
Contents

Welcome to the 19th IUSTI, Asia Pacific Conference in Okayama.....	2
Member List of International Union against Sexually Transmitted Infections (IUSTI), Executive Committee / Asia Pacific Branch Committee / International Scientific Committee / Local Organizing Committee	4
General Information	8
Floor of Map : Okayama Convention Center	11
Conference Schedule	12
Program	
Plenary.....	16
Symposium	18
Joint Symposium	22
Luncheon Seminar	23
Oral Session	24
Poster	29
Abstracts	
Plenary.....	34
Symposium	44
Joint Symposium	92
Oral Session	100
Poster	152
List of Supporting Companies.....	189

Welcome to the 19th IUSTI, Asia Pacific Conference in Okayama

I would like to take this opportunity to say a few words to welcome all of you to the conference. It is a great honor to serve as chairman for the 19th International Union Against Sexually Transmitted Infections (IUSTI) Asia-Pacific Conference, being held in Japan for the first time.

Recently, sexually transmitted diseases have become a major social problem here in Japan. Furthermore, together with globalization, the importance of prevention and treatment across borders and regions is increasing. Medical and social conditions, customs, etc. vary from region to region, influencing the research and clinical topics, epidemiology, and sociological aspects of STIs. Precisely because of these differences, the exchange of information is of utmost importance. Hoping that this conference will be a good opportunity to explore new strategies to control STIs, I've made the conference theme "Creating New Wind to Prevent STI".

This conference will also be held in conjunction with the annual meeting of the 29th Japanese Society for Sexually Transmitted Infections Association (JSSTI). Until now, exchanges among these academic societies were limited to a small number of participants, but I hope that by holding these conferences jointly here in Japan, many participants will have an opportunity for more meaningful scientific information exchanges and new friendships. The creation of this program has been realized only through the great efforts of Secretary General Dr. Ryoichi Hamasuna, and through consultations with members of the International and Local Committees, and I am pleased to present new and completely updated contents. I am also happy to welcome the many general submissions for presentations that we have received.

Japan is a wonderful country full of beautiful natural sceneries, a diverse food culture and a mixture of traditional culture and advanced technology, producing many cool and unique features. Here in Okayama City we have easy access both domestically and from foreign countries. Okayama is known as "The Land of Sunshine" with lots of fine weather to visit the many scenic areas and the lowest incidences of natural disasters among provincial cities. Safety and security are excellent and as time permits, I hope you will be able to enjoy the wonders of Japan, in addition to participating in the conference. Although the season's weather may be a little cold, we look forward to welcoming you with the heartfelt warmth of our "O-mo-te-na-shi" Japanese hospitality.



YOSHIO Kishimoto, M.D., Ph.D.
Congress Chairman, 19TH IUSTI ASIA-PACIFIC CONFERENCE



Welcome to the 19th IUSTI, Asia Pacific Conference in Okayama

Welcome to Okayama! It is my great honor to serve as Secretary General of the 19th International Union against Sexually Transmitted Infections (IUSTI) Asia-Pacific Conference. This is the first time the IUSTI Asia Pacific Conference has been held in Japan. We have been preparing for the conference since 2014 when in Bangkok we were elected as the host of the 19th IUSTI Asia-Pacific Conference. However, the process to confirm the program was honestly not easy for us, because some rules for funding have been changed in Japan and we have lacked experience to manage the international conference. We have tried our best to make the conference proceed as smoothly as possible.

There are eight plenary sessions, twelve symposia and one joint symposium with Japanese Association of STI. These sessions will range from clinical practices to basic science advances in STI. Eighty seven abstracts have been approved for oral and poster presentations throughout the three days of conference, December 1st-3rd. I would like to express my gratitude for all speakers, chair persons, participants, companies which have provided fundings and volunteers of Okayama City to help our conference.

In Japan, there are many researchers for STI and they have published their findings in journals for infectious diseases their topics include the outbreaks of antimicrobial-resistant *N. gonorrhoeae* strains, newer methods for detecting pathogens of STIs, newer antimicrobials for STI, genome analysis and others. However, I do not think that Japanese researchers have fully contributed to IUSTI. In the conference, I have asked Japanese researchers to be speakers and chair persons at all symposiums and oral presentation sessions. I hope that our conference will provide opportunities to get to know each other between Japanese and IUSTI members or participants and discuss face-to-face.

Okayama City is an old city with a beautiful castle and gardens. I hope you will enjoy Okayama and Japan.

I look forward to greeting you.

Best wishes



Ryoichi Hamasuna, M.D., Ph.D.
Secretary General, 19TH IUSTI ASIA-PACIFIC CONFERENCE



Member List of International Union against Sexually Transmitted Infections (IUSTI), Executive Committee

David A Lewis (Australia)	President
Charlotte A Gaydos (USA)	President-Elect
Janet Wilson (UK)	Secretary General
Immy Ahmed-Jushuf (UK)	Treasurer
Raj Patel (UK)	Immediate Past President
Bradley P Stoner (USA)	Membership Secretary
Christopher Fairley (Australia)	Assistant Secretary General and Webmaster
Jonathan Ross (UK)	Editor STI Global Update
Francis Ndowa (Zimbabwe)	Regional Director Africa
Somesh Gupta (India)	Regional Director Asia-Pacific
Airi Pöder (Estonia)	Regional Director Europe
Adele Schwartz Benzaken (Brazil)	Regional Director Latin-America
Cornelis Rietmeijer (USA)	Regional Director North America
Amina Hansali (Morocco)	Regional Chair Africa
Xiang-sheng Chen (China)	Regional Chair Asia-Pacific
Claudia Heller-Vitouch (Austria)	Regional Chair Europe
Post vacant	Regional Chair Latin America
J. Dennis Fortenberry (USA)	Regional Chair North America
Sam Phiri (Malawi)	Elected Member
Freddy Tinajeros (Honduras)	Elected Member
Miguel Tilli (Argentina)	Elected Member
Aïssatou Gaye-Diallo (Sénégal)	Elected Member
Keith Radcliffe (UK)	Elected Member
Edward W Hook III (USA)	Elected Member
J. Dennis Fortenberry (USA)	Elected Member
Angélica Espinosa Miranda (Brazil)	Elected Member
Sunil Sethi (India)	Elected Member
Marco Cusini (Italy)	Elected Member
Mihael Skerlev (Croatia)	Elected Member
Jo-Anne Dillon (Canada)	Elected Member
Ryoichi Hamasuna (Japan)	Elected Member
Suzanne Garland (Australia)	Elected Member
Nathalie Broutet (Switzerland)	WHO focal person for STIs
Jeanne Marrasso (USA)	ISSTDR representative
Angelika Stary (Austria)	Senior Counsellor and ILDS representative
Basil Donovan (Australia)	Senior Counsellor
Lew Drusin (USA)	Senior Counsellor
Julius Schachter (USA)	Senior Counsellor
Thomas Quinn (USA)	Senior Counsellor
Sevgi O Aral (USA)	Senior Counsellor
H Hunter Handsfield (USA)	Senior Counsellor
Mikhail Gomberg (Russia)	Senior Counsellor
King K Holmes (USA)	Senior Counsellor
Chavalit Mangkalaviraj (Thailand)	Senior Counsellor
Patricia Garcia (Peru)	Senior Counsellor

Member List of International Union against Sexually Transmitted Infections (IUSTI), Asia Pacific Branch Committee

Somesh Gupta (India)	Regional Director
Xiang-Sheng Chen (China)	Regional Chairman
Sunil Sethi (India)	Honorary Secretary
Patchara Siriwongrungsun (Thailand)	Honorary Membership Secretary
Brian Mulhalli (Australia)	Immediate Past Chairman and Honorary Treasurer
Cathrine O'Connor (Australia)	Vice-Chair Oceania Pacific Subregion
Kaushal Verma (India)	Vice-Chair South East Asia Subregion, and Chairman-Elect
Kamal Faour (UAE)	Vice-Chair West Asia Subregion
Qian-Qiu Wang (China)	Vice-Chair East Asia Subregion
Wresti Indriatmi (Indonesia)	Vice-Chair East Asia Subregion

Member List of International Union against Sexually Transmitted Infections (IUSTI), International Scientific Committee

Christopher Fairley (Australia)	Chairman
Roy Chan (Singapore)	Chairman
Ryoichi Hamasuna (Japan)	Co-chairman
Somesh Gupta (India)	Committee
Sunil Sethi (India)	Committee
Jonathan Ross (UK)	Committee
Barbara Van Der Pol (USA)	Committee
Jeffrey D Klausner (USA)	Committee
Catriona S. Bradshaw (Australia)	Committee
Charlotte A Gaydos (USA)	Committee
Shinichi Oka (Japan)	Committee
Kei Kawana (Japan)	Committee
Makoto Ohnishi (Japan)	Committee
Seung-Ju Lee (Korea)	Committee

Member List of International Union against Sexually Transmitted Infections (IUSTI), Local Organizing Committee

Toshio Kishimoto	Congress Chairman
Soichi Arakawa	Co-chairman
Shinichi Oka	Co-chairman
Ryoichi Hamasuna	Secretary general
Takashi Deguchi	Committee
Mariko Honda	Committee
Akifumi Imamura	Committee
Takaoki Ishiji	Committee
Aikichi Iwamoto	Committee
Kazuhiro Iwasaku	Committee
Kei Kawana	Committee
Hiroshi Kiyota	Committee
Hiroshige Mikamo	Committee
Hidemi Nakagawa	Committee
Makoto Ohnishi	Committee
Masuko Saito	Committee
Takuma Shirasaka	Committee
Chika Shirai	Committee
Satoshi Takahashi	Committee

General Information

1. Registration Desk

The registration fee for all conference participants includes abstracts and all congress activities, and welcome reception.

I. Pre-Registered Delegates

Please collect your name tag at the reception desks.

II. On-site Registration

The registration desks are open during the following hours.

Thursday, December 1st 10:30-18:30

Friday, December 2nd 7:30-16:30

Saturday, December 3rd 7:20-16:30

Please note that credit cards are not accepted. We accept cash, Japanese Yen, only.

On-site Registration Fee		
	<i>FULL MEETING</i>	<i>ONE-DAYS</i>
Non-Member	55,000 JPY	30,000 JPY
IUSTI Full Member	45,000 JPY	
Low and Middle Income Countries	35,000 JPY	
Resident	35,000 JPY	
Student	25,000 JPY	—
Accompanying Person	18,000 JPY	—

※ Registration fees for full meetings include the welcome party.

※ Accompanying persons registration fee does not include access to scientific session.

It's only to join the welcome party and to access exhibition area.

2. Name tags

All registered delegates and accompanying persons are requested to wear their name tags during the period of the conference and its social events.

3. Cloakroom

The cloakroom service for coats and reasonably-sized luggage is available during the following hours. It is located on the 3rd floor. Items of value should not be left in the cloakroom. Please make sure you collect all your belongings at the end of each day.

Thursday, December 1st 10:30-19:00

Friday, December 2nd 7:30-16:30

Saturday, December 3rd 7:20-18:30

4. Tourist Information

JTB Western Japan desk located on the 3rd floor will be available to provide further information about the city tours and your traveling.

5. Policy of Recording Lectures

It is prohibited to use audio and video devices to record of all lectures during the congress.

6. Wi-Fi

Free Wi-Fi is available in all meeting rooms.

7. IUSTI Asia Pacific Business Meeting

The IUSTI AP Exective Committee Meeting and General Assembly will be scheduled at 12:50-13:40 on Friday, December 2nd at Room No. 404, 4th floor of Okayama Convention Center.

8. Coffee Breaks

Sweets and Beverages will be served the following hours in the lobby of 2nd floor.

Thursday, December 1st 15:00-15:30

Friday, December 2nd 10:40-11:10

GUIDELINE FOR CHAIRS AND SPEAKERS

Instruction for Oral Presentation

The Slide Preview Desk is open during the following hours. It's located on the 3rd floor.

Thursday, December 1st 10:30-19:00

Friday, December 2nd 7:30-16:30

Saturday, December 3rd 7:20-11:30

Please provide your presentation data to a staff at Slide Review Desk at least 30 minutes before your presentation. If you bring your own PC, please confirm the power output. Please wait at the speaker's standby seat before starting your session.

A mouse and keypad will be provided on the podium table,

A note to bring your own

1. Macintosh users are required to bring your own. If video material is included in the presentation data, we recommend you bring your own PC. We also recommend any video data to be in WMV format which can be played on Windows Media Player. All data files should be in one folder, including any reference files such as video images.
2. Please cancel the password, screensaver, and powersaving settings of your PC before your presentation.
3. Connector for outsourcing data is only for D-sub 15 pin. Please check that the PC you will use on the day has D-sub 15 pin. If you have a different output connector, please bring a conversion cord. Also, please remember to bring your computer's AC adapter.
4. If your PC has only HDMI output, please bring the conversion adapter to D-SUB.
5. Even if you bring your own PC, please prepare a back-up of your data on media as well.
6. After a preview is performed at computer registration, please take your own PC with you to the computer operator seats at the front left side of the venue.

A note to bring USB or CD-Rom

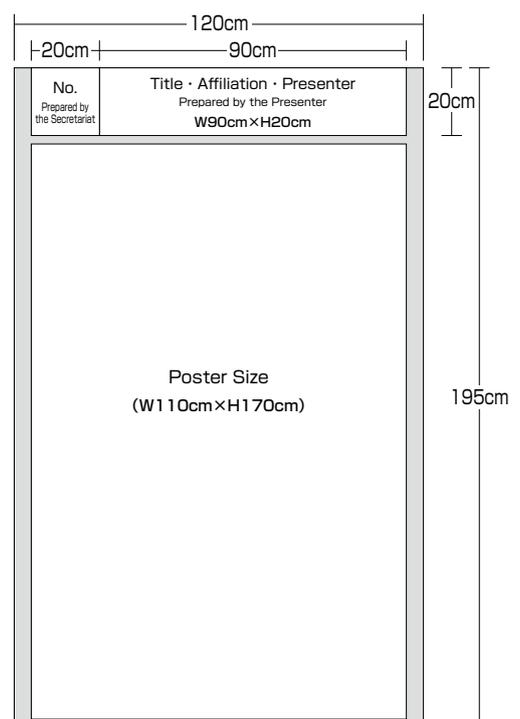
1. An operator will download the data and copy it to the server. We, the congress secretariat, promise to delete the data after your presentation.
2. The equipment that is available on the day uses Windows OS. Please note that it is not compatible with Macintosh.
3. The application software is limited to Windows PowerPoint 2003-2013.
 ※ We do not support in PowerPoint 2016.
4. Please use standard fonts such as Arial, Century, Times New Roman, etc.
5. If you use video materials, we recommend you bring your own PC.
6. Video material is limited to that which can be played on the following software: Windows Media Player.
7. Please be sure to check the media that it can be played on other PC in addition to the one it was created on.

Instruction for Poster Session

1. Posters will be displayed throughout the congress.
2. Setting-up and removal hours are scheduled as shown below. Please note that any posters remaining after the removal hours will be disposed of by the secretariat.
3. There are no poster discussions. However, please stand by in front of your poster during the Review Session as we have informed the starting time via e-mail. Review.

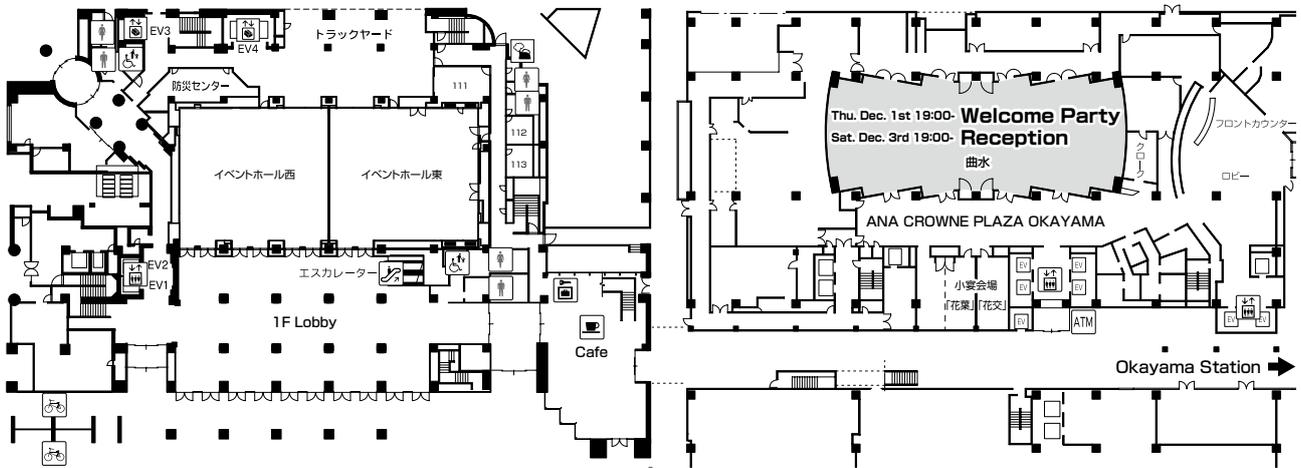
Date	Setting-up	Review	Removal
Thursday, December 1st	12:00-15:00	15:00-15:30	—
Friday, December 2nd	—	10:40-11:10	—
Saturday, December 3rd	—	—	12:00-14:00

4. The size of panel is 170cm by 110cm. The presentation number will be provided in advance. Please refer to the sample. The presenter must prepare the title for the poster.
5. We suggest that text and diagrams be arranged appropriately so that the poster is legible from a distance.

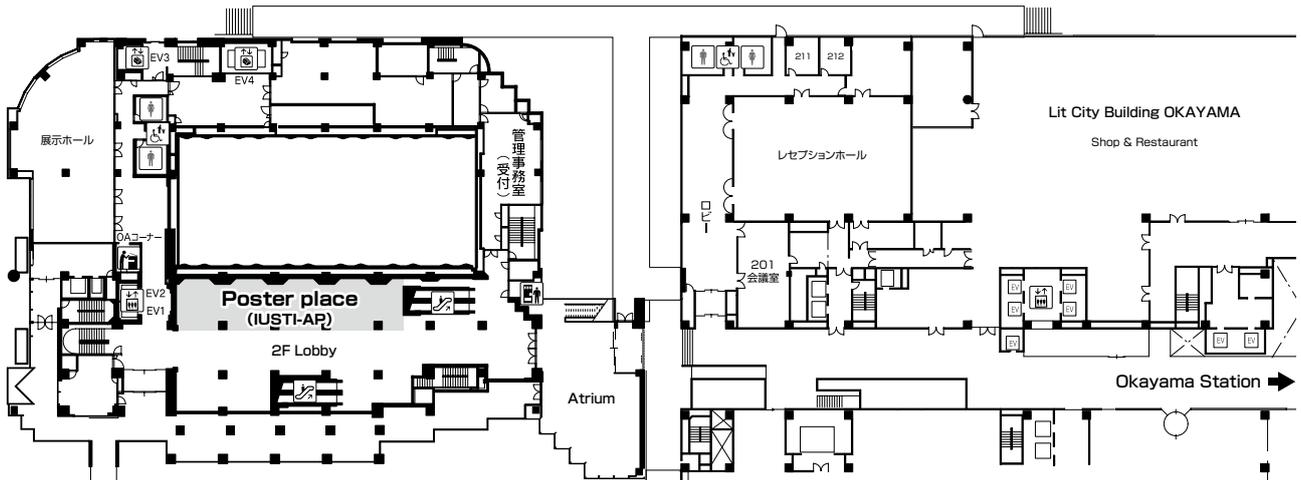


Map : Okayama Convention Center

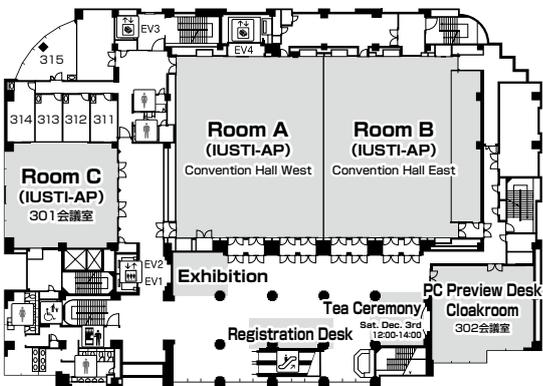
1st Floor



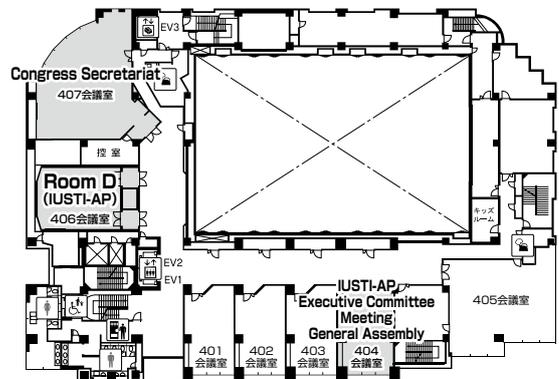
2nd Floor



3rd Floor



4th Floor



Conference Schedule

December 1 [Thursday]

	Room A 3F Convention Hall West	Room B 3F Convention Hall East	Poster place 2F Lobby
11:00			
12:00	Opening ceremony 11:30~12:00		
13:00	Plenary 1 Gonorrhoea in Japan and Asia Pacific Speaker: Tetsuro Matsumoto 12:00~12:30		Poster Setting-up
	Plenary 2 HIV and sexually transmitted infections in men who have sex with men and sex workers in Asia Speaker: Ying-Ru Lo 12:30~13:00		
14:00	Symposium 1 Antimicrobial susceptibility of N. gonorrhoeae in Asian Pacific region Chairs: Makoto Ohnishi Magnus Unemo 13:00~15:00	Symposium 4 Bacterial vaginitis Chairs: Barbara Van Der Pol Mao Hagihara 13:30~15:00	
15:00	~ Coffee Breaks ~ 15:00~15:30		Poster Viewing
16:00	Symposium 2 Newer trials for resistant gonorrhoeae Chairs: Jonathan Ross Makoto Ohnishi 15:30~17:10	Symposium 5 STIs in Pregnancy Chairs: Jeffrey D. Klausner Kei Kawana 15:30~17:10	
17:00			
18:00	Symposium 3 Asian Association of Urology guideline for STIs Chairs: Yong-Hyun Cho Tetsuro Matsumoto 17:10~18:50	Oral session 1 HIV 1 17:10~18:22	
19:00			
20:00	Welcome Party ANA CROWNE PLAZA OKAYAMA 1F "KYOKUSUI" 19:00~21:00		
21:00			

Conference Schedule

December 2 [Friday]

	Room A 3F Convention Hall West	Room B 3F Convention Hall East	Room C 3F Room 301	Room D 4F Room 406	Poster place 2F Lobby	Meeting Room 4F Room 404
8:00						
9:00						
10:00	Symposium 6 Current trend of epidemiology and diagnosis for syphilis Chairs: Tadaaki Ishiji Somesh Gupta 9:00~10:40	Symposium 9 Detecting M. genitalium-Principle for detecting system and its utility Chairs: Jorgen Skov Jensen Ryoichi Hamasuna 9:00~10:40	Oral session 2 Education/ Social science 1 9:00~9:48	Oral session 8 HIV 2 9:00~9:48		
			Oral session 3 Education/ Social science 2 9:48~10:36	Oral session 9 HIV 3 9:48~10:36		
11:00	~ Coffee Breaks ~ 10:40~11:10				Poster Viewing	
12:00	Symposium 7 HIV and Syphilis in Asia Chairs: Hiroshi Ichimura Yong-Gil Na 11:10~12:40	Symposium 10 Treatment strategies for M. genitalium infection-resistant status and new treatment Chairs: Catriona S. Bradshaw Takashi Deguchi 11:10~12:40	Oral session 4 Epidemiology/ Social science 1 11:10~12:10			
			Oral session 5 HPV/Others 12:10~12:46			
13:00	Luncheon Seminar 1 Chair: Koichiro Shimoya Speaker: Takashi Kawana Co-Sponsored by Roche Diagnostics K.K. 12:50~13:40	Luncheon Seminar 2 Chair: Soichi Arakawa Speaker: Seung-Ju Lee Co-Sponsored by EIDIA Co.,Ltd. 12:50~13:40				Executive Committee Meeting and General Assembly 12:50~13:40
14:00	Plenary 3 Are our STI control programs controlling STIs? Speaker: John Kaldor 13:50~14:20					
	Plenary 4 Syphilis in men who have sex with men Speaker: Basil Donovan 14:20~14:50					
15:00						
16:00	Symposium 8 Emerging trends in STIs in Asia Chairs: Sunil Sethi Satoshi Takahashi 15:00~16:40	Symposium 11 How to publish papers Chairs: Christopher Fairley Basil Donovan 15:00~16:40	Oral session 6 Chlamydia/ Mycoplasma 15:00~15:48	Oral session 10 Epidemiology/ Social science 2 15:00~15:48		
			Oral session 7 Gonorrhoea 15:48~17:00	Oral session 11 Syphilis/HIV 15:48~17:00		
17:00						
18:00						

Conference Schedule

December 3 [Saturday]

	Room A • B 3F Convention Hall	Room C 3F Room 301	Poster place 2F Lobby
8:00			
	Plenary 5 Dual elimination of mother-to-child transmission of HIV and syphilis in Asia Pacific Speaker: Razia Pendse 8:00~8:30		
9:00	Joint symposium of IUSTI and JSSTI Establishments of STI prevention net-work in Adolescents among ASEAN countries Chairs: Hiroya Matsuo Cecilia A. Ladines Llave Speakers: Soichi Arakawa Yuko Tanaka Maria Teresa R. Tuliao Punpilai Sriarporn Elsi Dwi Hapsari 8:30~10:30	Symposium 12 Diagnostic Update for Sexually Transmitted Infections: What's New; What's Hot? Chairs: Charlotte A. Gaydos Kamal Faour 8:30~10:10	
10:00			
	Plenary 6 Update on <i>Mycoplasma genitalium</i> Speaker: Jørgen Skov Jensen 10:30~11:00		
11:00	Plenary 7 Update of <i>Neisseria gonorrhoeae</i> antimicrobial resistance internationally and new antimicrobials for treatment of gonorrhoea Speaker: Magnus Unemo 11:00~11:30		
	Plenary 8 Trichomoniasis - a forgotten problem Speaker: David A. Lewis 11:30~12:00		
12:00			
	Closing Ceremony 12:00~12:40		
13:00			Poster Removal
14:00			
15:00			
16:00			
17:00			
18:00			
Reception ANA CROWNE PLAZA OKAYAMA 1F "KYOKUSUI" 19:00~21:00			

Program

Plenary

Symposium

Joint Symposium

Luncheon Seminar

Oral Session

Poster

Plenary

Thursday - 1st December 12:00-12:30 Room A

Plenary 1

Chair: Somesh Gupta (India)

PL-01 Gonorrhoea in Japan and Asia Pacific

Tetsuro Matsumoto (Japan)

Thursday - 1st December 12:30-13:00 Room A

Plenary 2

Chair: Shinichi Oka (Japan)

PL-02 HIV and sexually transmitted infections in men who have sex with men and sex workers in Asia

Ying-Ru Lo (Philippines)

Friday - 2nd December 13:50-14:20 Room A

Plenary 3

Chair: Carlotte A Gaydos (USA)

PL-03 Are our STI control programs controlling STIs?

John Kaldor (Australia)

Friday - 2nd December 14:20-14:50 Room A

Plenary 4

Chair: Chavalit Mangkalavira (Thailand)

PL-04 Syphilis in men who have sex with men

Basil Donovan (Australia)

Saturday - 3rd December 8:00-8:30 Room A • B

Plenary 5

Chair: Basil Donovan (Australia)

PL-05 Dual elimination of mother-to-child transmission of HIV and syphilis in Asia Pacific

Razia Pendse (India)

Saturday - 3rd December 10:30-11:00 Room A • B

Plenary 6

Chair: Ryoichi Hamasuna (Japan)

PL-06 Update on *Mycoplasma genitalium*
Jørgen Skov Jensen (Denmark)

Saturday - 3rd December 11:00-11:30 Room A • B

Plenary 7

Chair: Christopher Fairley (Australia)

PL-07 Update of *Neisseria gonorrhoeae* antimicrobial resistance internationally and new antimicrobials for treatment of gonorrhoea
Magnus Unemo (Sweden)

Saturday - 3rd December 11:30-12:00 Room A • B

Plenary 8

Chair: Anne Robertson (New Zealand)

PL-08 Trichomoniasis - a forgotten problem
David A. Lewis (Australia)

Symposium

Thursday - 1st December 13:00-15:00 Room A

Symposium 1	Antimicrobial susceptibilities for <i>N. gonorrhoeae</i> in Asian-Pacific region
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Chairs: Makoto Ohnishi (Japan), Magnus Unemo (Sweden)

- S-01-01 Antimicrobial Susceptibilities in Japan
Tetsuro Muratani (Japan)
- S-01-02 Abstract Withdrawal
- S-01-03 Antimicrobial susceptibilities for *N. gonorrhoeae* in India
Seema Sood (India)
- S-01-04 NG Antimicrobial Susceptibilities in Australia
David A. Lewis (Australia)
- S-01-05 Antimicrobial susceptibilities for *N. gonorrhoeae* in Taiwan
Tsai Chia-Chun (Taiwan)
- S-01-06 Recent Increase of Cephalosporin-resistance in *Neisseria gonorrhoeae* in Korea
Hyukmin Lee (Republic of Korea)

Thursday - 1st December 15:30-17:10 Room A

Symposium 2	Newer trials for resistant gonorrhoeae
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Chairs: Jonathan Ross (UK), Makoto Ohnishi (Japan)

- S-02-01 Clinical trials for Gonococcal Urethritis by Azithromycin 2g Single Dose
Mitsuru Yasuda (Japan)
- S-02-02 Possible Agent for MDR Gonorrhoeae - Reverse Antibiotics for *N. gonorrhoeae*
Tadashi Baba (Japan)
- S-02-03 New randomized clinical trials for *Neisseria gonorrhoeae* infections
Magnus Unemo (Sweden)
- S-02-04 Newer treatment strategies for resistant gonococcal infection in South-East Asia
Manju Bala (India)

Thursday - 1st December 17:10-18:50 Room A

Symposium 3	Asian Association of Urology guideline for STIs
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Chairs: Yong-Hyun Cho (Republic of Korea), Tetsuro Matsumoto (Japan)

- S-03-01 Detection of Microorganisms for Urethritis
U-Syn Ha (Republic of Korea)
- S-03-02 Treatment strategies for male urethritis
Satoshi Takahashi (Japan)

S-03-03 Treatment strategies for genital lesions of STI
Somesh Gupta (India)

Thursday - 1st December 13:30-15:00 Room B

Symposium 4 Bacteiral vaginitis

Chairs: Barbara Van Der Pol (USA), Mao Hagihara (Japan)

- S-04-01 Laboratory testing for vaginitis: an opportunity not to be missed!
Barbara Van Der Pol (USA)
- S-04-02 Vaginal microbiota of Japanese women
Mao Hagihara (Japan)
- S-04-03 Clinical Performance of the BD MAX™ Vaginal Panel for the Diagnosis of Vaginitis
Charlotte A. Gaydos (USA)

Thursday - 1st December 15:30-17:10 Room B

Symposium 5 STIs in Pregnancy

Chairs: Jeffrey D. Klausner (USA), Kei Kawana (Japan)

- S-05-01 Sexually Transmitted Infections in Pregnancy: Time to Screen and Treat?
Jeffrey D. Klausner (USA)
- S-05-02 Triple elimination of mother-to-child transmission of HIV, syphilis and hepatitis B
Ying-Ru Lo (Philippines)
- S-05-03 Prevalence of sexually transmitted infections and acceptability, feasibility of screening in antenatal care, Vietnam, 2016-2017
Minh Nguyen (Vietnam)
- S-05-04 Human papillomavirus infection in pregnancy
Kei Kawana (Japan)

Friday - 2nd December 9:00-10:40 Room A

Symposium 6 Current trend of epidemiology and diagnosis for syphilis

Chairs: Tadaoki Ishiji (Japan), Somesh Gupta (India)

- S-06-01 Rapid Increase in New Syphilis Cases in Japan
Takuri Takahashi (Japan)
- S-06-02 Prospects and Pitfalls of Recent Change in Sero-Diagnosis of Syphilis
Muhammad Morshed (Canada)
- S-06-03 Neurosyphilis in China
Pingyu Zhou (China)
- S-06-04 Molecular characteristics of *Treponema pallidum* ssp. *pallidum*
David A. Lewis (Australia)

Friday - 2nd December 11:10-12:40 Room A

Symposium 7	HIV and Syphilis in Asia
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Chairs: Hiroshi Ichimura (Japan), Yong-Gil Na (Republic of Korea)

- S-07-01 Epidemiology of STI/HIV in Mongolia
Davaalkham Jagdagsuren (Mongolia)
- S-07-02 HIV infection and syphilis in Taiwan
Chien-Ching Hung (Taiwan)
- S-07-03 Syphilis in HIV-1-infected individuals in Japan
Takeshi Nishijima (Japan)
- S-07-04 A Report on Sexually Transmitted Diseases in Vietnam
Nguyen Van Kinh (Vietnam)

Friday - 2nd December 15:00-16:40 Room A

Symposium 8	Emerging trends in STIs in Asia
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Chairs: Sunil Sethi (India), Satoshi Takahashi (Japan)

- S-08-01 Emerging trends in Syphilis in Asia
Kaushal Verma (India)
- S-08-02 Adenovirus Infection as STI; adenoviral urethritis.
Nozomu Hanaoka (Japan)
- S-08-03 Zika fever as a sexually transmitted infection (STI)
Satoshi Kutsuna (Japan)
- S-08-04 Trichomonas vaginalis related to prostate cancer
Yu Chen (Taiwan)

Friday - 2nd December 9:00-10:40 Room B

Symposium 9	Detecting <i>M. genitalium</i> -Principle for detecting system and its utility
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Chairs: Jorgen Skov Jensen (Denmark), Ryoichi Hamasuna (Japan)

- S-09-01 Detecting *Mycoplasma genitalium*-Principle for Detecting System and its Utility Detecting System in Korea - Seegene System
Seung-Ju Lee (Republic of Korea)
- S-09-02 Detection and drug resistance of *Mycoplasma genitalium* in Japan
Shin Ito (Japan)
- S-09-03 Detection of *Mycoplasma genitalium* in Europe
Jorgen Skov Jensen (Denmark)
- S-09-04 Is detection of *Mycoplasma genitalium* important in South Asian Countries?
Sunil Sethi (India)

Friday - 2nd December 11:10-12:40 Room B

Symposium 10	Treatment strategies for <i>M. genitalium</i> infection-resistant status and new treatment
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Chairs: Catriona S. Bradshaw (Australia), Takashi Deguchi (Japan)

- S-10-01 *M. genitalium*: resistance and treatment strategies in Australia
Catriona S. Bradshaw (Australia)
- S-10-02 Multidrug-resistant *M. genitalium* strains
Ryoichi Hamasuna (Japan)
- S-10-03 Treatment Status for *Mycoplasma genitalium* in Eastern Asia
Gilho Lee (Republic of Korea)
- S-10-04 Pelvic Inflammatory Disease and *Mycoplasma genitalium*
Jonathan Ross (UK)

Friday - 2nd December 15:00-16:40 Room B

Symposium 11	How to publish papers
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Chairs: Christopher Fairley (Australia), Basil Donovan (Australia)

- S-11-01 What Editors Expect
Christopher K Fairley (Australia)
- S-11-02 What reviewers expect
David A. Lewis (Australia)
- S-11-03 What early career researchers want from journals
Eric P. F. Chow (Australia)
- Concluding Remarks
Basil Donovan (Australia)

Saturday - 3rd December 8:30-10:10 Room C

Symposium 12	Diagnostic Update for Sexually Transmitted Infections: What's New, What's Hot?
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Chairs: Charlotte A. Gaydos (USA), Kamal Faour (UAE)

- S-12-01 New Approaches to Diagnosing STIs by Point-of-Care Tests
Charlotte A. Gaydos (USA)
- S-12-02 Stimulating the demand for HIV testing - novel approaches
Philip Cunningham (Australia)
- S-12-03 Leveraging point-of-care technology for syphilis to improve health outcomes and integrate programmes
David A. Lewis (Australia)
- S-12-04 Potential Impact of Point-of-Care Tests for *Chlamydia trachomatis* on Clinical Practice
Margaret R. Hammerschlag (USA)

Joint Symposium

Saturday - 3rd December 8:30-10:30Room A • B

Joint Symposium	Establishments of STI prevention net-work in Adolescents among ASEAN countries
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Chairs: Hiroya Matsuo (Japan), Cecilia A. Ladines Llave (Philippines)

- JS-01 Asian Guideline for Education for prevention of STIs to young people
-Standardized slides in youth education for the prevention of sexually transmitted infections-
Soichi Arakawa (Japan)
- JS-02 Knowledge, Attitude and Preventive Behavior about STIs (include Cervical Cancer) among High School Students in Japan
Yuko Tanaka (Japan)
- JS-03 Promoting STI prevention among the youth of Muntinlupa City philippines
Maria Teresa R. Tuliao (Philippines)
- JS-04 Social Support Network for STI Prevention among Youth in Thailand
Punpilai Sriarporn (Thailand)
- JS-05 The Education of STI Prevention for Youth in Indonesia
Elsi Dwi Hapsari (Indonesia)

Luncheon Seminar

Friday - 2nd December 12:50-13:40 Room A

Luncheon Seminar 1

Co-Sponsored by Roche Diagnostics K.K.
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Chair: Koichiro Shimoya (Department of Obstetrics and Gynecology Kawasaki Medical School)

LS-01 The Evolution of Clinical Diagnosis in Genital Herpes by Novel Molecular Testing

Takashi Kawana (Department of Nursing, Faculty of Community Health Care Teikyo Heisei University)

Friday - 2nd December 12:50-13:40 Room B

Luncheon Seminar 2

Co-Sponsored by EIDIA Co.,Ltd.

