV epidemic and effect of targeted interventions

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At the meeting 'Phase-specific strategies for the control and elimination of STDs' (Rome, October 2000), we presented data showing that ongoing transmission of HIV in Cotonou, Benin, and also of the most predominant STDs including gonorrhoea, appears to be largely fuelled by transmission within core and bridging groups, and that exposure of low and high risk women to HIV and STDs through unprotected sex with male clients of FSW in Cotonou could account for most if not all of the estimated yearly numbers of HIV infections in women in this city. Mathematical modelling analyses using these data, also presented at the Rome meeting, indicated that in a context of concentrated epidemics such as that in Cotonou, interventions directed at female sex workers (FSW) and their clients could have a significant effect on HIV incidence and prevalence among the general population as well as among high risk groups themselves.

Major findings from these analyses were that at least 13% of the adult male population of Cotonou visit FSW per year and that the majority of these men have non-FSW regular partners (or wives); that HIV and GC prevalence were several-fold higher in this population than in the general population of men in Cotonou; that high risk sexual behaviour was common; that a high proportion of these men had had STIs and a very low proportion had taken effective treatment for their symptoms. Further analyses using additional data indicate that the proportion of adult men in Cotonou who visit FSW per year may in fact be as high as 30.1%, resulting in a population attributable risk of sexual exposure to FSW for HIV infection in men of 75.8%.

On the basis of these results, we developed targeted interventions simultaneously focusing on promotion of safer sexual behaviour as well as on health-seeking behaviour for STDs in this high-risk population of clients of FSW. Initiated in 2000 by the SIDA 2/3 project (Canadian International Development Agency), these interventions combine outreach activities by male peer educators with clients on-site at prostitution venues, including condom use demonstrations and distribution, with access to a confidential low-cost STD clinic for men, where syndromic STD diagnosis and treatment, leucocyte esterase dipstick (LED) screening for asymptomatic urethritis, as well as counselling on health-seeking and sexual behavior, are provided.

After one year of implementation, evaluation of the results of the intervention suggested that it had had at least a short-term impact on knowledge and behaviour among clients of FSW, and particularly on rates of correct condom use among this population. Among clients who had been directly exposed to the intervention in Cotonou, 65% were able to correctly demonstrate how to put a condom on a wooden penis, compared to 22% of clients who had not been exposed to the intervention (OR=6.7; p<0.001). Further evaluations of the intervention, involving serial cross-sectional studies with clients in 2001 and 2002, demonstrate increasing rates of condom use with FSW (from 55.8% in 1998 to 70.5% in 2002, p<0.0001, linear test for trend), stable HIV prevalence (8.1% in 2002 vs. 8.4% in 1998, p=0.85), and decreasing Neisseria gonorrhoeae (GC) prevalence (from 5.4% in 1998 to 2.0% in 2002, p<0.004), and particularly among clients at prostitution venues in peripheral areas of the city, where STD/HIV rates and levels of sexual risk behaviour were particularly high in 1998. In these areas, between 1998 and 2002, condom use rates with FSW increased from 26.9% to 66.8% (p<0.0001, linear test for trend), and GC prevalence declined from 9.3% to 1.9% (p<0.0001, linear test for trend).

These results demonstrate that it is possible to reach male clients of FSW for preventive and clinical services, and that such interventions can have a significant effect on sexual and health-seeking behaviour, and STI rates, among this population. Given the high proportion of men who have sex with FSW in Cotonou, and the importance of this bridging population in the dynamics of HIV transmission, such interventions should also have a positive effect on rates of HIV transmission within the general population in Cotonou.

0730

Proportion of HIV infections attributable to sexuall y transmitted diseases in Mwanza and Rakai - Results based on a simulation model

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Objectives: Estimate the true proportion of HIV infections which were attributable to STDs (PAF_t) in the Mwanza and Rakai trial populations and evaluate how the proportions changed over time.

Methods: The *STDSIM* model was used to simulate the Mwanza and Rakai trial populations. Differences between the populations included higher risky sexual behaviour and STD prevalences in Mwanza compared to Rakai at the time of the trials. HIV cofactor effects were removed from the default scenarios at the time of the trials. HIV incidence reductions between the default scenarios and the scenarios with cofactors removed were determined to estimate the PAF_ts for the effect of STDs. The effects of removing the cofactors were investigated 2, 10 and 20 years into the epidemics.

Results: In Mwanza, the highest PAF_t for the effect of any single STD was due to chancroid (43%). The PAF_t for all curable STD was 65% and that for all STD, including HSV-2 was 77%. In Rakai, HSV-2 was the most important STD (PAF_t=20%). The PAF_t for curable STD was 18% and the total PAF_t for all STDs was 38%. In both sites, reductions in new infections due to short duration STD decreased over time. In Mwanza, the reduction in the PAF_t was steepest for chancroid in the first 10 years of the epidemic. In Rakai, the relative importance of HSV-2 increased late in the epidemic. In both Mwanza and Rakai, transmission of HIV due to other STD decreased early in the epidemic. The proportion of acquired HIV infections due to STD was higher in Rakai than Mwanza late in the epidemic.

Conclusions: Efforts to control chancroid may have a large impact on HIV transmission in expanding HIV epidemics. Treatment of STDs is an important HIV prevention strategy in epidemics where STDs are highly prevalent. In more advanced epidemics where declines in risky sexual behaviours have taken place, STD treatment among adolescents may help prevent HIV acquisition in this vulnerable group.

0731

The impact of migration patterns of female sex workers on a slow spreading HIV epidemic: implicationfor prevention

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Introduction: At the meeting on "Phase-specific strategies for the prevention, control and elimination of sexually transmitted diseases", in Rome in 2001, Alary et al (1) and Boily et al (2) presented epidemiological and modelling results on the role of core groups in the transmission dynamics of HIV and STIs in Cotonou (Bénin) and the implications for prevention. Both analyses suggested that the spread of HIV in Cotonou depends heavily on female sex workers (FSW) and their clients. The diffusion of HIV to the low risk population seems to be limited by the high percentage of circumcised males and the sexual network structure, which appears to be very assortative. Results also suggest that the low intensity intervention, which began in 1993 and was targeted to CSW (SIDA1/2), could help explain the decline in HIV and STI prevalence among FSW from 1996. However, an important temporal trend in the distribution of the country of origin of the FSW population also took place during the same period (3). In 1993, only 1.9% of FSW were Beninese compared to 22% in 1998-1999. The remaining study participants were immigrants from surrounding countries (mostly Ghana, Nigeria and Togo) with different sexual behaviour and HIV and STI prevalence. The epidemiology of HIV and STI in this population is therefore influenced by the complex relationship between migration and the spread of these diseases.

Objectives and Methods: To assess 1) the impact of two different migration patterns of FSW on the spread of STI and HIV in Cotonou (Bénin) and 2) the impact of the two migration patterns on the effectiveness of FSW interventions (condom use between FSW and clients and Gc screening) at the different stages of the HIV epidemic. The analysis is based on the mathematical model of gonorrhoea (Gc) and HIV transmission described in Boily et al. (2). Each gender of the sexually active population is divided into a low and high activity class (FSW and clients). We define 2 migration patterns: The internal migration: FSW leave the high-risk group after an average duration of prostitution (Dp) and join the low activity class. Simultaneously, these FSW are replaced by an equivalent number of women from the low activity class who enter the high activity class.

The external migration: FSW leave after an average duration of prostitution (Dp) and are no longer a member of the resident population. They are replaced by non-resident high-risk "immigrants". Gc and HIV prevalence among immigrant FSW is allowed to vary. The estimated mean duration of prostitution in Cotonou is two years. Results: Internal migration: In absence of HIV, migration has a negligible impact on Gc prevalence because new FSW rapidly get infected with Gc. In absence of Gc, migration reduces the spread and the equilibrium prevalence of HIV because the infected FSW don't transmit HIV as efficiently once in the low-risk group. When both Gc and HIV are present the effect is somewhat different. As HIV spreads, migration limits the depletion of the high risk population due to AIDS differential morbidity and mortality. As a result, the decline in Gc prevalence over time is less pronounced in presence of migration. Despite the larger Gc prevalence, the initial spread of HIV in the low and high risk groups is slowed. With time, this transfer between risk groups limits the size of the HIV epidemic among FSW whereas it nearly doubles it among the low risk group. If migration starts late in the HIV epidemic (rather than at the beginning), HIV prevalence among FS drastically decline and continue to progress in the other risk groups.

External migration: 1) If Gc prevalence of immigrant FSW is similar than for the resident FSW. The initial spread of HIV can be considerably accelerated (slowed) if the HIV prevalence of the immigrant FSW is high (>25%) (low (< 5%)). Interestingly the size of the mature HIV epidemic is unaffected by migration. 2) If HIV prevalence of immigrant FSW is similar than for the resident FSW. The impact of migration on HIV prevalence is marginal even if no immigrant FSW is infected with Gc. Effectiveness of intervention: In presence of internal migration, FSW interventions are still more effective at an early stage of the HIV epidemic, than at a later stage. When introduced early, the effectiveness is somewhat lower with than without migration but it remains better for longer.

Conclusion: Our results highlight the importance of describing the pattern of CSW more precisely in order to interpret STI and HIV prevalence trends.

0732

Association of Mycoplasma genitalium with cervicitis and female urethritis

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Methods: From September 1995 through October 1997 445 consecutive women attending the STD-clinic in Falun, Sweden because of symptoms of STD or for a check-up were enrolled in this study. Samples for *M. genitalium*, *C. trachomatis* and *N. gonorrhoeae* were collected. Women co-infected with *N. gonorrhoeae* and/or *C. trachomatis* were excluded. Standardized interviews were performed. Samples from urethra, cervix and vagina were examined in microscope. Urethritis and cervicitis were defined as ^{3} 5 and ^{3} 30 PMNLs/hpf respectively.

Results: Of the 445 examined women, 136 had symptoms as well as microscopic signs of urethritis and/or cervicitis. *M. genitalium* was detected in 15 (11%) of those with symptoms or signs compared to 3 (2.2%) of the 139 women without symptoms or signs (P=

0.005). Microscopic signs of cervicitis but not of urethritis were seen in 30 of the women. Of these *M. genitalium* was detected in 4 (13.3%) compared to 6 (2.6%) of women without microscopic signs (P = 0.02). Microscopic signs of urethritis but not of cervicitis was seen in 129 women. Of these *M. genitalium* was detected in 11 (8.5%) compared to 6 (2.6%) of women without microscopic signs (P = 0.02).

Conclusion: *M. genitalium* is independently and significantly associated with cervicitis as well as urethritis among these female STD clinic attendees.

0733

Sexual transmission of Mycoplasma genitalium

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Objectives: Limited information is available about the important question as to whether *M. genitalium* is sexually transmitted. This encouraged us to perform following study.

Methods: Partner notification was performed in 53 index patients. Of the 38 male partners reported by 26 infected women, 26 men (68%) were examined for *M. genitalium* and 10 (38%) were positive.

Corresponding figures for the 22 (73%) of 30 female partners to 27 males infected with *M. genitalium* were 10 (45%) infected.

Of the 13 *M. genitalium* negative partners to *M. genitalium* positive women 6 (46%) had symptomatic urethritis and 10 (77%) had microscopic urethritis. Likewise 9 (82%) of the *M. genitalium* negative female partners to *M. genitalium* positive men had symptom and/or signs of cervicites/urethritis. Thus it can be considered that it least some of these partners were infected but "false" negative in test. Only one of these partners was infected with *C. trachomatis*, no one with *N. gonorrhoea*.

Conclusion: *M. genitalium* is sexually transmissible with transmission rates similar to those of *C. trachomatis*.

0734

Current Evidence on the Hiv-1 Epidemic in India and the Determinants of Infection

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Background: While it is certain that India's HIV-1 epidemic will increase, there remains considerable uncertainty about the importance of sexual networks and the determinants of infection. Currently prevalence is estimated at less than 1% of the adult (15-49) population, based on ANC data. Estimated prevalence is roughly double this figure in the Southern states of Andhra Pradesh, Goa, Karnataka, Maharashtra and Tamil Nadu, which together comprise over 75% of all prevalent infections, even though they have less than 30% of the adult population. There is marked and unexplained geographic variation in reported HIV-1 prevalence.

Objective: To assess the current evidence of HIV-1 transmission dynamics and the determinants of prevalent (and incident) HIV-1 infections in India.
Methods: • A comprehensive literature review of existing studies of HIV-1 prevalence in India. • A mathematical model was created to simulate the HIV-1 epidemic in India and in the Southern states to understand the dynamics of sexual transmission. • A quantitative meta-analysis of risk factors (sex work, no condom use, history of STI, male circumcision and alcohol use) was carried out to assess the pooled odds ratios and attributable fractions (AF).

Results: The preliminary evidence consistently reveals that vulnerable groups, chiefly sex workers and their clients are likely to be a major source of new infections. They may well account for 63% to 90% of new infections if multiplier transmission is included. Paid sex and history of genital ulcer disease appear to be the strongest risk factors for prevalent HIV-1 infection (AF= 71% and 48% respectively), although there are methodological problems with these studies. These indirect estimates require direct confirmation in epidemiological studies (which are forthcoming).

0735

Reflections on the Phase-Specific Model: Is there a Missing Phase?

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At the time the Phase Specific model developed by Wasserheit and Aral was published, and even at the time of the first Phase Specific Strategies meeting held in Rome, Italy in the fall of 2000, reported Syphilis in the United States was at an all time low. Substantial declines in reported P & S and congenital syphilis have continued, especially among the heterosexual and African American populations. In late 2000, reports of increases in syphilis among men who have sex with men (MSM) were being acknowledged, and since that time, fairly dramatic increases in syphilis among MSM have been observed in multiple cities in the U.S., as well as in Europe, the United Kingdom, and Australia. This phenomenon provides us an opportunity to examine aspects of the Phase Specific model, using a single pathogen (syphilis), apparently presenting at two different phases in distinct populations: Phase IV (declines in an endemic situation) and Phase I (early growth). Hindsight affords us an opportunity to reflect on various aspects of the model, to consider modifications, and the utility of various program interventions.