Chair: Soichi Arakawa (Sanda City Hospital)

LS-02 Novel molecular detection technologies for sexually transmitted infections

Seung-Ju Lee (The Catholic University of Korea)

Oral Session

Thursday - 1st December 17:10-18:22 Room B

Oral Session 1	HIV 1
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Chairs: Kiyonori Takada (Japan), Kaushal Verma (India)

- O-01-01 The Policy Impacts of Prevent Mother-to-Child Transmission of Syphilis on the Identification of Pregnant Syphilis in Shanghai, China: a comparative study between 2002-2006 and 2011-2015
Yang Li (China)
- O-01-02 Clinical features of syphilis patients detected by polymerase chain reaction and molecular typing of *Treponema pallidum* at an urban community-based STI clinic in Japan
Ichiro Itoda (Japan)
- O-01-03 Convergence Case-management for Syphilis Control: A Pilot Project in China
Zhenzhou Luo (China)
- O-01-04 Increase in syphilis testing and detection of early syphilis among men who have sex with men across Australia, 2007-2014
Eric P. F. Chow (Australia)
- O-01-05 Investigating the lack of access to antiretroviral treatment of hiv among individuals who inject drugs
Ofosuhene O Apenteng (Malaysia)
- O-01-06 Geographical Patterns of HIV Sero-discordancy in High HIV Prevalence Countries in Sub-Saharan Africa
Laith J. Abu-Raddad (Qatar)

Friday - 2nd December 9:00-9:48 Room C

Oral Session 2	Education/Social science 1
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Chairs: Chika Shirai (Japan), Eric Chow (Australia)

- O-02-01 Determinants of STIs Preventive Behaviors among High School Students in Four Main Tourist Destination Areas in Bali
Ni Wayan Septarini (Indonesia)
- O-02-02 Barriers and enablers to adoption of contraceptive method: a multi-stakeholder perspective
Sanghamitra Pati (India)
- O-02-03 Assessing Participation and Effectiveness of Peer-led Approach in Youth Sexual Health Education - Systematic Review and Meta-analysis in More Developed Countries
Wai Han Sun (Hong Kong Special Administrative Region of China)
- O-02-04 An emerging sexual risk factor: the use of smartphone dating applications
Edmond Pui Hang Choi (Hong Kong Special Administrative Region of China)

Friday - 2nd December 9:48-10:36 Room C

Oral Session 3	Education/Social science 2
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Chairs: Tomoko Saotome (Japan), Anne Robertson (New Zealand)

- O-03-01 **Faster and Riskier?: Online Context of Sex Seeking Among Men Who Have Sex with Men in China**
Bolin Cao (China)
- O-03-02 **Prevalence of sexually transmitted infections and acceptability, feasibility of screening in antenatal care, Vietnam, 2016-2017**
Minh Nguyen (Vietnam)
- O-03-03 **Assessment of the impact of a client led checklist of care on delivery of holistic care for men who have sex with men attending integrated sexual health services**
John McSorley (United Kingdom of Great Britain and Northern Ireland)
- O-03-04 **The development of Sexual Health Strategy in Aotearoa New Zealand**
Anne Robertson (New Zealand)

Friday - 2nd December 11:10-12:10 Room C

Oral Session 4	Epidemiology/Social science 1
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Chairs: Narumi Hori (Japan), Margaret Hammerschiag (USA)

- O-04-01 **Prevalence of sexually transmitted infections among nepalese population**
Manoj Kumar Sah (Nepal)
- O-04-02 **Chlamydia prevalence and risk factors in Hong Kong: A population-based geospatial household survey**
Yanping Zhao (Hong Kong Special Administrative Region of China)
- O-04-03 **Sexually transmitted infections among Iranian female sex workers: a systematic review and meta-analysis**
Maryam Nasirian (Islamic Republic of Iran)
- O-04-04 **Depression, a worsen but ignored issue among Chinese female sex workers: Results from a multi-site cross-sectional study**
Hongcheng Shen (China)
- O-04-05 **Bacterial vaginosis in early third trimester and pregnancy outcomes**
Suphaphon Tachawatcharapunya (Thailand)

Friday - 2nd December 12:10-12:46 Room C

Oral Session 5	HPV/Others
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Chairs: Toshiyuki Sasagawa (Japan), Somesh Gupta (India)

- O-05-01 **Clearance of HPV infection and clinical prognosis after treatment of cervical intraepithelial neoplasia: prospective observation of 334 patients**
Tasuku Mariya (Japan)

O-05-02 Human papillomavirus (HPV) vaccination and STI screening in men who have sex with men (MSM). Clinical outcomes and factors associated with completion of a three dose schedule in a clinical cohort.

John McSorley (United Kingdom of Great Britain and Northern Ireland)

O-05-03 Penoscrotal Extramammary Paget's Disease: case report and review of literature

Lim Chye Yang (Taiwan)

Friday - 2nd December 15:00-15:48 Room C

Oral Session 6	Chlamydia/Mycoplasma
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Chairs: Toshio Kishimoto (Japan), Catriona Bradshw (Australia)

O-06-01 Does nucleic acid amplification test indicate false negative result of *Chlamydia trachomatis* for male patients with both gonococcal and chlamydial urethritis?

Yoshiki Hiyama (Japan)

O-06-02 Astonishing high prevalence of asymptomatic sexual chlamydial trachomatis infection (SCTI) in Japanese women -National survey in 325.771 cases of Japanese unselected ordinary pregnant women-

Yoshiaki Kumamoto (Japan)

O-06-03 Non-gonococcal non-chlamydial *Ureaplasma urealyticum* and *Ureaplsma pавum* infections and chronic prostatitis/chronic pelvic pain syndrome

Gilho Lee (Republic of Korea)

O-06-04 Upper genital tract infection due to *Ureaplasma urealyticum biovar 2*: not so innocuous?

Tanvi Dev (India)

Friday - 2nd December 15:48-17:00 Room C

Oral Session 7	Gonorrhoea
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Chairs: Tetsuro Muratani (Japan), Catherine C. O'Connor (Australia)

O-07-01 Vaccine development to combat antimicrobial resistant gonorrhoea

Kate L. Seib (Australia)

O-07-02 Characterization of *penA*, *penB*, *mtrR* and *ponA* genes in ceftriaxone susceptible (S) and decreased susceptibility (DS) isolates of *N. gonorrhoeae* in New Delhi, India

Neeraj Mahajan (India)

O-07-03 New ceftriaxone- and multidrug-resistant *Neisseria gonorrhoeae* strain with a novel mosaic *penA* gene isolated in Japan

Shu-ichi Nakayama (Japan)

O-07-04 The Enhanced Gonococcal Antimicrobial Surveillance Programme (EGASP), Silom Community Clinic, Bangkok, Thailand

Sirirat Lertpruek (Thailand)

O-07-05 Prevalence of *Neisseria gonorrhoeae* and *Chlamydia trachomatis* Infections in Different Anatomic Sites among Men Who Have Sex with Men in Guangzhou, China

Ligang Yang (China)

O-07-06 Impact of oral cephalosporin use on commensal *Neisseria* prevalence and resistance

Huan Vinh Dong (USA)

Friday - 2nd December 9:00-9:48 Room D

Oral Session 8	HIV 2
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Chairs: Takuma Shirasaka (Japan), Chien-Ching Hung (Taiwan)

O-08-01 The Social Context of HIV Self-Testing: A Global Qualitative Systematic Review

Larry Han (USA)

O-08-02 HIV self-testing among MSM in China: An implementation science evaluation

Fengying Liu (China)

O-08-03 Repeat HIV testing and incident HIV diagnosis among clients attending voluntary counselling and testing clinics in Wuxi, China

Huachun Zou (China)

O-08-04 Delayed HIV testing among men who have sex with men in Australia has improved but remains an issue

Huachun Zou (China)

Friday - 2nd December 9:48-10:36 Room D

Oral Session 9	HIV 3
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Chairs: Daisuke Mizushima (Japan), N Van Kinh (Vietnam)

O-09-01 A systematic review of factors attributing to the spread of HIV in Africa

Emmanuel Yaw Amoako (Ghana)

O-09-02 Coming Out of the Closet: Disclosure of Sexual Orientation in China

Weiming Tang (China)

O-09-03 Reimagining Health Communication: A Non-Inferiority Randomized Controlled Trial of Crowdsourcing in China

Weiming Tang (China)

O-09-04 The interplay between CD4 cells count, viral load suppression and resistance on HIV patients after 20 months of the first-line ART

Wienta Diarsvitri (Indonesia)

Friday - 2nd December 15:00-15:48 Room D

Oral Session 10	Epidemiology/Social science 2
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Chairs: Katsumi Nakase (Japan), Kamal Faour (United Arab Emirates)

- O-10-01 Trajectory of first sexual experiences reported by teenage heterosexual males in Australia
Eric P. F. Chow (Australia)
- O-10-02 Can the heterogeneity of sexual contact network explain the regional difference of the association between HIV and HSV-2 prevalence?: insights from mathematical modelling
Ryosuke Omori (Japan)
- O-10-03 Recreational drug use among Chinese MSM and transgender individuals : Results from a national online cross-sectional study
Peizhen Zhao (China)
- O-10-04 UAE Legislation's, Concerns, Awareness, Campaigns and Fight Against Human Trafficking
Kamal Faour (United Arab Emirates)

Friday - 2nd December 15:48-17:00 Room D

Oral Session 11	Syphilis/HIV
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Chairs: Takeshi Nishijima (Japan), Chavalit Mangkalaviraj (Thailand)

- O-11-01 Is STD treatment being left out of the HIV Prevention Toolbox?
Anuwat Sriporn (Thailand)
- O-11-02 Factors associated with incident syphilis in HIV voluntary counseling and testing, Silom Community Clinic, Bangkok, Thailand, 2005-2015
Wipas Wimonstate (Thailand)
- O-11-03 Framing of syphilis and HIV in China: a comparative case study to inform promotion of political prioritization for STI prevention
Dadong Wu (China)
- O-11-04 Correlates of Multiplicity of Risk Behavior among Injecting drug users in three high HIV prevalence states of India
Santosh Kumar sharma (India)
- O-11-05 Community engagement and HIV/syphilis testing among high-risk MSM in China: A cross-sectional online survey
Chuncheng Liu (China)
- O-11-06 An outbreak of syphilis in an urban sexual health clinic in England.
Kanch Seneviratne (United Kingdom of Great Britain and Northern Ireland)

Poster

..... Poster Place

- P-01 Mechanism and molecular epidemiological typing of *Neisseria gonorrhoeae* with decreased susceptibility to cephalosporin
Kayo Osawa (Japan)
- P-02 Dampening of the mtrCDE efflux pump operon in *Neisseria gonorrhoeae* strain HO41 enhances gonococcal susceptibility to penicillin
Shao-chun Chen (China)
- P-03 Surveillance of genetic resistance determinants and gonococcal infection among MSM in Hong Kong
Denise P. C. Chan (Hong Kong Special Administrative Region of China)
- P-04 Are antibiotic-resistant *Neisseria gonorrhoeae* still increasing in Japan?
Kayo Osawa (Japan)
- P-05 Characterization of azithromycin resistant *Neisseria gonorrhoeae* strains isolated in Kyoto and Osaka, Japan, 2010-2015.
Ken Shimuta (Japan)
- P-06 The detection of *Neisseria gonorrhoeae* or *Chlamydia trachomatis* from the oral wash specimens by Abbott RealTime CT/NG assay-prospective comparative study
Masahiro Matsumoto (Japan)
- P-07 Nationwide surveillance of the antimicrobial susceptibility of *Chlamydia trachomatis* from male urethritis in Japan
Satoshi Takahashi (Japan)
- P-08 Prevalence of *Chlamydia trachomatis* genotypes in men who have sex with men and men who have sex with women using multilocus VNTR analysis-*ompA* typing in Guangzhou, China
Heping Zheng (China)
- P-09 Evaluation of an Immunoassay as a Rapid Test for Detection of *Chlamydia trachomatis* Infection in Female Commercial Sex Workers
Gilho Lee (Republic of Korea)
- P-10 Abstract Withdrawal
- P-11 The implications of *Ureaplasma urealyticum* on human papillomavirus infections in asymptomatic sexually active persons
Hong Chung (Republic of Korea)
- P-12 Prevalence of human papillomavirus infection in genitalia and urine of Japanese men.
Kazufumi Nakashima (Japan)
- P-13 Fetomaternal infection of syphilis -The significance of measuring IgM-TPHA-
Isao Fuchi (Japan)

- P-14 Neutropenia induced by high-dose intravenous benzylpenicillin in treating neurosyphilis: does it really matter?
Rui-Rui Peng (China)
- P-15 Prevalence of sexually transmitted infections using multiplex PCR in Korean nationwide reference laboratory
KyoungHo Roh (Republic of Korea)
- P-16 Prevalence of genital gonococcal and chlamydial infections in Japan: Why does Government routine surveillance of whole Japan was shown lower data than sentinel surveillance reported of seven selected preference
Takeo C. Tanihata (Japan)
- P-17 Prevalence of *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Mycoplasma genitalium*, and *Trichomonas vaginalis* by multiplex real-time PCR in a university hospital in Korea.
Dokyun Kim (Republic of Korea)
- P-18 Sexually transmitted infections in the Korean elderly population
Tae Hyong Kim (Republic of Korea)
- P-19 Analysis of Korean epidemiological characteristics in sexually transmitted infections
Eu Chang Hwang (Republic of Korea)
- P-20 Practice of universal hepatitis B core antibody screening in a sexual health setting: a critique
Joshua Campbell (United Kingdom of Great Britain and Northern Ireland)
- P-21 High risk behaviors and syphilis/HIV infection among men who have sex with men aged 50 and older in Shenzhen
Yumao Cai (China)
- P-22 High Prevalence of Sexual Transmitted Diseases and Its Correlates among Males Attending Sexually Transmitted Infection Clinics (MSC) in Guangdong Province, China
Lei Chen (China)
- P-23 Trends in male sexually transmitted infections of 8 urology clinics in Kagoshima, Japan
Hiroshi Hayami (Japan)
- P-24 Viral Sexually Transmitted Infections (STIs) among pregnant women in Southwestern Nigeria: A hidden epidemic potential.
Chinenye Gloria Anaedobe (Nigeria)
- P-25 Correlates of cervical cancer screening behavior among unmarried sexually active Japanese women aged 20-29 years old: Results from an Internet-based survey
Noriyo Kaneko (Japan)
- P-26 Association between Student Personality with Stigmatization Attitudes towards People Living with HIV/AIDS among New Undergraduate Medical Students in Bali
Kadek Dinda Pramadyanti (Indonesia)

- P-27 Non penetrative anal sex and saliva exposure: associations with use of smart phone applications in men who have sex with men in Melbourne, Australia
Eric P. F. Chow (Australia)
- P-28 Relationship of Level of Knowledge on HIV/AIDS and Attitude towards People Living with HIV/AIDS among Undergraduate Students of the University of the Philippines Diliman
John Angelo C. Labuguen (Philippines)
- P-29 Research of Quality of life on syphilis patients and related influencing factors in Nanshan District, Shenzhen, 2015
Yanfang Yang (China)
- P-30 Analysis of bacterial community using pyrosequencing in semen from the sexually active patient with chronic pelvic pain syndrome: A pilot study
Hoon Choi (Republic of Korea)
- P-31 Late presentation in HIV: the burden of hospitalization in an Australian tertiary health care centre
Jillian SY Lau (Australia)
- P-32 Risk factors affecting incidence of HIV/AIDS among men WHO have sex with men (MSM) in Semarang, Indonesia
Forman Novrindo Sidjabat (Indonesia)
- P-33 Testing for HIV in patients treated with Tenofovir and Lamivudine monotherapy for hepatitis B Virus
Jillian SY Lau (Australia)
- P-34 Factors for Japanese HIV positive patients to continue medical care
Fumiko Kagiura (Japan)
- P-35 Association of *C. difficile* infections in HIV-positive cases
Rama Chaudhry (India)
- P-36 Prevalence, socio demographic features and risk factors of Hepatitis B virus infection among pregnant women in Southwestern Nigeria.
Chinenye Gloria Anaedobe (Nigeria)
- P-37 Interim report on sampling of vaginal human papillomavirus from gynecology patients: Difference in detection rate between gynecologist sampling and self-sampling
Hisami Matsumine (Japan)

Abstracts

Plenary

Plenary 1

PL-01

Gonorrhoea in Japan and Asia Pacific

Tetsuro Matsumoto

University of Occupational and Environmental Health, Kitakyushu, Japan

Gonorrhoea is the second common sexually transmitted infections in the world. *Neisseria gonorrhoeae* is the causative bacteria and can induce urethritis, epididymitis, prostatitis in men and cervicitis in women. Infections caused by *N. gonorrhoeae* can expand to pelvic inflammatory diseases, which lead infertility or ectopic pregnancy in women, *N. gonorrhoeae* can infect to the extragenital regions including pharynx, rectum and conjunctiva. Disseminated gonococcal infection is rarely seen in untreated patients.

A variety of antimicrobial agents including penicillins, early generation of cephalosporins, tetracyclines, macrolides and fluoroquinolones were introduced to the treatment of gonococcal infections during several decades. Resistant strains of *N. gonorrhoeae* have emerged and have been increasing in the world. In addition, resistant strains to the third generation oral cephalosporin, cefixime, have emerged. Cefixime has been standard first line treatment option during recent years. Therefore, cefixime is now not recommended as the first line treatment option worldwide. Parenteral third generation cephalosporin, ceftriaxone, is the last remaining option of treatment. But, several cases of treatment failure caused by resistance to ceftriaxone were reported in several countries including Japan, Australia, several European countries, Canada, and South Africa. In Japan, two more resistant strains of *N. gonorrhoeae* to ceftriaxone were recently reported after first experience in 2009. This maybe show spread of resistant strains of *N. gonorrhoeae* in Japan and this is quite serious event, because these resistant strains are concomitantly resistant to almost all of antimicrobial agents which are clinically available in the treatment of gonococcal infections.

Currently, newer treatment options have been searched such as monotherapy using newer antimicrobial agents including delafloxacin, solothromycin, AZD0914, eravacycline and dual therapy using gemifloxacin and azithromycin, and gentamicin and azithromycin. But, standard treatment option is not found. There is not so much time to find it.

plenary 2

PL-02

HIV and sexually transmitted infections in men who have sex with men and sex workers in Asia

Ying-Ru Lo¹, Linh-Vi Le¹, Naoko Ishikawa¹, Wang Xiao Chun², Chen Xiang-Shen³, Razia Pendse⁴, Teodora Wi⁵, Melanie Taylor⁵

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²National Center for AIDS/STD Prevention and Control, China Center for Disease Control and Prevention, Beijing, China

³Deputy Director-General, National Center for STD Control, China CDC, WHO CC for Prevention and Control of Sexually Transmitted Infections, Nanjing, China

⁴HIV, STI, Hepatitis Unit, Division of Communicable Diseases, WHO Regional Office for South East Asia, Delhi, India

⁵Department of Reproductive Health and Research, WHO Headquarters, Geneva, Switzerland, Department of STD Prevention, Centers for Disease Control and Prevention, Atlanta, GA, USA

Asia continues to face significant HIV and STI epidemics. HIV remains concentrated in populations at higher risk often referred to as "key populations" including men who have sex with men (MSM), transgender people, people who inject drugs and sex workers (SWs). Asia continues to rank second after sub-Saharan Africa with 5.1 million people living with HIV and 300 000 annual new HIV infections. An overall decrease of HIV incidence has been observed in several Asian countries since the onset of the HIV epidemic due to effective HIV prevention and treatment programmes. Whilst prevention of HIV and STI among sex workers were successful we observe an alarming increase of newly reported HIV infections and syphilis among MSM and transgender populations. HIV incidence rates among MSM in Bangkok were as high as 5.5 per 100 person-years and reports with similar high rates are emerging from Manila. A 2015 WHO STI surveillance report shows syphilis prevalence among MSM of 6% in the Western Pacific Region. The resurgence of syphilis in China is disproportionately affecting MSM, where seroprevalence surveys across the country have detected city-level syphilis prevalence of up to 27%. Moreover rates of gonorrhoea among MSM remain high and gonococcal antimicrobial resistance (AMR) has emerged. This is alarming since there are no new antimicrobials being developed for gonorrhoea treatment. STI disease prevention and control are critical to reduce the escalating infection rates. Central to this is effective treatment, which is pivotal for disease control. Yet surveillance of AMR and STI treatment are suboptimal and underfunded. WHO and its partners are renewing efforts to improve country-level capacity to enhance gonococcal resistance and support implementation of WHO 2016 STI treatment guidelines combined with STI and HIV case detection, HIV treatment expansion and introduction of antiretroviral pre-exposure prophylaxis.

Plenary 3

PL-03

Are our STI control programs controlling STIs?

Jane Hocking¹, John Kaldor²

¹*Sexual Health Unit, Melbourne School of Population and Global Health, University of Melbourne, Australia*

²*Kirby Institute, University of New South Wales, Sydney, Australia*

Chlamydia is the most commonly diagnosed bacterial sexually transmitted infection in the developed world. A recent systematic review of chlamydia prevalence in young adults in high income countries estimated a pooled point prevalence of 3.6% (95%CI 2.4, 4.8) in women and 3.5% (95%CI 1.9, 5.2) in men.

Most countries recommend annual screening for young sexually active men and women and have invested considerable sums in sexual health programmes and while there has been a marked increase in chlamydia screening, a reduction in chlamydia prevalence is yet to be demonstrated. Available population-based prevalence data from the UK and USA, both of which have widespread chlamydia screening (>30% in young women), show no change in chlamydia prevalence over time.

The evidence underpinning existing chlamydia control policy comes from: 1) observational studies showing the incidence of sequelae; 2) a small number of trials showing a reduction in PID following a one off chlamydia test for women; 3) ecological studies demonstrating a decline in chlamydia following the introduction of testing in some countries; 4) a small number of studies describing the impact of testing interventions on population prevalence, and; 5) mathematical models suggesting that screening programmes could have an impact on transmission if they achieve high coverage over repeated rounds of testing. The recently completed Australian Chlamydia Control Effectiveness Pilot (ACCEPt) will also contribute to this evidence based.

This presentation will evaluate the existing evidence base for the development of chlamydia control policy and discuss what this means for future chlamydia control policy.

Plenary 4

PL-04

Syphilis in men who have sex with men

Basil Donovan

Kirby Institute, University of New South Wales, Sydney, Australia

Syphilis among men who have sex with men (MSM) is in epidemic phase globally following more than a decade of low incidence after the arrival of AIDS. The syphilis epidemic was initially concentrated in HIV positive MSM, but is increasingly spreading to HIV negative MSM. The multiple causes of this resurgence in syphilis cases include (a) HIV serosorting - MSM with similar HIV status finding each other for condomless sex, (b) inadequate screening, (c) the use of geo-spatial location applications to find sexual partners, (d) limited awareness that syphilis is readily transmitted by oral sex, and (e) increasing reliance on anti-retroviral drugs to avoid HIV infection.

The potential interactions between the overlapping epidemics of syphilis and HIV infection in MSM can result in clinical complexity, but the treatment is generally unchanged.

Mathematical models suggest that syphilis could be brought back under control if testing frequency was increased for high risk MSM and if contact tracing was enhanced. Systemic chemoprophylaxis targeting high risk MSM could also be acceptable and effective at a population level. However, MSM have indicated that they would not find it acceptable to reduce their sexual behaviour to control syphilis, and the models indicate that this would have limited effect anyway.

Plenary 5

PL-05

Dual elimination of mother-to-child transmission of HIV and syphilis in Asia Pacific

Razia Pendse¹, Naoko Ishikawa², Ying-Ru Lo²

¹HIV, STI, Hepatitis Unit, Department of Communicable Diseases, WHO Regional Office for South East Asia, Delhi, India

²HIV, Hepatitis and STI Unit, Division of Communicable Diseases, WHO Regional Office for the Western Pacific, Manila, Philippines

The dual goals of elimination of parent-to-child transmission (EPTCT) of HIV and syphilis are aspirational, although challenging for countries to achieve. Globally, new HIV infections in children declined by 58 per cent between 2000 and 2014 from 520,000 to 220,000. This fell short of the target of reducing new cases of HIV in children to less than 40,000 by 2015.

In 2014, of the 220,000 children who acquired HIV worldwide, the Asia-Pacific region at 21,000 accounted for the second highest number of new paediatric cases after sub-Saharan Africa.

ANC attendance in most countries in Asia Pacific is high. HIV testing coverage of pregnant women is below the validation target for most of the countries. Only Thailand and Mongolia reported a rate higher than 95 per cent. The average HIV testing coverage of pregnant women was 45 per cent in 2014. ART coverage for HIV-positive pregnant women in Asia-Pacific was 38 per cent compared to 73 per cent globally.

Reported coverage of early infant diagnosis (EID) has actually declined between 2009 and 2014 (from 26 per cent to 24 per cent). In South Asia, coverage rose during this period, but from a very low baseline.

Undiagnosed and untreated syphilis in mothers and babies has devastating consequences in the newborn. Prevention of congenital syphilis is relatively easy and can be prevented with penicillin given as a single dose intramuscular injection.

Between 2008 and 2012, maternal syphilis infections and adverse pregnancy outcomes declined globally by one third. The decline in maternal syphilis was most evident in South Asia, with India accounting for 37 per cent of this reduction in large part due to better data availability.

Universal versus targeted HIV and Syphilis testing in low prevalence settings has been subject of debate. Modelling analysis based on country data revealed that offering universal testing for pregnant women in antenatal services was cost-saving and/or cost-effective even in low HIV prevalence settings. Despite impressive reductions in cases of paediatric HIV and congenital syphilis, elimination targets remain elusive for most countries. Progress has been uneven, patchy and slow in most countries except champion countries like Thailand who has eliminated and Cambodia, China, Fiji and Malaysia who are progressing well.

There is a huge opportunity within the SDG and UHC agenda to mount an integrated fast track response to ensure a generation free of HIV and Syphilis in Asia Pacific

Political commitment has increased and needs to be maintained and scaled up in some countries to ensure adequate resource allocation as our children have a right to be born HIV and syphilis free.

Prevention of vertical transmission of HIV and Syphilis is a key quality indicator for MCH services and should be measured as such within national programmes.

Asia Pacific has the potential of being the first region in the world to achieve EMTCT at a regional level and should move in that direction.

Plenary 6

PL-06

Update on *Mycoplasma genitalium*

Jørgen Skov Jensen

Microbiology and Infection Control, Statens Serum Institut, Copenhagen, Denmark

M. genitalium is an established cause of sexually transmitted urethritis and cervicitis, and may cause upper genital tract disease in women. *M. genitalium* infections is the aetiology in 15-25% of symptomatic non-gonococcal urethritis and probably around 10% of pelvic inflammatory disease (PID). Detection by nucleic acid amplification tests is the only diagnostic method available, and new CE marked tests approved for diagnostic use in Europe, and compatible with high-throughput testing, have recently become available. The availability of such assays may dramatically change the availability of diagnostic testing.

In 2016, the first European guideline on *M. genitalium* infections was published. The work was initiated by the IUSTI Europe guidelines editorial board and provides evidence based advice regarding indications for testing, laboratory diagnostics, and patient management including treatment, partner notification, and follow-up.

One of the main concerns in the guideline is the lack of a universally effective treatment. Doxycycline has a cure rate of only 30% as documented in multiple treatment trials, whereas azithromycin is significantly more effective with cure rates approaching 90% in macrolide susceptible infections. However, macrolide resistance is an emerging threat with $\geq 40\%$ of currently circulating strains carrying macrolide resistance mediating mutations. These mutations lead to treatment failure with azithromycin regardless of the dosage. Currently, moxifloxacin is the only second line antibiotic that has been documented to have a high activity against macrolide resistant *M. genitalium*. However, multidrug resistant strains have emerged, primarily in South East Asia, but are also detected in Europe at an increasing rate. In the presentation, new antimicrobials with activity against multidrug resistant *M. genitalium* and possible third line treatment modalities will be discussed along with new laboratory techniques holding promise in detection of resistance mediating mutations.

Plenary 7

PL-07

Update of *Neisseria gonorrhoeae* antimicrobial resistance internationally and new antimicrobials for treatment of gonorrhoea

Magnus Unemo

Department of Laboratory Medicine, Microbiology, Örebro University Hospital, Sweden

The WHO estimated 78 million new gonorrhoea cases in 2012 globally and antimicrobial resistance (AMR) in *Neisseria gonorrhoeae* is a major public health concern that compromises effective treatment and disease control efforts worldwide. *N. gonorrhoeae* has retained high-level resistance to antimicrobials previously recommended for first-line treatment and, recent decade, resistance to the extended-spectrum cephalosporin (ESC) ceftriaxone, the last remaining option for first-line empiric monotherapy of gonorrhoea, has been reported from many countries. This is of grave concern because gonorrhoea has become exceedingly-difficult-to-treat and may become untreatable under certain circumstances, at least in some settings. In this talk, an update regarding the AMR in *N. gonorrhoeae* internationally will be provided, the crucial need for implementing effective actions will be discussed, and new antimicrobials of potential interest for treatment of gonorrhoea will be reviewed.

Plenary 8

PL-08

Trichomoniasis - a forgotten problem

David A. Lewis

Western Sydney Sexual Health Centre, Sydney, Australia

Trichomonas vaginalis is a motile parasitic protozoan causing trichomoniasis. It is characterized by a profuse itchy vaginal discharge in women and is a recognized cause of non-gonococcal urethritis in men. Trichomoniasis has several important medical, social and economic implications, including adverse pregnancy outcome and enhanced transmission of HIV. *Trichomonas vaginalis* induces a profound inflammatory response, recruiting CD4 cells and macrophages to vaginal and cervical mucosa. *T. vaginalis* has a direct cytopathic effect *in vitro* resulting in punctate micro-haemorrhages compromising host barrier against HIV infection. *T. vaginalis* has also been shown to be associated with increased HIV viral load in the seminal and cervico-vaginal compartments. Furthermore, some studies show *T. vaginalis* increases susceptibility to bacterial vaginosis or colonisation with abnormal vaginal flora. Trichomoniasis may be diagnosed by wet film microscopy, latex agglutination, culture (e.g. Diamond's medium), immunofluorescence (acridine orange), DNA/RNA amplification technology (PCR and Aptima[®] assays) or as an indirect consequence of cervical cytological examination. The introduction of the OSOM[®] *Trichomonas* Rapid Test offers an additional diagnostic option for point-of care testing. Case-finding women with vaginal discharge and testing/providing epidemiological treatment for partners has little effect on reducing the community burden of infection on account of the large asymptomatic pool of disease. However, where the prevalence of *T. vaginalis* and HIV is high, screening should be considered, e.g. sex workers. Metronidazole mass treatment, improved condom use and voluntary medicalized male circumcision have all been shown to reduce the community prevalence of *T. vaginalis* infection. An effective vaccine remains elusive although an oestrogenized mouse model exists for the study of immunological responses and potential vaccine candidates.

Abstracts

Symposium

Symposium 1

S-01-01

Antimicrobial Susceptibilities in Japan

Tetsuro Muratani

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Hibiki Research Group for Clinical Microbiology, Kitakyushu, Japan

Japanese Antimicrobial Surveillance Group, Osaka, Japan

Background: In 2001, we have reported the emergence of most of the cephalosporins and aztreonam resistant *Neisseria gonorrhoeae* isolates from clinical failure cases treated with cefdinir and aztreonam. These isolates exhibit high-level MIC for penicillins, 1st and 2nd generation cephalosporins, cephamycins, most of 3rd generation oral cephalosporins including cefixime and aztreonam, and the reduced susceptibility to most of 3rd generation parenteral cephalosporins. Ceftriaxone and cefodizime (MIC = 0.125 to 0.5 µg/ml) was still susceptible against these strains. In 2011, the first *N. gonorrhoeae* strain highly resistant to the 3rd generation parenteral cephalosporins, ceftriaxone (MIC = 1 to 2 µg/ml) was isolated in Kyoto, Japan. After this, other ceftriaxone-resistant *N. gonorrhoeae* strains were discovered in France and Spain.

Materials & Methods: We used 299 *N. gonorrhoeae* isolates from different cases during 2014 in all Japan area. The MICs of various antimicrobials against the isolates were determined by the two-fold serial agar dilution method. Breakpoint of CLSI and EUCAST was used to determine the susceptibility ratio to various antimicrobials.

Results: The susceptibility ratio (CLSI/EUCAST) to various antimicrobials were 2.7/2.7% to penicillin, 100/95.7% to ceftriaxone, 93.0/57.9% to cefixime, 22.4/22.4% to ciprofloxacin, 22.1/27.4% to tetracycline, -/68.2% to azithromycin, and 100/100% to spectinomycin, respectively. The MIC ranges of ceftriaxone were \leq 0.002 to 0.25 µg/ml. No ceftriaxone-high resistant strains were isolated in this study.

Conclusions: The susceptibility ratio to penicillin, ciprofloxacin, tetracycline were less than 30%, so these agents not able to use as first line therapeutic agent. The susceptibility ratio to the other antimicrobials except ceftriaxone and spectinomycin was less than 70%. Due to these circumstances concerning the antimicrobial susceptibility in Japan, the Japanese therapeutic guideline for uncomplicated gonococcal infection by Japanese Society for Sexually Transmitted Diseases recommend single dose treatments using 3 parenteral agents, ceftriaxone, cefodizime, or spectinomycin.

Symposium 1

S-01-02

Abstract Withdrawal

Symposium 1

S-01-03

Antimicrobial susceptibilities for *N. gonorrhoeae* in India

Seema Sood

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Antimicrobial resistance (AMR) in *N. gonorrhoeae* has become a world-wide problem with resistance spreading between continents at remarkable speed and ease. As per the recent CDC report, due to the high consequence and significant risk associated with it, drug-resistant *N. gonorrhoeae* has been classified under hazard level 'urgent'. There is now global documentation of increasing minimum inhibitory concentrations (MICs) to extended-spectrum cephalosporins (ESCs), currently first-line therapy for gonorrhoea and India is no exception. There is a compelling need to closely monitor resistance to ensure success of empirical treatment regimens and gonorrhoea control efforts. The presentation will discuss AMR surveillance data from the Apex & other regional STD centres of the country. Additionally, data from ICMR surveillance network set up in 2010 and coordinated by AIIMS, New Delhi will be taken up. Further, trends over time, limitations and challenges will be reviewed. The disc-diffusion method for AST using either the CDS technique or the CLSI method is in widespread use in India. MIC testing by E test is being done in few laboratories that generate continuous data. Use of Gold Standard method for MIC determination is infrequent. Overall, the finite data available chiefly comprises of isolates from male patients with urethritis. In brief, it has been observed that resistance to classical antibiotics, i.e., penicillin and tetracycline is high. Chromosomal as well as plasmid mediated resistance is noted. Although no longer recommended for the treatment of gonorrhoea, fluoroquinolone resistance rates are approaching 100% in many laboratories. Verified decreased susceptibility (DS) to ESCs has been reported from some laboratories and varies from about 1% to 9.5% while azithromycin resistance in India is low, seen in <5% isolates. Further, spectinomycin resistance is rare and no MDR-NG is described as per the recently proposed criteria. There appears no immediate threat to the in-use therapies administered in syndromic approach (cefixime 400mg plus azithromycin 1g orally as a single dose) in our setting.

Symposium 1

S-01-04

NG Antimicrobial Susceptibilities in Australia

David A. Lewis

Western Sydney Sexual Health Centre, Sydney, Australia

In Australia there are distinct differences in gonococcal disease rates, antimicrobial resistance and epidemiology in the remote Indigenous populations when compared with the urban, non-Indigenous populations. Monitoring AMR is critical for disease management and public health responses.