In the model, key events in disease patterns are described in a linear fashion, ending with Phase IV. Resurgence or re-introduction of disease in a particular population is an aspect neither specifically described in the model nor addressed in program interventions. For instance, in 1999, syphilis among MSM had been eliminated in many areas of the U.S. With reintroduction of syphilis into the MSM population, there is now clearly a growth spurt (Phase I), or perhaps a return to hyper-endemicity (Phase II). However, no new detection or treatment tools have been developed as described in the growth phase and new interventions have also been scarce.

Wasserheit and Aral suggest that epidemics are kindled and fueled by core groups with high rates of sex partner exchange, limited contact with the health care system, and lower educational and socioeconomic status. For the most part, syphilis among MSM has not involved those with limited contact with

the health care system or those with lower educational and socioeconomic status. In fact, just the opposite appears to be the case. For instance, in San Francisco, CA the majority of MSM with early syphilis are HIV positive, receiving medial care, and employed. The part of the model that does seem to apply is high rates of sex partner exchange.

Developing effective program interventions among a population, in this case a former core group, in which a disease has been virtually eliminated, is a problem that needs to be addressed. The phase specific approach suggests that program interventions should be emphasized differently in maintenance and spread networks. If the resurgence of syphilis among MSM is used as an example, many of the strategies targeting spread networks appear to either not apply or be ineffective. For example, outreach screening and treatment in venues where anonymous sex takes place has been of limited value and very few new syphilis infections identified. Reasons for this may include that the highest risk individuals opt out of testing, that riskier sex is taking place in other venues, or that overall syphilis rates are so low that it's searching for a "needle in a haystack". Given the relatively high proportion of HIV positive MSM in medical care, it seems that the outreach and screening of most value in this case may be to HIV care providers rather than to the spread network itself. In addition, with the advent of the use of the internet to meet sex partners, the concept of outreach takes on new meaning, requiring completely different interventions than those envisioned in the phase-specific approach.

In the absence of a vaccine for syphilis or any other STD, we think it would be useful to consider adding a phase to the phase specific approach or to describe some kind of "loop" from Phase IV to Phase I. In so doing, program interventions likely to be very different when virtually eliminated in one population (i.e. syphilis among MSM) can be incorporated into the model.

0736

STI/HIV surveillance in Ethiopia: national and regional perspective

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Background: STI and HIV/AIDS are among the major health problems in Ethiopia. Since the advent of AIDS in 1986 attempts to build a surveillance system for STI and HIV infection were made. Objectives: this analysis shows the achievements and drawbacks of the surveillance system, at national level and in two selected regions, and constitute the basis for future improvements.

Methods: documents were retrieved from the Ministry of Health, HIV/AIDS and other STDs prevention and control programme. HIV surveillance was based on sentinel seroprevalence studies conducted yearly at national level among pregnant women; whereas the AIDS surveillance is based on cases reported by hospitals using ELISA technique. STI data of the three consecutive projects (EU, AIDSCAP and MSF-Belgium) from 1991 to 2002 was analysed. The EU project (1989 – 1994) supported 41 health institutions to implement comprehensive management of STI in most regions, while the AIDSCAP (1995 –1997) assisted 20 health institutions, of which a few were included from the former EU project, concentrated in few regions of the country. After the phase out of the two projects, MSF Belgium is the major stakeholder assisting 38 institutions in Addis Ababa (capital city) and Tigray regions (fully operative from 2000). The surveillance system during the three periods was characterised by the introduction of syndromic reporting, while keeping some etiologic component. The flow of information was from the peripheral health institution to the regional office and then directed to the HIV/AIDS and other STDs prevention & control Team at central level. Analysis of the information was done only at central level during the first and second period, with the production of regular internal reports. In the third period analysis is also done at regional level.

Results: The first AIDS case was reported in Ethiopia in 1986. However the first evidence of HIV infection was found in 1984. Since then, a cumulative of more than 107,000 AIDS cases were notified and reported to the MOH. Ethiopia is classified among the countries in the state of generalised epidemic. Data on HIV seroprevalence are available for Addis Ababa from 1989 onwards and allow for a definition of trend. From a low of 4.6% in 1989 it rose to a pick of 21.2% in 1995 with a current value of 15.6% in 2001. A sentinel surveillance system was started in 1996 and it became fully operational in 2001 with 28 urban sites and 6 rural sites. It is an anonymous and unlinked test done among pregnant women aged 15-49. The results of the system show an average prevalence of 13.2 in urban sites and 2.3 in rural areas. The most affected are women in the age range 15-24. Statistics on AIDS cases are routinely collected and figures on age and sex distribution are provided. Collected information and other parameters and studies conducted in the country, are used to generate estimates of HIV infection, making projections of AIDS cases, mortality, life expectancy and orphans. A behavioural surveillance survey was conducted in collaboration with Family Health International in 2001 and will be replicated over the time. Results are available and provide the first cross sectional picture, though they cannot provide trends. In past years results of surveillance and studies on social and sexual networks on HIV/STI epidemiology were fragmented. Unprotected sexual transmission was accounted to more than 87% and female commercial sex workers have been shown to play a pivotal role in the spread of HIV in the early '90s. Between 1991 and 1993, 77294 consultations for STDs were recorded in EU-clinical sites with a male to female ratio of 1:1. Urethral discharge and vaginal discharge were the leading causes of consultation, among males (58%) and females (64%), respectively. The frequency of genital ulcer was 26% among the males in 15% among females. These first syndromic case reporting system proved to be efficient to set up basis for monitoring trends of STDs morbidity. Following that project, 20 AIDSCAP clinical sites collected a total of 35,971 STI cases (21,621 males and 14,352 females) (1996- 1997). Of all reported cases, vaginal discharge accounted for 33%, urethral discharge for 51%, genital ulcer for

10%, and lower abdominal pain for 2.5%. A total of 32568 STI cases were from MSF- assisted 38 health institutions in Addis Ababa and Tigray (2000-2002). The most recent survey to assess chemosensitvity pattern of N. gonorrhoea in Ethiopia was performed in 1996. Currently, the MoH in collaboration with CDC-Ethiopia (America) and EHNRI is validating the national guideline using syndromic approach in two regions of the country. Syphilis surveillance have been conducted over the last decade, but reports are not available to show the trend and impact of control interventions due to poor planning. Though surveillance is being done in parallel with the HIV sentinel surveillance system, there is no establish system to exploit this information.

Comments and perspective: an effective and modern surveillance system for STI is still not in place in Ethiopia. The poor allocation of budget to STI activities, poor phase out strategies of subsequent donor programmes, slow and incomplete introduction and establishment of syndromic reporting, poor health information system, and underreporting are among the major drawback. On the contrary, data collection of HIV/AIDS has developed to a much faster rate. The concept of second generation surveillance tools has been planned to be developed in the future. The expansion of HIV sentinel surveillance is given due emphasis currently (due to the fact that 85% of the population live in rural areas), that the rural sites become more represented (up to 34), whereas the urban will remain 29. In line with prevention and care of the HIV infection, the STI prevention and control of STI programme will get due emphasis in the whole country.

0737

KNOWLEDGE and ATTITUDES AMONG FAMILY PLANNING CLINIC

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Objective: Heterosexual transmission of the HIV has become a significant issue for women.The consistent and correct use of condoms can play an important role in the reduction and prevention of HIV/AIDS transmission.

Methods: A descriptive cross-sectional survey was carried out . knowledge and attitude about HIV/AIDS infection with particular emphasis on how the infection could be acqired and how the risk of its can be reduced were studied.A 37-item questionnaire was filled by trained questioner. Data was under taken in Ahwaz(center of Khuzestan,province of Iran)in 2002.Ninteen standard questions were used for knowledge assessment and eighteen qestions for assess of their attitude. 200 family planning Clients were randomly selected. Kind of contraceptive methods,age,gravida,level of education,knowledge related to role of condom in prevention of AIDS ,use of condom as contraception,use of condom as AIDS prevention,sources of information,use of condom with other methods of contraception,sources of information were varriables in this study.

Results: Nearly all of the clients had heard about HIV/AIDS .About two-third belived that newborn can be infected with HIV.82% of them knew condom can protect against AIDS.40% . of clients were used condom as contraception.none of them used condom as HIV prevention.About 50% of all clients belived that they cant use condom with ocp and about 75%belived that use of condom and IUD with together isnt possible .none of the IUD users and OCP users were used condom with their contraceptive methods.

Counclusion: Little open discussion of the disease,cultural barriers of condom use by men low education about the disease and role of condom were essential barriers for condom use and fight against AIDS.

0738

KNOWLEDGE about HIV/AIDS INFECTION AMONG WOMEN and MEN

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Objective: Due to HIV/AIDS has become a serious public health crisis we aimed To determine the level of awareness about HIV/AIDS among barbers.

Methods:In a discriptive study all of the barbers(men and women) in Shahr-e-Kord(a city in Isfahan,province of Iran)were studied.Two groups were compared about level of awareness about AIDS.Interview and filling a questionnaire by trained questioner were instruments for data collection. Age,marital status,level of education,ways of transmission and prevention,high risk groups of disease were essential variable in present study.

Results:Mean age of them was 29.7 years.Level of education was less than high school in 40.7% of them.50.4% of them participated in AIDS educated programs.Majority of barbers believed that disease can transmitted(98.6%).15.6% believed the disease is curable.56% knew one way of transmission and 84.6% were awared that their job and their clients are at risk for this disease.About 80% knew high risk groups of disease.After adjusted for variables,there was no significant relation between two groups,however level of knowledge was higher in men barbers.

Conclusion: In spite of the fact that most respondents have heard of HIV but the quality of their knowledge was low.There is a need for better education efforts on the modes of transmission and prevention of HIV.

0739

Changing Patterns of STD in Botswana, 1993-2002

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Objectives: A study was conducted in Botswana in 2002 to determine the prevalence of STD among STD and family planning (FP) patients, and compare the current STD prevalence with rates from previous surveys.

Methods: Tests included: *Chlamydia trachomatis* (CT) *and Neisseria gonorrhoeae (*NG) -urine LCR; syphilis -RPR/TPHA; HIV - two ELISA, and *Trichomonas vaginalis* (TV) -culture; among genital ulcer specimens (GU) *Treponema pallidum*, HSV, and *Haemophilis ducrey* - multiplex PCR. Findings were compared with a 1993 survey among STD and FP patients, which tested for: CT, NG and TV - culture; syphilis - RPR/TPHA, and HIV - ELISA; and for GU specimens: *T. pallidum* – darkfield; *H. ducreyi* and HSV - culture.

Results: In 2002, 288 women and 199 men participated, while 102 women and 107 men participated in 1993. Among men with urethritis, HIV prevalence for 1993 and 2002 were 27% and 62%; NG, 63% and 59%; CT, 5% and 19%; and syphilis sero-prevalence, 41% and 3%, respectively. Among FP women, HIV prevalence for 1993 and 2002 were 17% and 43%; NG, 7% and 3%; CT, 20% and 12%; TV, 17% and 7%; and syphilis sero-preva-

lence, 18% and 2%. The proportion of GU due to HSV increased from 24% to 60%, and chancroid decreased from 26% to 1% in 1993 and 2002, respectively. Although the proportion of syphilis GU was similar in 1993 (1%) and 2002 (2%), syphilis sero-prevalence decreased from 56% to 3% among GU patients. HIV among GU patients increased from 40% in 1993 to 75% in 2002.

Conclusions: Despite differences in laboratory methodology, findings suggest a decrease in syphilis sero-prevalence and chancroid and an increase in herpes during 1993-2002. Contributing factors for these changes include: implementation of syndromic management since 1992 that may have impacted bacterial infections, and the evolving HIV epidemic that has contributed to increases in symptomatic herpes.

0740

Estimating the size and overlap of populations with high rates of new sexual partner acquisition and injecting drug use

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Background : The Priorities for Local AIDS Control Efforts (PLACE) method uses epideimiologic and contextual information to identify areas where HIV incidence is likely to be high and to monitor individual behavior and AIDS prevention programs in those areas. Almaty, Kazakhstan has been identified as an area likely to have pockets of high HIV incidence, given available information on the commercial sex and injecting drug user epidemics in the city. The purpose of this study was to identify sites in Almaty where people – particularly youth— meet new sexual partners, where commercial sex is practiced, and where injecting drug users can be reached and obtain the characteristics of these groups, including the size of the group and extent to which there is overlap in group membership.

Methods: Key informants and focus group participants identified sites in Almaty where people meet new sexual partners and sites where drug injectors can be found. Sites were visited, mapped using GIS, and characterized regarding the type of site, where commercial sex workers solicit at the site, whether people meet new sexual partners at the site, and whether injection drug users can be found at the site. Individuals at a sample of sites were interviewed to estimate rates of new partner acquisition, commercial sex, and injection drug use, and identify patterns of partnership formation.

Results: All field work was completed in two months. Field staff interviewed 1200 community informants throughout the city and held focus groups with teachers, commerical sex workers, injection drug users, and others. A total of 857 sites in Almaty were identified and characterized. Additional information was obtained from site visits to 439 sites where further information could be obtained by interviewing someone onsite (i.e., not rooftops or stairwells). A fourth of the sites were bars, cafes or restaurants. Another one fourth were streets or abandoned yards. Among the 1109 men interviewed socializing at sites, 13% reported injecting drugs, 24% reported visiting a sex worker in the past three months, and 55% were aged 18-25. The extent of overlap was substantial: 21% shared two or more of these characteristics and 43% of all men reported having a new sexual partner in the past 4 weeks, including over a fourth of the injecting drug users. Injection drug use among women was much less common (2%) but a third reported at least one new partner in the past 4 weeks and 21% reported receiving money in exchange for sex. Based on the proportion of the respondents who reported being registered as an injection drug user, we estimate that there are 23,000-34,000 injecting drug users in the city.

Conclusion: This study found substantial overlap in risk behaviors in this city and provided an estimate of the size of the risk populations. Overlapping risk groups suggests a pathway for the virus to spread between groups.

0741

Heterogeneity in the distribution and determinants of reported STIs and GUM clinic attendance in Britain

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Background: In Britain, marked variations exist in the distribution of sexually transmitted infections (STIs). We examined reported STIs, attendance to Genitourinary Medicine (GUM) clinics, and their associated factors, in a nationally representative survey of sexual attitudes and lifestyles in Britain.