The National Neisseria Network, Australia is a nation-wide laboratory based surveillance system of laboratories from each state and territory that perform testing for the Australian Gonococcal Surveillance Programme which has continuously monitored antimicrobial resistance in clinical isolates of *Neisseria gonorrhoeae* from all states and territories for more than 35 years.

Overall, nationally about 1 in 3 gonococcal infections are diagnosed by culture, and antimicrobial susceptibility testing (AST) is performed. However increasingly nucleic acid amplification testing (NAAT) is replacing culture in urban settings, and remote settings where the distances from the clinic to the laboratory can be extreme. To address this, in remote Australia where relatively low numbers of strains are available for AST, molecular testing for antimicrobial resistance is in place for surveillance, and to inform guidelines, and forms part of the AGSP Annual Surveillance Report. In this presentation NG AMR in Australia and surveillance strategies will be discussed.

Symposium 1

S-01-05

Antimicrobial susceptibilities for *N. gonorrhoeae* in Taiwan

Tsai Chia-Chun

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Due to the increase of drug-resistant strains and sexually open societies, the incidence of *N. gonorrhoeae* drastically increased in recent years. From 2005 to 2008, the incidence of *N. gonorrhoeae* in aged from 15 to 49 increased 21%. In Taiwan, the incidence of *N. gonorrhoeae* has also been gradually rising in the past decades, from 2011 in 2011 to 3585 in 2015. The increasing trend may result from a number of factors including drug-resistant pathogens, asymptomatic carriers and sexually open societies. To make matters worse, most patients tend to purchase over-the-counter drugs for self-treatment. Inadequate dosage and inaccurate treatment usually contribute to therapeutic failures and drug-resistant strains. Because of eastern racial preferences and geographical relations, the cross-border prostitution of Taiwanese mostly occurs within Asian countries. The pathogens of sexually transmitted infections (STIs) in Taiwan reflect a regional spread within Asian countries and different from western countries. Recent studies have also shown different antimicrobial susceptibility results of urethral *N. gonorrhoeae* strains between Asian and western countries.

There are two major tactics for *N. gonorrhoeae* prevention and transmission in Taiwan. First, physicians must report diagnosed cases of gonorrhea to public health authorities. The diagnosed gonorrhea patients should be notified within one week. Taiwan Health Ministry and Centers for Disease Control (Taiwan CDC) can collect data and provide the current information about this threatening STI. Taiwan CDC also regularly announced the antimicrobial Susceptibilities. Second, to further improve the quality of STIs care services and encourage patients to seek reliable treatment, Taiwan CDC has asked relevant societies and associations to assist the training of the STI-friendly physicians since 2010.

In Taiwan, antimicrobial therapies of STIs were previously established in 2010. Taiwan Urological Association also accumulated clinical pictures of Taiwanese and issued the "Atlas and Treatment Guidelines of Sexually Transmitted Diseases" and "Treatment Guidelines of Sexually Transmitted Diseases" in 2015. Here in, we focus on the evaluations and announcements for *N. gonorrhoeae* in Taiwan. The strategies for prevention and control are also discussed.

Symposium 1

S-01-06

Recent Increase of Cephalosporin-resistance in *Neisseria gonorrhoeae* in Korea

Hyukmin Lee

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Neisseria gonorrhoeae is one of the most important pathogens causing sexually-transmitted diseases and the causative agent of various infections from uncomplicated urethritis to pelvic inflammatory or disseminated infections. The annual burden of gonococcal infection was estimated as 88 million new cases among adults globally in 2011 by WHO, and 321,849 cases of infection were reported in the United States by CDC. In Korea, it is difficult to measure the exact number of gonococcal infections, approximately 45,000 cases of gonococcal infection are reported to the Korea Health Insurance Review and Assessment Service annually. The recent emergence and global dissemination of multidrug resistant *N. gonorrhoeae* may result in global concern. Gonorrhea may be treated empirically at primary care healthcare facilities in most of cases. Recent emergence and dissemination of antimicrobial resistance of *N. gonorrhoeae* is a serious problem and the drop out of classic antimicrobial agents restricts the selection of available drugs. In Korea, antimicrobial resistance to penicillin and tetracycline was already common in 1990's, and ciprofloxacin resistance spread during 2000's and only spectinomycin and extended-spectrum cephalosporin could be used for gonococcal treatment in Korea since 2007. And in 2013, combination of ceftriaxone and azithromycin was recommended as standard treatment by Korean CDC. However, this expanded use of ceftriaxone act as selective pressure for ceftriaxone resistance, and caution for emergence of cephalosporin resistance was required. In Korea, cefixime-resistant isolate was reported in 2004 for the first time, and this isolate showed typical *penA* mosaicism (type X) which was reported in 2002 in Japan. Second isolates which was resistant to cefixime was reported in 2011, and this isolate had *penA* type XIII which was the most prevalent *penA* type in Korea. Both of two isolates had other complex resistance mechanisms simultaneously. The proportion of cefixime-resistant *N. gonorrhoeae* increased from 2011 and reached about 10% in 2014 and the genotype which was responsible for cefixime resistance was changed. In this lecture, we will discuss recent increase of cephalosporin resistance and molecular epidemiologic characteristics of *N. gonorrhoeae* isolates which are resistant to cephalosporin in Korea.

Symposium 2

S-02-01

Clinical trials for Gonococcal Urethritis by Azithromycin 2g Single Dose

Mitsuru Yasuda

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Gonococcal infections are difficult to treat because of their multidrug antimicrobial resistance. Ceftriaxone is effective for gonococcal infections including urethritis and pharyngeal infection. However high-level ceftriaxone-resistant strain H041 was isolated from the pharynx of a female commercial sex worker in Japan in 2009. Thus, other drugs for gonococcal infections are required.

In Japan, a 2-g dose of extended-release azithromycin (azithromycin-SR) can be used to treat gonococcal infections because it has an indication for gonococcal infection in Japan since 2009. However, there have been no studies evaluating the usefulness of a single 2 g dose of azithromycin-SR for the treatment of gonorrhoea. We treated male gonorrhoea with a single 2 g dose of azithromycin-SR to determine its microbiological outcomes and tolerability.

We enrolled 189 Japanese men with gonococcal urethritis between April 2009 and December 2013. The patients were given a single 2 g dose of azithromycin-SR. Microbiological efficacy was evaluated by the results of the post-treatment molecular testing of *Neisseria gonorrhoeae*. MIC testing was performed only for pretreatment isolates of *N. gonorrhoeae* collected from the patients.

We evaluated 130 patients for microbiological outcomes. Of these patients, 122 (93.8%) were judged to be microbiologically cured on the basis of negative test results. All isolates for which the azithromycin MICs were ≤ 0.25 mg/L were eradicated, whereas 5 of 12 isolates for which the MICs were 1 mg/L persisted after the treatment. Forty-six adverse events occurred in 41 patients. However, all adverse events were classified as mild.

The eradication rate of *N. gonorrhoeae* was 93.8% in men with gonococcal urethritis treated with a single 2 g dose of azithromycin-SR. The breakpoint MIC of a 2 g dose of azithromycin-SR for gonococcal urethritis associated with clinical treatment failures appeared to be 1 mg/L. With regard to side effects of higher doses of azithromycin, the 2 g dose of azithromycin-SR appeared to improve tolerability. However, the widespread use of a high-dose regimen of azithromycin might lead to the development of further resistance to azithromycin.

Symposium 2

S-02-02

Possible Agent for MDR Gonorrhoeae - Reverse Antibiotics for *N. gonorrhoeae*

Tadashi Baba

Juntendo University Infection Control Science Research Center, Tokyo, Japan

We have been challenged by emergence of antibiotic resistant bacteria since the clinical introduction of penicillin G. By developing antibiotics with novel mechanisms of action, we have made a lot of efforts to overcome the problem. However, the bacteria soon caught up and acquired resistance to the newly developed antibiotics, and started prevailing as multi-antibiotic-resistant pathogens. Therefore, finding novel chemotherapeutic agents or strategies is critically important.

During screening for a novel antibiotic active against multi-resistant MRSA strain, we re-discovered antibiotic nybomycin as representing a novel class of antibiotic that may solve the problem of predestined antibiotic resistance. Nybomycin, produced by an actinobacterium and first reported in 1955, is active against quinolone-resistant *Staphylococcus aureus* strains with mutated *gyrA* genes encoding for DNA gyrase subunit A but not against those with intact *gyrA* genes against which quinolone antibiotics are effective. When nybomycin-resistant mutants were generated from a quinolone-resistant, nybomycin-susceptible *Staphylococcus aureus* strain, the mutants were found to have their *gyrA* genes back-mutated and to have lost quinolone resistance. Nybomycin with complementary feature to quinolone is considered to be a novel class of antibiotics, and we designated such class of antibiotics as 'reverse antibiotics'. We also found apigenin, plant-derived flavone, also acts as a reverse antibiotic.

Nybomycin and apigenin may be also applicable to Gram-negative bacteria. An MIC of nybomycin for a quinolone resistant *Escherichia coli* strain (levofloxacin MIC >64 mg/L) was 0.5 mg/L when efflux pump inhibitor Phe-Arg β -naphthylamide (PA β N) was present. The MIC value so far is not low enough and therefore nybomycin cannot be immediately applied for infectious diseases caused by Gram-negative bacteria. We are currently working on chemical modification of nybomycin and apigenin to develop candidates of drugs that are effective for large variety of bacteria, including *Neisseria gonorrhoeae* and other pathogenic microorganisms.

Symposium 2

S-02-03

New randomized clinical trials for *Neisseria gonorrhoeae* infections

Magnus Unemo

Department of Laboratory Medicine, Microbiology, Örebro University Hospital, Sweden

The antimicrobial resistance (AMR) in *Neisseria gonorrhoeae* is a major public health concern that compromises effective treatment and disease control efforts worldwide. Gonorrhoea has become exceedingly-difficult-to-treat and may become untreatable under certain circumstances, at least in some settings. The World Health Organization has published a global action plan to control the spread and impact of AMR in *N. gonorrhoeae*. One of the most actions described in this global action plan is to identify new effective, affordable and accessible alternatives for treatment of gonorrhoea. Repurposing old antimicrobials, e.g. gentamicin, ertapenem, and fosfomycin, have been suggested for future therapy of gonorrhoea. However, several shortcomings with these antimicrobials exist and appropriate randomized clinical trials are lacking. In recent years, several new antimicrobials (derivates of earlier developed antimicrobials or new antimicrobial classes) have proven relatively potent *in vitro* activity against gonococcal strains. In this talk, new randomized clinical trials for antimicrobials such as gentamicin, solithromycin (CEM-101), zoliflodacin (AZD0914/ETX0914), and gepotidacin (GSK2140944) will be discussed.

Symposium 2

S-02-04

Newer treatment strategies for resistant gonococcal infection in South-East Asia

Manju Bala

WHO GASP SEAR Regional Reference Laboratory, VMMC & Safdarjung Hospital, New Delhi, India

Antimicrobial resistance (AMR) in *Neisseria gonorrhoeae* severely compromises control of gonococcal disease, preventing effective treatment of individuals and increasing the rate of morbidity and complications. In order to decrease its impact on HIV transmission and sexual and reproductive health, there is a need to treat this infection with the right drug at the right time. No routine gonococci AMR surveillance or quality assurance was in place in countries of South-East Asia Region (SEAR) including India before 1990. WHO Gonococcal Antimicrobial Surveillance Programme (GASP) for SEAR countries became functional in 1998 with establishment of WHO Regional Reference laboratory (RRL) at Safdarjung Hospital, New Delhi in 1999.

WHO RRL carried out expansion of GASP network in SEAR countries following revitalization of GASP by WHO Headquarters, Geneva in 2009. WHO RRL is conducting a country-based EQAS programme in India for the last 15 years i.e. since 2000 to evaluate the quality of the AMR testing data.

National AIDS Control Organization, India along with WHO RRL has taken the initiative by expanding the ongoing AMR surveillance to the national level by including all 10 Regional STI Centres (RSCs) and has extended support to 45 State Reference Centres (SRCs) across the country to get linked with the GASP. Data thus generated will enable the public health managers to modify the national treatment guidelines.

WHO has published the 'Global Action Plan to Control the Spread and Impact of Antimicrobial Resistance in *N. gonorrhoeae*' in 2012. The main components of the global action plan are to enhance AMR surveillance worldwide; facilitate early detection and verification of resistance and treatment failure to recommended treatment; and research to identify alternative effective treatment strategies. RRL for SEAR countries is assisting in implementation of all these components.

This presentation will focus on the strategies adopted for formation of a SEAR alliance on AMR, limitations and gaps in the surveillance and search for newer treatment options.

Symposium 3

S-03-01

Detection of Microorganisms for Urethritis

U-Syn Ha

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Although the criteria for the clinical diagnosis of urethritis are well accepted, isolation or confirmation of microorganisms are important. The molecular diagnosis of microorganisms related to urethritis from DNA residue has been vigorously examined. The recent CDC laboratory testing guidelines now recommend the use of Nucleic acid amplification tests (NAATs) for testing men for urethritis, unless culture is desired to perform susceptibility testing for gonococcus. First-void urine is the specimen of choice for NAATs in men, though the urethral swab specimen remains an option. NAATs are the most sensitive tests for STI screening and diagnosis. NAATs are more sensitive than the previously available diagnostic tests. More recently, the multiplex PCR assay has made it convenient for clinicians in many clinical fields to test for multiple causative organisms simultaneously. The multiplex PCR assay is a cost-effective diagnostic test because it allows for faster detection and a reduction in labor and reagent costs.

And furthermore, Real-time PCR was investigated, which comprises amplification and fluorescence detection of an amplified DNA target in the same step. One of the most important features of real-time PCR is quantification. Unlike bacterial culture, in which only viable bacteria can be quantified, real-time PCR can quantify both viable and nonviable bacteria. The quantification of the bacterial load in clinical specimens can provide a critical clue in discriminating between infection and commensalism, which leads to an evaluation of the patient's prognosis by determining disease severity and assessing treatment efficacy

So, in this session, I will present the review and recent update of detection method for male urethritis.

Symposium 3

S-03-02

Treatment strategies for male urethritis

Satoshi Takahashi

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Male urethritis as the sexually transmitted infections is primarily caused by *Neisseria gonorrhoeae* and *Chlamydia trachomatis*, as well as other pathogens, including *Mycoplasma genitalium*, *Ureaplasma urealyticum*, *Adenovirus* and *Trichomonas vaginalis*. *N. gonorrhoeae* is the most important STI pathogen and has a noteworthy history of resistance to several antimicrobial agents. The World Health Organization called attention to the resistance to third-generation cephalosporins including cefixime and ceftriaxone, and the certain future threat of the emergence of resistance is a critical issue worldwide to date. Two nationwide surveillance reports from Japan, 2009 to 2010 and 2012 to 2013, showed that *N. gonorrhoeae* loses its sensitivity to multiple antimicrobial agents but not to ceftriaxone. Based on the situation in Japan, I will intensively show how wonderful the treatment regimen with intravenous ceftriaxone 1g is.

We are also interested in the antimicrobial susceptibility of *C. trachomatis*. Fortunately, a few reports have reported the isolation of heterotypic resistant strains of *C. trachomatis* but not stable strains in clinical situations. However, some cases of *C. trachomatis* infections with unsuccessful treatment outcomes have been reported. Therefore, we put the nationwide surveillance of *C. trachomatis* antimicrobial susceptibility in Japan into practice and reported the details in this symposium. In addition, we should notice how we treat the patients with *M. genitalium*-positive urethritis. In Japan, we have the results of favorable outcome for the treatment regimen with sitafloxacin, newer generation fluoroquinolone, against *M. genitalium*. Therefore, we will discuss how we make the best treat the patients with non-gonococcal urethritis.

Symposium 3

S-03-03

Treatment strategies for genital lesions of STI

Somesh Gupta

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Asian Association of Urology has published Asian guidelines for management of sexually transmitted infections. In this presentation, I will be presenting evidence-based therapeutic guidelines for the management of three sexually transmitted infections, namely, Early Syphilis, Genital Herpes, and Anogenital warts. In addition, brief discussion on epidemiology, diagnosis, risk factors, prevention and management strategy in presence of co-infection with HIV will also be discussed.

Symposium 4

S-04-01

Laboratory testing for vaginitis: an opportunity not to be missed!

Barbara Van Der Pol

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Vaginitis may be the result of a variety of pathogens, some of which are transmitted sexually. Millions of women are affected by this syndrome every year and clinical diagnosis remains difficult. Different infections have been associated with specific discharge characteristics, e.g. yeast infection caused by *Candida spp.* Are described as producing a thick, white curd-like discharge versus infection bacterial vaginosis (BV) which causes a thin, whitish-gray fishy smelling discharge. However, these characterizations are subjective and not universally present in each woman with infection. When assessing women with complaints of discharge or dysuria, wet preparation microscopy may be useful for visualizing Clue cells (indicative of BV), yeast hyphae or actively motile trichomonads. If present, these observations have excellent specificity and should be used to inform patient management immediately. However, the sensitivity of microscopy is unfortunately low for a number of reasons. The availability of laboratory-based molecular diagnostic assays that can identify the causes of vaginitis is an important step forward in improving women's sexual and reproductive health.

Adoption of laboratory-based vaginitis detection also affords a new opportunity for improving women's health and population health related to sexually transmitted infections (STIs). Since *Trichomonas vaginalis*, the causative agent of trichomoniasis, is a sexually transmitted pathogen, use of a molecular vaginitis panel will provide data that may inform local public health policy. Vaginitis testing is predominately performed based on clinical presentation without consideration of sexual behaviors. As a result, the frequency of positive trichomonas results may be an indicator of sexual risk in populations previously considered to have low behavioral risk of STI exposure. Many estimates of both STI risk and STI population prevalence are extrapolated from data collected from high risk populations such as STI clinic attendees. Assessing rates of infection during antenatal and gynecology office visits is considered to be more representative of the overall risk of STI in the general population. In many settings, direct questions regarding sexual behavior are not comfortable for patients, but adding STI screening to samples collected for vaginitis diagnostics may help gather information without causing discomfort. Addition of STI testing to swabs used for vaginitis diagnostics, whether as a screening test that would inform patient management or as an epidemiologic surveillance tool, provides a new opportunity for improving our understanding of women's sexual and reproductive health.

Symposium 4

S-04-02

Vaginal microbiota of Japanese women

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The vaginal microbiota (VM) composition is dynamic throughout a woman's life and dysbiosis of the VM may be responsible for bacterial vaginosis, preterm birth as well as the risk of sexually transmitted diseases. We investigated vaginal microbiota in non-pregnant women (non-PG), pregnant women (PG) and commercial sex workers (CSW) in Japan by using Terminal Restriction Fragment Length Polymorphism Analysis (T-RFLP) and metagenomic sequencing analysis (16S-MG) using 16S rDNA amplicons, and analyzed the properties of lactobacilli isolated from Japanese women.

Fifty-four (54) women's vaginal samples were collected (non-PG: 22 samples from 22 women, PG: 24 from 23, CSW: 8 from 8) by sterilized swab and VM was analyzed by T-RFLP and 16S-MG to compare the differences. In addition to the characterization of VM, we also isolated vaginal lactobacilli by LBS medium and determined its properties (e.g. H₂O₂ production).

Vaginal community states were clustered into 2 groups with similar bacterial composition and abundance as a result of the method of T-RFLP and 16S-MG. Group 1 was most often dominated by *Lactobacillus* spp., group 2 was constituted by not only *Lactobacillus* spp., but also *Bifidobacterium* spp., *Atopobium* spp., *Bacteroides* spp., *Streptococcus* spp., *Clostridium* spp., *Prevotella* spp., *Gardnerella* spp. and a few other taxa. The non-PG had the composition ratio of group 1 (54.5%) and 2 (45.5%). The PG had more group 1 (70.8%) than group 2 (29.2%). However, the CSW had more group 2 (87.5%) than group 1 (12.5%). Therefore, a correlation was observed between groups and vaginal flora. Similar results were observed in a principal coordinate analysis (PCoA) using Unifrac distance. Detection rate of live lactobacilli in CSW was lower than non-PG and PG.

Our results clearly showed that VM was different among non-PG, PG and CSW in terms of its diversity and colonization rate of lactobacilli as similar to the studies out of Japan. Concurrently, we are also investigating more detailed characterization of vaginal lactobacilli which were isolated from each group.

Symposium 4

S-04-03

Clinical Performance of the BD MAX™ Vaginal Panel for the Diagnosis of Vaginitis

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Background: Vaginitis can be caused by bacterial vaginosis (BV), yeast candidiasis, and *Trichomonas vaginalis* (TV). The Becton Dickinson MAX Vaginal Panel (BDVP; for sale in Europe) detects TV, BV, and different *Candida* species (*C. albicans*, *C. tropicalis*, *C. parapsilosis*, *C. dubliniensis*, as *Candida* group; as well as *C. glabrata* and *C. krusei* separately). The objective of this study was to evaluate the performance of the BDVP on the BD MAX System. We also compared the performance of the BD MAX Vaginal Panel and Clinician's diagnosis (CD) for BV, TV and Candidiasis.

Methods: The BDVP results obtained were compared to molecular target-specific, comparator Reference Methods (RM) for the detection of TV (wet mount/culture), BV (Amsel/Nugent) and *Candida* (culture/sequencing). Of 1763 enrolled women, 1,633 specimens were valid for all testing methods. One clinician-collected vaginal swab (BD MAX UVE Specimen Collection Kit) was tested with the BDVP and 4 additional vaginal swabs for comparators were collected: one each for wet mount; InPouch™ TV Culture; Amsel/Nugent score and yeast culture; and for Aptima® TV. The performance of the BD MAX Vaginal Panel was compared to the Clinician's diagnosis (CD) for BV, TV and Candidiasis as well. CD was based on the positivity of at least three of the four Amsel's criteria for BV, pseudo-hyphae, yeast mycelium and/or budding *Candida* as well as "cottage cheese" discharge for candidiasis and on observation of at least one motile parasite on wet mount preparation and "yellow-green to gray malodorous" discharge for TV.

Results: For TV, the sensitivity was 92.7% (115/124) with a specificity of 99.3% (1459/1470). For BV, the sensitivity was 90.5% (764/844) with a specificity of 86.1% (572/664). For the *Candida* group, the sensitivity was 90.9% (452/497); specificity was 94.1% (1006/1069). The sensitivity/specificity for *C. glabrata* was 75.9% (22/29)/99.7% (1533/1537). There were no isolates/data for sensitivity for *C. krusei*; specificity was 99.7%. Clinician diagnosis compared to BDVP results:

	BV ^a		Candida Group ^b		TV	
	sensitivity	specificity	sensitivity	specificity	sensitivity	specificity
CD	76.7%	91.8%	56.9%	89.3%	70.2%	99.6%
BDVP	92.9%	91.0%	90.8%	93.7%	92.7%	99.3%

^aNugent score <4 and >6 were considered

^bAll *Candida* species results including *C. glabrata* and *C. krusei* were pooled together

Conclusions: The BD MAX Vaginal Panel performed with high sensitivity and specificity for the diagnosis of vaginitis/vaginosis compared to the gold standard RMs. Compared to Clinicians' Diagnoses, the BD Max Vaginal Panel performed with higher sensitivity and comparable specificity for the diagnosis of vaginitis/vaginosis. The assay performance supports the use of molecular target choices and design of the BDVP, indicating high clinical relevance for the management of vaginitis/vaginosis.

Symposium 5

S-05-01

Sexually Transmitted Infections in Pregnancy: Time to Screen and Treat?

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Sexually transmitted infections (STIs) are associated with adverse pregnancy and newborn health outcomes yet the WHO does not recommend routine STI screening in antenatal care beyond HIV and syphilis testing. Only 13 countries routinely recommend screening pregnant women for *Chlamydia trachomatis* and only 6 countries for *Neisseria gonorrhoeae*.

In 2012 we launched pilot projects using the Cepheid GeneXpert CT/NG and TV rapid point-of-care PCR assays in India, Vietnam, Haiti, Democratic Republic of Congo, Botswana and South Africa to determine the acceptability, feasibility and prevalence of STIs in women attending antenatal care.

I will review the epidemiology of STIs in pregnancy, prior meta-analyses showing the relationship to adverse pregnancy outcomes and other interventions to detect and treat infections in pregnancy to prevent preterm birth and mother-to-child transmission of bacterial STIs. I will review findings from our pilot projects to date with a special emphasis on the data from Asia-Pacific region. I will discuss the implications of the findings for policy and practice of STI detection and treatment in antenatal care.

Symposium 5

S-05-02

Triple elimination of mother-to-child transmission of HIV, syphilis and hepatitis B

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In 2015, approximately 77 000 pregnant women were living with HIV in Asia and the Pacific. The proportion of pregnant women living with HIV who received antiretroviral drugs was 39% having increased from 17% in 2010. However, there were still 19 000 newly infected children were in 2015. In 2012, an estimated 167 000 cases of maternal syphilis infections in Asia and the Pacific were resulting in 66 000 adverse outcomes including early fetal deaths. Yet, syphilis screening among pregnant women still remains low in these countries with a significant gap in data availability, especially on congenital syphilis. The Western Pacific Region has a large burden of chronic viral hepatitis. While hepatitis B vaccination programme has averted more than seven million deaths and 37 million chronic infections among children born between 1990 and 2014, over 181 000 cases of mother-to-child transmission of hepatitis B were estimated to have occurred in 2014.

The new global health sector strategies on HIV, viral hepatitis and sexually transmitted infections 2016-2021 call for zero new HIV infections among infants by 2020 and elimination of hepatitis B and congenital syphilis as public health threats by 2030. With successful vaccination programmes for hepatitis B and low prevalence of HIV and syphilis, triple elimination of mother-to-child transmission of HIV, hepatitis B and syphilis is an achievable goal. Interventions to collectively prevent mother-to-child transmission of these three infections share a common platform of maternal and child health care services. The WHO Regional Office for the Western Pacific is developing an integrated regional framework for triple elimination to emphasize the principle of mother-child-centred care and proposes an integrated and coordinated approach for countries to achieve and validate triple elimination in an efficient and sustainable manner.

Symposium 5

S-05-03

Prevalence of sexually transmitted infections and acceptability, feasibility of screening in antenatal care, Vietnam, 2016-2017

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BACKGROUND: There is strong evidence that sexually transmitted infections (STIs) cause adverse pregnancy outcomes, including preterm birth, stillbirth, low birth-weight and congenital infections. The prevalence of *Chlamydia trachomatis* (CT), *Neisseria gonorrhoeae* (NG) and *Trichomonas vaginalis* (TV) in the Asia Pacific region varies. The proportion of pregnant women infected ranges from 0.1% (CT prevalence in India) to 44% (CT prevalence in Bangladesh). The recently estimated mean prevalence of CT, NG and TV in low and middle income countries in Asia was 0.8%, 2.8% and 13.6% respectively.

Since most STIs are asymptomatic, antenatal screening policies can present an opportunity to prevent numerous sequelae associated with STIs during pregnancy. In the Asia Pacific region, only Japan has policies to screen for CT, only New Zealand has policies to screen for NG, Australia and North Korea have policies to screen for both CT and NG (however, screening is not done in North Korea due to the lack of resources).

In Vietnam, pregnant women are not screened for CT, NG and TV during their antenatal visits. Moreover, data on the prevalence of STIs among pregnant women in Vietnam is very limited. Therefore, the aim of our current study was to estimate the prevalence of STIs and assess feasibility and acceptability of screening for CT, NG and TV among pregnant women in Hanoi, the capital of Vietnam.

METHODS: We plan to enroll 800 pregnant women coming to Ha Dong General Hospital, Hanoi for antenatal care. Eligibility includes age 18 years or older, gestational age less than 35 weeks and willing to come back to the hospital for counseling and treatment if tested positive. After informed consent, enrolled women self-collected vaginal swabs or urine samples for testing using Xpert CT/NG and TV assays (Cepheid, Sunnyvale, CA, USA).

RESULTS: To date we have enrolled 400 participants (Acceptability was 98.8% (95%CI, 97.1-99.6)): 31 had CT (7.8%; 95%CI, 5.3-10.8), 3 had TV (0.8%; 95%CI, 0.2-2.2) and none had NG. Feasibility was 93.9% (95%CI, 79.8-99.3), with 31 out of 33 infected women treated for the corresponding infection.

CONCLUSION: Acceptability and feasibility of STI screening among pregnant women was high. The prevalence of CT was much higher than the mean prevalence of CT among low and middle income countries in Asia. Study findings support policy to incorporate routine screening for STIs during pregnancy to improve maternal and infant health.

Symposium 5

S-05-04

Human papillomavirus infection in pregnancy

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Human papillomavirus (HPV) is the most common microbes in the world and more than 80% of women, especially young women, are exposed to genital HPV which is sexually transmitted. Since the HPV-infected women include pregnant women, management of HPV-infected pregnant women is necessary for maternal-fetal medicine. We here present three topics; (1) HPV and cervical intraepithelial neoplasia (CIN) in pregnant women, and (2) condyloma acuminata in pregnant women, and (3) HPV vaccine crisis in Japan.

(1) The fate of CIN in pregnant women seems to be different from that in non-pregnant women. We investigated the regression (down grade) rate of CIN in pregnant women in our institute comparing with data of cohort study in our group.

(2) Vertical transmission of HPV6/11 to the respiratory tract of a newborn can occur when the pregnant mother has genital tract condyloma acuminata (CA). This is a common source for juvenile-onset recurrent respiratory papillomatosis (JORRP). Laser vaporization can be used to treat pregnant women with CA. To address the extent of protection against vertical transmission of HPV6/11 to the neonate, we here examined clinical and virological transmission rates in newborns born to mothers treated by laser vaporization. Neonatal oropharyngeal HPV genotypes in 21 newborns were analyzed by the PGMY-CHUV method. 25 mothers gave birth vaginally at term; the remaining three delivered by caesarean delivery for purely obstetrical indications. No infant developed JORRP during follow-up. Neither HPV6 nor HPV11 was detected by HPV genotyping in any neonatal oropharyngeal swab specimen, although several high-risk HPV types were detected in three newborns. Laser vaporization is safe and effective in treating pregnant women with CA to prevent vertical transmission of HPV6/11.

(3) Both HPV6/11 and HPV16/18 are preventable by 4-valent HPV vaccine. In Japan, National immunization program was implemented in April 2013. However, MHLW (Japanese government) suspended the proactive recommendation on HPV vaccination at June 2013 due to severe adverse events in girl in Japan.

Symposium 6

S-06-01

Rapid Increase in New Syphilis Cases in Japan

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The number of reported syphilis cases have been increasing considerably in recent years in Japan. The current situation constitutes a serious public health concern, and we have been monitoring epidemiological features of the ongoing outbreak to better understand trends, risk areas, and risk groups. These data, in turn, help generate hypotheses and raise key questions that are important for assessment and response to help control the outbreak. Here, we describe the epidemiology of syphilis in Japan from 1999-2015 based on the national surveillance data, with a particular focus on 2011-2015 when notifications increased dramatically.

During 1999-2010, the number of reported syphilis cases ranged annually from 509-827 cases. From 2011-2015, however, notifications increased steadily (n=827, 875, 1228, 1661 and 2702 cases, respectively). During this period, Tokyo (35%) and Osaka (12%), prefectures with major urban areas, reported both the large numbers of cases and notification rate per population. Neighboring prefectures such as Aichi, Chiba, and Kanagawa also reported a high number of cases. Demographically, while the majority of reported syphilis cases have remained male, there were changes in risk groups and a notable increase in female cases during 2011-2015.

Among male cases, from 2011-2013, those who were men who have sex with men (MSM) increased rapidly (n=235, 276 and 445, respectively) compared to those who attributed infection to heterosexual contact (n=234, 244 and 322, respectively). During 2014-2015, notifications of heterosexual cases rapidly increased, exceeding the number of MSM cases (heterosexual: n=452 to 854, MSM: n=559 to 597). The age distributions of male heterosexual and MSM cases were similar. Notifications came from a broad age range, with many cases being reported from those in their 20s to 40s (59% of male heterosexual and 70% of MSM cases were aged 25-44 years); cases aged 35-44 years made up the largest proportion.

Among female cases, notifications increased substantially from 177 cases in 2011 to 766 cases in 2015. Majority of cases were attributed to heterosexual contact (557/766 (73%)). Relative to male cases, female cases were younger (70% of cases were aged 15-34 years) and a large proportion of cases came from those aged 20-24 years. Notifications of congenital syphilis cases increased from 6 cases in 2011 to 13 cases in 2015.

While there are limitations in interpreting surveillance data, the epidemiology observed through 2015 continues to be seen through 2016, including a continuous increase in notifications. These data warrant public health response, and the public health sector has been responding through active and timely information provision and risk communication (e.g. via posters and websites), raising awareness among risk groups and clinicians (e.g. importance of early treatment and testing of partners), and enhancing access to testing (e.g. provision of testing at no-cost). While stopping transmission of syphilis is a challenge, special studies on MSM and congenital syphilis cases are ongoing, and further investigations are currently being planned to identify potential risk factors for infection among heterosexuals. Findings from these studies will be important in informing efficient and effective control measures.

Symposium 6

S-06-02

Prospects and Pitfalls of Recent Change in Sero-Diagnosis of Syphilis

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Syphilis caused by spirochete *Treponema pallidum* was first reported at the end of the 15th century in Europe. Infections may be sexually transmitted as well as spread from an infected mother to her fetus or through blood transfusions. The laboratory diagnosis of syphilis infection is complex, continue to challenge clinicians. Since *T pallidum* cannot be cultured and direct tests such as microscopy or PCR are not very sensitive, serology remains as a principal diagnostic method of choice.

For serology, traditionally, syphilis screening was performed using either rapid plasma regain (RPR) or Venereal Disease Research Laboratory (VDRL) tests, and confirmed by treponemal tests such as MHA-TP, TPPA or FTA-Abs. Currently, that trend is reversed. Most of the laboratories now screen for syphilis using treponemal enzyme immunoassays (EIA) and confirm the status of infection using RPR or VDRL tests; this approach is often referred to as the reverse algorithm. The ability to automate the treponemal test has led to increasingly widespread use of reverse algorithms using EIAs among industrialized nations, as well as for-profit laboratories in developing countries.

In BC Centre for Disease Control Public Health Laboratory (BCCDC PHL), we evaluated and implemented Siemens ADVIA Centaur Syphilis screen assay and analyzed the data 6 months after implementation. A total of 105,934 samples were tested using Siemens syphilis EIA assay. 101,709 (96%) samples tested as non-reactive, 4,155 (3.9%) tested as reactive and 70 (<0.1%) as equivocal. 248 (0.2%) patients with potential false positive EIA results (had non-reactive confirmatory tests) were retested on a follow-up sample. The potential EIA false positive patients demonstrated EIA index value from >1.0 to 11.7. False positive rate for the RPR screening tests have been reported to be 2% or greater.

Some of the issues related to serological diagnoses are: antibodies take time to appear after infection, and serology screening tests require several confirmatory tests that can produce complex results needing interpretation by experts in the field. This presentation will discuss treponemal and non-treponemal tests utilization at the BCCDC PHL, the current status of serological tests for syphilis in Canada, issues of serological diagnosis of syphilis infection and serological testing algorithms.

Symposium 6

S-06-03

Neurosyphilis in China

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In the early 20th century, about 10% of the population of the United States and Europe were infected with syphilis. A century has passed, syphilis still remains a global public health problem, especially in developing countries, such as China, where an estimated 400 thousand people were infected annually in recent ten years.

The causative agent of syphilis, *Treponema pallidum* (Tp), is a very aggressive bacteria that can persist in a host for decades and invades virtually every organ of human body. Among those infected organs, the diagnosis and treatment of central nervous system (CNS) infection is recognized to be the most challenging. The facts that: 1. the Tp invades the CNS in most patients with early syphilis; 2. standard therapy with benzathine penicillin fails to provide measurable penicillin concentrations in cerebrospinal fluid (CSF) with evidence of both serologic and clinical failure, and developing to symptomatic neurosyphilis after receipt of standard therapy is not uncommon; 3. the diagnosis of neurosyphilis relies on CSF findings and the laboratory test criteria for diagnosis of neurosyphilis is neither sensitive nor specific; 4. early neurosyphilis is often no symptom and is difficult to determine which patient requires lumbar puncture (LP) ; 5. symptomatic neurosyphilis is a "great imitator" and lack of specific clinical manifestations, which may result in misdiagnosis and leaves the disease without treatment for years; 6. delayed diagnosis and treatment of neurosyphilis will cause the irreversible nerve damage, making the early diagnosis of neurosyphilis and an optimal therapy extremely important.