Methods: We used data from two stratified probability sample surveys, the British National Surveys of Sexual Attitudes and Lifestyles (Natsal), undertaken in 1990 and 2000. Data from 11,161 men and women aged 16-44 years interviewed in Natsal 2000 were compared with 13,765 men and women aged 16-44 years from Natsal 1990. Both surveys obtained information on GUM clinic attendance. In Natsal 2000 items on the timing and location of treatment of diagnosed STIs and GUM clinic attendance were also recorded.

Results: Between 1990 and 2000, the proportion of individuals who attended a GUM clinic in the past 5 years, rose from 4.3% to 7.6% in men (adjusted odds ratio for 2000 as compared to 1990, 1.62 95% confidence interval 1.51-2.21) and from 3.3% to 6.6% in women (adjusted OR 1.86, 95% CI 1.53-2.25). This trend was observed across a range of demographic and behavioural variables. 3.0% of men and 4.0% of women reported being diagnosed with an STI in the past 5 years. STI acquisition was independently associated with increasing numbers of sexual partners, age and reporting sexual partners from other countries (women only). Marked heterogeneity in the population distribution of reported STIs were confirmed by gender, area of residence and reported sexual partnerships. 68.5% of men and 41.6% of women reporting 5 or more partners in the past 5 years were diagnosed with an STI during this time.

Conclusions: Between 1990 and 2000, there have been substantial increases in GUM clinic attendance, across all sectors of the British population. Sexual behaviour remains the most important determinant of STI acquisition risk. Risk reduction strategies, including reduction in rates of partner change, must continue to be part of STI prevention campaigns.

0742

HIV Drug Resistance Testing

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Potent antiretroviral drugs are available for treatment of HIV-infection. Most of these drugs target the HIV-1 enzymes, protease and reverse transcriptase. The first HIV-1 fusion inhibitor, which targets the HIV-1 transmembrane protein, was approved by the U.S. FDA this year. Unfortunately, mutations in these viral proteins can cause resistance to antiretroviral drugs, limiting their use. The

prevalence of HIV-1 drug resistance continues to rise, and transmission of drug-resistant HIV-1 is also a growing problem. The U.S. Dept. of Health and Human Services, as well as other international agencies, recommends drug resistance testing as part of the routine management of patients with HIV-1 infection.

There are two commonly used approaches for HIV-1 drug resistance testing: genotyping and phenotyping. Genotyping assays are based on sequencing the relevant portions of the HIV-1 genome to detect drug resistance mutations. Currently available assays are designed for analysis of HIV-1 protease and reverse transcriptase. FDA-approved assay systems, such the ViroSeq HIV-1 Genotyping System, are available for laboratories wishing to do in-house testing. Genotyping assays are faster and less expensive than phenotyping assays, and are more sensitive for detecting emerging resistance. However, interpretation of drug-resistance mutations may be complex, and expert guidance is often recommended. The Virtual Phenotype, available from Tibotec-VIRCO, provides a computer-driven genotype interpretation that is derived from an extensive genotype-phenotype correlative data-base. Phenotyping assays, are offered by commercial companies (Tibotec-VIRCO, ViroLogic, and Viralliance). Those assays are based on production of recombinant viruses that express protease and reverse transcriptase proteins from a patient's HIV-1. Replication of the recombinant viruses is measured in cell culture in the presence of different concentrations of antiretroviral drugs, providing a direct measurement of drug susceptibility. Interpretation of phenotyping assays is more direct than genotyping assays, but is influenced by cut-offs used to define reduced susceptibility. Cut-offs can be determined by assay variability, biologic variability, or clinical data.

Data from genotyping and phenotyping assays should be considered complimentary. In certain settings (e.g. management of highly experienced patients), it may be desirable to obtain results from both assays. New testing approaches that may help manage patients with HIV-1 drug resistance include measurement of viral replication capacity (fitness assays) and combining viral resistance testing with therapeutic drug monitoring.

0743

Hormonal Contraceptives and Progression of HIV Disease

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The vast majority of HIV-infected women are of reproductive age and thus require access to safe and reliable contraception. Steroid hormonal contraceptive methods may effect progression of HIV disease either directly through an interaction with the virus itself or indirectly through effects on the immune system. In addition, combined oral contraceptive (COC) and depomedroxyprogesterone acetate (DMPA) may increase HIV genital tract shedding thereby causing increased sexual transmission. In 2000 the WHO initiated a study in Nairobi, Harare and Bangkok to determine the effect of hormonal contraception on the natural history of HIV-infection. As of the middle of 2002 a total of 395 HIV-infected women with an initial CD4 count ≥ 500 cells/µl had been recruited, 25% of whom initially used COCs, 42% DMPA, 5% Norplant and the remaining 28% non-hormonal contraception.

Preliminary assessment of the rates of CD4 cell decline showed a higher rate in Harare (mean annual loss of 102 [standard deviation, SD, 244] cells/µl) than in Nairobi (mean annual loss of 55 [SD 283] cells/µl). Recruitment into the cohort will continue through 2003 and follow-up will continue for enrolled women for at least four years. The study is estimated to have 80% power to demonstrate two-fold differences in the rates of CD4 cell decline between COC and non-hormonal users, as well as between DMPA and non-hormonal users.

0744

Eliminating endemic bacterial STIs: We need new tactics

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Background: Classical STD control strategies include education, contact tracing, diagnosis and treatment, screening and prevention. These are supported by tactics such as surveillance, behavior change, media campaigns, school sex education and condom promotion. Recently, our STD knowledge base has expanded and we have witnessed improvements in public awareness, laboratory testing, treatment, condom usage and prevention. In rich countries, most bacterial STDs have stabilized at endemic (Phase IV) levels but have not been eliminated. Syphilis elimination successes have often been temporary. The classical STD control strategies and tactics have achieved the goal of 'control'. For STI elimination, a new tactical paradigm is needed.

Methods: A comparison of progress in STD control in British Columbia with the estimated incidence of bacterial STDs and a discussion of possible component strategies in a new tactical paradigm for bacterial STI elimination.

Results: BC has benefited from a well resourced and strongly supported STD control program during the last 20 years. STD rates have stabilized at Phase IV endemic levels but have not been eliminated. New tactical measures for elimination may include social networking, mass treatment, rapid testing, paid-peer interventions, prophylaxis, client-initiated partner treatment, expanded empirical treatment, patient self sampling, incentives, internet interventions, geographic information systems, molecular epidemiology, harm reduction, mathematical modeling and research as an intervention tool.

Conclusion: The general strategies needed to eliminate bacterial STIs are the same strategies that were successful in controlling STDs - education, contact tracing, diagnosis and treatment, screening and prevention. However, elimination will require a new tactical paradigm. In its early stages, this new paradigm will be most relevant for bacterial STIs and for rich countries. However, there will be important implications for non-bacterial STIs and for poor countries.

0745

Hormonal Contraception and the Risk of HIV-1 Acquisition

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Objective: To measure the effect of combined oral contraceptive (COC) and depot-medroxyprogesterone acetate (DMPA) use on the risk of HIV-1 acquisition among women.

Methods: We designed a longitudinal cohort study of HIV-negative women in Thailand, Uganda, and Zimbabwe to compare HIV-1 incidence rates among women using COCs, DMPA, and women not using hormonal contraception (HC). Participants are followed at 3-month intervals for a maximum of 24 months. At each visit participants undergo a pelvic examination, are tested for HIV and other sexually transmitted infections, and complete an interviewer-administered behavioral and contraceptive history questionnaire. The study is designed to detect a 2-fold effect of HC use on HIV-1 incidence with 90% power.

Results: From 11/1999 to 9/2002, we enrolled 6,175 HIV-uninfected women into the study including 2,113 COC users, 2,135 DMPA users and 1,927 women not using hormonal methods. Through 10/02 overall study follow-up is 84% with 92%, 82% and 78% follow-up rates in Thailand, Uganda, and Zimbabwe, respectively. To date there have been 150 incident HIV-1 infections for an overall incidence rate of 1.7 per 100 woman-years (Thailand 0.1 per 100wy, Uganda 1.5 per 100wy, Zimbabwe 3.6 per 100wy). Data collection will be completed in late 2003.

Conclusions: While a randomized controlled trial would provide the most rigorous design to test our hypothesis, we instead chose a prospective cohort design where women select their contraceptive method of choice. This reduces adherence issues, and minimizes ethical issues resulting from randomizing women to a method with decreased contraceptive efficacy. We reduced biases by enrolling nearly equal groups of women in each country who use COC, DMPA, and non-hormonal methods, and by collecting detailed information on potential confounding factors. This study will provide critical information regarding the relationship between HC use and HIV-1 acquisition.

Support: The National Institute of Child Health and Human Development (NICHD) Contract N01-HD-0-3310 supports this study.

0746

Rising Incident HIV Infections Among Men Who Have Sex with Men: The Malignant Echo of Resurgent Unsafe Sex and STDs

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Objectives: As in many cities in most industrialized countries, since the mid-1990s reported syphilis and other STDs and the frequencies of unsafe sexual behaviors have risen sharply among men who have sex with men (MSM) in King County, Washington. It has been uncertain whether incident HIV infections also are rising. We assessed indicators of incident HIV infection among MSM at risk.

Methods: We analyzed data on MSM who underwent HIV testing at the STD Clinic or public health HIV assessment clinics since 1995 and compared the results with reported syphilis, gonorrhea, and chlamydial infection and with sexual behavior trends.

Results: HIV seroprevalences in MSM who had never been tested or who previously were seronegative were 175/6614 (2.6%) in 1999-2001, 74/2533 (2.9%) in 2002, and 45/1153 (3.9%) in Jan-May 2003 (P = 0.03). Among MSM found to be HIV-negative and subsequently retested, the proportion of newly seropositive men rose steadily from 13/1760 (0.7%) in 1997 to 34/1564 (2.2%) in 2002. From 1997 to 2000, 72 (19.7%) of 365 HIV-positive MSM had negative lower-sensitivity enzyme immunoassay results, suggesting recently acquired infection; this proportion rose to 24 (39%) of 62 men in 2001 and 39 (44%) of 88 men in 2002 (P<0.001). Rates of syphilis, gonorrhea, and chlamydial infection in MSM, which started to rise in 1997, continued to increase steadily through May 2003. During the same period, there were progressive increases in several indices of unsafe behaviors among MSM, such as unprotected anal intercourse. Among 202 MSM who knew themselves to be HIV-positive and who attended the STD Clinic from October 2001 to March 2003, 88 (43%) acknowledged unprotected anal intercourse with partners of negative or unknown HIV status in the preceding year.

Conclusions: Incident HIV infections are rising among MSM, in parallel with adverse trends in sexual safety and STD rates. Traditional prevention strategies are inadequate; new approaches are urgently needed.

0747

Acceptability and effectiveness of self-referral for male patients with urethral discharge attended in a specialized STD clinic in Shandong Province, People¡¯s Republic of China

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Background: Although partner notification has long been considered as an important component in STD control programs and implemented in both developed and developing world, little information is known on the acceptability and efficacy of partner notification in China.

Objectives: To assess the acceptability and outcome of self-referral for male patients with urethral discharge and to identify the characteristics associated with successful partner notification based on a specialize d STD clinic.

Methods: From October 2001 to October 2002, 730 patients with confirmed urethral discharge were selected and asked by STD clinicians to bring their sexual contacts to treatment in a specialized STD clinic. The demographic and sexual characteristics of returned and unreturned index patients were analyzed. Univariate and multivariate analy-

ses were applied to identify the characteristics associated with the outcome of self-referral.

Results: Out of 723 eligible index patients, 294 (40.7%) who returned for follow-up identified 534 sexual partners and 429 (59.3%) who did not return for follow-up identified 759 sexual partners. Of the total named 1293 sexual partners, 301 (23.3%) were notified by index male patients and 265 (20.5%) presented at clinic. Of the 265 partners tested, 165 (62.3%) were infected with either gonorrhoea or chlamydia or both, of them 78 (47.3%) were asymptomatic. When the partnerships were married and steady, the informed rate was higher than that when the partnership was casual. Especially for the commercial sexual partnership, only 1.8% of the partners were informed. In multivariate analysis, a prior STD history and condom use in the last sexual contact were associated with successful outcome of notification.

Conclusion: Patient referral was accepted both by STD clinic attendees and STD clinicians. Although the self'Creferral approach is believed to be an effective strategy to reach individuals at higher risk for STD, the outcome showed in this study is far more satisfying. There is a need for future study to improve the efficacy.

0748

Liposome-encapsulation of the internal control for whole process quality assurance of Chlamydia trachomatis nucleic acid amplification-based analysis

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Few of the nucleic acid amplification-based assays have internal controls included for quality assurance of the crucial specimen preparation procedures. We have developed a system intended for whole process quality assurance of nucleic acid amplification assays based on the use of liposomes as cell-mimicking vehicles for the internal control, allowing introduction of the internal control directly into the crude biological specimens. By the proof of principle testing, the Roche Cobas Amplicor® CT assay was chosen as model system and the Roche CT/NG Internal Control was thus loaded into the liposomes. The liposome/DNA particles were spiked into a Chlamydia trachomatis-positive urine specimen. The results showed that the liposome/DNA particles might be used for whole process quality assurance of Amplicor® assay without major modifications of the assay protocol. A quantitative "in-house" duplex real-time C. trachomatis PCR assay showed that liposomes having Blue Dextran 2000 polysaccharide co-entrapped, were the most suited particles. By use of these liposomes the pellet became coloured and that facilitated a thorough and safe removal of the urine supernatant. Principally, the liposome/internal control system is versatile and seems to be applicable for whole process quality control of amplification-based assays for detection of various pathogens.

0749

ROADMAP FOR HIV VACCINE: MOBILIZING INNATE AND ADAPTIVE MUCOSAL IMMUNITY to PROTECT AGAINST HIV and STIs

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The innate immune system is the first line of defense against infectious pathogens and plays a critical role in directing the subsequent adaptive immune responses. The recent discovery and characterization of the Toll-like receptor (TLR) family has provided insight into how the innate immune system recognizes and rapidly responds to infection. The strategy of innate immune recognition is based on detection of highly conserved and essential structures present in many types of microorganisms and absent from host cells. Here we will discuss how one may exploit activation of innate immunity, especially at mucosal surfaces, to enhance protection against sexually-transmitted infections.