Despite a major health consequence that can cause undue physical, psychological harm and suffering for patients, neurosyphilis has not yet been a priority and remains a medical and public-health problem in many countries and surveillance data of neurosyphilis are limited at global and national levels. Here we reviewed the reported cases of neurosyphilis in main land China and investigated more than 2000 neurosyphilis patients in Shanghai Skin Disease Hospital. We reinstate the need for LP among HIV -positive and HIV-negative patients with concurrent syphilis, particularly in the settings where syphilis is prevalent among key populations. As the incidence of syphilis continues to increase, further work is needed to better understand neurosyphilis.

Symposium 6

S-06-04

Molecular characteristics of *Treponema pallidum* ssp. *pallidum*

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Treponema pallidum ssp. *pallidum*, the causative agent of syphilis, has proven difficult to study as it cannot be cultured *in vitro* or manipulated genetically. The spirochaete is surrounded by a cytoplasmic membrane and enclosed by an outer membrane; structural stability is provided by an intervening thin layer of peptidoglycan. *T. pallidum* has been referred to as a 'stealth pathogen' reflecting the limited presence of surface-exposed antigens. The surface-exposed TprK protein appears to be important in generating antigenic diversity, required for immune evasion, through V-region sequence variation and gene conversion within the *tprK* gene. The pathogen's corkscrew motility, which enables passage through human tissues and fluids, is due to endoflagella located in the periplasmic space. *T. pallidum* has limited metabolic capabilities and a dependence on exogenous macromolecules acquired by transport systems. Analysis of the pathogen's small genome (1.14 Mb) does not reveal the presence of classical virulence factors. *T. pallidum* binds components of serum, human cell membranes and the extracellular matrix, including matrix and soluble forms of fibronectin (via Tp0155 and Tp0483) and laminin (via Tp0751). *T. pallidum* has homologues for methyl-accepting chemotaxis transmembrane proteins which may enable movement from tissue into the bloodstream in response to nutrient gradients. A clear understanding of the biological processes underlying local inflammation and the host immune response remains elusive. Although antibodies inhibit lesion production, they are unable to kill *T. pallidum* in passive immunization experiments which may reflect the paucity of antigens visible on the surface of the treponemal outer membrane. Activated T cells and macrophages facilitate immune clearance of *T. pallidum* through delayed-type hypersensitivity.

Symposium 7

S-07-01

Epidemiology of STI/HIV in Mongolia

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The prevalence of sexually transmitted infections (STIs), which increase the risk of Human Immunodeficiency Virus (HIV) transmission, is growing not only in at-risk populations, but also in the general population in Mongolia. In 2015, NCCD routine case notifications showed that STIs (trichomoniasis, gonorrhoea and syphilis) were 28.1% of all reported communicable diseases and out of it 45.9% was syphilis and 0.2% was HIV cases. In particular, the prevalence of syphilis increased in all population groups including men who have sex with men (MSM), female sex workers (FSWs), reproductive-age men and women, and pregnant women in the past years. Positive syphilis serology in pregnant women reached 5.2 % by SS 2014, which is almost three times higher than the global target of less than 2 percent. In MSM, syphilis prevalence dropped from 22.0% in 2005 to 3.4% in 2011, but it was increased to 7.1% in 2014. While surveyed male STI clients had 0% prevalence of HIV, syphilis prevalence was high, at 15.8%. This same study found 5.1% syphilis prevalence in mobile men and a staggering 29.7% prevalence of syphilis in FSW. Congenital syphilis rate has also increased from 36.7 to 64.3 per 100'000 live births between 2014 and 2015.

The prevalence of HIV infection in the general population in Mongolia is low according to both official case reporting and estimation. As of the end of 2015, a cumulative number of officially reported HIV cases was 199 giving rise to HIV prevalence of less than 0.01% in the general population. An estimated number of HIV cases are 414, and an estimated HIV prevalence in reproductive-age individuals is 0.02%. Despite the low prevalence of HIV infection in the general population in the past two decades, the number of reported cases is growing exponentially in the recent past with almost a half of all notified cases reported in the last four years. According to the eighth round of SS crude prevalence of HIV in MSM in urban settings reached 13.7% (adjusted prevalence - 12%) in 2014. In other words, Mongolia is moving from low prevalence HIV epidemic to a concentrated epidemic.

HIV epidemic in the country is likely to worsen further given the transition from low prevalence to concentrated HIV epidemic, and epidemic size of STI prevalence in the general population.

Symposium 7

S-07-02

HIV infection and syphilis in Taiwan

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Since the first case of HIV infection in Taiwan in 1984, a total of 32625 cases of newly diagnosed HIV infection have been reported to Taiwan Centers of Disease Control (CDC) as of 31 August, 2016. Most of the HIV infections occur in young males, with a male to female ratio of 15.9 and 66.5% aged 15 to 34 years. The most common modes of HIV transmission include men who have sex with men (MSM) (59.6%), injection drug use (21.3%), and heterosexual contacts (17.4%). An outbreak of HIV infection among injection drug users occurred in 2003-2008 was controlled with rapid implementation of harm reduction program by providing free access to needle exchange and methadone maintenance therapy. MSM continue to be the leading mode of transmission and the incidence rate of HIV infection was estimated 5.5 per 100 person-years of follow-up among MSM seeking voluntary counseling and testing for HIV between 2006 and 2015.

Free access to HIV care, including antiretroviral therapy and monitoring of plasma HIV RNA load and CD4 count, are provided with a special budget from the government and National Health Insurance. In 2016, the national HIV treatment guidelines recommend antiretroviral therapy be initiated when a diagnosis of HIV infection is confirmed. It is estimated that more than 70% of the patients are receiving combination antiretroviral therapy. To facilitate adherence and achievement of viral suppression, 3 single-tablet regimens, including tenofovir/emtricitabine/efavirenz (Atripla), tenofovir/emtricitabine/rilpivirine (Complera), and abacavir/lamivudine/dolutegravir (Triumeq), are available as the recommended first-line regimens for antiretroviral-naive patients.

On average, 100 to 150 cases of syphilis of any stage are reported to Taiwan CDC on a weekly basis over the past 3 years. However, cases of syphilis are diagnosed and reported based on positive results of *Treponema pallidum* hemagglutination test. Early syphilis (primary, secondary, or early latent syphilis) is noted to be increasing, particularly in HIV-positive MSM. In an observational cohort study, 29.3% of 2798 HIV-infected patients acquired one or more episodes of early syphilis between 2009 and 2014, with an incidence increasing from 7 per 100 PY in 2009-2010, to 12 per 100 PY in 2011-2012, and 15 per 100 PY in 2013-2014. Acquisition of syphilis has been shown to be associated with recent hepatitis C infection and acute hepatitis A infection in Taiwan.

Symposium 7

S-07-03

Syphilis in HIV-1-infected individuals in Japan

Takeshi Nishijima

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Syphilis is a chronic sexually transmitted infection caused by *Treponema pallidum*. In recent years, there has been resurgence in reported syphilis cases in resource-rich settings, with the majority of cases being men who have sex with men (MSM), particularly those with HIV-1 infection. In Japan, physicians are required to report new cases of syphilis by law, and the reported number of syphilis has been rapidly increasing from 2010, and was 2698 (provisional value) in 2015, up from 1671 in 2014, with most reported from urban city areas such as Tokyo, Osaka, and Nagoya. Furthermore, syphilis was reported in 1226 cases in 2013, among them 81% were men, and homosexual contact was the reported route of transmission in 52% of the infected men, suggesting that a substantial proportion of syphilis epidemic in Japan is attributed to syphilis infection among MSM.

In this talk, I will focus on epidemiology of syphilis in Japan, characteristics of syphilis in HIV-infected patients, incidence of syphilis among HIV-infected MSM in Japan, efficacy of oral treatment with high-dose amoxicillin plus probenecid for syphilis, and ocular syphilis, which has been reported to emerge as one of manifestations of syphilis.

Resume

Since 2007 Dr Nishijima has been working at AIDS Clinical Center, Tokyo, as a physician specializing at HIV infection and sexually transmitted diseases. Being a graduate from Tsukuba University School of Medicine, he received his PhD degree from Kumamoto University, Graduate School of Medicine for his works on nephrotoxicity of antiretroviral agent tenofovir (Nishijima et al. *AIDS* 2016 30 (10).

Nishijima et al. *AIDS* 2014 28 (13). Nishijima et al. *Clin Infect Dis*. 2012 55 (11).). Dr Nishijima has also been interested in sexually transmitted infections, especially syphilis, and for the first time showed the efficacy of oral treatment with high-dose amoxicillin plus probenecid for syphilis (Tanizaki, Nishijima et al. *Clin Infect Dis*. 2015;61 (2)). His other publications on syphilis include the one which showed prognosis of ocular syphilis in HIV co-infected patients (Tsuboi, Nishijima et al. *Sex Transm Infect*. 2016) and the report of a HIV-infected patient in whom cerebral syphilitic gumma developed within 5 months of syphilis infection (Tsuboi, Nishijima et al. *Emerg Infect Dis* in press).

Symposium 7

S-07-04

A Report on Sexually Transmitted Diseases in Vietnam

Nguyen Van Kinh

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Sexually transmitted diseases (STDs) are common diseases in the world, especially in developing countries. STDs gradually become a burden for health sector and community. STDs cause many complications and increase the risk of HIV transmission from 5 to 9 times.

In Vietnam, there are about 130000 new cases with STDs each year and we still observe an increasing tendency of STDs in recent years. A study from 2009 to 2014 in Vietnam showed a peak of STDs in 2010 (348134 cases), then decreased between 2010 and 2013, but number of STD cases in 2014 (279729 cases) was higher than that in 2013 (220918 cases).

A report in 2014 showed that the percentage of syphilis, gonorrhoea, AIDS and others were 0.98%, 1.69%, 2.54% and 94.79%, respectively. In term of gonorrhoea, eye complications of neonatal gonorrhoea were 0.16% in 2009 and 0.99% in 2014. Regarding to syphilis, the percentage of obscure syphilis was the highest amongst syphilis stages, 88.89% (2009) and 79.35% (2014). Congenital syphilis cases increased from 3 (2009) to 14 (2014). The report in 2014 also revealed that genital warts was 19.39%, fungi was 19.10%, trachomonas vaginalis was 8.15% and others including genital herpes, chancroid were more than 50%.

The routes of STD transmission in Vietnam are sexual intercourse, mother-to-child and blood transfusions, which may cause the rate of subjects with STDs in female is higher than in male, 73.3% and 26.7%, respectively. The rate of subjects with STDs in group 15-49 year-old, was the highest (94.82%).

One of the reasons to explain why there are still many STD cases in Vietnam annually is that most of patients treat themselves by purchasing medicine in drug stores or being treated in private clinics where treatment quality is not assured, which make STD prevention and treatment much more difficult.

In conclusion, it needs a program for STDs prevention and treatment with long-term and short-term aims, detailed plans and an effective and unique working system in order to reduce STD cases and improve life quality and life-long for Vietnamese.

Symposium 8

S-08-01

Emerging trends in Syphilis in Asia

Kaushal Verma

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Syphilis is one of the major STIs globally. It had decreased significantly till 90s due to widespread use of penicillin and effective control measures, but has re-emerged in the last decade world-over, especially in developing countries with startling intensity. Of about 12 million new cases of syphilis annually globally, 90% are estimated to occur in developing countries of which about 4 million are in Asia-Pacific alone. Various estimates have shown a dramatic increase in syphilis in many Asian countries in the last 2 decades. In China, the prevalence of syphilis has been estimated to be 5.7/100,000 cases in 2005. High risk groups like CSWs, MSMs had syphilis 1 in 5-10 cases. Congenital syphilis accounted for 19.68/100,000 cases in 2005, an estimated annual increase of >71%. Increased migrant workers and prostitutes, extramarital sex, low condom use and poor health controls have been key factors in its increase. In Singapore, early infectious syphilis is estimated to be 29/100,000 cases in 1986. Female prostitutes, reduced herd immunity, decreased penicillin use, greater population movement and decreased surveillance have been implicated to this increase. An Australian study has shown a prevalence of infectious syphilis of 6.6/100,000 in 2007. In India, seroprevalence of syphilis in blood donors has increased. Also it has been found to be the commonest ulcerative STI and 46% male inmates in a district jail in Delhi were found to have syphilis in 1999. Similarly, syphilis has accounted for 37% of cases in transsexuals in Karachi, Pakistan in 1999 and 20% in Indonesia. A prevalence of 23% has been found in HIV drug users in Bangladesh. In Southeast Asia and Western Pacific region also syphilis has increased in the last decade mainly due to booming sex industry, travel and tourism, migration of workers and poor control measures. However the syphilis has decreased to <2/100,000 population in 2008 in Thailand and to 3/100,000 in 2007 in Malaysia primarily due to strict control measures which lead to decline of other STIs and HIV also.

Symposium 8

S-08-02

Adenovirus Infection as STI; adenoviral urethritis.

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Human mastadenoviruses (HAdVs) are one of the most well-known nonenveloped viruses. The size of HAdV is approximately 90-100 nanometers. The icosahedral capsid proteins contain about 35k base of a linear double stranded DNA genome. More than 60 types have been reported and are classified into seven species (HAdV A to G) including serotypes and genotypes.

HAdVs mainly infect the respiratory and digestive tract, but some types cause systemic infection. The severe fatal cases of HAdV infections have been reported for not only immunocompromised patients but also in healthy young children.

HAdV was first identified from human adenoid about 60 years ago. Since then, HAdV have been isolated and identified in association with genital site, however, the focus of study of HAdV had been changed from etiology or pathogenicity to the function as oncogenic virus and molecular tool as vector. Therefore, especially in urology, only hemorrhagic cystitis caused by HAdV type 11 and 37 isolated from Cervicitis have been known.

Since 2000, the urethritis associated with HAdV began to be reported. In 2005, Bradshaw et al. showed statically significant relationship between urethritis and HAdV infection by a case-control study. In Japan, the several reports had been published by Furubayashi et al. and Ito et al. Now, the details of adenoviral urethritis have begun to be clear.

In this symposium, I will introduce the history, epidemiology, prevention, etc. of HAdV and summarize several recently reports of HAdV associated urethritis.

Symposium 8

S-08-03

Zika fever as a sexually transmitted infection (STI)

Satoshi Kutsuna

Disease Control and Prevention Center, International Health Care Center, National Center for Global health and Medicine, Tokyo, Japan

Although Zika virus is transmitted primarily through the bite of *Aedes aegypti* mosquitoes, it can also be transmitted through unprotected sexual intercourse. Most sexual transmissions have been reported from patients with symptomatic infection including from infected men to their female or male sex partners, and from infected women to their male sex partners. However, two reports have described the sexual transmission of the virus from asymptomatic men to their female sex partners.

Zika virus RNA was detected in the semen up to 188 days after symptom onset, the longest reported period of detection, and the virus could be cultured from semen up to 69 days after symptom onset. Zika virus RNA has also been detected in the female genital tract secretions even when the virus was no longer detectable in blood or urine.

Based on these data, the Centers for Disease Control and the World Health Organization have released interim guidelines for people with a possible Zika virus exposure. According to these new guidelines, men with a possible exposure, regardless of their symptom status, should wait at least 6 months before engaging in sexual intercourse with their partners, similarly women with a possible exposure should wait at least 8 weeks.

Symposium 8

S-08-04

Trichomonas vaginalis related to prostate cancer

Yu Chen

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The etiologies of prostate cancer are multiple factors related. A number of inflammation-related factors have been implicated in prostate cancer risk and progression, but the origin of inflammation is unclear. Some recent studies found that the presence of *Trichomonas vaginalis* (*T. vaginalis*) was positively associated with subsequent incidence of prostate cancer. *T. vaginalis* is a common nonviral sexually transmitted infection, with an estimated 174 million annual infections globally and often co-infected with other sexually transmitted diseases.

More recent studies showed that *T. vaginalis* can ascend the urethra to the prostate and infect the prostate epithelium and resulted with acute and chronic inflammation. Using established immunoperoxidase procedures, previous studies have positively identified trichomonas in the prostatic urethra, glandular lumina, submucosa, and stroma. An immuno-pathology of secreted *T. vaginalis* protein homologous to human macrophage migration inhibitory factor elicits antibodies in infected men was found. Therefore, chronic prostatic infection with *T. vaginalis* may initiate an inflammatory response that could increase the risk of developing prostate cancer and increase the risk of disease progression with high Gleason grade disease.

Symposium 9

S-09-01

Detecting *Mycoplasma genitalium*-Principle for Detecting System and its Utility Detecting System in Korea - Seegene System

Seung-Ju Lee

Department of Urology, The Catholic University of Korea, Seoul, Korea

Mycoplasma genitalium is the smallest mollicute, initially isolated from men with urethritis and is a significant cause of this condition and female cervicitis and pelvic inflammatory disease. *M. genitalium* is less commonly detected in the absence of clinical infection than other genital mycoplasmas that are rather common as commensals in the lower urogenital tract of many healthy adults. Molecular-based nucleic acid amplification tests (NAATs) enable detection of extremely fastidious species, such as *M. genitalium*, that might never be detected otherwise. Polymerase chain reaction (PCR) is the most widely applied NAAT for detection of *M. genitalium*. Conventional PCR measures the end-stage PCR products using gels or other methods, whereas real-time PCR detects and quantifies the products simultaneously with amplification. Multiplex PCR-based systems for detection of *M. genitalium*, along with *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and other urogenital mycoplasmas and ureaplasmas, are sold as kits using various formats and instrument platforms. Seegene, Inc. (Seoul, Korea) markets their products STD6 and STD6B ACE Detection, which simultaneously detect *Trichomonas vaginalis*, *M. hominis*, *M. genitalium*, *C. trachomatis*, *N. gonorrhoeae*, and *Ureaplasma* species in endocervical/urethral swabs. The novel feature of the Seegene, Inc., technology is a dual-priming oligonucleotide system that contains two separate priming regions linked by a polydeoxyinosine spacer. The Seegene, Inc., STD6 ACE kit works with any thermocycler, and the post-PCR assay is designed for either manual or automated gel electrophoresis. The STD6 *Ureaplasma* assay amplifies a 130-bp region of the ureD cassette. Their new version, STD6B, differentiates *U. urealyticum* from *U. parvum* ureC genes. The Anyplex II STI-7 Detection Assay is based on Seegene's recently introduced TOCE™ (Tagging Oligonucleotide Cleavage and Extension) technology, which turns any multiple color real-time PCR instrument into a powerful multiplexing platform. TOCE enables complex multiplexing in a single fluorescence channel, provides consistent T_m values regardless of the sequence variation of the target, and a level of sensitivity better than that of currently utilized probe-based singleplex real-time PCR assays. Seegene also develop a novel analytical technique, MuDT™ (Multiple Detection Temperatures), which enables us to detect multiple targets in a single fluorescence channel without melting curve analysis. This method achieves C_t measurements for the targets, does not require melting curve analysis, and avoids crosstalk between channels; thus, MuDT has the potential to deliver more comprehensive and actionable diagnostics, leading to improved patient care and reduced healthcare costs.

Symposium 9

S-09-02

Detection and drug resistance of *Mycoplasma genitalium* in Japan

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Mycoplasma genitalium has been shown to be significantly associated with non-gonococcal urethritis (NGU) in men and with cervicitis, endometritis, salpingitis and pelvic inflammatory diseases in women. In Japan, several PCR-based assays have been developed to detect genital mycoplasmas, including *M. genitalium*. The detection rate of *M. genitalium* in men with NGU has been reported to be 10-20% in Japan and would be lower than those in European studies. Although genital mycoplasmas, including *M. genitalium*, can be detected in Japan, their detection is not approved by the Japanese health insurance. In reality, therefore, genital mycoplasmas are not examined routinely in clinical practice.

Azithromycin regimens have been recommended for treatment of *M. genitalium* infections. However, azithromycin treatment failure was reported in cases of *M. genitalium*-positive NGU, and macrolide-resistant clinical strains of *M. genitalium* were isolated from some patients with treatment failure. In these strains, mutations were found in the 23S rRNA gene of *M. genitalium* which are critical for the binding of macrolides.

Moxifloxacin regimens have been highly effective on persistent *M. genitalium* infections unsuccessfully treated with azithromycin. Several studies showed quinolone resistance-associated amino acid changes in GyrA and ParC in clinical strains of *M. genitalium*, suggesting the emergence of quinolone-resistant strains. Recently, moxifloxacin treatment failure was reported in patients infected with *M. genitalium* harboring mutant ParC. We have reported increases in *M. genitalium* with macrolide and fluoroquinolone resistance in Japan. In particular, the prevalence of *M. genitalium* with both macrolide resistance- and fluoroquinolone resistance-associated mutations has risen from 0% before 2013 to 16.7% in 2013 and 30.8% in 2014, suggesting that multidrug resistant *M. genitalium* may be increasing.

In Japan, moxifloxacin is not approved for the treatment of urogenital infections. We reported the sitafloxacin regimen to be highly effective on *M. genitalium* infections, including those caused by the mycoplasmas harboring mutant ParC. Although the sitafloxacin regimen has been used to treat *M. genitalium* infections in Japan, its frequent use might select mutants with high-level resistance to fluoroquinolones.

In conclusion, the detection of *M. genitalium* and its drug resistance-associated mutations should be approved by the health insurance in Japan and routinely performed in clinical practice. Its information could be useful to treat *M. genitalium* infections appropriately and to prevent its drug-resistant strains from emerging and spreading.

Symposium 9

S-09-03

Detection of *Mycoplasma genitalium* in Europe

Jørgen Skov Jensen

Microbiology and Infection Control, Statens Serum Institut, Copenhagen, Denmark

M. genitalium has been accepted as an established cause of sexually transmitted urethritis and cervicitis, and may cause upper genital tract disease in women. *M. genitalium* infections causes 15-25% of symptomatic non-gonococcal urethritis and probably around 10% of pelvic inflammatory disease (PID) and is the most commonly detected pathogen in chronic or recurrent urethritis due to the difficulties in eradicating the bacterium.

Detection by nucleic acid amplification tests is the only diagnostic method available, and recently several new tests with the European CE mark approving them for in-vitro diagnostic use have become available. Some of these tests are amenable to high-throughput testing on diagnostic platforms already used for *C. trachomatis* and *N. gonorrhoeae* screening. Other assays provide simultaneous detection of *M. genitalium* and detection of macrolide resistance mediating mutations. The availability of such assays may dramatically change the access to diagnostic testing.

With the recently published European *M. genitalium* guideline providing advice on indications for testing along with a strong recommendation that all positive tests are followed up with detection of macrolide resistance mediating mutations, it is expected that the new CE marked tests will rapidly be taken up by laboratories which can easily establish a new test that has been demanded for a long time by well-informed clinicians.

Symposium 9

S-09-04

Is detection of *Mycoplasma genitalium* important in South Asian Countries?

Sunil Sethi

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Mycoplasma genitalium is a slow growing organism, and the advent of nucleic acid amplification test (NAAT) has shed more light on this sexually transmitted infection (STI). There has been an increase in interest, research, and knowledge about *M. genitalium* in recent years. Various studies from different parts of world including India also showed that it may have significant role in persistent and recurrent NGU. Although fewer studies are available regarding its role in female reproductive tract infections, it is reasonable to conclude that *M. genitalium* can cause mucopurulent cervicitis. There exist many barriers and gaps to further understand *M. genitalium* infection and its impact on human health.

Currently, there is no uniform method of detection of *M. genitalium* in south asian countries, which makes a collective comparison difficult. A significant step in *M. genitalium* research would be uniform detection of acute infection and prior exposure. Isolation and culturing of *M. genitalium* is slow, time consuming and not feasible when there is a need to institute immediate antimicrobial therapy. Therefore, NAAT is the preferred diagnostic method where feasible. Although research companies have quantitative PCR detection kits in the market, the United States Food and Drug Administration (FDA) has not approved any of these methods for the clinical screening or detection of *M. genitalium*. In South asian countries, in house PCR including real time PCR are being used to detect this organism by most of the laboratories but that too only in referral Centres. Few labs are using commercial based Multiplex PCR but not on routine basis. Infact awareness regarding this pathogen among clinicians in south asian countries is very less so this organism remains underdiagnosed and never sought after. Most of the patients are treated empirically based on symptoms and there are chances of developing drug resistance which is not detected at all. So there is need to do more prevalence studies of *Mycoplasma genitalium* in south asian countries and automated PCR assay for screening in south asian countries will be the answer to all this.

Symposium 10

S-10-01

***M. genitalium*: resistance and treatment strategies in Australia**

Catriona S. Bradshaw

Melbourne Sexual Health Centre, The Alfred Hospital and Central Clinical School, Monash University, Melbourne, Victoria, Australia

M. genitalium is an established cause of non-gonococcal urethritis in men and cervicitis in women. A recent meta analysis has now confirmed a significant association with pelvic inflammatory and adverse sequelae in pregnancy such as preterm delivery and spontaneous abortion. First line recommended therapy in the majority of countries, including Australia, is azithromycin, either as a single 1g dose or an extended 1.5g regimen administered over 5 days; with the latter considered less likely to induce resistance. An increase in circulating macrolide resistance has become evident in many countries, compromising the efficacy of first line recommended therapy. Second line therapy in Australia and many nations such as the US has been the 4th generation fluoroquinolone, moxifloxacin, which has been highly effective in curing macrolide resistant strains. However over the past 5 years evidence of fluoroquinolone resistance mutations has emerged with up to 15% of cases failing moxifloxacin. This presentation will discuss the current status of antimicrobial resistance in *M. genitalium* in Australian, its influence on the efficacy of first and second line treatment regimens and the need for new therapeutic approaches. Data on the efficacy of extended azithromycin, whether it selects for resistance, and the efficacy of the streptogramin, pristinamycin, in macrolide resistant strains will be presented.

Symposium 10

S-10-02

Multidrug-resistant *M. genitalium* strains

Ryoichi Hamasuna¹, Jorgen Skov Jensen²

¹Department of Urology, University of occupational and Environmental Health, Japan

²Mycoplasma Laboratory, Statens Serum Institut, Denmark

Mycoplasma genitalium is confirmed as the pathogens for male urethritis and cervicitis. By the clinical trials with some antimicrobials to *M. genitalium* infection, treatment failure cases by antimicrobials were reported. Tetracycline or fluoroquinolone such as levofloxacin showed less effective to *M. genitalium* infection. Macrolide, especially azithromycin has the strongest activity to *M. genitalium* in vitro, however, the azithromycin resistant *M. genitalium* strains emerged and are spreading in the world, Azithromycin resistance is related to mutation on 23S rRNA gene. For azithromycin resistant strains, fluoroquinolones such as moxifloxacin showed good efficacies in vitro and vivo. However, treatment failure cases by moxifloxacin reported and emerge of fluoroquinolone-resistant strains were expected. The resistance of *M. genitalium* to fluoroquinolone such as moxifloxacin is related to mutations on the quinolone resistant determining regions (QRDR) on gyrase or topoisomerase genes as other bacteria. However, the responsible site has not determined.

M6489 is *M. genitalium* strain which was isolated from man who were treated by several antimicrobials such as doxycycline, azithromycin, clarithromycin, erythromycin, metronidazole, telithromycin, cefperaxone, levofloxacin, and moxifloxacin between April 2006 and November 2007. The MICs for azithromycin and moxifloxacin to this strain were 6 and 32 µg/L, respectively. The mutations on 23S rRNA was A2059G and on QRDR was Asp87→Asn on *gyrA* and Ser80→Ile on *parC*. The strains with mutation on 23S rRNA are spreading in the world. In addition, we have some clinical experience that *M. genitalium* cannot be eradicated by the fluoroquinolone regimens. Tetracycline does not have a strong activity to *M. genitalium*. In the future, we think multi-drug resistant *M. genitalium* strains would be spread in the world, like *N. gonorrhoeae*. We have to make a treatment strategies to decrease the resistance especially for macrolides and fluoroquinolone.

Symposium 10

S-10-03

Treatment Status for *Mycoplasma genitalium* in Eastern Asia

Gilho Lee

Department of Urology, Dankook University College of Medicine, Korea

East Asia or Eastern Asia usually consists of the People's Republic of China (including Hong Kong and Macau), Taiwan, Japan, and Korea.

We searched the PubMed (US National Library of Medicine and the National Institutes of Health) and collected all published literatures up to August 2016 using the search term "*Mycoplasma genitalium*" AND treatment AND (Japan OR China OR Hong Kong OR Taiwan OR Korea).

We find 27 articles from Japan, 10 articles from China and 4 articles from Korea. To be faithful to main topic (Treatment Status for *Mycoplasma genitalium* in Eastern Asia), we reviewed the all publications. Finally, we narrow the literature into 21 articles; 20 from Japan and one from China (Table 1).

Table 1. Publication in PubMed for *Mycoplasma genitalium* in Eastern Asia

Clin Infect Dis. 2016 Feb 1;62(3):405-6	Sex Transm Infect. 2011 Aug;87(5):412-4.
J Antimicrob Chemother. 2014 Sep;69(9):2376-82	Sex Transm Infect. 2011 Aug;87(5):389-90
Antibiotics (Basel). 2014 Apr 2;3(2):109-20.	J Infect Chemother. 2011 Aug;17(4):487-92.
J Infect Chemother. 2013 Oct;19(5):941-5.	J Infect Chemother. 2011 Jun;17(3):392-6.
Int J Urol. 2013 Jul;20(7):676-84.	Int J Urol. 2009 Feb;16(2):215-6.
J Infect Chemother. 2013 Feb;19(1):1-11.	J Infect Chemother. 2008 Dec;14(6):409-12
Expert Rev Anti Infect Ther. 2012 Jul;10(7):791-803	Clin Infect Dis. 2007 Oct 1;45(7):866-71
J Infect Chemother. 2012 Jun;18(3):414-8	Int J Urol. 2007 May;14(5):422-5.
J Infect Chemother. 2012 Jun;18(3):313-7.	Clin Infect Dis. 2005 Nov 1;41(9):1357-9.
J Infect Chemother. 2011 Dec;17(6):821-4.	Int J Antimicrob Agents. 2004 Sep;24 Suppl 1:S23-7
Sex Health. 2016 Jul 4. doi: 10.1071/SH15155*.	

*From China, others from Japan.

Due to the availability of articles from other countries, I also added all publications with the same keywords through Yahoo China, Yahoo Taiwan, and Yahoo Korea. We discovered five additional reports from China (<http://www.ncstcdc.org/show.asp?id=621>, <http://www.rdbio.com/nd.jsp?id=36>, <http://www.zgxxkx.org/xingxexue/cbjb/201604/5455.html>, <http://www.iivd.net/article-7919-1.html>, <http://www.ncstcdc.org/show.asp?id=1487>). Additionally, I will add an unpublished Korean data for a genetic study about antibiotics resistance to *Mycoplasma genitalium*.

Symposium 10

S-10-04

Pelvic Inflammatory Disease and *Mycoplasma genitalium*

Jonathan Ross

Consultant physician in Birmingham, UK

Prof Ross will summarise the evidence linking *Mycoplasma genitalium* to pelvic infection from in vitro and in vivo studies. The case for testing for *Mycoplasma genitalium* in women with suspected pelvic infection will be presented, highlighting the rationale for testing and potential barriers. Finally, an algorithm for the management of women with *Mycoplasma* related PID will be discussed and options for treatment proposed.

Symposium 11

S-11-01

What Editors Expect

Christopher K Fairley

Melbourne Sexual Health Centre and Monash University, Melbourne, Victoria, Australia

It is important to appreciate the processes that editors for journals go through when considering papers for publication in their journals.

Editors generally read the introductory letter and the abstract of the paper. They want to know, what the study did and what it found and how this information 'fits' into the existing body of knowledge. They can then decide how 'significant' the paper is and how likely it is to contribute to the scientific literature.

It is also important to understand the steps that editors go through in the acceptance or rejection process. First the editor will read the paper. If they consider it very unlikely that it could be developed into a publishable article, it will be immediately rejected. If the editor considers it might be a good paper, it will be send to a Joint Editor who will decide if it is good enough to review (or reject before reivew). Once it is reviewed the Joint Editor will consider the reviewers comments and decide if the reviewer's comments can be reasonably addressed. If they can, then the Joint Editor will ask the author to make changes. If the author makes all the changes required to the best of their ability, the paper will almost always be accepted. If a paper is rejected at this time it is usually only because the author has not genuinely tried to address each reviewer comment, carefully and thoughtfully. If the editor or joint editor has specifically asked for any changes, these then changes must be very carefully and completely addressed.

The features of a paper that make it likely to be rejected are; a paper with poor English (because the amount of work required to get it into a publishable form is extreme), a paper that is unclear and the editor cannot understand what the authors have done, a very long paper that has describes a small study, a paper from an inexperienced author (e.g. not in IMRAD format, absence of data, numerous unnecessary tables and figures), single author papers from large studies involving many investigators (because of concern about why this has happen), papers with very old data (possibly suggesting data dredging from open access data bases from authors not understanding the study), papers with results that look too good to be true (because of concern about data fabrication).

Symposium 11

S-11-02

What reviewers expect

David A. Lewis

Western Sydney Sexual Health Centre, Sydney, Australia

Reviewers have expectations relating to both the journal staff and the authors. Reviewers expect authors to submit papers which are within the journal's scope and for this to be clearly stated on the journal's website. Reviewers also expect to be sent articles to review that are within their area of scientific expertise. One of the first thing a good reviewer will do is to assess the quality of the article's science and whether or not it meets the novelty standards of the journal. Novelty value may be viewed simply as new data that make a scientific contribution to the existing literature or may be more complex, i.e. conceptual novelty where a ground-breaking new method may be described. A good reviewer will check the article for internal consistency, for example he/she will check that the methods, results and conclusions all match up and that there is evidence of a clear thought process throughout the article. Particular attention is paid to the study design and methods; they should be sufficiently detailed so that the work may be replicated. Sometimes appropriately qualified statistical reviewers are asked to review complex statistical analyses. Reviewers expect accurate and relevant presentation of the paper's results in the form of text, tables and figures and this will be critically appraised. A conscientious reviewer also reviews the appropriateness of the title, the abstracts and the research conclusions, as well as the references. Reviewers do not expect to have to undertake copy-editing duties and rightfully expect the journal to only ask them to review articles that are grammatically sound, spell-checked and within the appropriate word length for the type of article submitted. Journal editorial staff, rather than reviewers, are responsible for detecting plagiarism and other ethics issues; however, in practice, reviewers often notice these during the course of a careful review. Finally, it should always be remembered that reviewers aim, wherever possible, to improve the quality of submitted articles through the peer review process.

Symposium 11

S-11-03

What early career researchers want from journals

Eric P. F. Chow

Melbourne Sexual Health Centre, Alfred Health, Melbourne, Victoria, Australia.

Central Clinical School, Faculty of Medicine, Nursing and Health Sciences, Monash University, Melbourne, Victoria, Australia.

Publication is an indicator of a researcher's output and it is one of the most important components for early career researchers. Publications always have a huge influence and impact when early career researchers applying for their postdoctoral fellowships, research grants, conference scholarships, research prizes and awards. However, several factors such as quality of review, impact factor of journals, time for review process and publication time are considered when submitting a paper to a journal for peer-review. Dr Eric Chow is an early career research fellow at the Melbourne Sexual Health Centre and Monash University in Australia. As an early career researcher's perspective, he will share his experience on paper submission and exceptions from journals.

Symposium 12

S-12-01

New Approaches to Diagnosing STIs by Point-of-Care Tests

Charlotte A. Gaydos

Division of Infectious Diseases, John Hopkins University, Baltimore, USA

Background: Globally there are an estimated 131 million new incident cases of chlamydia, 78 million cases of gonorrhea, 143 million cases of trichomoniasis, and 6 million cases of syphilis per year estimated by the World Health Organization. Incident cases of global HIV infections are estimated at 2.1 million annually. Paradigm shifts will be required to allow more STIs to be diagnosed and treated.

Methods: Non-invasive self-collected sample types, such as vaginal swabs and urine, are now approved for STI detection by commercially-available nucleic acid amplification tests (NAAT) assays. Self-obtained penile-meatal swabs have been studied. Additionally, new diagnostic amplification assays are being developed, such as rapid point-of-care (POC) tests, which use these self-obtained sample types.

Results: New POC and "near patient" tests can allow for testing in a clinic or doctor's office, and allow patients to be tested, diagnosed and treated at one clinical encounter, thus preventing loss to follow-up. Such tests are now available for chlamydia gonorrhea, trichomonas, syphilis, HIV, and herpes simplex virus. These sample types can also be used in POC tests outside the clinic, in such sites as pharmacies, health fairs, in field settings, by recruitment via the Internet with mailed samples, on mobile vans, and in privacy shelters. POC tests allow immediate diagnosis and treatment, thus may interrupt ongoing transmission of infections. Acceptability for self-collection of samples for STI tests is high and affords privacy and confidentiality. Potentially some POC tests could allow self-performance of the test by patient themselves.