For example, CpG oligodeoxynucleotides (ODNs) acts via TLR9 to activate innate immunity and can serve as a potent vaccine adjuvant, particularly for mucosal vaccination. Indeed, our studies demonstrated that intranasal (i.n.) immunization of mice with recombinant herpes simplex virus (HSV) glycoprotein B (rgB) plus CpG ODN resulted in protection against intravaginal (IVAG) HSV-2 challenge. This protection was accompanied by significantly elevated levels of anti-gB IgA in vaginal washes that persisted throughout the estrous cycle, increased numbers of specific antibody secreting cells (ASC) and strong CTL responses in the genital tract. More recently, we showed that mice immunized mucosally with inactivated gp120-depleted HIV-1 plus CpG were significantly protected against IVAG challenge and this protection was cross-reactive against various clades of HIV-1. Interestingly, direct delivery of CpG ODN alone to the genital mucosa protects against genital HSV-2 infection. This protection was associated with rapid thickening and proliferation of the genial mucosa and induction of a novel innate antiviral state, which inhibited replication but not entry of virus into vaginal epithelial cells. Together, these results support the concept that use of activators of innate immune responses can serve as potent vaccine adjuvants or act alone to directly protect against sexually-transmitted infections, such as HSV-2 or HIV-1.

0750

Sex Work In The Former Soviet Union: Responses To Societal Collapse

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Objectives: To describe the social organizational and spatial patterns, and quantifiable parameters of sex work and its embeddedness within Russian society at the beginning of the 21st century.

Methods: Four qualitative data collection methods were used: semi structured telephone interviews; semi structured face-to-face individual and group interviews with key informants, systematic and unobtrusive naturalistic observations and geomapping.

Results: Identifiable categories of sex work (SW) include hotel SW, brothel SW, street SW, truck stop SW, railway SW, and intermittent SW; the last three categories mentioned may be the most important in the dissemination of STI. Identifiable positions in the social organization of SW include pimps, assistant pimps, guards, drivers, "indicators" and "pluckers." The factor limiting the number of SW-client contacts may be the social organization of SW.

Conclusions: Sex markets have great potential for disseminating STI; social, political, economic disruption tend to enhance sex markets. Improved understanding of STI spread necessitates better description of sex markets, their determinants and consequences.

0751

Bathhouse Policy During Epidemics of HIV and Syphilis

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Outbreaks of syphilis in men who have sex with men (MSM) are now occurring in several U.S. cities. As these men have a high prevalence of HIV infection, these outbreaks are probably spurring a resurgence in HIV transmission in MSM. Data from several cities suggest that a substantial proportion of the transmission of syphilis may be taking place in gay bathhouses. Bathhouses facilitate anonymous sex with multiple partners, and in bathhouses men routinely have unprotected oral sex and often have unprotected anal sex. After attempts to close bathhouses in the mid-1980s were blocked or limited by owners and community activists, in most cities bathhouses have been regulated lightly or not at all. The community risks posed by bathhouses suggest that research should be done on the effect of bathhouses and bathhouse closure on the sexual behavior of individual men and on sexual networks of MSM, and that in the current epidemics bathhouses should be either closed or tightly regulated. Research and policy changes regarding bathhouses are hampered by political pressures of various types and a general approach to the HIV epidemic which rejects any government enforcement role, even if the enforcement is directed at organizations rather than individuals. The interplay among policy, politics, and public health in this issue will be discussed.

0755

ASSOCIATION BETWEEN The INTACT FORESKIN and INFERIOR STANDARDS OF GENITAL HYGIENE BEHAVIOUR: A CROSS-SECTIONAL STUDY.

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Objective: To determine whether genital hygiene behaviour differs between circumcised and uncircumcised men attending a UK STI clinic.

Methods: 150 uncircumcised and 75 circumcised consecutive male attenders were enrolled into a cross-sectional study. A clinic physician performed a genital examination and administered a questionnaire through direct interview. Information was collected about demographics, sexual behaviour, genital washing habits and circumcision status.

Results: Subjects originated from, UK, other Europe or Australasia 163 (72%), Africa 27 (12%), India/ Pakistan 17 (8%) West Indies 6 (3%), other 12 (5%). The majority 210 (93%) were heterosexual. Ninety-one (40%) had no complaint and 59 (26%) had urethral discharge/dysuria. The frequencies of penile washing among the circumcised (uncircumcised) men were, more than once a day 37% (19%), daily 51% (69%), 4-6 times per week 8% (5%), 1-3 times per week 4% (7%). Washing the whole penis, including retracting the foreskin in uncircumcised men, every time they washed was more common in circumcised than uncircumcised men (96% versus 74%, $p<0.001$), as was washing the whole penis either every time or almost every time they washed (99% versus 89%, $p=0.008$). The majority (91%) washed with soap/shower gel and water. Neither school-leaving age, private washing facilities, number of sexual partners in the last three months, recent condom use, knowledge of circumcision status, penile skin abrasions or STI diagnosis were associated with circumcision status.

Conclusion: A significant proportion of uncircumcised men do not always retract the foreskin when washing the genital area. Studies investigating the relationship between circumcision status and HIV infection should investigate poor hygiene as a potential confounder or effect modifier.

0756

GENETIC RECOMBINATION : A MECHANISM FOR GENERATION OF HETEROGENEITY IN THE tprK GENE of Treponema pallidum DURING INFECTION

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The tprK gene sequence of Treponema pallidum subspecies pallidum (T. pallidum) is heterogeneous within and among isolates. Heterogeneity in the tprK ORF is localized in seven discrete variable regions (VRs), and variability is due to base changes, insertions, or deletions. In this study we describe the sequence anatomy of the seven VRs of tprK, and the identification of putative donor sites for new VR sequences. We propose a model for generation of new VR by segmental gene conversion and possible site-specific recombination.

To test our hypothesis that VR sequences change during infection and passage, we developed a clonal isolate from the Chicago strain of T. pallidum, and confirmed V region diversification during passage of this isolate. Our model can be used to explain the sequence changes that we identified in this isolate during passage, and allows for the development of a vast number of possible new sequences. The finding by Morgan et al that the VRs are the focus of anti-TprK antibodies arising during infection suggests that this antigenic variation of Tprk is important in immune evasion and persistence.

0757

Clinical Implications for Molecular Diagnostics for bacterial STDs.

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Molecular diagnostics have been shown to be significantly more sensitive at detecting both Chlamydia trachomatis and Neisseria gonorrhoeae compared to culture. Despite the improvements in sensitivity for both STD diagnostic and population screening programs, widespread incorporation of molecular tests for these bacterial pathogens has not yet been fulfilled. The clinical implications of routine use of such molecular diagnostic tests warrants consideration. For molecular diagnostics using urine for C.trachomatis there is a lack of awareness that false negative test results can occur depending on how the urine is transported. Furthermore, as molecular diagnostics for N.gonorrhoeae and C.trachomatis become more mainstream consideration to various aspects of the following issues will be needed. i) public health contact tracing and screening, ii) detection of antibiotic resistance iii) epidemiologic monitoring (e.g. spread of specific strains) Currently N.gonorrhoeae isolates obtained from culture are tested to determine antibiotic susceptibility patterns. Once molecular testing becomes the norm, availability of isolates for susceptibility testing and epidemiologic tracing will become problematic. Future areas of focus need to include; proper specimen collection/transport for molecular testing with awareness of test limitations and stringent internal controls needed to reduce false negative/positive reactions, realistic cost rationalization, molecular methods to evaluate antibiotic susceptibility/resistance and population screening algorithms that include epidemiologic monitoring that allows strain discrimination.