Conclusion: Such shifts in paradigms for testing in new screening venues with new rapid POC tests and using non-invasive specimens offer a new model to reduce the incidence of STIs globally.

Symposium 12

S-12-02

Stimulating the demand for HIV testing - novel approaches

Philip Cunningham

New South Wales State Reference Laboratory for HIV, St Vincent's Centre for Applied Medical Research, St Vincent's Health Network, Sydney, New South Wales, Australia

Laboratory diagnosis of HIV infection is typically made by the detection of antibodies or antigen in patient's serum. Point of care tests for HIV (PoCT, rapid or short incubation tests) have been available in many countries for decades but the first HIV point of care test only became available in December 2012. In 2012, the USA FDA announced the approval of a self-test or 'over-the-counter' test for HIV. In 2015, rapid HIV testing (RHT) became a part of a mix of HIV testing services offered in Australia to encourage people from high risk populations to be tested regularly for HIV, in particular men who have sex with men who report high risk behaviours and/or not engaging in routine testing.

RHT in Australia transitioned from a research trial context to 'real world' focussed on approved test products and deployment in community based testing sites that engage a high proportion of 'at risk' populations and sexual health clinics with express HIV testing models. A systematic and centralised approach has enabled cost effective access to quality tests, standardised competency training for staff, routine quality assurance and site management support including compliance checks.

In addition novel approaches of testing using dried blood spots (DBS) which have been used for HIV antibody testing and for HIV nucleic acid testing of neonates born to mothers with HIV infection for many years, but have been used rarely in clinical settings until recently. DBS can be used for HIV diagnosis, viral load and potentially, drug resistance testing, and may be particularly useful to overcome difficulties and cost of the specimen collection, transport, and stability that is necessary for conventional testing, which now play an increasing role in both HIV diagnosis and clinical management. DBS can thus facilitate diagnosis and expanded treatment access, particularly in resource limited settings, and to reach people at high risk for HIV with previously low rates of HIV testing, where DBS have attained high acceptance and positive yield.

This presentation will review existing evidence for the performance of point of care tests and DBS with current HIV assays and practical applications for clinical management and surveillance in both low and high resource settings, examine the current status of validations and regulatory approvals and to assist in improving the range of options available for increased uptake of HIV testing.

Symposium 12

S-12-03

Leveraging point-of-care technology for syphilis to improve health outcomes and integrate programmes

David A. Lewis

Western Sydney Sexual Health Centre, Sydney, Australia

Despite being easily treatable with penicillin, syphilis continues to cause substantial morbidity and, in the case of congenital syphilis, unacceptably high incidence of fetal loss and stillbirth. For decades, the routine diagnosis of syphilis has relied on classical serological techniques. A growing number of rapid tests for syphilis and HIV have been developed in an attempt to improve coverage of syphilis screening in resource-poor settings, where access to traditional medical services is limited and laboratory support minimal or non-existent. Several countries have now introduced syphilis rapid tests as the main method for screening pregnant women on the basis that treponemal antibody positive women may be treated at the same visit. Syphilis rapid tests were initially designed to detect treponemal specific serological responses. Whilst ideal to diagnose and treat patients with no previous history of syphilis, there are challenges with interpretation of positive results with these tests in individuals who were either previously treated for syphilis infection or who live in areas where non-venereal treponematoses co-exist. In attempt to improve interpretation, substantial effort has been made to produce combo rapid tests which can detect both treponemal and non-treponemal antibody responses. Few combo tests exist as developing the non-treponemal antibody detection component of the test cassette is technically challenging. Combined treponemal and HIV rapid tests ('dual tests') have been developed in order to better integrate HIV and STI control programmes among pregnant women and individuals at high-risk of both infections. This presentation will highlight examples which demonstrate the substantial benefits to be gained, as well as some of the pitfalls, from leveraging point-of-care technology for syphilis in an attempt to improve health outcomes.

Symposium 12

S-12-04

Potential Impact of Point-of-Care Tests for *Chlamydia trachomatis* on Clinical Practice

Margaret R. Hammerschlag

Pediatric Infectious Diseases Fellowship Program SUNY Downstate Medical Center, Brooklyn, NY, USA

Background: Most treatment of infections due to *C. trachomatis* is based on screening, especially in women as most are asymptomatic. The advent of highly sensitive and specific nucleic acid amplification tests (NAATs), have facilitated diagnosis and treatment. However, these tests require a major investment in equipment and personnel, which may not be not feasible in many settings especially, in resource poor nations. The turnaround time for currently available tests may be several hours or days, resulting in either delay in treatment while waiting for the results of the test, or unnecessary treatment in patients who may actually be negative. There also is concern that many people who should be screened are not presenting to the clinic.

What are the features of an ideal point-of-care test (POCT)? As previously discussed, new amplification based POCTs are currently being developed. Currently available non-NAAT POCs are based on antigen detection and are insufficiently sensitive or specific to be used without NAAT confirmation. An ideal POC should be: 1) rapid, turnaround time < 20 min. 2) sensitive and specific (>95%). 3) Use noninvasive or self-collected specimens. 4) Not require special equipment, electricity or refrigeration. These characteristic will allow for use in doctors' offices, clinics and resource poor settings.

The impact of POCs on clinical practice: The most immediate effect of use of a POCT for *C. trachomatis* would be on treatment of sexually active adolescents and adults. It would allow for immediate treatment of the patient in the doctor's office. This may also facilitate treatment of sexual contacts. Studies of adolescent women with *C. trachomatis* infection in the US have found that as many as 40% become reinfected within 9 months, usually because of unprotected sex with an untreated partner. Immediate identification of the infection may change behavior and reduce the rate of reinfection. Another important application would be the facilitation screening of populations that are not currently being screened because of lack of resources. An example is antenatal screening and treatment of pregnant women for *C. trachomatis* infection. Currently fewer than 10 nations worldwide, mostly in Europe, North American and Japan screen and treat pregnant women with *C. trachomatis* infection. Rates of chlamydial infection among pregnant women in Sub-Saharan Africa and Asia Pacific range from 0 in Tanzania to 44% in Bangladesh. The average for Sub Saharan Africa was ~7%. Prenatal screening and treatment is the most effective way to prevent morbidity due to *C. trachomatis* during pregnancy (low birth weight, prematurity) and perinatal chlamydial infections including conjunctivitis and pneumonia in the infant. Transmission rate of *C. trachomatis* infection from an infected mother to her infant during partuition is approximately 50%. Although the most frequent clinical manifestation is conjunctivitis, the most frequent site of infection is the nasopharynx. Most nasopharyngeal infections are asymptomatic and may persist for at least 12 months. Only 20-30% of infants with nasopharyngeal infection will go on to develop chlamydial pneumonia. Over half of infants with chlamydial ophthalmia are also infected in the nasopharynx. Although the WHO currently recommends neonatal ocular prophylaxis for prevention of gonococcal and chlamydial infection, it has been demonstrated since the 1980s in several prospective studies that neonatal ocular prophylaxis with either silver nitrate, erythromycin or tetracycline ointments does not prevent chlamydial ophthalmia or respiratory infection in the infant. There are no prospective studies on the other preparations recommended including povidone iodine and chloramphenicol drops. Treatment of neonatal chlamydial conjunctivitis or pneumonia requires 10 days or more of oral antibiotics, usually erythromycin. Prenatal screening and treatment of pregnant women is significantly more efficacious and cost effective than treating perinatal infection after it occurs.

Use of POCT for *C. trachomatis* would allow for the implementation of prenatal screening in most of these countries.

Abstracts

Joint Symposium

Joint Symposium

JS-01

Asian Guideline for Education for prevention of STIs to young people -Standardized slides in youth education for the prevention of sexually transmitted infections-

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Introduction

The prevention of sexually transmitted infections (STIs) in the young is an important mission, as these are the future leaders of the coming generations who will be responsible for bearing and raising healthy children. What should be done to protect young people from contracting STIs? The Japanese Society for Sexually Transmitted Infections collaborated with the Japan Society of Adolescentology to create standard slides for teaching STI prevention to primarily teenagers around the age of 15 to 16 years. The following is a discourse on a strategy for preventing STIs from the position of an educator who participated in the preparation of these slides and who teaches STI prevention classes annually to teenagers mostly between the ages of 14 and 16 years at local high schools.

I. How to cope with sexual awakening

The purpose of knowledge and virtue education is to promote the development of reason and intellect in individuals who will become fully-fledged adult members of society that must be capable of making unwavering judgments. However, it is also critical to nurture rich emotions and help young people develop the ability to both understand and control their emotions. That being said, humans are also part of the animal kingdom, and thus have "natural instincts" such as appetite that are difficult to control. It goes without saying that when sexual desire exceeds the limits of control, we catch a glimpse of the difficulties humans face in self-control. Schools are the primary setting for education, and therefore must teach young people objectively about sexual awakening with the hope that they do not blindly follow their impulses and instead transfer their energy into other activities, putting energy to good use. This is one clear challenge faced by boys and girls entering puberty (and especially boys, who are typically the active sexual agents), and an answer to the question of how far education can help resolve this universal challenge remains unclear. However, some factors, including the risk of pregnancy and STIs, are thought to be helpful in meeting this challenge. Educators and medical professionals alike must teach young people in the midst of puberty about the potential adverse events that may occur when sexual desire leads to sexual activity, and must actively strive to cool the passionate emotions that young people are developing to some extent. This is not intended to be a form of intimidation, but rather one fact that must be communicated as common sense in a scientific society. It should be seen as an element of education for STI prevention that is also a key part of sex education in general.

II. Detailed education for STI prevention (for high school students) (Slide 1)

1. Introduction (Slides 2, 3, and 4)

How would you describe your (the junior and senior high school students receiving the lesson) current stage of development? This is a detailed explanation of puberty and the other developmental stages, including physical changes in both boys and girls.

2. Presentation of the risks of sexual activity and main topics of the class (Slides 5 and 6)

Point out the presence of undesired adverse events such as STIs and pregnancy. Do not use the term "adverse event" in the classes. Use the term "risk" instead.

3. Detailed explanation about STIs (Slides 7, 8, and 9)

Describe the symptoms and route of infection for specific diseases such as chlamydial infection, how they may be present without symptoms, and problems they can lead to such as infertility, ectopic

pregnancy, miscarriages or premature birth, or related infections in women, and swollen and painful epididymis in men.

4. Warning about the high prevalence of asymptomatic infections (Slides 10 and 11)

Use chlamydial infection or other types of infections as an example to explain the problem of disease spread, even when no symptoms are present.

5. Information about the acquired immunodeficiency syndrome (AIDS) (Slides 12 and 13)

Provide information about the actual conditions and progression of this infectious disease, using data to explain that the incidence of human immunodeficiency virus (HIV) infections and AIDS is increasing annually in Japan, for example.

6. The relationship between human papillomavirus (HPV) infection and cervical cancer (Slides 14 and 15)

Show them that the incidence of cervical cancer among young women in their 20s is on the rise, and that one reason for this is the presence of high-risk HPV infection. In other words, explain that many cases of cervical cancer are a type of STI in the broad sense of the term.

7. Are you safe if you have had only one sexual partner? (Slides 16 and 17)

The answer is no. Even if you have only had one sexual partner, you are still at risk of infection due to the existence of a hidden sexual activity network.

8. How can we solve this problem? (Slides 18, 19, and 20)

The most important thing is prevention. Abstinence from sex is the best form of prevention. If young people are going to have sex, they should use condoms. Teach them the proper way to put on a condom as a common sense. Explain that they can have a free and anonymous HIV test at a public health center if they think they may be infected.

9. Final message (Slide 21)

There is no need to rush into sexual activity. Start with heart-to-heart communication.

III. Education for STI prevention in pubescent students also applies to adults (Slide 22)

It is not necessarily true that most adults have accurate knowledge of STIs. "If you are going to have sex → Always use a condom (consult a medical facility for the proper use of birth control pills or other contraceptive methods). You should only have sex without condoms or other forms of protection if both you and your partner are monogamous, have been tested, and are infection-free, and if both you and your partner are willing and able to raise a child." This conclusion applies to adults as well.

Conclusions

Providing junior and senior high school students with accurate knowledge about STIs against the background of a steadily increasing incidence of HIV and other types of infections is an absolutely essential mission from a societal perspective. The Japanese Society for Sexually Transmitted Infections launched a system for certifying doctors and experts in STI in 2009. Although about 370 doctors have been certified in four tests conducted up to 2012, only about 20 experts have been certified during that period. We plan on stepping up recruitment for certified experts with the goal of increasing their numbers and improving STI prevention education for junior and senior high school students. STIs are an increasing threat for young people around the world. Education in schools for young people in their mid-teens may represent the best strategy for STI prevention, and collaboration between medical and educational professionals is essential.

It is important to link the study of infectious disease with epidemiology to conduct ongoing investigations, to inform the public and young people of the results, and to take effective measures. Societies for the prevention of STIs around the world should act as mediators to increase the number of expert certification systems, for example. The slides we developed show promise for use as standard educational materials.

Joint Symposium

JS-02

Knowledge, Attitude and Preventive Behavior about STIs (include Cervical Cancer) among High School Students in Japan

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In Japan, there are an increasing number of sexually transmitted infections (STIs) (particularly those caused by *Chlamydia trachomatis*) among young people. Notably, there are serious problems with the increasing numbers of HIV/AIDS infections and cervical cancer cases caused by human papillomavirus (HPV). These increases can be attributed to the high percentage of high school students with sex experiences. Especially, Asymptomatic Chlamydial infection among high school students were 6.7% of male, 13.1% of Female who they had sex experience in 2006. These numbers compared with other countries of the young people, it is a warning to be very high. Ministry of health education, Culture, Sports, Science and Technology Japan have recommended learning for sexual education including sexually transmitted infections and AIDS in schools. Each schools have sexual education programs (include STI) for students.

Therefore, we have researched the current knowledge, attitude, behavior towards STIs prevention (multidimensional health locus of control: MHLC) among high school students in Japan since 2012. At the result of this, 80.0% of students obtained information on STIs from their schools. However, due to insufficient knowledge, they understand about 60% of "Infection manner". 60% of students feared STIs infection, and 50%~77% of students want to chance to have a check-up regarding STIs. Regarding as sexual behavior, 9.5%~13.7% of students had sexual intercourse. 70.0%~94.3% of students were attention to STIs prevention and care during intercourse among them. However, 30% of students consulted friend on STIs problems. Next, 11%~24.7% of students choose parents. However, 14%~20% of students choose "without consulting anyone". Regarding on MHLC, high scores was "Internal HLC" among students.

On the results obtained, we then discuss STI prevention education for adolescents with regard to knowledge and prevention of STIs (including uterine cervical cancer and AIDS), sexual activity, and attitudes toward health issues. Finally, issues regarding STI prevention education in each of the countries are discussed.

Key Words: High school stud

Joint Symposium

JS-03

Promoting STI prevention among the youth of Muntinlupa City philippines

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Comprising 19.6% of the total population of Muntinlupa City (Philippine Statistics Authority 2010), the promotion of STI prevention remains to be a challenge among the health providers of the city. Strategies that were implemented to promote STI prevention include the integration of public health programs such as the Adolescent Health and Development Program, STI HIV AIDS Program and Responsible Parenthood. This is to target not only the youth but to engage the parents in the fight against STI.

Capacities for counseling among Health Center providers were strengthened through trainings on Provider Initiated Counseling and Testing and the use of the Adolescent Job Aid Manual as a tool for assessing the needs of teenagers. The Barangay Health Volunteers were trained on "Parenting the Adolescent" to broaden STI prevention promotion from schools and workplace to the community. Family development sessions of the so called "4P's" or the poorest among the poor include STI education. Lectures on STI and gender sensitivity-responsiveness were provided to all city government employees for them to promote our services to all sectors and make it known that services are available to all genders.

With the advancement in information technology, the internet became a vehicle to promote STI prevention. With 88% of the youth as internet users in the National Capital Region (Source: Demographic Research and Development Foundation and University of the Philippines Population Institute. 2014. 2013 YAFS4 Key Findings) in which Muntinlupa City is situated, a website on STI HIV and face book account was created for participative interaction between health provider and user.

Networking and collaboration with other agencies and civic society organizations including religious groups, foundations and the LGBT community has built partnerships in sharing promotion mechanisms.

Joint Symposium

JS-04

Social Support Network for STI Prevention among Youth in Thailand

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The health status of adolescents and young adults in Thailand has been the subject of growing concern among educators, health personnel, policy makers and advocates interested in youth issues and adolescent health. According to the year 2004 National Health survey, most young people in Thailand enter puberty in early adolescence. They typically have sexual intercourse for the first time around age 16, but do not marry until their middle to late twenties. An increase in the acceptance of premarital sex coupled with a decrease in condom use among youth and young adults has been identified by the WHO (2009) as one of the threats to Thailand's continued HIV prevention success. Adolescent sexuality is a very sensitive and confidential issue for every youth in Thailand. With limited of resources in sexual education, contraception method and condom usage, adolescents face potential problems. Sexual activity is risky and contraceptive use is often unpredictable. Unwanted pregnancy and unsafe abortions are observed in many settings.

There can be an improvement in the health status of adolescents in Thailand with the application of the Triangular Theory of Powerful Network developed by Professor Dr. Prawase Wasi. Based on knowledge, the community, and policy with five levels of connectedness and collaboration with the three Es: Education, Empowerment and Environment, all of these circles work together to be a powerful network and improve the health of adolescents. Moreover, the strategy of the adolescent health network is categorized into five levels as health care provider, individual, family, community and country. Each level has their specific strategy by structure, the three Es: education, environment and empowerment to combat public health challenges like sexually transmitted infections (STIs) or unwanted pregnancies. It has been well established that social networks can be used to prevent STIs. An effective strategy for STI prevention and promoting good health will be necessary for adolescents to grow to be productive adults.

Key words: Social support network, STI prevention, youth in Thailand

Joint Symposium

JS-05

The Education of STI Prevention for Youth in Indonesia

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Young generation play an important role in the development of a country. Any health problems that occurred during youth period, such as in the case of Sexually Transmitted Infection (STI), could affect future condition of the youth and the country. Indonesia is one of developing countries in which the number of youth aged between 15 and 24 years old estimated at around 17 per cent of the total population in 2010. Based on the data from Indonesia Demographic and Health Survey 2012 related to adolescent reproductive health, the percentage of never-married women and men 15-24 who ever heard of HIV/AIDS was higher compare to those who ever heard of other STIs such as syphilis, gonorrhoea, genital herpes, condylomata, chancroid, chlamydia, candida and others. That knowledge may have contribution to the lower understanding on how the youth in Indonesia prevent STI. So, it needs special attention to educate them about STI prevention with consideration of the social and cultural aspects in Indonesia. This presentation will review the current condition of youth in Indonesia, social and cultural aspects related to reproductive health, research related to STI among youth, and in the end of the presentation, several strategy to educate STI prevention for youth are discussed.

Abstracts

Oral Session

Oral Session 1

O-01-01

The Policy Impacts of Prevent Mother-to-Child Transmission of Syphilis on the Identification of Pregnant Syphilis in Shanghai, China: a comparative study between 2002-2006 and 2011-2015

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Objective: To compare the screening and diagnosis of syphilis in pregnancy (SP) in Shanghai between the national and municipal policies of Prevent Mother-to-Child Transmission (PMTCT) of Syphilis, and to evaluate the impact of PMTCT policies on the identification of SP.

Methods: Time were dated back to 2002-2006, when the municipal PMTCT policy were established initially in Shanghai and 2011-2015, when the Ministry of Health scaled up national PMTCT policy widely. These two stages can be regarded as "exploration period" and "development period" respectively. All the pregnant women who were diagnosed as SP in Shanghai during these two periods were recruited in. Epidemiological data from the SP monitoring system of Shanghai were analyzed to compare the social demographic factors and the gestational weeks (GW) of screening and diagnosis of syphilis between the two periods. In addition, multivariate statistical model was also used to identify the factors associated with the early identification of SP.

Results: About 770,633 and 1,068,481 pregnant women received syphilis screening in exploration period and development period, and 1,545 and 2,749 subjects of them were diagnosed as SP respectively. Compared with the pregnant syphilis women in exploration period, the proportion of age \geq 35yr, non-resident, and well-educated were increased in development period, and the rates of screening and diagnosis within 18 GW were also higher (48.4% vs. 30.4%, 47.0% vs. 22.9%). However, there were still 30.2% and 30.3% of participants who were diagnosed as SP in the last trimester. Based on the result of multivariate analysis, the pregnant women with syphilis during the development period were more liable to receive syphilis screening and diagnosis within 12GW and 16GW (OR=1.48/3.24). Other obstacle factors associated with early SP identification were the non-resident, poor-educated, unemployed as well as the pluriparous.

Conclusion: With the scaling-up of PMTCT policies, the situation of early SP identification has been improved remarkably. However, many women with SP were not diagnosed until last trimester, which indicated that more attentions and interventions should be paid to the non-resident, poor-educated, unemployed women, who might have less access to antenatal care and early syphilis screening.

Keywords: Syphilis, Mother-to-Child Transmission, Policy, Impact Evaluation

Oral Session 1

O-01-02

Clinical features of syphilis patients detected by polymerase chain reaction and molecular typing of *Treponema pallidum* at an urban community-based STI clinic in Japan

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Background: In Japan the increase of syphilis notification has been observed since 2010. The experience of diagnosis of syphilis by polymerase chain reaction (PCR) is limited and there is no report on molecular typing of prevalent *Treponema pallidum* (Tp) strain in Japan. The aim of the study is to investigate clinical features of syphilis patients detected by PCR and determine the Tp strain type diversity.

Methods: This is a single institute study. Swabs taken from ulcerative lesion or erosion from patients suspected with syphilis between May 2012 and February 2016 were tested for PCR targeting 2 treponemal genes: TpN47 and *poA*. Molecular strain typing was based on characterization of 3 variable treponemal genes: *arp*, *tpr* and *tp0548*. Clinical features were investigated from the case records.

Results: A total of 97 specimens from 81 patients were positive for PCR. Fifty two out of 81 patients (64%) were HIV positive. All but 1 patient were men who have sex with men. Primal locations of ulcerative lesions with positive PCR were oral cavity (42 specimens, 43%), penis (33 specimens, 34%) and anus (17 specimens, 18%). Among the fully typeable specimens (58 specimens), 14d/f was the most frequently detected (37 specimens, 64%) but also 14e/f (4 specimens, 7%), 11o/c (3 specimens, 5%), 14d/c (3 specimens, 5%) were detected. One specimen with subtype 14d/g contained the 23S rRNA A2058G macrolide resistance mutation.

Conclusions: PCR is useful tool to diagnose extra-genital lesions of syphilis including oral cavity and anus. A wide spectrum of different strain types of Tp were seen among MSM in urban setting in Japan.

Oral Session 1

O-01-03

Convergence Case-management for Syphilis Control: A Pilot Project in China

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Background: The traditional syphilis control practice in China usually pays too much attention to treatment but neglects further management of syphilis cases, which could not effectively prevent spreading of the disease. In an attempt to address the problem, Nanshan district, Shenzhen, launched the Syphilis Convergence Case-management Project (SCCP) for the first time in China in April 2011. This pilot project aimed to consolidate prevention, treatment and management in order to better control syphilis. By far, the project has obtained some meaningful experimental outcomes and practical experience. We hereby report findings of the 5-year trial

Methods: On basis of extensive screening, all the medical and public health faculties within the district are encouraged to refer syphilis seropositive cases to a centralized institution, which is responsible for providing standardized treatment, serologic follow-up (once every three months), partner tracing and health education, etc. We adopted some indices such as standardized treatment rate, follow-up rate and success rate of partner notification to evaluate the project.

Results: By June 2016, the project has managed 1124 syphilis cases, among which 749 were newly treated cases. The standardized treatment rate for SCCP was 96.98%. Compared to the historical level before (79.20%), there was significant increase after five years of SCCP ($P < 0.01$). Three months', six months', one year's and two years' follow-up rate were 76.33%, 62.40%, 53.75% and 36.93%, respectively, which were also significantly higher than those without convergence case-management ($P < 0.01$). Success rate of partner notification for managed patients were 83.92% (887). It was a relatively high level compared with the rate reported in literatures. Among all the notified partners, 735 (82.86%) received examination; 329 (44.76%) were found to be seropositive and 198 (60.18%) of these positive partners were furtherly included in the management.

Conclusions: After five years of practice, the SCCP significantly improved effectiveness of syphilis control and patients' management. Our study highlights the importance of standardized follow-up and management in the control of syphilis. The experience from Nanshan District could be substantially valuable for prevention and control practice in this area, and the mode of convergence case-management might be able to generalized in some similar regions.

Oral Session 1

O-01-04

Increase in syphilis testing and detection of early syphilis among men who have sex with men across Australia, 2007-2014

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Introduction: Australia's national strategy for controlling syphilis in gay, bisexual and other men who have sex with men (GBM) has been based on frequent syphilis screening of GBM. This study examined trends in syphilis testing and detection to determine the effectiveness of Australia's national response.

Methods: Data on syphilis testing and diagnoses among GBM from 46 sexual health clinics from the Australian Collaboration for Coordinated Enhanced Sentinel Surveillance of Sexually Transmissible Infections and Blood Borne Viruses (ACCESS) from 2007 to 2014 were analysed. The proportion of GBM serologically tested for syphilis, tests per man, and number of early syphilis cases was determined for each year. P values were calculated using the chi-square test for proportions and Poisson regression for count data.

Results: 117,387 GBM attended a clinic during the period; 17% were HIV positive. From 2007 to 2014, the proportion of GBM tested for syphilis increased in HIV-negative (48% to 91%, $p_{\text{trend}} < 0.001$) and HIV-positive men (42% to 77%, $p_{\text{trend}} < 0.001$). Mean tests per man per year increased from 1.3 to 1.6 among HIV-negative men ($p_{\text{trend}} < 0.001$) and from 1.6 to 2.3 among HIV-positive men ($p_{\text{trend}} < 0.001$). Among HIV negative men, the number of syphilis cases increased over the study period (primary: from 117 to 225; secondary: 59 to 113; and early latent: 65 to 262; [each $p_{\text{trend}} < 0.001$]). Similarly, the number of syphilis cases also increased among HIV-positive MSM over the study period (primary: from 30 to 67; secondary: 41 to 60; and early latent: 21 to 103; [each $p_{\text{trend}} < 0.001$]). Among HIV negative men, the proportion of early syphilis cases in HIV negative men that were latent increased from 23% to 45% ($p_{\text{trend}} < 0.001$) and among HIV positive men from 27% to 44% ($p_{\text{trend}} < 0.001$).

Conclusion: Syphilis screening and detection of asymptomatic infection increased substantially but has not been sufficient to prevent a worsening epidemic.

Oral Session 1

O-01-05

Investigating the lack of access to antiretroviral treatment of hiv among individuals who inject drugs

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The Human Immunodeficiency Virus (HIV) and Acquire Immune Deficiency Syndrome (AIDS) is one of the serious deadly diseases. The spread of HIV infection and AIDS among People Who Inject Drugs (PWID) is a major health concern in many parts of the world. Mathematical models have the ability to understand the dynamics of HIV/AIDS epidemic. It gives the policy makers ability to plan ahead in terms of effective preventive control measures to reduce the spread of HIV/AIDS. To understand the spread of HIV and AIDS cases and their parameters in a given population, it is necessary to develop a theoretical framework that takes into account realistic factors. The current study used such a framework to assess the interaction between individuals who developed AIDS after HIV infection and individuals who did not develop AIDS after chronic HIV infection. We first investigated how probabilistic parameters affected the model in terms of the HIV among PWID population over a period of time. Our results suggested that antiretroviral medication (drug treatment), the rate at which individual who lack of success to antiretroviral is $9.630e-01$. The results showed that the disease-free steady state is unstable because the basic reproduction number was 2.21. The proportion of population that needs to be on antiretroviral medication in order to reduce the infection among PWID is 0.56. Hence, to examine this framework and demonstrate how it works, a case study of reported HIV cases among PWID from an annual data set in Malaysia was employed. Consequently, we compared how these approaches complemented each other. We concluded that HIV in Malaysia shows epidemic behavior, especially in the context of understanding and predicting emerging cases of HIV and AIDS.

Oral Session 1

O-01-06

Geographical Patterns of HIV Sero-discordancy in High HIV Prevalence Countries in Sub-Saharan Africa

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Background: Variation in the proportion of individuals living in a stable HIV sero-discordant partnership (SDP), and the potential drivers of such variability across sub Saharan Africa (SSA), are still not well-understood. This study aimed to examine the spatial clustering of HIV sero-discordancy, and the impact of local variation in HIV prevalence on patterns of sero-discordancy in high HIV prevalence countries in SSA.

Methods: We described the spatial patterns of sero-discordancy among stable couples by analyzing Demographic and Health Survey data from Cameroon, Kenya, Lesotho, Tanzania, Malawi, Zambia, and Zimbabwe. We identified spatial clusters of SDPs in each country through a Kulldorff spatial scan statistics analysis. After a geographical cluster was identified, epidemiologic measures of sero-discordancy were calculated and analyzed.

Results: Spatial clusters with significantly high numbers of SDPs were identified and characterized in Kenya, Malawi and Tanzania, and they largely overlapped with the clusters with high HIV prevalence. There was a positive correlation between HIV prevalence and the proportion of SDPs among all stable couples across within and outside clusters. Conversely, there was a negative, but weak and not significant, correlation between HIV prevalence and the proportion of SDPs among all stable couples with at least one HIV-infected individual in the partnership.

Conclusion: There does not appear to be distinct spatial patterns for HIV sero-discordancy that are independent of HIV prevalence patterns. The variation of the sero-discordancy measures with HIV prevalence across clusters and outside clusters demonstrated similar patterns to those observed at the national level. The spatial variable does not appear to be a fundamental nor independent determinant of the observed patterns of sero-discordancy in high HIV prevalence countries in SSA.

Disclosure of Interest Statement: This publication was made possible by NPRP grant number 6-681-3-173 from the Qatar National Research Fund (a member of Qatar Foundation). The statements made herein are solely the responsibility of the authors.

Oral Session 2

O-02-01

Determinants of STIs Preventive Behaviors among High School Students in Four Main Tourist Destination Areas in Bali

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Introduction: Sexually transmitted infections (STIs) have been given a significant morbidity and mortality especially in developing countries. The prevalence of STIs from 2010 to 2013 in Bali were 6348 cases; 4171 cases; 8747 cases; 9231 cases respectively. Teenagers in a famous travel destination like Bali are stated to be more at risk to STIs. This research is aimed to analyse factors contributing to the STIs preventive behaviours among teenagers who live in travel destination areas in Bali.

Methods: This is a analytic cross sectional study involving 286 respondents from 4 high schools in 4 tourist destination areas in Bali, which were Kuta, Ubud, Sanur and Tulamben. Data collection was using Self Administered Questionnaire (SAQ). Data were analyzed using logistic regression. Independent variables in this research are knowledge, information exposure, attitude, parenting style and peer influence. The dependent variable is STIs preventive behaviors.

Results: The results shows that all independent variables are determinants of STIs preventive behaviors, however, from logistic regression analysis, peer influence and knowledge are independently associated to STIs preventive behavior among school students/teenagers in tourist destination areas in Bali with AOR=2,65 and 2,38 respectively. However the R^2 is 0,072. It means that both variables explained only 7,2% of STIs preventive behavior among teenagers in Bali.

Conclusion: It is needed to activate peer educator program and other education programs in other to enhance the knowledge and good influence between peers. Therefore, STIs preventive behaviors among teenagers will be better.

Keywords: Determinants, knowledge, peer, STIs, teenager

Disclosure of Interest Statement: There is nothing to be declare

Oral Session 2

O-02-02

Barriers and enablers to adoption of contraceptive method: a multi-stakeholder perspective

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Promoting family planning practices aid considerably in attaining Millennium Development Goals (MDGs) by various mechanisms. Despite concerted health system efforts, adoption of especially reversible contraceptive methods like intra-uterine devices (IUDs) have remained negatively skewed in India which is the pioneer country to implement Family Planning program way back in 1952. Though few studies in India have looked into the reasons for its non-acceptance, literature from Odisha was scant and hence the study was undertaken. A cross-sectional study using qualitative methods was done in the Mahanga tehsil of Cuttack district. In depth interviews were conducted with women of reproductive age (WRA) and focused group discussions (FGDs) among health workers and health professionals were held separately. Data analysis was done using thematic framework approach supported by Atlas Ti software. There were 31 in-depth interviews with WRA, two FGDs with health workers and one FGD with health professionals. Availability of IUD services was low and wherever available, being located far away affected its physical accessibility. Most women were reluctant to ask health workers about services owing to their shyness while many women felt using IUDs breached their autonomy and privacy. Existence of fear and misconceptions regarding its use rooting from lack of knowledge and poor service quality also impeded its adoption by women. There is a pressing need to enhance the demand of IUDs by dispelling the myths among women through effective information, education and communication (IEC) and also to improve the availability of IUDs.

Oral Session 2

O-02-03

Assessing Participation and Effectiveness of Peer-led Approach in Youth Sexual Health Education - Systematic Review and Meta-analysis in More Developed Countries

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Sexual health education for young people is important because of norm development and vulnerability during this stage of life. Although several systematic reviews have examined the effectiveness of peer-led sex education, none has focused on the extent of peer participation. The purpose of this review was to evaluate peer-led sexual health education interventions in More Developed Countries (MDC).

Electronic and hand searches in five social science, education and medical databases were conducted and fifteen articles were selected. The majority of studies found improvements in sexual health knowledge (13/14) and attitudes (11/15) at post-intervention. Two studies showed improved self-efficacy and three showed behavioural changes. Meta-analysis showed a large effect on knowledge change (Hedges'g=0.84, 95% CI: 0.43-1.25) and a medium effect on attitude change (Hedges'g=0.49, 95% CI: 0.19-0.80). Most (11/15) studies gave low or no responsibility to peers.

Peer-led sexual health education may be a powerful tool. Further research and action are needed to better understand optimal implementation.

Oral Session 2

O-02-04

An emerging sexual risk factor: the use of smartphone dating applications

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Background: Smartphone dating applications (apps) are very popular recently due to advanced mobile technology and widespread Internet access. Previous studies only explored their negative impacts on rates of unprotected sex in homosexual men. Generalizability of the findings to the heterosexual population is limited due to the distinct differences in sexual practices between people of different genders and sexual orientations.

Aims: The study aimed to examine the association between using dating apps and risky sexual behaviours in college students in Hong Kong.

Methods: It was a cross-sectional study. Students were recruited in four universities in Hong Kong by convenience sampling. Subjects completed a structured questionnaire on the use of dating apps, sexual behaviours and socio-demographic information. Multiple linear and logistic regressions were used to examine factors associated with sexual risk behaviours.

Results: We recruited 666 subjects whose mean age was 20 years with 54.1% were female, 82.4% were heterosexual, 71.5% were currently in a dating relationship, 60.5% did not have sexual intercourse experience and 52.9% currently used dating apps. Factors associated with more number of sexual partners with unprotected sexual intercourse were using dating apps ($\beta=0.93$, $p<0.01$), having one's first sexual intercourse before 16 years old ($\beta=1.74$, $p<0.01$), being older ($\beta=0.4$, $p<0.01$), currently being in a relationship ($\beta=0.69$, $p<0.05$), having a monthly income at least HKD\$5,000 ($\beta=1.34$, $p<0.01$), being a current smoker ($\beta=1.52$, $p<0.01$), and being a current drinker ($\beta=0.7$, $p<0.01$). In addition, people less likely have consistent condom use (lifetime) were those users of dating apps (adjusted odds ratio [aOR]: 0.52, $p<0.05$) and current drinkers (aOR: 0.40, $p<0.01$). Users of dating apps (aOR: 1.93, $p<0.05$), bisexual/homosexual subjects (aOR: 2.57, $p<0.01$) and female subjects (aOR: 2.00, $p<0.05$) were more likely not using condoms the last time they had sexual intercourse.

Conclusion: The present study found a robust association between using dating apps and sexual risk behaviours including having more number of sexual partners with unprotected sexual intercourse and inconsistent condom use, suggesting that app users had greater sexual risks. Popularity of smartphones nowadays has made it difficult to stop people from using dating apps. Instead, clinicians should take a proactive approach to promote safety use of dating apps. School-based interventions to promote safe sex and availability of condoms in school campuses and dormitories should also be advocated.

Oral Session 3

O-03-01

Faster and Riskier?: Online Context of Sex Seeking Among Men Who Have Sex with Men in China

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Objectives: Online sex seeking is increasingly common among men who have sex with men (MSM). While the online setting creates an environment in which MSM can build social support and seek HIV information, it may also facilitate casual encounters and high-risk sex. The purpose of this study was to compare socio-demographics, sexual risk behaviors, and HIV/STI-related information obtainment between Chinese MSM who sought sex partners through websites only, gay apps only, or both platforms.

Methods: Data was collected through a cross-sectional online survey from September through October 2014 from three large gay web portals. Socio-demographic information, sexual behaviors, and online sex seeking behaviors were measured. The platforms of online sex seeking were categorized into websites (e.g., online forum) and gay apps (e.g., Blued). Multinomial logistic regression was performed to compare sexual risk behaviors among website users, gay app users, and men who used both platforms.

Results: Among the 1,201 participants, the majority were less than 30 years old (67.8%), single (89.3%), and living in urban areas (89.8%). Overall, 377 (31.4%) men were website only users, 487 (40.5%) were gay app only users, and 337 (28.0%) were men who used both platforms for online sex seeking. MSM who only used websites were more likely to be older, less educated, and married compared to the other two groups. MSM who used both platforms were similar to men who used gay apps only, except that they were more likely to have ever disclosed their sexual orientation to others. MSM who used both platforms received more health messages than website only users (aOR = 2.19, 95% CI:1.57-3.05). Overall, 57.6% of participants reported having engaged in condomless anal sex with their last male partner in the past six months, but there was no significant difference in condomless sex between the three groups.

Conclusion: Our data suggest that these three MSM subgroups have distinct socio-demographic characteristics. The similar rates of condomless sex between the three groups indicate condom usage behaviors were unaffected by the medium through which sexual partners were found. However, the high prevalence of condomless sex emphasizes that websites and gay apps are both risk environments. Lastly, MSM who use both platforms reported receiving more online health messages than single platform users, which suggests that using multiple platforms for HIV/STI social media interventions may be useful.

Keywords: app; website; MSM; sex seeking; China

Oral Session 3

O-03-02

Prevalence of sexually transmitted infections and acceptability, feasibility of screening in antenatal care, Vietnam, 2016-2017

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BACKGROUND: There is strong evidence that sexually transmitted infections (STIs) cause adverse pregnancy outcomes, including preterm birth, stillbirth, low birth-weight and congenital infections. The prevalence of *Chlamydia trachomatis* (CT), *Neisseria gonorrhoeae* (NG) and *Trichomonas vaginalis* (TV) in the Asia Pacific region varies. The proportion of pregnant women infected ranges from 0.1% (CT prevalence in India) to 44% (CT prevalence in Bangladesh). The recently estimated mean prevalence of CT, NG and TV in low and middle income countries in Asia was 0.8%, 2.8% and 13.6% respectively.

Since most STIs are asymptomatic, antenatal screening policies can present an opportunity to prevent numerous sequelae associated with STIs during pregnancy. In the Asia Pacific region, only Japan has policies to screen for CT, only New Zealand has policies to screen for NG, Australia and North Korea have policies to screen for both CT and NG (however, screening is not done in North Korea due to the lack of resources).

In Vietnam, pregnant women are not screened for CT, NG and TV during their antenatal visits. Moreover, data on the prevalence of STIs among pregnant women in Vietnam is very limited. Therefore, the aim of our current study was to estimate the prevalence of STIs and assess feasibility and acceptability of screening for CT, NG and TV among pregnant women in Hanoi, the capital of Vietnam.

METHODS: We plan to enroll 800 pregnant women coming to Ha Dong General Hospital, Hanoi for antenatal care. Eligibility includes age 18 years or older, gestational age less than 35 weeks and willing to come back to the hospital for counseling and treatment if tested positive. After informed consent, enrolled women self-collected vaginal swabs or urine samples for testing using Xpert CT/NG and TV assays (Cepheid, Sunnyvale, CA, USA).

RESULTS: To date we have enrolled 400 participants (Acceptability was 98.8% (95%CI, 97.1-99.6)): 31 had CT (7.8%; 95%CI, 5.3-10.8), 3 had TV (0.8%; 95%CI, 0.2-2.2) and none had NG. Feasibility was 93.9% (95%CI, 79.8-99.3), with 31 out of 33 infected women treated for the corresponding infection.

CONCLUSION: Acceptability and feasibility of STI screening among pregnant women was high. The prevalence of CT was much higher than the mean prevalence of CT among low and middle income countries in Asia. Study findings support policy to incorporate routine screening for STIs during pregnancy to improve maternal and infant health.

Oral Session 3

O-03-03

Assessment of the impact of a client led checklist of care on delivery of holistic care for men who have sex with men attending integrated sexual health services

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Background: Public Health England advocates an holistic approach to the care of men who have sex with men (MSM). We introduced a client led checklist of holistic care for MSM to enable audit and feedback during care delivery.

Aims: (1) To assess the acceptability of client led audit. (2) To describe healthcare issues affecting MSM.

Methods: The checklist was issued to consecutive MSM attending an integrated sexual health service and could be anonymised or named to enable linkage to EPR for data extraction.

Results: 206/207 returned a named checklist. Age range 15-63 years. 111/206 (54%) were UK born, 46/206 (22%) white british, 169/206 (82%) homosexual, 34/206 (17%) bisexual, 3 (1%) trans-sexual. 27/206 (13%) were HIV positive. 149/206 (73%) had self-triaged as asymptomatic. 46 (22%) had an STI including 5 new HIV infections. All had venepuncture, 164/179 (92%) HIV POCT and 202/206 (98%) triple site testing for bacterial STI. 88/206 (43%) reported unprotected anal sex within 3 months. 194/207 (94%) reported being happy. 87/207 (42%) reported that "Friends & Family" were unaware of their sexuality. 31/206 (15%) had hazardous alcohol intake and or drug misuse recorded in EPR. 48 (23%) more disclosed through the tool, a total of 79/206 (38%). 62/206 (30%) currently smoke, 74/206 (36%) take no regular exercise. Unprotected anal sex was associated with smoking ($p = 0.02$), and drug and alcohol misuse ($p = 0.004$) only. Being unhappy was associated with drug misuse only ($p = 0.01$).

Discussion: A client led checklist supported staff to deliver excellent outcomes within a multidisciplinary integrated service. Near universal named uptake and completion indicated high acceptability.

Oral Session 3

O-03-04

The development of Sexual Health Strategy in Aotearoa New Zealand

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A sexual and reproductive health strategy was developed for New Zealand in 2001. However the proposed development of action plans to follow the launch of the strategy did not eventuate. Subsequent funding of sexual and reproductive health services developed in an ad hoc fashion with lack of national consistency. A Value for Money (VfM) review published in 2013 of sexual and reproductive health service provision concluded that there was a lack of robust comparable data to provide a quantitative assessment of VfM. It was noted that there was an environment driven by individuals rather than strategy. Subsequently a sector driven engagement process has resulted in the development of an action plan coordinated by the Ministry of Health. The lack of any increase in dedicated funding for the sector has meant that any progress will be made through voluntary partnerships and collaboration between disciplines, services and professional bodies. An evaluation of the engagement process and development of the strategy will be presented.

Oral Session 4

O-04-01

Prevalence of sexually transmitted infections among nepalese population

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Background: HIV and syphilis have been a major public health concern in Nepal. Because of limited work opportunities in Nepal seasonal labor migration to overseas become common. Nepalese government is promoting overseas employment opportunities for its citizens because of poor absorption of growing labor force in the country. This study was aimed to determine the seroprevalence of Human Immunodeficiency Virus (HIV) and syphilis among the Nepalese population intended to depart overseas for labor employment.

Methods: This study was conducted at Namaste Nepal Medical Center and Polyclinic, Kathmandu, Nepal. Seventeen Thousand Seven Hundred Seventeen healthy populations were included for study between August 2011 to July 2012. The venous blood is collected aseptically and subjected to screening for anti HIV 1/2 and syphilis which was confirmed by third generation HIV 1/2 ELISA and Treponema Palladium Haemagglutination Assay (TPHA) (SD, Bio Lines, Korea) respectively prior to overseas migration for labor employment. Data were analyzed by using SPSS version 17.0 software.

Results: The seroprevalence of antibodies to HIV 1/2 were found to be 0.09% (16/17,717) and syphilis 0.3% (51/17,717) respectively. Among the HIV infected population 0.07% (12/17,717) were Male while only 0.02% (4/17,717) were female. Whereas in syphilis 0.23% (40/17,717) were male and 0.06% (11/17717) female. The ordinary age group infected with HIV and syphilis were found to be 20-30 years which was followed by 31-40 years respectively.

Conclusion: The seroprevalence HIV and syphilis showed decreasing trend, due to the cumulative effect of increasing awareness of HIV and better HIV testing and counseling (HTC) in Nepal. This study reflects that it would be alarming situation because young age population becomes more infected. Therefore, a continuous surveillance, advocacy and social mobilization need to be considered for further improvements of transmission of HIV infection.

Keywords: HIV, Syphilis and Labor Migrant

Oral Session 4

O-04-02

Chlamydia prevalence and risk factors in Hong Kong: A population-based geospatial household survey

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Background: Chlamydia causes infertility and increases the risk of HIV infection, and population-based studies provide essential information for effective infection control and prevention. This study examined chlamydia prevalence and risk factors among a representative sample of 18-49-year-old residents in Hong Kong.

Methods: City map of 412 constituency areas were used to construct a sampling frame as primary sampling units and, buildings and residential units were randomly selected using a geospatial modelling software. A questionnaire on sexual health and practice was conducted between November 2014 and March 2016, and PCR was used to test the urine for genital chlamydia infection. Prevalence data was weighted according to the 2011 census and risk factors identified through logistic regression.

Results: Among the 881 participants (response rate of 24.5%), the overall chlamydia prevalence was 1.4% (95%CI 0.8-2.4%) with those of the males and females at 1.1% (95%CI 0.4-2.8%) and 1.7% (95%CI 0.9-3.1%) respectively. Sexually active women aged 18-26 years had a particularly high chlamydia prevalence (5.3%, 95%CI 1.5-17.1%). Amongst them, the risk factors of chlamydia infection were younger age (18-26 years; aOR=10.2, 95% CI 1.68 - 62.1); living with fewer people (i.e. 2 or below) (aOR = 3.09, 95% CI 1.10 - 8.73); or, those whose partners had travelled outside Hong Kong in the past 12 months (aOR= 5.15, 95% CI 1.21 - 22.0). A core-peripheral distribution of chlamydia prevalence was observed in the territory.

Conclusion: Young women have high chlamydia prevalence in Hong Kong. Routine screening for sexually active women aged 18-26 years should be considered. Further research on testing feasibility and linkage to care are urgently needed to reduce sexual risks of the population.

Keywords: Chlamydia trachomatis; chlamydia; prevalence; risk factors; Hong Kong

Oral Session 4

O-04-03

Sexually transmitted infections among Iranian female sex workers: a systematic review and meta-analysis

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Background: It is estimated that about 130,000 female sex workers (FSWs) live in Iran. Given the burden of HIV and sexually Transmitted infections (STIs) among FSWs and their potential role in bridging HIV/STIs into the general population, estimating the prevalence of HIV/STIs among FSWs is important in improving our understanding of the dynamics of the HIV epidemic in Iran as well as recognizing the opportunities for action. Despite the increasing number of bio-behavioural studies among Iranian FSWs, the existing evidence on HIV/STIs prevalence among FSWs varies to a great extent across different studies. This review tries to synthesize available HIV/STIs data on Iranian FSWs.

Design: Systematic review and meta-analysis of prevalence studies

Material and method: The review was based on data generated through systematic searches of PubMed, Scopus, CINAHL, PsycINFO, and national databases (i.e., Magiran, IranDoc, Iranmedex, Scientific Information Database). Peer-reviewed studies (published from 2005 to 2016) with a sample size of at least 30 participants and detailing sero-prevalence data, other laboratory-based tests, and clinical diagnoses of HIV/STIs among FSWs were included in the analysis. Using Comprehensive Meta-Analysis software, pooled prevalence were calculated using fixed or random-effects meta-analyses. Heterogeneity between studies and publication bias were assessed. Statistical significance level was set at P-value < 0.05 throughout the analyses.

Results: Nine studies were included into meta-analysis. There was no heterogeneity between studies except for studies on syphilis. Our findings indicated a high prevalence for a variety of STIs: Pooled HBV, HCV, and Syphilis prevalence were 1.0 % (95 % Confidence Interval (CI): 0.40-2.7 %), 7.3 % (95 % CI: 5.1-10.5 %) and 0.30 % (95 % CI: 0.10-1.5 %), respectively. Pooled HIV prevalence was 3.8 % (95 % CI: 2.9-5.1 %).

Conclusion: The prevalence of certain STIs (e.g., HIV, HCV) is considerably high among Iranian FSWs. FSWs should be targeted by focused harm reduction and prevention strategies to meet their special sexual and reproductive health needs. Existing HIV/STIs prevention programs should also be further scaled up throughout the country, in order to decrease the vulnerability of FSWs HIV/STIs and reduce the chance of bridging the infections to the general population.

Oral Session 4

O-04-04

Depression, a worsen but ignored issue among Chinese female sex workers: Results from a multi-site cross-sectional study

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Objective: Female sex workers (FSWs) are at high risk for HIV and other sexually transmitted Diseases (STDs) infection, and face the problems of stigma, sexual violence, social discrimination and exclusion. This study aimed to assess the burden of depression among Chinese FSWs, and evaluate the correlates of depression among Chinese FSWs.

Method: In a multi-site cross-sectional study, using convenient sampling method, we recruited participants from three cities in Guangdong, China. Information on demographic characteristics, HIV testing history, sexual behaviors and HIV, syphilis and HCV status was collected from each participant. We defined depression as obtain the point 6 or above in GHQ-12. Univariate and multivariate logistic regressions were used to evaluate the correlates of depression.

Results: Among the 653 participants, more than two-fifth (41.7%) were 21-30 years old and married (43.6%). About half (57.4%) of them have at least attended middle school and were living alone (50.4%). Overall, 342 (52.4%) of them were found to be depressed. Prevalence of HIV, syphilis, HCV among participants were 0.6%, 5.1% and 2.0% respectively. Participants who had correct syphilis related knowledge [adjusted Odds Ratio (aOR)=1.45, 95% CI: 1.04, 2.03], had no primary sex partner (aOR=1.63, 95% CI: 1.14, 2.33) were tend to have depression. FSWs who did not use condom during their last sex with primary sex partner (aOR=0.47, 95% CI: 0.31,0.71) were less likely to be depressed.

Conclusion: Our study observed high level of depression among Chinese FSWs. Future intervention should strength symptom management after education promotion, and integrates mental health service in comprehensive intervention to prevent depression among Chinese FSWs.

Oral Session 4

O-04-05

Bacterial vaginosis in early third trimester and pregnancy outcomes

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Bacterial vaginosis (BV) associates with various pregnancy complications such as premature rupture of membranes (PROM), preterm delivery, chorioamnionitis and post-partum infection. No consensus on the screening of BV during pregnancy has been established. Although most previous studies were conducted before GA 24 weeks, some data suggested that BV episode at GA 28 weeks was more related to adverse pregnancy outcomes than those at GA 24 weeks. The present study aimed to investigate the prevalence of BV and other vaginal infections in pregnant women during GA 28-32 weeks using gram staining and pregnancy outcomes. From 245 specimens, the prevalence of BV, vaginal candidiasis (VC) and intermediate flora were 19.6, 20.8 and 35.9, respectively. None had trichomoniasis or gonococcal infection. One of BV cases had chorioamnionitis and none of all participants had post-partum infection. When adjusting to age, parity and GA at screening, the greater disturbance to vaginal ecosystem tended to increase PROM (intermediate flora 1.47, 95% CI 0.56-3.85; BV 2.01, 95% CI 0.71-5.68), delivery <37 weeks (intermediate flora 0.90, 95% CI 0.23-3.52; BV 1.98, 95% CI 0.50-7.87) and birthweight <2500 grams (intermediate flora 1.12, 95% CI 0.39-3.25; BV 1.74, 95% CI 0.56-5.36) although there was no statistical significance. However, timing from screening to delivery was comparable among all groups, at around 8 weeks. No association between VC and any adverse pregnancy outcomes was demonstrated.

Oral Session 5

O-05-01

Clearance of HPV infection and clinical prognosis after treatment of cervical intraepithelial neoplasia: prospective observation of 334 patients

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Aims: Cervical intraepithelial neoplasia (CIN) is the precancerous lesion of cervical cancer. Human papilloma virus (HPV) infection is the main cause of cervical cancer and CIN, and several HPV subtypes have been shown to be high risks for disease development. In this study, we examined the details of infected HPV genotypes in 334 cases of CIN treated in our hospital and performed long-term prospective observation.

Methods: Cases were recruited from CIN cases treated in our hospital from 2007 to 2011, and observed till December 2014. One hundred and four cases were treated by laser conization, and 230 cases by laser vaporization. Surgical procedure was selected on the basis of colposcopic examination, pathological grade and patient's hope for pregnancy. All cases were examined infected HPV genotypes before and after treatment using multiplex PCR method.

Results: There were no significant differences in cure rates, HPV persistence rates and recurrence rates between conization and vaporization. Persistent HPV infection after treatment was independent risk factor of recurrence (RR, 9.25; 95%CI 3.06-27.98; $p < 0.001$) in multivariate analysis. And multiple-types HPV infection before treatment was independent risk factor of persistence of HPV infection (RR, 2.04; 95%CI 1.10-3.78; $p = 0.024$).

Conclusion: HPV persistent cases showed higher recurrence rates and might be needed intensive follow up than HPV cleared cases.

Oral Session 5

O-05-02

Human papillomavirus (HPV) vaccination and STI screening in men who have sex with men (MSM). Clinical outcomes and factors associated with completion of a three dose schedule in a clinical cohort.

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Background/introduction: We introduced HPV4 vaccination for younger MSM under 27 years into our sexual health services in 2012. We report on the attendance behaviour, clinical outcomes, completion rates and factors associated with vaccination completion in our cohort.

Aims: (1) To deliver 3 dose HPV4 vaccination to younger MSM. (2) To increase engagement and STI testing by younger MSM at integrated sexual health services.

Methods: HPV4 vaccine was offered at Time 0, 2-4 and 6-12 months, with STI testing, clinic call/recall, alongside care and support as appropriate. We conducted a retrospective electronic case note (EPR) review of all eligible MSM at end 2015. Completion rates are censored at 1 year.

Results: 893/930 (96%) offered vaccine accepted 1st dose.

In Year 1, of 239 initiating HPV vaccination, 187 (78%) and 148 (62%) received a 2nd and 3rd dose within one year. In Year 2, of 255, 194 (76%) and 140 (56%), and in Year 3, of 399, 243/324 (75%) eligible, and 111/200 (56%) eligible received a 2nd and 3rd dose within one year.

880/893 (99%) at Dose 1, 556/658 (84%) at Dose 2 and 372/427 (87%) at Dose 3 had STI testing at each vaccination visit. Overall, at Dose 1, 283/893 (32%), 77/568 (12%) at Dose 2, and 60/427 (14%) at Dose 3, had an STI diagnosed at that visit. In a univariate analysis, age >21yrs; 232/375(62%) vs. 57/119 (48%) <21yrs ($p = 0.008$), being HIV positive; 61/74 (82%) vs. 228/420 (54%) HIV negative ($p = 0.001$), prior HPV disease; 41/57 (72%) vs. 248/438 (57%) ($p = 0.03$), being exclusively homosexual; 231/379 (61%) vs. bisexual/other MSM 38/77 (49%) ($p = 0.02$), and being of non white-british ethnic group; white british 81/172 (47%), white Other 66/102 (65%) ($p = 0.006$), Asian ethnicities 65/98(66%) ($p = 0.003$), Black ethnicities 54/80 (68%) ($p = 0.003$), were associated with higher 3 dose completion rates within one year.

Discussion/conclusion: We observed 3 dose completion rates commensurate with outcomes expected from a catch up vaccination programme. Completion within one year was associated with older age, HIV infection and engagement in care, prior known HPV infection, self-identifying homosexual men and men of non white- british ethnicities. We observed high rates of STI testing and infection in this cohort. Delivering HPV vaccination within sexual health care services is an effective engagement strategy for young MSM.

Oral Session 5

O-05-03

Penoscrotal Extramammary Paget's Disease: case report and review of literature

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Introduction: Extramammary Paget's disease (EMPD) is a rare intra-epidermal malignancy that involved in area of apocrine glands riched. The common involving sites are vulva and anus. Occurrence at penis and scrotum is rare. According to the previous report, the incidence of penoscrotal EMPD represented 6.5% of all Paget disease. Due to the rarity of disease, the definite treatment is diversity. Herein, we report a case of penoscrotal EMPD without metastasis.

Case description:

[Case 1] This is a 79-year-old Chinese man with the history of Bowen's disease. He suffered from penoscrotal erythematous plaque with ulceration for years. Then he presented to dermatologic clinic where biopsy revealed EMPD. There was no palpable inguinal lymph node. Due to localized disease, wide excision with split-thickness skin grafts. Intraoperative frozen section done to ensured adequate surgical margin. The final pathology showed EMPD without margin involved. Skin graft growth well thereafter.

[Case 2] A 73-year-old Chinese man without any malignancy history before who presented to dermatologic clinic due to pruritus of penoscrotal area for a long period of time. He ever received topical therapy for the erythematous lesion but in vain. Consequently, it turned into indurated, crusted and ulcerated appearance. Biopsy done and it revealed the pathology of EMPD. Then he was referred to urologic clinic for further management. There was no inguinal lymph node palpable. As the possibility of the intraabdominal malignancy associated, tumor markers examined including LDH, CEA, CA 19-9 and PSA showed within normal limits. Meanwhile chest X-ray, bone scan, pelvic MRI were all normal. Frozen section guided wide excision with primary closure of the involved area done until margin free. The final pathology disclosed EMPD with margin free.

Discussion: EMPD is a rare neoplasm which often occurred in elderly who aged between 50 - 80, amongst Caucasians account for the most. The diagnosis of penoscrotal EMPD always delayed because the nonspecific clinical presentation and mistaken as common skin disease. The diagnosis is based on the presence of Paget's cells on hematoxylin-eosin histology section. In addition, further workup should be arranged to rule out the probably associated malignancy. The prognosis of localized EMPD is better than those in invasive form, thus the treatment is slightly different. For localized EMPD, treatments included surgical resection, radiation, topical chemotherapy, photodynamic therapy or carbon-dioxide laser vaporization. However, the more favorable treatment is local wide excision with a large surgical margin. Lymph node dissection is necessary with clinically found. Regarding invasive EMPD, surgical excision alone is not curative. Adjuvant chemotherapy or radiotherapy may be necessary.

Conclusion: Penoscrotal EMPD is a rare disease, thus the standard treatment guideline is lacking presently. However, wide excision for local control is the mainstay treatment. Meanwhile survey should be done to rule out associated malignancy or metastasis.

Oral Session 6

O-06-01

Does nucleic acid amplification test indicate false negative result of *Chlamydia trachomatis* for male patients with both gonococcal and chlamydial urethritis?

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Purpose: In the male patients with gonococcal urethritis, the frequency of simultaneously infected by *Chlamydia trachomatis* (CT) is from 20 to 30 %. In real-life clinical practice, we exceptionally experience patients with chlamydial urethritis after the treatment for the patients with non-chlamydial and gonococcal urethritis. To clarify this exceptional clinical situation, we evaluated the accuracy of nucleic acid amplification test for simultaneous detection of *Neisseria gonorrhoeae* (NG) and CT.

Materials and Methods: We conducted three of each NG sample with each concentration of 6 cfu/mL, 24 cfu/mL, 10⁶ cfu/mL, 10⁷ cfu/mL, 10⁸ cfu/mL, 10⁹ cfu/mL, 10¹⁰ cfu/mL and 10¹¹ cfu/mL, and added 2 IFU/mL of CT, lower detection limit, respectively. We examined whether there were false negative result by simultaneous detection with cobas 4800 System[®] (Roche Diagnostics, Tokyo, Japan).

Results: The results of all samples were positive for both NG and CT. As the concentration of NG was higher, the number of threshold cycle to detect CT was larger. The concentration of NG with 10¹¹ cfu/mL seemed yellow and quite turbid.

Discussion: Although the number of threshold cycles to detect CT was larger in the sample with high concentration of NG, there were no false positive results in CT detection. If the sample with high concentration of NG is diluted before examination, a small chlamydial volume may decrease below lower detection limit. We should notice this preparation is possible to make different result.

Oral Session 6

O-06-02

Astonishing high prevalence of asymptomatic sexual chlamydial trachomatis infection (SCTI) in Japanese women -National survey in 325.771 cases of Japanese unselected ordinary pregnant women-

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Recently, Japanese governmental official surveillance reported that epidemic of symptomatic SCTI is reducing, by reported data from national STD report centers in all over Japan.

However, many clinical obstetrician feel that infection rate of asymptomatic SCTI in pregnant women does, even now, not so changed, even though notifying about decrease in cases of symptomatic SCIT cases.

This discrepancy is severely big concerning problems about STD prevalence in public health medicine. Fortunately, since 2013.March, Japanese government decided that SCTI check in pregnant women should be obligatory done by official support of examination cost.

Then, from making sure that discrepancy of infection rate, we have did national surveillance about asymptomatic infection rate of SCT in pregnant women, actively cooperating with 2544 obstetric clinics in all over Japan, between 2013,Oct and 2014,March (half-year) with active cooperation from Japanese clinical obstetrician society. We could collect the statically available examination data of 325.771 ordinary non-selected pregnant women.

We believed that this STI rate data in unselected ordinary pregnant women is by now the world wide biggest surveillance report.

Average infection rate is 2.4% (1/417 cases)

19 y.o. > ;13.3% (1/6.5)

20 ~ 24 y.o.:7.3% (1/14)

25 ~ 29 y.o. :2.2% (1/46)

30 ~ 34 y.o. :1.2% (1/88)

35 ~ 39 y.o. : 0.8% (1/128)

40 y.o.< : 0.9% (1/110)

These data are very high infection rate comparing foreign reported data. These SCT infection rate suggest that in background on general women's population, there is remarkable high number cases with infertility became by local pathological evident by chronic STDI

And also these STIcases have high possibility with coinfection of other sexual transmitted diseases.

Infection rate of Syphilis: 0.34% (0.07% in not-infected case)

HIV infection: 0.05% (0.003%)

B Type Hepatitis infection: 1.0 % (0.55%)

C Type Hepatitis infection: 0.7 % (0.55%)

Those data is strongly suggesting that all young women who had sexual relationship, should have the check of chlamydial infection, even though having no clinical symptom.

Oral Session 6

O-06-03

Non-gonococcal non-chlamydial *Ureaplasma urealyticum* and *Ureaplasma parvum* infections and chronic prostatitis/chronic pelvic pain syndrome

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Introduction: The role of ureaplasma species as a cause of genitourinary pelvic pain syndrome in men is not well known. We determined the role of urinary *Ureaplasma urealyticum* and *Ureaplasma parvum* infections in chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS)

Methods and Materials: We used the stored DNA samples from the first voided 696 urine samples, were selected from 669 men who attended the Dankook University Hospital between September 2009 and March 2015. We excluded the cases of bacterial prostatitis through expressed prostatic secretion (EPS) and also excluded the cases of gonorrheal and chlamydial infection through a multiplex PCR method. We evaluate the genitourinary symptoms were evaluated with the Korean version of National Institutes of Health-Chronic Prostatitis Symptom Index (NIH-CPSI) questionnaires, and measured white blood cell (WBC) counts in urine and EPS. We amplify the common ureaplasma urease complex (partial UreA and UreAB sequences) area and classify the ureaplasmas with Sanger's DNA sequencing.

Results: The overall rates of UU and UP are 3.88% (27/696) and 6.46% (45/696), respectively. We found only one genetic type of UU (AF085721) and UP (AF085733). The mean age of the UU, UP and negative cases are 42.7 ± 12.7 (18-72), 46.3 ± 11.8 (19-81), 45.9 ± 12.4 (18-79) years, respectively ($P=0.406$). The UU and UP infection rates are 3.87% and 6.58% in the non-CP/CPPS, 3.42% and 6.28% in noninflammatory CPPS, and 5.68% and 6.81% in inflammatory CPPS groups, respectively ($P=0.906$). WBC counts of the UU and UP cases in the first voided urine are 81.48% and 86.66% in 0-1/HPF (high-power field), 3.7% and 6.66% in 2-4, and 14.81% and 6.66% in ≥ 5 , whereas WBC counts of the controls are 89.58% in 0-1, 8.17% in 2-4, and 2.24% in ≥ 5 ($P=0.002$).

WBC counts in EPS are not statistically associated with the ureaplasma infections among the three groups ($P=0.791$). In univariate analysis, only UU infection significantly increases the likelihood of urinary WBC count ≥ 5 only (odds ratio [OR]; 7.377, 95% confidence interval [CI]: 2.244-24.248, $P=0.001$). In addition, the items of pain or discomfort on the perineum, the testicle, tip of the penis, below the waist, pain during urination, and pain or discomfort during or after sexual climax (ejaculation) are not related with the ureaplasma infections. Similarly, the pain score, the urination domain, and impact of symptom score from the NIH-CPSI questionnaire do not definitively correlated with the ureaplasma infection

Conclusions: We find that only UU can induce asymptomatic pyuria. However, the presence of urinary UU or UP is not definitively associated with the occurrence of CP/CPPS.

Oral Session 6

O-06-04

Upper genital tract infection due to *Ureaplasma urealyticum* biovar 2: not so innocuous?

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Introduction: Genital mycoplasmas are increasingly recognised as causes of genital tract infections, leading to gynecological and obstetric sequelae if left undiagnosed and untreated. We report a case of cervical discharge due to *Ureaplasma urealyticum* biovar 2 in a woman with upper genital tract infection (UGTI) and secondary infertility. All other potential causes were ruled out by molecular testing.

Methods and Results: A 32-year-old married woman, presented with vaginal discharge for 4 months, and lower abdominal pain for 3 years. She denied high risk sexual behaviour and had one living child and three subsequent spontaneous abortions. Endometrial biopsy did not show any evidence of tuberculosis. Her serological tests for VDRL, HIV, HBsAg and anti-HCV were negative. Speculum examination revealed odorless, mucoid, creamy discharge from the cervical os, not associated with cervical motion tenderness. Rest of the local examination and pelvic ultrasound were normal. 10% KOH and wet mounts of the cervical smear were negative. Gram smear showed 20-30 neutrophils per high power field without any gram-negative intracellular diplococci or other organisms except lactobacilli. Clinical diagnosis of UGTI with cervical discharge was made. Cervical discharge swab tested positive for *Ureaplasma urealyticum* biovar 2 on culture and PCR and negative for *Neisseria gonorrhoeae*, *Mycoplasma hominis*, *Chlamydia trachomatis*. Patient was given doxycycline 100mg twice daily for 14 days resulting in remarkable improvement in symptoms and discharge on examination.

Conclusion: Majority of human *Ureaplasma* isolates in UGTI belong to biovar 1 (*U. parvum*) and biovar 2 (*U. urealyticum*) is considered a commensal. In our case, the characteristic discharge, microscopic findings, positive culture and PCR for *U. urealyticum*, absence of other pathogens, and response to treatment, pointed to a diagnosis of *U. urealyticum* associated UGTI. This case highlights the nature of *Ureaplasma* associated UGTI and the importance of laboratory based diagnostic tests in guiding specific treatment.

Disclosure of Interest Statement: None

Oral Session 7

O-07-01

Vaccine development to combat antimicrobial resistant gonorrhoea

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Neisseria gonorrhoeae, the causative agent of the sexually transmitted infection (STI) gonorrhoea, is a major public health problem worldwide with an estimated global incidence of 106 million cases/year. Symptomatic infection typically presents as urethritis in males and cervicitis in females. Gonococcal infection, however, can be asymptomatic in up to 80% of infected females, which if left undiagnosed or untreated can lead to sequelae that include pelvic inflammatory disease, infertility, and neonatal complications. Infection with *N. gonorrhoeae* also increases the risk of acquiring and transmitting HIV. It is now recognised by WHO and CDC as an urgent threat to global health due to the emergence of multi-drug resistant gonococcal strains. There is currently no vaccine, and no new antibiotics or new vaccine candidates in late-stage development.

To facilitate vaccine development, we performed mathematical modelling of different vaccine scenarios and predicted that even a modestly efficacious vaccine could have a substantial impact on gonorrhoea prevalence and sequelae, within a relatively short time frame. In addition, we have characterised two highly conserved and immunogenic candidate vaccine antigens. In vitro assays, using wild type, knock-out and complemented strains, have shown that NGO1958 (the gonococcal homologue of the *Neisseria* heparin binding antigen (NHBA) present in the serogroup B meningococcal vaccine) is involved in serum resistance and adherence to cervical epithelial cells. Similar assays have shown that NGO2139 (a methionine uptake receptor) is involved in resistance to killing by human serum, monocytes and macrophages, as well as adherence and invasion of cervical epithelial cells. Antibodies to these proteins are bactericidal and can block gonococcal infection of cervical epithelial cells. Additional studies are underway to determine if antibodies to these proteins can protect against infection in a mouse model.

Oral Session 7

O-07-02

Characterization of *penA*, *penB*, *mtrR* and *ponA* genes in ceftriaxone susceptible (S) and decreased susceptibility (DS) isolates of *N. gonorrhoeae* in New Delhi, India

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Background: There is growing interest in molecular approaches for AMR surveillance of *Neisseria gonorrhoeae* (Ng). The adoption of NAATs on one hand and the implementation of syndromic case management (SCM) on the other has led to a decline in the gonococcal isolates thereby limiting the data generated by phenotypic techniques. The development of molecular tests to detect resistance is the need of the hour as it can enhance surveillance. Genetic mechanisms causing decreased susceptibility (DS) to ceftriaxone in Ng isolates varies in different geographical locations. Therefore, in an endeavor to keep pace, the present study was undertaken to investigate the alterations in genes associated with a range of minimum inhibitory concentrations (MICs) to extended spectrum cephalosporins (ESCs), the last available option for empirical therapy of gonorrhoea. This is the first such research performed in this country.

Methods: A total of 140 Ng isolates (139 from urethral swabs from male patients & 1 from endocervical swab from a female patient) were collected during 2008-2014. MICs of ceftriaxone were determined by Etest method. Amongst these, 59 isolates were selected which included all DS (n=11; MIC 0.032-0.25 µg/ml) obtained during this period at our centre and 48 ceftriaxone (S) susceptible (MIC 0.002-0.023 µg/ml) strains. These were investigated for mutations in *penA* (PBP2), *penB* (*porB*), *mtr* (*mtrR*) and *ponA* (PBP1) genes by sequence and bioinformatic analysis. Fisher exact and χ^2 tests were used to evaluate the association of mutation with MIC and results were considered as significant at $p < 0.05$.

Results: As per already established nomenclature, six different non-mosaic amino acid patterns (II, IV, IX, XII, XIX, XXII) were observed in PBP2. Pattern IX was significantly associated with DS to ceftriaxone ($p=0.0007$) while II with S isolates ($p=0.007$). No mosaic *penA* gene was detected. On *penB* gene analysis, *porB1b* porins were seen in 72.9% S and in all DS isolates while 27.1% S isolates had *porB1a*. Double mutations at positions G120 and A121 were significantly linked to DS ($p=0.001$). An adenine deletion (A-) in the promoter region of *mtrR* gene was seen in 10 DS ($p=0.001$) and in 18 S isolates. In coding region, G45D & Y105H was seen in 2 DS isolates. In S strains Y105H was seen alone (n=17), with A39T (n=6); L33V, G45D (n=3); G45D (n=3); A39T, truncated *mtrR* (n=2); A39T, L47P (n=2); C66Y (n=2). One S isolate had truncated *mtrR* with no other substitution. For *porA* gene, L421P substitution was seen in all DS isolates ($p=0.02$).

Conclusions: The four genes displayed significant differences in mutation patterns among strains with and without DS to ceftriaxone. The mosaic *penA* gene that was previously thought to be decisive in determining the category of susceptibility was absent in our setting.

Oral Session 7

O-07-03

New ceftriaxone- and multidrug-resistant *Neisseria gonorrhoeae* strain with a novel mosaic *penA* gene isolated in Japan

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We have characterized in detail a new ceftriaxone- and multidrug-resistant *Neisseria gonorrhoeae* strain (FC428) isolated in Japan, 2015. As of July 2016, fortunately no expansion of this strain has been detected in Japan. FC428 differed in molecular epidemiological types from four previously reported well-characterized ceftriaxone-resistant strains, H041 (Japan), F89 (France, Spain), A8806 (Australia), and GU140106 (Japan), and contained a novel mosaic *penA* allele, encoding a new mosaic penicillin-binding protein 2 (PBP2). However, we found that the resistance-determining 3'-terminal region of *penA* of FC428 was almost identical to the regions of two previously reported ceftriaxone-resistant strains, A8806 (Australia) and GU140106 (Japan), although the 5'-terminal regions of these three strain had little similarities to each others. This indicates that conserved ceftriaxone resistance-determining PBP2 regions might spread across the lineage of strains in addition to the simple clonal expansion of the established resistant strain(s).