0758

RAPID STI DIAGNOSTICS and THEIR ROLE in RESOURCE-CONSTRAINED SETTINGS

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Rapid simple diagnostics play an important role in the control and management of sexually transmitted infections (STIs) for two major reasons. First, many STIs cause little or no symptoms but untreated infection can lead to serious reproductive complications and adverse outcomes of pregnancy. Secondly, in areas of world with limited access to laboratory diagnosis, syndromic management of patients presenting with symptoms of vaginal discharge has not worked as well as expected. In consultation with STI programme managers in resource-constrained settings, SDI has identified three STIs for which the development, evaluation and application of rapid diagnostics are an urgent priority: syphilis, chlamydia and gonorrhea. Rapid tests for syphilis are needed for screening of pregnant women to prevent congenital syphilis, and for screening men and women at high risk of infection. SDI has recently completed a laboratory-based evaluation of 6 simple rapid treponemal tests for syphilis at 8 sites in geographically diverse locations using archived sera. Compared to reference standard tests such as TPHA, the test sensitivities and specificities range from 85-98% and 93-98% respectively. Four of these tests are currently undergoing further evaluation at 6 field sites for test performance using whole blood, as well as for acceptability and sustainability of use in primary health care settings for the screening of women presenting for prenatal care and of men and women at high risk of infection. Rapid diagnostics for chlamydia and gonorrhea are commercially available but costly. Evaluation of several rapid tests for chlamydia and gonorrhea are ongoing to determine their performance in screening for asymptomatic infection, and their cost-effectiveness as an adjunct to syndromic management of women presenting with vaginal discharge.

0759

THE SYNDROMIC MANAGEMENT of GENITAL DISCHARGE and GENITAL ULCER DISEASES

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Role of syndromic STI case diagnosis and management The use of syndromic approach for managing sexually transmitted infections (STI) has been recommended and promoted by WHO since 1978. The approach enables patients to be managed in a single visit, mainly at primary health care level. It is a tool intended for patients complaining of symptoms of STI.

The syndrome of genital discharge A number of field evaluations have shown that syndromic case management is of real value in urethritis in men. When used to diagnose and treat gonorrhoea and chlamydial infections the flowchart has a high validity (high sensitivity and positive predictive values) and a good cost-effectiveness profile. However, in women the syndrome of abnormal vaginal discharge is poorly predictive for cervical gonococcal and chlamydial infections. In some settings this has resulted in high levels of overdiagnosis and overtreatment for gonorrhoea and chlamydia.

What are the choices for vaginal discharge? In low STI prevalence settings the choice is whether to treat for gonorrhoea and chlamydia and risk overtreatment or not to treat at all. In high prevalence settings there are not many choices but to treat every woman who presents with an abnormal vaginal discharge for gonorrhoea and chlamydia. The question is where the cut-off point is between a high and a low prevalence setting.

Options based on prevalence of cervical infection - a decision tree Tools are being developed to rationalize utilization of the flowcharts for vaginal discharge in different prevalence settings. One such activity is the development of a decision tree that will assist programme managers and policy makers to rationalize the use of the vaginal discharge flowchart based on STI prevalence and cost per true case treated.

The syndrome of genital ulcer disease Up until recently the syndrome of genital ulcer disease (GUD) has been adequately addressed by the syndromic approach to diagnosis and management. However, recent reports from parts of Africa, Asia and Latin America have indicated that GUD is more frequently a result of HSV2 infections and chancroid is

becoming less prevalent in settings where interventions against H. ducreyi infection have been intensified. This has implications for the effectiveness of the syndromic management of GUD if specific antiviral treatment of HSV-2 is not considered.

What is being done by WHO? Rapid STI diagnostic tests WHO is working on the evaluation of existing rapid diagnostic tests to determine their utility in syndromic management of STI. Tools for adaptation Work is in progress to develop tools to assist programme managers make decisions on approaches to STI case management.

0760

Comparison of Western Blot and ELISA for the serological diagnosis of HSV-1 and 2.

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Objective: Sera from asymptomatic partners of HSV-2-positive patients or suspected of genital herpes were concomitantly tested for HSV-1 or HSV-2 using both a Western Blot (WB) and an ELISA procedures.

Methods: WB was performed using HSV-1 or HSV-2 virus lysates while the HerpeSelect HSV-1 and HSV-2 kits (Focus Technologies) using recombinant gG1 and gG2 respectively, were used for the ELISA testing.

Results: 30 patients were included in the study. When the WB is taken as the gold standard, the Focus assay shows: For HSV-2, a sensitivity of 93% and a specificity of 79%; For HSV-1, a sensitivity of 93% and a specificity of 80%. In the case of HSV-2 testing with the ELISA, the only "false-negative" case was strongly positive for HSV-1; since the WB procedure did not include a HSV-1 pre-absorption step this result should be interpreted with caution. The "false-negative" case of HSV-1 was borderline (Index of 0.8). The 5 "false-positive" cases (2 HSV-1 and 3 HSV-2) were all in the index range of 1.1-2.1. As the Focus HerpeSelect ELISA was recently reported to be more sensitive than WB, clinical analysis of these cases is ongoing to see if they are early seroconverters. Based on these results, we developed a new algorithm in which patients are first screened with the ELISA ; depending on the Index result of the ELISA (if $1.0 < x < 5.0$), the HSV-1 and HSV-2 status of the patient is confirmed by WB. Results will also be analysed taking the Focus ELISA assay as the gold standard.

Conclusion: These results suggest that WB may not always be required to establish the serological diagnosis of HSV-1 and 2. A significant portion of the specimens can be tested with the Focus ELISA kit, a more convenient procedure.

0761

Role of STI Surveillance in Second-generation HIV Surveillance Systems and

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Background Information: Sound and up-to-date information on the spread of STI is essential for advocacy and planning and for monitoring and evaluation of HIV/STI programmes. WHO has an important role to play as an unbiased global source of surveillance information, which includes Sexually Transmitted Infections (STI), HIV, behavioural indicators, and data on the response. In addition, WHO is promoting the development of country level surveillance systems that include STI, HIV, and behavioural data to ascertain the quality of surveillance. WHO also develop tools and facilitate the use of tools that facilitate the collection of accurate and complete data on HIV, STI, behaviours and the response.

The presentation highlights the recent developments in improvement of STI surveillance approaches and scaling up of STI surveillance activities in member countries. These include (1) co-ordination and promotion of STI surveillance within the framework of second generation HIV surveillance in member countries; (2) capacity building of staff responsible for surveillance activities in countries; (3) reviewing the evidence and promotion of surveillance and research on measurement of trends in STI; (4) improve STI surveillance and provide estimates of the levels, trends and consequences of STIs at global/regional and country levels.

Conclusion: It is important to maintain these ongoing efforts to obtain the quality data on sexually transmitted infections at country level. WHO will continue to support STI surveillance activities in collaboration with member countries, research communities and partner organizations. This will facilitate the planning of care services and assessment of the impact of prevention efforts globally.

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