In addition to the elucidation of the origin of this unique *penA* allele, development of a specific PCR system detecting this unique *penA* allele is important.

Oral Session 7

O-07-04

The Enhanced Gonococcal Antimicrobial Surveillance Programme (EGASP), Silom Community Clinic, Bangkok, Thailand

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Background: Antimicrobial resistant *Neisseria gonorrhoeae* (NG) is a global public health threat, and understanding the epidemiology of NG resistance is critical. The Thailand's Department of Disease Control in collaboration with Centers for Disease Control and Prevention and World Health Organization began the Enhanced Gonococcal Antimicrobial Surveillance Programme (EGASP) in November 2015. Thailand is the first country to participate in EGASP to monitor trends in antimicrobial susceptibilities in NG and characterize male patients with NG. These data are critical for early detection of NG resistant strains and to inform treatment options. We report data from one of two sentinel sites in Bangkok, Thailand.

Methods: EGASP Thailand occurs in 2 sentinel sites: Silom Community Clinic @Tropical Medicine (SCC) and Bangrak hospital. Men at least 18 years old attending SCC for HIV voluntary counseling and testing were routinely asked about urethral discharge or dysuria; men with these symptoms were enrolled into EGASP and demographic and clinical data were collected. Men completed a short assessment by Computer-Assisted Self-Interview. A urethral swab was collected for Gram stain and NG culture. All NG positive cultures had antimicrobial susceptibility testing to determine minimum inhibitory concentrations (MICs) for Cefixime (CFM), Ceftriaxone (CRO), Azithromycin (AZI), Gentamicin (GEN), and Ciprofloxacin (CIP) using Epsilon meter tests (Etest).

Results: From 13 November - 31 March 2016, 94 specimens were collected for EGASP at SCC. Of these, none were repeat infections, 41 (44%) were NG positive by culture. Of the 41 men with NG positive by culture, the median age was 29 years (range 19-53 years), 34 (83%) did not use antibiotics prior to their clinic visit and 38 (93%) had symptoms within 1 week before their clinic visit. Most men, 35 (86%), reported their sexual identity as homosexual, and only 9 (22%) men reported that they had sex with a foreigner in the past month. Twenty-one (51%) men reported a recent sex role as insertive anal intercourse; and 16 (39%) men reported condomless receptive anal intercourse in the past month. The 41 NG isolates were all susceptible by Clinical and Laboratory Standards Institute standards break points for CFM, CRO, AZI and GEN. Thirty-six (88%) isolates were resistant to CIP with an MIC of ≥ 1 mg/L.

Conclusion: We report the first data from EGASP from one sentinel site in Thailand. The antimicrobial susceptibility surveillance data show that all isolates are susceptible to CFM, CRO, AZI and GEN, and most are resistant to CIP. This surveillance project is critical to describe the epidemiology of NG susceptibility in Thailand, and to conduct early detection for the emergence of resistance.

Oral Session 7

O-07-05

Prevalence of *Neisseria gonorrhoeae* and *Chlamydia trachomatis* Infections in Different Anatomic Sites among Men Who Have Sex with Men in Guangzhou, China

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Background: High prevalence of anorectal chlamydia trachomatis (CT) and neisseria gonorrhoea (NG) have been reported among men who have sex with men (MSM) in many settings. Regular rectal CT and NG screening have been recommended in the United States and other countries, but little data exists on rectal and oropharyngeal CT and NG among Chinese MSM. The aim of this study was to determine the prevalence of CT and NG in different anatomic sites among Chinese MSM.

Methods: Participants were enrolled in a free sexually transmitted diseases (STD) screening program if they self-reported MSM status and had never previously received rectal or oral STD screening. Exclusion criteria included taking antibiotics in the past month. Sociodemographic information, sexual history, and medical history data were collected before taking any samples. Samples were obtained from the rectum, oropharynx, and urethra according to sexual exposure sites. Nucleic acid amplification tests (NAAT) were used to detect CT and NG.

Results: 127 MSM were enrolled between January 2015 and July 2016. The mean age of participants was 31.12 ± 14.88 years, and 74.8% (95/127) were married. Anorectal CT was detected in 17.6% (13/74) of samples and anorectal NG in 6.8% (5/74). Urethral CT was detected in 9.4% (6/64) of samples, and urethral NG in 9.4% (6/64) of samples as well. Of 68 oropharyngeal samples, CT was detected in only 1.5% (1/68) and NG in 7.4% (5/68). For CT infection, two participants were infected at two anatomic sites. For NG infection, three participants were infected at two anatomic sites.

Conclusions: Our findings show that the prevalence of chlamydial and gonococcal infections are high among Chinese MSM. Given that many MSM in China are married, efforts to control CT and NG infection among this key population is of significant public health importance.

Oral Session 7

O-07-06

Impact of oral cephalosporin use on commensal *Neisseria* prevalence and resistance

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Background: Worldwide, there are 106 million new cases of *Neisseria gonorrhoea* (NG) and when in the urogenital tract, can progress to more serious sequelae including pelvic inflammatory disease, infertility, and also facilitate HIV transmission. NG infection is quickly gaining antimicrobial resistance (AMR) to last line, third-generation cephalosporin class treatments; having already conferred resistant to almost all classes of antimicrobials used to treat it since the 1930s. The prevalence of infection disproportionately affects those who are socially and economically disadvantaged, particularly men-who-have-sex-with-men (MSM) and commercial sex workers. *Neisseria* species are particularly apt in acquiring genetic material through transformation and conjugation, particularly within the genus. Some genetic analysis of mosaic Penicillin Binding Protein 2 (PBP2), which is indicated as conferring the cephalosporin resistance in NG, reveal fragments analogous to those PBP2 from *N. cinerea* and *N. perflava*, commensal non-pathogenic *Neisseria* species in the pharynx, suggesting a possible mechanism for cephalosporin resistance in NG. Preliminary data from MSM who received STI/HIV testing at Hanoi Medical University estimates prevalence of sexually transmitted infections at 11% for HIV, 20% for Syphilis, and 30% for Gonorrhoea. Given the high prevalence rates of STIs in certain populations, global use of antibiotics, and impending issue of resistance, novel approaches to resistance surveillance is warranted.

Methods: 300 MSM from community sites in Hanoi and Hanoi Medical University clinic are surveyed regarding antibiotic and cephalosporin usage. A randomized subset of respondents categorized with high-exposure and low-exposure to cephalosporins undergo specimen collection of pharyngeal swabs with subsequent microbiology laboratory protocols to characterize commensal *Neisseria* prevalence and cephalosporin susceptibility using E-test (MIC).

Results: Data collection and analysis is ongoing. We expect to report initial data from a subset of approximately 50 questionnaires as well as initial characterizations of approximately 6 microbiological specimens.

Conclusions: The impending emergence of resistance to last-line, 3rd generation cephalosporins for treatment of *Neisseria gonorrhoea* is a serious threat to public and reproductive health globally. We hope this feasibility project can inform future directions to characterize resistance patterns before its emergence in *Neisseria gonorrhoeae*, providing additional time to intercept with public health and/or pharmacological interventions.

Oral Session 8

O-08-01

The Social Context of HIV Self-Testing: A Global Qualitative Systematic Review

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Background: Quantitative research has shown that HIV self-testing (HIVST) kits are sensitive and specific, yet the social context of HIVST is unclear. Questions remain on how self-testing can be scaled up in countries with heterogeneous regulatory, social, and policy environments. Effective scale up of HIVST in diverse local contexts requires an understanding of implementation experiences. This qualitative systematic review aims to appraise and synthesize research evidence on individual experiences with HIVST and stakeholder perspectives on implementing HIVST programs.

Methods: In this systematic review we searched seven primary databases, four grey literature sources, and reference lists for qualitative studies that evaluated previous direct experiences of HIVST, published from each database's inception through Nov 30, 2015, following PRISMA guidelines. The searches were done in MEDLINE/PubMed, EMBASE, CINAHL, PsycINFO, the Cochrane Library, Global Health, and Scopus. Additional searches were conducted on February 25, 2016 in: Conference on Retroviruses and Opportunistic Infections (CROI), International AIDS Society (IAS), OpenGrey, and EThOS (British Library). Data extraction and thematic analysis were used to synthesize findings. Quality was assessed using the CASP tool and certainty of evidence was evaluated using the CERQual approach. The study protocol was registered on PROSPERO (CRD42015027607).

Findings: From 1,026 potential articles, we included fourteen. Four studies were conducted in low-income countries, one in a middle-income country, eight in high-income countries, and one multi-country study. No studies reported on stakeholder perspectives on organizing HIVST programs. Self-testing was preferred to facility-based testing and elicited less overall test-associated stigma. HIVST provided a more personalized testing experience that increased agency and expanded partner testing among both casual and long-term partners. HIVST was not associated with suicidality, violence, or abuse, but some reported mild anxiety. Quality of evidence was generally high.

Interpretations: This review suggests that HIVST can play an important role in expanding HIV testing and empowering testers. This data may be useful for the development of national and global HIVST guidelines and inform implementation research. Further implementation studies should be conducted to better understand post-HIVST behaviors and linkage to care.

Funding: NIH

Oral Session 8

O-08-02

HIV self-testing among MSM in China: An implementation science evaluation

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Background: *Treat all* is a crucial strategy to achieve the 2030 goal of ending the HIV epidemic. HIV self-testing (HIVST) may expand HIV testing, but has not been rigorously evaluated in unsupervised, implementation settings. The purpose of this study was to evaluate an MSM HIVST implementation using qualitative research methods.

Methods: Semi-structured interviews were conducted among MSM who used HIVST and stakeholders that organized HIVST. MSM were purposively sampled to ensure a diversity of HIV serostatus, age, sexual orientation, and HIVST experience. Stakeholders included community-based organization (CBO) leaders, Centers of Diseases Control (CDC) experts, and program managers. An implementation science framework was used to design the study and interpret the findings. We used a standard code-based methodology to identify codes. All data was coded by two individuals.

Results: 42 MSMs and 6 stakeholders were interviewed. Our data showed that MSM preferred HIVST compared to facility-based testing because of increased confidentiality and decreased test-associated stigma. HIVST empowered men and contributed to safer sexual decision making. Only minimal adverse events related to transient anxiety were reported. No depression, suicidal thoughts, or coercion were reported. Stakeholders noted that HIVST could be widely scaled up through MSM social media in China. They noted that decreasing the bulky packaging and decreasing price may expand HIVST uptake.

Conclusion: HIVST may expand HIV testing and promote empowerment of individuals and their partners. Minimal adverse outcomes were noted, but further implementation research among unsupervised HIVST users is needed.

Funding: NIH Fogarty UJMT #5R25TW009340

Key words: HIV, self-testing, implementation, MSM, China.

Oral Session 8

O-08-03

Repeat HIV testing and incident HIV diagnosis among clients attending voluntary counselling and testing clinics in Wuxi, China

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Background: We aimed to elucidate rates of repeat HIV testing and incident HIV diagnosis, and baseline CD4+ T cell count among clients attending VCT clinics in Wuxi, China.

Methods: Data on HIV testing and diagnosis among clients attending 32 VCT clinics in Wuxi, China 2013-2015 were retrieved. Multivariate logistic regression was used to analyze factors associated with repeat HIV testing. Cox regression was used to evaluate factors associated with incident HIV diagnosis.

Results: A total of 18237 tests by 16535 individuals during 2013-2015 were included. During 2013-2014, 11504 individuals tested negative for HIV at their first recorded test, with 655 (5.7%) retesting in the next 12 months. Higher repeat HIV testing was associated with male gender (adjusted odds ratio (aOR)=1.7, 95% confidence interval (CI) 1.4-2.1), risk behaviors [commercial heterosexual behaviors (1.4, 1.1-1.6), male-male sexual behaviors (3.7, 2.7-4.9), injection drug use (9.9, 6.5-15.1)] and having ever tested for HIV (2.0, 1.6-2.4). The overall rate of incident HIV diagnosis among all VCT clients was 1.6 per 100 person-years. Incident HIV diagnosis was associated with male gender (adjusting hazard ratio: aHR=8.5, 95% CI: 1.9-38.1), attending hospital-based VCT clinics (7.8, 1.1-58.3) and male-male sexual behaviors (8.4, 1.5-46.7). Higher CD4+ T cell count was observed among cases diagnosed at VCT clinics compared to other clinical services (median 407 versus 326 copies/mm³, p=0.003).

Conclusion: Low repeat HIV testing rate and high HIV incidence were observed among VCT clients in Wuxi, China. VCT clinics play an important role in the early detection of HIV.

Oral Session 8

O-08-04

Delayed HIV testing among men who have sex with men in Australia has improved but remains an issue

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Introduction: Guidelines in Australia and other countries recommend regular HIV testing for men who have sex with men (MSM) and up to 3-monthly for MSM at higher risk of HIV transmission. We determined trends and factors associated with delayed HIV testing in among MSM attending Australian sexual health clinics.

Methods: Longitudinal data from MSM attending 42 sexual health clinics in the Australian Collaboration for Coordinated Enhanced Sentinel Surveillance (ACCESS) from 2007-2014 were analysed. Patients were assigned "high-risk" status if they had >5 partners in the past 3 months or >20 partners in 12 months or a sexually transmissible infection in the past 2 years. Delayed testing status was defined as having no retest or re-testing outside of the guideline time intervals (6 months for high-risk men, 12 months for non-high-risk men). Mixed effects logistic regression models were used to determine factors associated with delayed testing status.

Results: A total of 54,139 MSM had 102,317 HIV tests during 2007-2014. At first visit, 35.9% (19,416) of men were categorized as high-risk. The proportion of high-risk MSM assigned delayed HIV testing status decreased from 73.3% in 2007 to 63.2% in 2013 (p for trend<0.001). The proportion of non-high-risk MSM with delayed HIV testing also decreased year-on-year (p-trend<0.001). Delayed HIV testing was more likely in men who lived in regional and remote areas (OR=2.00, 95% CI: 1.76-2.28); were Indigenous (1.44, 1.04-2.00); and older (>29 years vs <29 vs: 1.98, 1.82-2.15). Delayed test was less likely in men born overseas (0.72, 0.65-0.79); and categorised as high-risk (0.39, 0.36-0.42).

Conclusion: Delayed HIV testing is common among MSM in Australia, although declining over the past 8 years. Efforts are needed to further decrease delayed HIV-testing among MSM, particularly men who are Indigenous and those living outside of urban areas.

Oral Session 9

O-09-01

A systematic review of factors attributing to the spread of HIV in Africa

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Attempts to minimise the spread of HIV in Africa has become very problematic. Drawing on a comprehensive literature review on the spread of HIV studies conducted in Africa, we selected 565 literatures to identify how social norms, lack of education, and inadequate health care amenities have contributed to the spread of HIV during the period from 2006 to 2015. Descriptive analysis was used to study the specific percentages of cultural practises, lack of education and lack of health care amenities common factors found from the selected literatures. The spread of HIV epidemic in Africa is very high rate. Cultural practices (23.07%) finally coded and find out that the higher the percentage the higher factor had contributed to the spread of HIV/AIDS in Africa based on the total number of articles analyse. Our findings also suggest that there are 21.54 % which suggests that the inadequate health care for individual in Africa. The descending order of the percentages indicates the faster rate of spread of HIV to low rate with lack of education (55.38%) is the first. This shows that education programs that includes are prevention programme (12.31%), condom use (10.77%), education intervention (6.92%), poverty (3.85%) and awareness (1.54%). Secondly, cultural practises (23.10%). This result also confirms that cultural is one of the common factors that attribute the spread of HIV/AIDS epidemic in Africa. And finally lack of health care amenities (21.54%). The lack of basic amenities such as inadequate health care many enter into prostitution and migration to internal and international for commercial sex worker within Africa. The result suggests that the fast growth of urban communities in developing countries, have resulted from increased urban birth rates. Education is necessary to combat the cultural practises of silence such as prostitution stigmatization, poverty, migration, inadequate health information and discrimination that are associated with HIV/AIDS. The findings show that the nature of HIV/AIDS is such that open discussion is tremendously important through education methods.

Oral Session 9

O-09-02

Coming Out of the Closet: Disclosure of Sexual Orientation in China

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Background: Most men who have sex with men (MSM) in China are "in the closet." The low rate of disclosure may impact sexual behaviors, testing for HIV or other sexually transmitted infections (STIs), and diseases transmission. This study examined factors associated with overall sexual orientation disclosure and disclosure to a healthcare professional.

Methods: A national-wide cross-sectional online survey was conducted from September-October 2014 in China. Participants completed questions covering sociodemographic information, sexual behaviors, HIV/STIs testing history, and self-reported HIV status. We defined healthcare professional disclosure as disclosing to a doctor or other medical provider.

Findings: A total of 1819 men started the survey and 1424 (78.3%) completed it. Of 1424 participants, 62.2% (886/1424) reported overall disclosure, and 16.3% (232/1424) had disclosed to healthcare professionals. In multivariate analyses, the odds of sexual orientation disclosure were 56% higher among MSM who used smart-phone based sex-seeking applications [adjusted odds ratio (aOR)=1.56, 95% CI: 1.25-2.95], but were lower among MSM reporting high-risk sexual risk behaviors. The odds of disclosure to a healthcare professional were greater among MSM who had ever tested for HIV or STIs (aOR=3.36, 95% CI: 2.50-4.51 for HIV, and aOR=4.92, 95% CI: 3.47-6.96 for STIs) or self-reported as living with HIV (aOR=1.59, 95% CI: 0.93-2.72).

Interpretation: Over 80% of MSM had not disclosed their sexual orientation to health professionals. This low level of disclosure likely represents a major obstacle to serving the unique needs of MSM in clinical settings. Further research and action to facilitate MSM sexual orientation disclosure, especially to health professionals, is urgently needed.

Funding: NIH

Keywords: Disclosure; sexual orientation; men who have sex with men (MSM); healthcare professional; China

Oral Session 9

O-09-03

Reimagining Health Communication: A Non-Inferiority Randomized Controlled Trial of Crowdsourcing in China

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Background: Crowdsourcing, the process of shifting individual tasks to a large group, may reimagine health communication, making it more people-centered. We aimed to compare the effectiveness of a crowdsourced versus a social marketing video in promoting condom use.

Methods: Men who have sex with men (MSM) (≥ 16 years old, had condomless sex within three months) were recruited through a nationwide MSM website and randomly assigned to watch one of two videos in 2015. The crowdsourced video developed through an open contest, while the social marketing video was designed by a company, using social marketing principles. Participants completed a baseline survey and follow-up surveys at three weeks and three months post-intervention. Intention-to-treat analyses was used for data analysis, with a non-inferiority margin of +10%.

Results: Among the 1173 participants, 907 (77%) and 791 (67%) completed the three week and three month follow-ups. At three weeks, condomless sex was reported by 146/434 (33.6%) and 153/473 (32.3%) participants in the crowdsourced and social marketing arms, respectively. The crowdsourced intervention achieved non-inferiority (estimated difference: +1.3%, 95%CI: -4.8 to 7.4%). At three months, 196/376 (52.1%) and 206/415 (49.6%) individuals reported condomless sex in the crowdsourced and social-marketing arms (estimated difference: +2.5%, 95%CI: -4.5 to 9.5%). The two arms also had similar HIV testing rates and other condom-related secondary outcomes, while the crowdsourcing intervention is cost saving (31% reduction).

Conclusion: Our study demonstrates that crowdsourcing is an effective and cost saving tool for designing media to promote condom use. Crowdsourcing contests could create more imaginative intervention tools that promote HIV prevention and control, particularly in resource limited settings.

Keywords: Crowdsourcing; Condomless sex; Health communication; Non-Inferiority Randomized Controlled Trial; Men who have sex with men

Oral Session 9

O-09-04

The interplay between CD4 cells count, viral load suppression and resistance on HIV patients after 20 months of the first-line ART

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HIV and AIDS cases has been increasing in Indonesia. However, little is known about the interplay between CD4 cells count, viral load and resistance on the HIV patients in Indonesia.

We conducted a research on 28 HIV patients aged 18 years and older from Dr. Ramelan Naval Hospital Surabaya and Sidoarjo General Hospital. All HIV patients have received the first line of ART for 20 months. Based on an analysis of HIV p17 gag gene, all respondents of this study were HIV-1 group M, 27 of whom have CRF01_AE subtypes and one of them had B subtype.

The means of absolute CD4 cells count (SD) before, after 12 months and after 20 months of ART were 223.07, 266.19, and 299.55, consecutively. However, most respondents in this study have not yet reached virological success. After getting therapy for 20 months, only four HIV patients achieved undetectable viral load (an amount of HIV-RNA <50 copies / mL of blood). Seven patients had HIV-RNA of <5,000 copies / mL blood, yet only seven HIV patients had an absolute CD4 cells count of ≥ 350 cells / μ L.

Further, one HIV patient had a mutation in the gene M230I which showed a resistance to NNRTIs Rilvopirine, and one HIV patient had a mutation in the gene V179D which showed a resistance to the NNRTI Etravirine.

Keywords: HIV, resistance, viral load, CD4 cells count

Oral Session 10

O-10-01

Trajectory of first sexual experiences reported by teenage heterosexual males in Australia

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Background: There are limited data on the patterns of early sexual behaviours in heterosexual Australian teenage males. This study describes the nature and onset of early sexual experiences of this population through a cross-sectional survey.

Methods: Males aged 17-19 years were recruited into a study of genital HPV prevalence (IMPRESS) between February 2014 and December 2015. Recruitment was from 7 sexual health clinics and community sources nationally. Men reporting sex with men were excluded. Participants self-completed a questionnaire on sexual behaviours.

Results: 191 men were included. Median age was 19.1 years (IQR=18.4-19.6), 170 (89%) were Australian-born and 92 (48%) enrolled in tertiary studies. Median age at first oral sex was 16.4 years (95% CI: 16.2-16.8) while median age at first vaginal sex was 16.9 years (95% CI: 16.5-17.2). Most men had engaged in oral sex (90%; 95% CI: 0.84-0.93) and vaginal sex (92%; 95% CI: 0.87-0.95) in the last 12 months with 34% (95% CI: 0.26-0.41) reporting condom use at last vaginal sex. Median lifetime number of female partners for oral and vaginal sex was 4 for each act. Of the lifetime female sexual partners ($n=1187$), 54% ($n=645$; 95% CI: 0.51-0.57) were aged within a year of the man, 28% ($n=336$; 95% CI: 0.26-0.31) were >1 year younger, and 17% ($n=206$; 95% CI: 0.15- 0.2) were >1 year older. Heterosexual anal sex was reported by 22% (95% CI: 0.18-0.31) with 47% (95% CI: 0.31-0.64) using condoms at last anal sex. Median age at first anal sex was 18.2 years (95% CI: 17.7-18.5). Anal sex with a female was associated with earlier age at first vaginal sex ($p=0.02$) and higher number of lifetime female sexual partners ($p=0.03$).

Conclusion: These data provide insights into the trajectory of sexual behaviours experienced by teenage heterosexual males following sexual debut, findings which can inform programs promoting sexual health within this population.

Oral Session 10

O-10-02

Can the heterogeneity of sexual contact network explain the regional difference of the association between HIV and HSV-2 prevalence?: insights from mathematical modelling

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To control the sexually transmitted infections (STIs) understanding of sexual behavior is key due to common transmission mode. However, sexual behavior is difficult to quantify due to the nature of sexual behavior. Most previous study of sexual behavior conducted self-reported survey although self-reported survey includes a lot of biases. As an alternative method, the use of prevalence of STIs as biomarker of the sexual risk behavior for another STI at population level was proposed. It is expected that the associations of STIs prevalence with sexual contact network are differed between different STIs. To understand the association of STI transmission dynamics with sexual contact network, we constructed a mathematical model describing the transmission of HIV and HSV-2 on the dynamic sexual contact network. We modelled the sexual contact network as a dynamic weighted random network, with re-wiring newly formed sexual partnership for exploring the wide variation of sexual contact network structure. Our model describes formation/dissolution of marital/casual partnerships, birth and death of hosts, transmission of HIV and HSV-2 via connections between hosts by sexual partnership. Using this model we found clear difference in the association of prevalence with the network structure between HIV and HSV-2; clustering coefficients of the both sexual contact networks among unmarried population and among all population (unmarried + married population) had weak and positive association with HIV prevalence, on the other hand, negative association with HSV-2 prevalence. Degree correlation of the network among unmarried population had no association with HIV prevalence, weak positive association with HSV-2 prevalence. Regarding the number of partner of individuals, mean and variance of the number of partner among unmarried population had strong and positive association with HIV prevalence, however, only mean of the number of partner had strong and positive association with HSV-2 prevalence. The differences in the association of prevalence with network statistics can induce wide variation of the association between HIV and HSV-2 prevalence.

Oral Session 10

O-10-03

Recreational drug use among Chinese MSM and transgender individuals: Results from a national online cross-sectional study

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Background: Recreational drug use has considerably increased among Chinese men who have sex with men (MSM). This phenomenon can greatly increase HIV transmission among Chinese MSM. The purposes of this study were: 1) to investigate the prevalence of different recreational drug use among Chinese MSM, and 2) to explore the association between poppers use and influencing factors (HIV and other STIs testing history, gay app use, and other sexual behaviors of Chinese MSM).

Methods: MSM who were born male, at least 16 years of age and had engaged in anal sex with a man at least once were recruited through a nation-wide online survey in 2014. Information regarding socio-demographics, risk behaviors, recreational drug use, HIV and other STIs testing history and gay mobile app use were collected. Univariate and multivariate analysis were used to determine factors associated with recreational drug use among Chinese MSM.

Results: Among 1424 participating MSM, 1100 (77.3%) reported ever using recreational drugs in their life-time. In the last 12 months, 303 (21.3%) used poppers, 34 (2.4%) used crystal meth and 15 (1.0%) used ecstasy. The mean age of participants was 25.6 ± 6.8 years, 72.9% identified themselves as gay, 41.3% were students, and 83.8% had never been married. Multiple logistic regression revealed that compared with non-popper users, popper users were more likely to have been tested for HIV (adjusted OR (aOR) = 1.50, 95% CI: 1.15-1.96) and other STIs except HIV (aOR = 1.65, 95% CI: 1.26-2.17). In addition, popper users were more likely to engage in group sex (aOR = 2.63, 95% CI: 1.80-3.86) or commercial sex (aOR = 1.86, 95% CI: 1.13-3.06), and used gay mobile apps to seek sexual partners (aOR = 2.10, 95% CI: 1.58-2.80).

Conclusion: Chinese MSM has a high rate of recreational drug use. Public health programs serving MSM may consider integrating intervention programs to decrease recreational drug use related harms.

Oral Session 10

O-10-04

UAE Legislation's, Concerns, Awareness, Campaigns and Fight Against Human Trafficking

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Human Trafficking is a crime that shames us all. It is a multibillion-dollar business that helps sustain organized crime. In 2006, the UAE passed the first legislation in the region to combat H.T.. DFWC, is the First licensed non profit shelter in Dubai for women, children victims of domestic violence, and child abuse, to offer victims immediate protection and support.

Abu Dhabi opened another rehabilitation shelter Ewa'a in 2009 which provides social, psychological and intensive medical services, legal assistance, education, training, and financial aid.

On November 23-24, 2009, was the first conference on H.T. in Dubai and the theme was 'how dare you enslave people who have been born free'.

On December 2010 another workshop was organized by Dubai police titled 'Human Trafficking, Reality and Hope.'

On July 4, 2013 the national committee to combat H.T. launched an awareness campaign in Dubai International airport, considering that it is one of the busiest airports in the world having received as many as 57.6 million passengers in 2012.s

H.T cases in UAE have come down significantly over the recent years, number of victims in the year 2010 was 59 victims, year 2012 was 75 victims and the arrest of 119 traffickers, year 2015 was 24 victims and the arrest of 54 traffickers, This is an indicator of the government success and awareness about Human Trafficking among the public. Significant steps taken in 2015 as a part of the 5 P's strategy, Prevention, Prosecution, Punishment, Protection and Promotion of the International Cooperation. These include a two year awareness campaign and starting Anti-Human trafficking diploma course to improve the skills of law officials.

Types of abuse experienced by victims of H.T.: Sexual, emotional/verbal, physical, neglect/deprivation. Human trafficking is an issue that affects many countries and the UAE is no exception.

Key words: DFWC-Dubai Foundation for Women and Children. H.T.-Human Trafficking.

Oral Session 11

O-11-01

Is STD treatment being left out of the HIV Prevention Toolbox?

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Background: Sexually transmitted disease (STD) screening and treatment are an essential component of comprehensive HIV prevention. Silom Community Clinic (SCC) has served men who have sex with men (MSM), and transgender women (TGW), for HIV voluntary counseling and testing services in Bangkok, Thailand for over 10 years, offering onsite HIV testing and STD screening and treatment for free. Since 2015, community based organizations (CBOs) and clinical settings began pre-exposure prophylaxis (PrEP) for HIV prevention in Bangkok, Thailand. Quarterly STD screening for men taking PrEP is recommended in this implementation.

Methods: We performed a retrospective electronic record and document review of clients referred from CBOs and clinical settings to SCC for STD treatment from March 1, 2013 to February 29, 2016. We conducted a descriptive analysis, including demographic variables, treatment timelines, and referral location; treatment timeline was assessed using the date from patient diagnosis to patient treatment.

Results: During the study period, 4742 new clients attended SCC; 351 persons (7.4%) were referred for STD treatment. Among these, 332 (94.6%) were referred for syphilis treatment. Of the 228 referrals with a letter for syphilis treatment, 219 (96%) were MSM with an age range of 16-56 years (mean age 27.9 years); 164 (72%) had an HIV test positive on or before the visit date. The median time from syphilis diagnosis to treatment at SCC was 3 days, with a range of 0-323 days (25-75 IQR 0-9 days). More than half (68.4%) of the referrals came from a local HIV clinic, 18% from CBOs, and 6.6% from other clinics. Pre-treatment RPR titer was $\geq 1:8$ in 199 referrals.

Conclusions: PrEP implementation in Bangkok Thailand has resulted in more STD screening services, including more syphilis testing. Many settings in Bangkok, however, do not provide onsite and same-day STD treatment, including syphilis treatment. Almost three-quarters of the clients referred for STD treatment were HIV-infected and many had a high RPR titer, indicating early syphilis. Delays in STD treatment could accelerate syphilis and HIV transmission. Provision of PrEP should include both STD screening and treatment in order to offer comprehensive HIV prevention.

Oral Session 11

O-11-02

Factors associated with incident syphilis in HIV voluntary counseling and testing, Silom Community Clinic, Bangkok, Thailand, 2005-2015

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Background: Silom Community Clinic @TropMed (SCC @TropMed) has been serving men who have sex with men (MSM) with HIV and STI testing and STI treatment in Bangkok, Thailand, for 10 years. We identified syphilis trends, and predictors of incident syphilis among MSM attending HIV voluntary counseling and testing services (VCT).

Methods: We tested MSM attending VCT for HIV and syphilis, and collected basic demographic information. Testing for syphilis used a 2-step algorithm on blood specimens with rapid plasma reagin (RPR) and if positive, treponemal specific testing (Treponema pallidum particle agglutination assay, TPPA). Testing for HIV infection followed a national 3-step algorithm using rapid tests on blood specimens. For this analysis, we included MSM who first attended SCC @TropMed for VCT services from Sept 2005-Dec 2014 and had a negative syphilis test (negative RPR) and at least one follow-up visit. Incident syphilis cases were defined as MSM with a negative RPR test at first clinic visit and positive RPR and TPPA tests at any subsequent follow-up visit. We used polynomial regression with a quadratic term to test for trend in syphilis incidence, and a Cox proportional hazard model to predict syphilis incidence.

Results: Among 2944 MSM attending VCT during the study period who initially tested negative for syphilis and had a follow-up visit, incident syphilis occurred in 352 (12%) (5.0 infections per 100 Person-Years [/100PY]). The median time from first syphilis test to syphilis seroconversion was 1.8 years with an IQR of 1.0-3.7 years. We found an inverted U-shape trend of syphilis incidence over time, with an incidence of 2.4/100PY in year 2007 to a peak of 8.3/100PY in year 2009 and decreasing to 4.5/100PY in year 2014 ($p < 0.01$). Predictors of incident syphilis were age < 25 years at first syphilis testing (adjusted Hazard Ratio [aHR] 1.3, 95% Confidence Interval [CI] 1.0-1.6) and positive HIV test at first clinic visit (aHR 3.4, 95% CI 2.8-4.2), when adjusted for year of first syphilis testing.

Conclusions: Ten years of comprehensive HIV and STI testing services to MSM in Bangkok, Thailand demonstrate 5 new syphilis infections per 100 persons each year. Information on risk factors for incident syphilis can guide syphilis screening and targeted prevention efforts to young MSM.

Oral Session 11

O-11-03

Framing of syphilis and HIV in China: a comparative case study to inform promotion of political prioritization for STI prevention

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Background: Syphilis was eliminated in China in 1964, but returned in the 1980s. By the 2000s, the burden of disease associated with syphilis was greater than HIV. Nonetheless, syphilis received little political attention until 2010 when the first national plan for syphilis control was issued. In contrast, control of HIV/AIDS has been a Government priority since the late 1990s. How a disease is framed has a profound impact on the political priority afforded to it. This study aimed to identify: 1) how syphilis and HIV were framed in different periods in China; 2) what made these frames successful (or problematic); and 3) what lessons can be learnt to promote political prioritization for prevention of syphilis and other STIs in China.

Methods: A comparative case study was undertaken, with 24 informant interviews and documentation review, to investigate framing of syphilis and HIV, and how frames may have led to divergent policy decisions.

Results: The successful framing of syphilis as a social disease and "legacy of the old society", and syphilis control as patriotic activities largely contributed to the virtual elimination of syphilis in the 1960s. However, the return of syphilis received little political attention due to China's traditional ideas and the Criminal Law, associating the infection to immorality and criminality. Consequently, the serious stigmatization towards syphilis patients, together with a popular perception of the disease as a less urgent problem, reduced the decision-makers' willingness to take up the cause. It was until 2010 that a publication succeeded in obtaining national attention on syphilis by using, again, the social disease frame. In contrast, the high degree of prioritization for HIV is attributable to a number of successful frames created by international and national advocates, including a development and security issue, a potential threat to macroeconomy, and an incurable disease "leading to death" etc. The shame brought by the "blood selling" scandal further pushed the Government to adopt "AIDS politics" and view infected women and infants as "innocent" "victims" of the scandal, therefore worthy of high-level attention.

Discussion: The findings of this study demonstrated that the frames of syphilis and HIV were more likely to succeed in generating political attention when they were created by powerful actors and introduced at certain time points (e.g., political transitions, crises etc.), resonating with dominant ideologies, and malleable when contexts change. Additionally, because the Chinese Government preserved its positive image in the international society in dealing with illness, sometimes shaming strategies were effective to attract national attention quickly.

Oral Session 11

O-11-04

Correlates of Multiplicity of Risk Behavior among Injecting drug users in three high HIV prevalence states of India

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Background: Drug abuse, needle sharing, and risky sexual Behaviour are often compounded to increase the risk of HIV transmission. Injecting Drug Users are at the dual risk of needle sharing and risky sexual Behaviour, becoming more vulnerable to STI and HIV. Thus, studying the interface of injecting drug use and risky sexual Behaviour is important to curb the pace of HIV epidemic among IDUs. The aim of this study is to determine the factor associated with HIV among injecting drug users in three states of India.

Materials & Methods: This paper analyzes covariates of multiplicity of risk behavior among injecting drug users. Findings are based on data from Integrated Behavioral and Biological Assessment (IBBA) round 2, 2010. IBBA collects the information of IDUs from the six districts. IDUs were selected on the criteria of those who were 18 years or older, who injected addictive substances/drugs for non-medical purposes at least once in past six month. A total of 1,979 in round 2 were interviewed in the IBBA. The study employs quantitative techniques using standard statistical tools to achieve the above objectives. All results presented in this paper are unweighted univariate measures.

Results: Among IDUs, average duration of injecting drugs is 5.2 years. Mean duration between first drug use to first injecting drugs among younger IDUs, belongs to 18-24 years is 2.6 years Needle cleaning practices is common with above two-fifths reporting it's every time cleaning. Needle sharing is quite prevalent especially among younger IDUs. Further, IDUs practicing needle sharing exhibit pervasive multi-partner behavior. Condom use with commercial partners is almost 81 %, whereas with intimate partner it is 39 %. Coexistence of needle sharing and unprotected sex enhances STI prevalence (6.8 %), which is further pronounced among divorced/separated/widowed (9.4 %).

Conclusion: Working towards risk reduction for IDUs must deal with multiplicity of risk. Interventions should deal with covariates of risk, addressing youth, and risky sexual behavior.

Oral Session 11

O-11-05

Community engagement and HIV/syphilis testing among high-risk MSM in China: A cross-sectional online survey

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Introduction: HIV and syphilis testing rates remain low among men who have sex with men (MSM) in low- and middle- income countries (LMICs). Community engagement has been increasingly used to promote HIV testing among key populations in high-income countries, often in settings with stronger civil society. This study aimed to assess sociodemographic, behavioral, and community engagement factors associated with HIV and syphilis testing among high-risk MSM in China.

Methods: MSM \geq 16 years old who had condomless sex in the past three months were recruited nationwide to complete a cross-sectional online survey in November 2015. Data on sociodemographics, sexual behaviors, HIV/syphilis testing, and community engagement were collected. We defined community engagement using six items assessing awareness and involvement in sexual health programs. The underlying factor structure of a 6-item community engagement scale was determined through exploratory factor analysis. Univariate and multivariable logistic regressions identified correlates of HIV and syphilis testing.

Results: 1189 men were eligible and completed the survey. 54% (647/1189) of men had ever tested for HIV and 30% (354/1189) had ever tested for syphilis. Factor analysis suggested three levels of community engagement (minimal, moderate, and substantial) and this model explained 70.7% of observed variance. A quarter (26%, 312/1189) reported none to minimal engagement, over one half (54%, 644/1189) reported moderate engagement, and a fifth (20%, 233/1189) reported substantial engagement. Multivariable logistic regressions showed that MSM with higher levels of community engagement were more likely to have ever tested for HIV (substantial vs. no engagement: aOR 7.91, 95% CI 4.98-12.57) and for syphilis (substantial vs. no engagement: aOR 5.35, 95% CI 3.16-9.04).

Conclusions: HIV and syphilis testing are suboptimal among a particularly vulnerable subgroup of high-risk MSM in China. Community engagement, especially active participation in in-person sexual health events, can be an effective way of promoting testing in China and should be considered in intervention development and delivery.

Oral Session 11

O-11-06

An outbreak of syphilis in an urban sexual health clinic in England.

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Our busy urban sexual health clinic in central England serves a population of approximately 2.5 million, with 51,000 attendances per year. Since 2014, we have seen a steady rise in cases of syphilis, which has mirrored national levels. In early 2016, outbreak levels for syphilis were identified locally on the basis of routinely reported surveillance data to Public Health England, and these were noted to have exceeded national rates.

We reviewed the records of all patients diagnosed with early infectious syphilis (defined as primary, secondary syphilis or a negative syphilis result in the previous 2 years) for the 6 months between 1st February 2016 and 31st July 2016.

51 cases were identified. The median age was 36 years (SD \pm 14, range 17-68 years). The majority (96%) were male, and identified as either men who have sex with men (MSM) or bisexual (88%).

Nearly half of the patients were symptomatic of syphilis, ranging from a primary chancre to the typical rash of secondary syphilis. The remainder were asymptomatic (early latent syphilis) and detected only on routine serological testing which is offered to all sexual health clinic attendees.

This group of patients were a high risk cohort, with over half (55%) having another sexually transmitted infection (STI), including Chlamydia, Gonorrhoea, genital herpes, either diagnosed concurrently or prior to this episode. 35% had a previous diagnosis of syphilis, thereby making this episode a re-infection. There were no new HIV diagnoses made, but 14% were known to be HIV positive.

In recent years, the practice of 'Chemsex', defined as the use of a combination of recreational drugs (chems) before and during sex, has been identified as a significant risk factor for acquisition of STIs, particularly, but not exclusively, among MSM. Of the 51 cases of syphilis, 9 (18%) were engaging in Chemsex, 20 denied use of recreational drugs, and data was missing for the remaining 22 patients. Given that this data is self-reported with a possible reluctance to admit to use of illegal substances, and the missing data, the true rates of Chemsex use may be much higher in our cohort.

As a result of this outbreak, we are working closely with our colleagues in public health to identify risk groups, and potential epidemiological networks, with the aim of establishing potential public health interventions to limit the ongoing outbreak of syphilis. This represents a serious public health concern for transmission of not only syphilis, but all STIs including HIV, not just within our region, but both nationally and internationally.

Abstracts

Poster

P-01

Mechanism and molecular epidemiological typing of *Neisseria gonorrhoeae* with decreased susceptibility to cephalosporin

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Background: Gonorrhoea continues to present a public health problem worldwide. The recent emergence of *Neisseria gonorrhoeae* strains resistant to extended-spectrum cephalosporins such as cefixime (CFM) or ceftriaxone (CRO) is a major concern globally. The purpose of this study is to investigate the mechanism and molecular epidemiological typing of *N. gonorrhoeae* with decreased cephalosporin susceptibility in Japan.

Methods: Seventy-five clinical *N. gonorrhoeae* isolates were collected in Hyogo, Japan and MICs to penicillin G (PEN), CFM and CRO were examined. All isolates were screened for mosaic *penA* alleles and L421P mutation in *ponA*, which are potentially related to cephalosporin resistance, and *N. gonorrhoeae* multi-antigen sequence typing (NG-MAST) containing *porB* sequencing and multiple-locus variable-number tandem repeat analysis (MLVA) as epidemiological studies.

Results: Mosaic alleles of *penA* had higher resistance rates to CFM (72%) than non-mosaic alleles (6%) ($p < 0.001$). *ponA* mutation was associated with higher resistance rates to CFM (63%) than non-mutation (10%) ($p = 0.004$). In the strains with *penA*-X, *porB* clades 1059, 1785 and 2569 were CFM-decreased susceptibility (DS) or -resistant (R) in all or most strains (100 %; 79 %; 87 %, respectively), while those with *porB* clade 908 were lower rate (25%). MLVA types are classified into 5 categories (group a-e) and almost accordance with CFM-DS or -R and *penA* and *porB* clade alleles.

Conclusions: Genetic and epidemiological screening using new method, MLVA can be valuable for tracking strains with decreased susceptibility as well as resistance to oral extended-spectrum cephalosporins currently seen worldwide in *N. gonorrhoeae*.

Poster

P-02

Dampening of the mtrCDE efflux pump operon in *Neisseria gonorrhoeae* strain HO41 enhances gonococcal susceptibility to penicillin

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Background: The resistance to extended-spectrum cephalosporins (ESCs), which is the only remaining antibiotic in many regions for treatment of gonorrhoea, expressed by certain strains of *Neisseria gonorrhoeae* is a major public concern worldwide. The first "superbug" reported in Japan was referred to HO41, which was found to have high level resistance to ESCs and most other available antibiotics. Non-beta-lactamase resistance of gonococci to beta-lactam antibiotics requires several chromosomal mutations including a promoter mutation (single bp deletion in the mtrR promoter) that results in over-expression of the MtrCDE efflux. This promoter mutation results in loss of production of MtrR, which is the transcriptional repressor of mtrCDE., and is present in HO41. Here we investigated the possibility of reverting the resistant HO41 to be susceptible to β -lactam antibiotics by expressing MtrR and dampening the MtrCDE efflux pump.

Methods: MtrR was ectopically expressed in HO41 (named as SC4) and confirmed to be functional by western blot and qRT-PCR analyses. HO41 and SC4 were compared for their susceptibility to antibiotics in laboratory media and in the presence of ME180 cervical epithelial with or without IPTG induction.

Results: In both laboratory media and in ME180 cell culture, we found that expression of MtrR in SC4 (HO41 mtrR+) decreased mtrCDE gene expression and increased gonococcal susceptibility to beta-lactam antibiotics. Importantly, MtrR-mediated repression of mtrCDE decreased the MIC of penicillin to a level below the MIC breakpoint recommended clinical treatment dose.

Conclusions: We demonstrate the MtrR-mediated dampening of mtrCDE can greatly increase gonococcal susceptibility to penicillin. Thus, novel adjunctive therapeutics that decrease levels of MtrCDE may allow for the return of penicillin as an option for treating otherwise resistant strains of gonococci.

P-03

Surveillance of genetic resistance determinants and gonococcal infection among MSM in Hong Kong

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Background: *Neisseria gonorrhoeae* (GC) infection remains a public health concern due to gonococcus propensity of readily development of antimicrobial resistance. Men who have sex with men (MSM) are one of the key populations most at risk of HIV and STI infection. There is limited information on the burden of gonococcal infection among MSM in Hong Kong as regular screening is not offered. This study was conducted to determine the prevalence of GC infections in MSM and the genetic resistance determinants associated with reduced susceptibility to GC treatment.

Methods: Screening for GC infections at urogenital and extragenital sites was performed by Aptima nucleic acid amplification test (NAAT) (Hologic Gen-Probe, CA). Antimicrobial resistance determination of mosaic *penA* (*penA* Ala501) and mutations of 16S rRNA (C1192T and *rpsE* Thr24Pro), and 23S rRNA (A2059G and C2611T) were conducted by multiplex real-time PCR with high resolution melting.

Results: A total of 107 MSM were enrolled in 2016. Among them, the prevalence of GC infection was 16.8% (18/107). The positivity for pharyngeal and rectal gonorrhoea was 9.3% and 13.1%, respectively. While none were tested positive for urogenital GC infection, concurrent pharyngeal and rectal GC infections were identified in six MSM. No mosaic *penA* allele and mutations at 16S rRNA C1192T and 23S rRNA C2611T were detected in Aptima NAAT-positive cases. Most of the rectal GC-positive cases carry the mutations of 23S rRNA A2059G (91.7%) and *rpsE* Thr24Pro (83.3%), while only two (33.3%) pharyngeal GC-positive cases harbour the *rpsE* Thr24Pro mutation.

Conclusions: This study reveals a relative high GC infection among asymptomatic MSM, with all of the infections were detected at extragenital sites. Offering pharyngeal and rectal screening for STI would enhance the surveillance of gonococcal infection and the emergence of antimicrobial resistance in GC among MSM in Hong Kong.

Poster

P-04

Are antibiotic-resistant *Neisseria gonorrhoeae* still increasing in Japan?

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Antibiotic resistant strains of *Neisseria gonorrhoeae* had been spread by 2000 but the recent data as to the change of that resistance may be lacked. The purpose of this study was to investigate the antibiotic susceptibilities of *N. gonorrhoeae* strains in Hyogo, Japan. We gathered consecutively *N. gonorrhoeae* strains isolated from 2001 to 2002 (n=91), 2007 to 2008 (n=209), 2009 to 2010 (n=120), 2012 (n=78) and 2015 (n= 112) in Hyogo, Japan. Statistical analysis was conducted using linear regression analysis. The results showed that susceptibility rates of *N. gonorrhoeae* were almost 100 % to ceftriaxone (CTRX) and 100 % to spectinomycin (SPCM). Additionally MIC₅₀ to SPCM was significantly decreased (32 mg/L in 2001, 32 mg/L in 2007, 16 mg/L in 2009, 16 mg/L in 2012, 8 mg/L in 2015; r=0.908, b=-0.451, p=0.033). The trend of susceptibility to cefixime (CFIX) was remained stable (63% in 2001, 59% in 2007, 61% in 2009, 84% in 2012, 72% in 2015; r=0.573, b=0.320, p=0.312). In conclusion, we found no significant increase of antibiotic resistant rates in *N. gonorrhoeae* to representative antibiotics for these 15 years. Future examination will be necessary for follow-up of change of antibiotic-susceptibilities of *N. gonorrhoeae*.

Poster

P-05

Characterization of azithromycin resistant *Neisseria gonorrhoeae* strains isolated in Kyoto and Osaka, Japan, 2010-2015.

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Background: Since the 2000s, the increase of azithromycin-resistant (AZM-R) *N. gonorrhoeae* has been reported in the world. The aim of this study was to clarify the characteristics of AZM-R *N. gonorrhoeae* in Japan. We investigated the prevalence on recently isolated AZM-R *N. gonorrhoeae* by multilocus sequence typing (MLST) and *N. gonorrhoeae* multi-antigen sequence typing (NG-MAST).

Materials and Methods: Between April 2010 and December 2015, total 911 of *N. gonorrhoeae* [21 isolates in 2010, 131 in 2011, 217 in 2012, 217 in 2013, 138 in 2014, and 187 in 2015] were collected at five clinics in Kyoto and Osaka Prefecture. The Etest was used to determine the MIC values of antibiotics. AZM resistant was defined as a MIC of ≥ 0.75 mg/L. Reduced susceptibility to ceftriaxone (CRO-RS) was defined as a MIC of ≥ 0.094 mg/L. Characterization of AZM-R isolates were examined by MLST and NG-MAST.

Results: Among 911, 56 isolates were AZM-R (0.75 to 16 mg/L). The AZM-R rates of two periods (2010-2012, n=369 and 2013-2015, n=542) were 3.3% and 8.1%, respectively. According to ceftriaxone MIC of AZM-R isolates, the rates of AZM-R with CRO-RS increased from 1.1% (2010-2012) to 2.4% (2013-2015). MLST revealed that ST1579 and ST1901 were the predominant sequence type (46.4 and 35.7%, respectively) among AZM-R isolates. ST1579 isolate was found only 16.7% of AZM-R (2/12 of AZM-R) while it was increased to 54.5% (24/44 of AZM-R). NG-MAST analysis showed that AZM-R MLST 1579 isolates was closely related each other (NG-MAST 6798 and its relatives), and AZM-R MLST 1901 isolates mainly belonged to NG-MAST 1407 (13/20). Six among 24 AZM-R of MLST 1579 isolates between 2013 and 2015 showed CRO-RS, as well as MLST 1901/ NG-MAST 1407 isolates (7 among 13 isolates).

Conclusions: In this surveillance, we found that the isolation rates of AZM-R strains increased. MLST analysis suggested that the increase AZM-R isolates might be mainly due to the increase of AZM-R isolate of MLST ST1579. It is important to monitor AZM-R/CRO-RS *N. gonorrhoeae* as emergence of double-resistant *N. gonorrhoeae* would be serious threat worldwide.

Poster

P-06

The detection of *Neisseria gonorrhoeae* or *Chlamydia trachomatis* from the oral wash specimens by Abbott RealTime CT/NG assay-prospective comparative study

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Background and purpose: *N. gonorrhoeae* or *C. trachomatis* are sometimes detected from the pharynx of patients with urethritis or cervicitis. These STI pathogens might be the cause of male urethritis or cervicitis through the oral sex. However, pharyngeal infections by these pathogens are usually asymptomatic and gross lesions cannot rarely be seen. In our study, we tried to detect these pathogens in the oral wash specimens by Abbott RealTime CT/NG assay.

Methods: Targets were patients who attended private urology, gynecology and Otorhinolaryngology clinics in Japan. Some of them had symptoms of urethritis or cervicitis, had sexual partners who had STI pathogens or had worried to have pharyngeal infections of STI pathogens. The oral wash specimens were collected by gargling with 20 ml saline for 20sec. *N. gonorrhoeae* and *C. trachomatis* were detected from the oral wash specimens by both the Abbott RealTime CT/NG assay (Abbott) and the Cobas 4800 system CT/NG (Cobas). If the results by these 2 assays were discordant, additional test by APTIMA COMBO II TMA assay (TMA) was performed.

Results: 460 patients in total at 14 clinics were enrolled to this study. Female to male ratio was 168 to 292 and median age was 31 years old (19-76). Among specimens, 3 could not be examined and 457 specimens were analyzed. *N. gonorrhoeae* was detected from 35 and 28 specimens by Abbott and Cobas, respectively. The concordance rate was 96.3%. Discordant specimens were 17 which were all negative by TMA. The sensitivity and specificity of Abbott for *N. gonorrhoeae* were 100% and 97.2%, respectively. *C. trachomatis* was detected from 14 and 16 specimens by Abbott and Cobas, respectively. The concordance rate was 99.1%. Discordant specimens were 4 and 3 were positive by TMA. The sensitivity and specificity of Abbott for *C. trachomatis* were 87.5% and 100%, respectively.

The oral wash specimen by Cobas 4800 system CT/NG have already been accepted by Japanese Insurance system and available in Japan. Abbott RealTime CT/NG assay to oral wash specimens had a high sensitivity and specificity to detect *N. gonorrhoeae* and *C. trachomatis*.

Poster

P-07

Nationwide surveillance of the antimicrobial susceptibility of *Chlamydia trachomatis* from male urethritis in Japan

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Chlamydia trachomatis is one of the principal pathogens for non-gonococcal urethritis or chlamydial urethritis. There have been a few studies about novel resistant strains isolated from the patients with genital chlamydial infection. However, the current common concept indicates that those were temporary and unstable strains, "heterotypic resistance", with decreased antimicrobial susceptibility. Three societies, the Japanese Society of Chemotherapy, Japanese Association of Infectious Diseases and Japanese Society of Clinical Microbiology, performed the first national surveillance for *C. trachomatis* in 2009 and 2012. Based on the data obtained, the current situation of antimicrobial susceptibility in *C. trachomatis* is discussed.

In 51 medical facilities in 2009 and 38 in 2012, urethral discharge or urethral swab specimens were collected from male patients with urethritis. The specimens were sent to the Kitazato University Research Center for Anti-infectious Drugs via BD Universal Viral Transport. There, measurement of antimicrobial susceptibilities was performed according to the standard method of the Japan Society of Chemotherapy. The drugs used for antimicrobial susceptibility testing are shown below.

In 2009, 207 specimens were collected and 48 specimens were positive for *C. trachomatis* by culture. In 2012, 223 specimens were collected and 48 specimens were positive by culture. Using these specimens, antimicrobial susceptibility testing could be performed for 19 strains in 2009 and 39 in 2012. The MIC₉₀ and range ($\mu\text{g/ml}$) of subtotal were as follows. EM: 0.125, and 0.031 ~ 0.25; CAM: 0.016, and 0.004 ~ 0.016; AZM: 0.063, and 0.031 ~ 0.125; MINO: 0.125, and 0.031 ~ 0.125; DOXY: 0.125, and 0.063 ~ 0.25 $\mu\text{g/ml}$; CPM: 1, and 0.5 ~ 2; LVFX: 0.5, and 0.25 ~ 0.5; TFLX: 0.125, and 0.063 ~ 0.25; STFX: 0.063, and 0.031 ~ 0.063.

Fortunately, there were no resistant strains of *C. trachomatis* in this surveillance. However, the current and future situation of antimicrobial susceptibility in the pathogens of non-gonococcal urethritis should be surveyed regularly.

Poster

P-08

Prevalence of *Chlamydia trachomatis* genotypes in men who have sex with men and men who have sex with women using multilocus VNTR analysis-*ompA* typing in Guangzhou, China

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Background: *Chlamydia trachomatis* is one of the most prevalent bacterial sexually transmitted infection in China. Although *C. trachomatis* genotypes can be discriminated by outer membrane protein gene (*ompA*) sequencing, currently available methods have limited resolutions. This study used a high-resolution genotyping method, namely, multilocus variable number tandem-repeat analysis with *ompA* sequencing (MLVA)-*ompA*, to investigate the local epidemiology of *C. trachomatis* infections among men who have sex with men (MSM) and men who have sex with women (MSW) attending a sexually transmitted diseases (STD) clinic in Guangzhou, China.

Methods: Rectal specimens from MSM and urethral specimens from MSW were collected between January 2013 and July 2014 at the Guangdong Provincial Center STD clinic. The specimens were sent to the laboratory for analyses. All specimens that were tested positive for *C. trachomatis* by the commercial nucleic acid amplification tests were genotyped by MLVA-*ompA*.

Results: Fifty-one rectal specimens from MSM and 96 urethral specimens from MSW were identified with *C. trachomatis*. One hundred and forty-four of the 147 specimens were fully genotyped by MLVA-*ompA*. Rectal specimens from MSM were divided into four *ompA* genotypes and urethral specimens from MSW into nine genotypes. No mixed infections were found among all specimens. The most frequent genotypes were D, G, J, E and F. All specimens were further divided into 46 types after *ompA* genotyping was combined with MLVA. Genotypes D-8.7.1 and G-3.4a.3 were the most frequent among MSM, whereas genotypes D-3.4a.4, E-8.5.1, F-8.5.1, and J-3.4a.2 were the most frequent subtypes among MSW. The discriminatory index *D* was 0.90 for MLVA, 0.85 for *ompA*, and 0.95 for MLVA-*ompA*.

Conclusions: The most prevalent MLVA-*ompA* genotypes were significantly different between MSM and MSW from Guangzhou, China. Moreover, MLVA-*ompA* represented a more favorable degree of discrimination than *ompA* and could be a reliable complement for *ompA* for the routine subtypes of *C. trachomatis*.

Poster

P-09

Evaluation of an Immunoassay as a Rapid Test for Detection of *Chlamydia trachomatis* Infection in Female Commercial Sex Workers

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Purpose: The importance of laboratory screening tests for female commercial sex workers (FCSWs) is well documented to reduce the prevalence and complications of chlamydial infection. An immunoassay for the detection of *Chlamydia trachomatis* antigen as a product of rapid test has been one of the standard chlamydial tests performed in Korean health centers. Although the process of the rapid test is simple, the accuracy rates are inconsistent. Therefore, we evaluated the efficacy of QuickVue chlamydial detection kits (Quidel, San Diego, USA), a rapid test, by comparing this assay to an in-house polymerase chain reaction (PCR) method.

Materials and Methods: A total of 410 endo-cervical samples were consecutively collected in one health center. A rapid test was performed by using a QuickVue kit. Genomic DNA was extracted from cotton swabs. The cryptic plasmid of *C. trachomatis* from the genomic DNA was amplified by the PCR method.

Results: The overall sensitivity, specificity, positive predictive value and negative predictive value of the rapid test were 21%, 99%, 89% and 83%, respectively, based on the PCR results. A study of the serial dilutions of reference inclusion forming units (IFU) showed that the rapid test only detected chlamydial infections that had high counts of IFUs.

Conclusions: The rapid test is not sufficient in detecting asymptomatic or lesser symptomatic chlamydial infections in sexually transmitted infections core groups. Instead, a gene amplification test should be used for detecting chlamydial infections in FCSWs.

Poster

P-10

Abstract Withdrawal

Poster

P-11

The implications of *Ureaplasma urealyticum* on human papillomavirus infections in asymptomatic sexually active persons

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This study was aimed to determine the role of asymptomatic bacterial sexually transmitted infections (STIs) such as *Chlamydia trachomatis* (Ct), *Mycoplasma genitalium* (Mg), *Mycoplasma hominis* (Mh) and *Ureaplasma urealyticum* (Uu) on human papillomavirus (HPV) infections.

In total, 102 asymptomatic outpatients aged between 22 and 75 years were enrolled in this study during routine gynecological screening tests. Specimens collected by Cervex brush were routinely analyzed by Hybrid Capture 2 assay for detecting HPV. Simultaneously, a specimen obtained by endocervical swab was used to detect Ct and Mg by singleplex real-time PCR and used to confirm Mh and Uu by Mycoplasma IST 2 kit.

The detection rates (%) of HPV, Ct, Mg, and Uu were 63/102 (61.8), 7/102 (6.9), 2/102 (2.0) and 47/102 (46.1), respectively. Of 47 Uu, 16 (34%) showed high density colonization (HDC, $\geq 10^4$ CFU/ml). 6 Ct infections (6/7) were found in the HPV infected group ($p=0.246$, Fisher's exact test). HDC-Uu was significantly related to HPV infection ($p=0.025$, Chi-square test). Mg infection (only 2 cases) and HDC-Mh were not associated with HPV infection ($p=0.523$ and $p=0.769$, Fisher's exact test).

Our data suggested that asymptomatic HDC-Uu was closely related to HPV infection. Therefore, simultaneous evaluation for Uu should be performed with HPV detection during gynecological screening, even in asymptomatic people.

Poster

P-12

Prevalence of human papillomavirus infection in genitalia and urine of Japanese men.

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Purpose: We investigated the prevalence of human papillomavirus (HPV) infection in external genitalia and urine in asymptomatic Japanese men in Japan. In addition, a questionnaire survey regarding the sexual activity, and we analyzed the risk factors for genital HPV infection.

Patients and methods: Eight-hundred and twenty three asymptomatic men were enrolled in this study. Rubbed swab specimens from the external genitalia and urine samples were collected from each patient, and their sediment cells were preserved in the liquid-based cytology solution. After DNA extraction, β -globin amplification was confirmed based on polymerase chain reaction, and HPV genotype was determined using GENOSEARCH-HPV31.

Results: β -globin was shown positive in 91.2% of external genital samples and in 94.2% of urine ones. HPV-DNA was detected in 188 (22.8%) of the external genitalia, and in 45 (5.8%) of the urine. The age-specific positive rate of the genital HPV was high in patients aged 20-50s, and 60s or more showed a decline in HPV-positive rate. On the other hand, the age-specific HPV-positive rate in urine samples was high in 40-50s. In addition, 10 or more of past sex partners or urinary HPV infection were the independent risk factors for the genital HPV infection based on the multivariable analysis.

Conclusion: We found that HPV infection could occur in external genitalia or urinary tract in Japanese asymptomatic men. HPV infection in men was also strongly correlated with sexual activity.

P-13

Fetomaternal infection of syphilis -The significance of measuring IgM-TPHA-

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The present study was an attempt to use the measurement of fractionated TPHA as one means for determining appropriate anti-syphilitic therapy. In this study, 18 pregnant women with early syphilis and in whom IgM-TPHA antibody had been detected were given oral penicillin for a period of 4 to 8 weeks. Twenty patients with congenital syphilis and five patients with late syphilis were observed without treatment as long as IgM-TPHA antibody was not detectable, even though relatively high antibody titers for STS, TPHA and FTA-ABS were apparent. Umbilical cord blood was examined for fractionated TPHA at the time of delivery. If no IgM-TPHA antibody was detected, no therapy was prescribed for the newborn infants. However, careful follow-up was made with reference to various serological tests for syphilis.

The Results indicated that the administration of penicillin to pregnant women with early syphilis lowered the STS and TPHA antibody levels. This study also showed that, in the newborn infants, the STS tests became negative within three months, and the TPHA and FTA-ABS tests became negative within six months after birth. In summary, the results of this study indicate that the presence or absence of detectable IgM-TPHA antibody may in pregnant women be used as the basis for prescribing treatment to prevent infection of the neonates.

P-14

Neutropenia induced by high-dose intravenous benzylpenicillin in treating neurosyphilis: does it really matter?

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Background: High-dose intravenous benzylpenicillin is of proven efficacy for early stage neurosyphilis. Although benzylpenicillin-induced neutropenia is rare, one still needs to be vigilant in monitoring due to underlying life-threatening sepsis.

Methods: From January 1, 2013 to December 31, 2015 at the Shanghai Skin Disease Hospital, 578 patients undergoing initial therapy with benzylpenicillin were recruited. Patient factors were recorded, including age, gender, diagnosis, cumulative dose of benzylpenicillin, days to onset of neutropenia, absolute neutrophil count, accompanying symptoms, clinical management, recovery time and readministration of benzylpenicillin.

Results: Among neurosyphilis patients without medical co-morbidities, the total incidence of benzylpenicillin-induced neutropenia was 2.42% (95% CI: 1.38-4.13%), with incidence of severe neutropenia 0.35% (95% CI: 0.06-1.39%). The treatment duration before onset of neutropenia ranged from 10 to 14 days, and the cumulative doses of benzylpenicillin varied from 240 to 324 megaunits. The severity of neutropenia had no association with age or the type of neurosyphilis (both $p > 0.05$). The neutropenia was often tolerated and normalized within one week under intensive observation and/or symptomatic therapy. A more serious neutropenia did not occur when reinstituting benzylpenicillin in patients with mild or moderate neutropenia or when ceftriaxone was used as an alternative in patients with severe neutropenia three months later.

Conclusions: Benzylpenicillin can be continued with intensive surveillance in the presence of mild or moderate neutropenia. For severe neutropenia, therapy should be withdrawn, but it is not essential to aggressively use hematopoietic growth factors or broad-spectrum antibiotics for patients in good physical condition. Readministration of benzylpenicillin most likely did not exacerbate neutropenia.

P-15

Prevalence of sexually transmitted infections using multiplex PCR in Korean nationwide reference laboratory

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Background: Sexually Transmitted Infection (STI) is a public health concerns. Treating symptomatic STI patients and active monitoring to asymptomatic health care examiner could decrease disease burden. Also prevalence of STI is carefully follow up and monitored by hospital based laboratories and nationwide reference laboratories. We use sensitive and validated multiplex PCR assay for reporting clinically important STI prevalence rate during 2015.

Methods & Materials: Seegene Medical Foundation (SMF) had nationwide local branch offices networks which collect specimen and transport in Korea. More than 4,000 clinics sent genital and/or urinary specimens everyday and the results were reported next working day. From January 1, 2015 to December 31, 2015 104,400 samples (39,694 male and 64,706 female) were tested and analyzed in SMF using Seeplex STD6 (Seegene, Seoul, Korea). This multiplex PCR (Seeplex STD6) could detect six STI causing pathogens, *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Trichomonas vaginalis*, *Mycoplasma genitalium*, *Mycoplasma hominis* and *Ureaplasma urealyticum* in one PCR tube.

Results: During twelve months of study period, overall prevalence rates of *C. trachomatis*, *N. gonorrhoeae*, *T. vaginalis*, *M. genitalium*, *M. hominis* and *U. urealyticum* were 17.4, 7.1, 0.4, 7.3, 5.0, and 18.0 % respectively in male subgroup. The prevalence rates in female subgroup were 6.9, 1.1, 2.0, 3.5, 18.2, and 21.5 %, respectively. The positive rates were varied with specific specimen came from patients. In male patients, urine specimens gave high positive rates than EPS (43.4 % vs 24.9 %) *T. vaginalis* was the least possible pathogen in Korea. However higher prevalence rate of *U. urealyticum* was noted.

Conclusion: Multiplex PCR shows robust and consistent results in study times. It could be a cost-effective and give a rapid diagnostic tool for the detection of multiple STI organisms and sometimes used for routine health check up procedures. These results have a limitation because these data are come from mostly symptomatic male patients and asymptomatic female patients but detail medical history could not review. In clinical reference laboratory, high throughput multiplex PCR is convenient and epidemiologic data provides useful information to clinicians.

Poster

P-16

Prevalence of genital gonococcal and chlamydial infections in Japan: Why does Government routine surveillance of whole Japan was shown lower data than sentinel surveillance reported of seven selected preference

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Although we have a remarkable prevalence of sexually transmitted infections (STIs) in Japan, we did not have the precise epidemiological sentimental surveillance with STIs of all clinicians covered the reports from obstetrician and gynecologist, urologist and venereologist in 7 model prefectures. We have been conducting a sentinel surveillance with the STIs clinicians diagnosed in 7 model prefectures in Japan from 2012 to 2014 where covered 13% of all Japanese population.

We sent questionnaire to all clinicians with obstetrician and gynecologist, urologist and venereologist at early October in 2013 in 7 model prefectures. We would thank for medical doctors to entry at questionnaire about the patients' data with gender, age years, married or unmarried, diagnose when met the patient with syphilis, gonococcal infection, condyloma acuminatum, genital herpes, genital chlamydial infection and genital non-gono, non-chlamydial infection without examination at whole October in 2013. Our response rate of sentinel surveillance was 67.3%. We calculated our Prevalence rate (person year) per 100,000 with infected STIs for from 7 model prefectures to all 47 prefectures to comparing for the routine surveillance which Japanese Government selected.

Our results showed that the Government routine surveillance data lost to our data about 2.7 times low about male genital gonococcal infection and 4.1 times low about female genital chlamydial infection especially between 20 to 24 age years.

The STIs were shown in decreasing trends in the Government routine surveillance from 2002 to 2009 and sudden at equilibrium condition in Japanese Government Reports. We know that it is difficult to argue about the fixed points with our actual data. But some contradictions were found with the Government routine surveillance data about decreasing trend of STIs appeared from our actual data. We could appear by our data that STIs were not decrease in these periods because the selections of the fixed points were not selected by rule and line. And the Government routine surveillance data cannot compare for gender and each STIs, which our works could appear our study has the balance of better advantage than fixed points' data.

Poster

P-17

Prevalence of *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Mycoplasma genitalium*, and *Trichomonas vaginalis* by multiplex real-time PCR in a university hospital in Korea.

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Introduction: Most organisms that can cause sexual transmitted diseases (STDs) are fastidious which make it difficult to diagnose with conventional bacterial culture. Recently, multiplex real-time PCR tests for six major pathogens for STDs including *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Mycoplasma genitalium*, and *Trichomonas vaginalis* has been introduced. We reviewed our results in terms of the positive rates, the proportion of co-infection in a university hospital in Korea.

Methods: A total of 1132 tests were included in this study from March 2016 to July 2017, retrospectively. Among them, 732 tests (64.7%) were done with cervix swab, 263 tests (23.2%) with random urine, 30 tests (2.7%) with urethral swab, and 107 tests (9.5%) with vaginal swab. Multiplex real-time PCR was performed by using Seeplex STD6 ACE Detection kits (Seegene, Seoul, Korea) according to the manufacturer's guideline.

Results: Among the 1,132 specimens, 139 (12.3%) tested positive for STDs. The proportion of the organisms detected causing STD were as follows: *Chlamydia trachomatis*, 69.1% (96/139); *Mycoplasma genitalium*, 21.6% (30/139); *Neisseria gonorrhoeae*, 7.2% (10/139); *Trichomonas vaginalis*, 2.2% (3/139). There were 8 cases of co-infection, which were 6 *C. trachomatis* and *M. genitalium* and 2 *C. trachomatis*, *N. gonorrhoeae* and *M. genitalium*. Also, the positive rates of *Ureaplasma urealyticum* and *Mycoplasma hominis* are 9.2% (104/1132) and 9.4% (106/1132), respectively.

Conclusion: In our study, *C. trachomatis* showed the highest positive rates (8.5%) causing STD followed by *M. genitalium* (2.7%), *N. gonorrhoea* (0.9%) and *T. vaginalis* (0.3%). *U. urealyticum* and *M. hominis* were positive in about 9%. Further evaluation including multi-center study should be performed to determine the epidemiological trends in Korea.

P-18

Sexually transmitted infections in the Korean elderly population

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This study aimed to examine the sexual behavior and awareness in sexually transmitted infection (STI) in the elderly population in Korea using a structured survey. Prevalence of STI was examined at the same time. The results were compared between the elderlies considered high-risk for contracting STI and low-risk elderlies.

From October 2015 to March 2016, surveys were conducted among 575 elderlies in elderly welfare centers and urban parks in 5 cities. 442 elderlies in the elderly welfare centers were considered low-risk for contracting STI and 133 elderlies in the urban park were considered high-risk. The survey consisted of socioeconomic status, sexual behavior, awareness in STI, history of STI and sexual health education. Urine PCR test for *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Mycoplasma genitalium* and *Trichomonas vaginalis* was done among the respondents of the survey to examine the prevalence of STI.

Approximately 32% of the elderlies answered they had sexual intercourse 1-2 times/3 months. 91% answered they do not use condoms. 24% answered they experienced STI in the past, mostly (96%) when they were young. No difference was found in the survey between the high-risk group and the low-risk group except for sexual health education, in which elderlies in the high-risk group had less education for sexual health. The prevalence of STI in the high-risk group and low-risk group was 0.7% and 0.9%, respectively, and there was no significant difference between the two groups.

Elderlies in the urban park did not show risky sexual behavior for contracting STI compared to the low-risk group. The prevalence of STI among the elderlies in Korea was low and did not show significant difference between the high-risk and low-risk group. Policies should be focused on increasing accessibility to sexual health education programs to more elderly population.

P-19

Analysis of Korean epidemiological characteristics in sexually transmitted infections

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The purpose of this study was to identify the epidemiological characteristics of Korean sexually transmitted infections most closely. This study analyzed data of the Health Insurance Review and Assessment Service (HIRA) from 2008 to 2014 a total of seven years, in the field of sexually transmitted infections. In addition, through further investigation we determine the prevalence of sexually transmitted infections in the elderly.

Korea has an increasing trend in chlamydia, early syphilis (including primary & secondary syphilis), and condyloma acuminatum and a decreasing trend in gonorrhea and chancroid, and genital herpes is no significant change. The main age of the sexually transmitted infection is 20s-30s, there is a lot being diagnosed at 10s. However, the elderly, the very low prevalence of sexually transmitted infections, a special risk factors could not be found.

HIRA is the amount of data a lot, because it is thought to reflect the actual medical diagnosis to be less than the risk of bias to the surveillance system data. It is expected to replace the sentinel surveillance system in the future, and it will have to make that potential through additional research.

Poster

P-20

Practice of universal hepatitis B core antibody screening in a sexual health setting: a critique

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Question: Is it cost effective, and of benefit, to offer universal hepatitis B core antibody screening, regardless of risk, in a genitourinary medicine clinic? Are there any further risk factors that are apparent upon case note review?

Introduction: Hepatitis B is a blood borne virus that can be transmitted by sexual contact. Although it has a low rate of chronic carriage it can have serious negative health effects and is preventable by vaccination in high-risk groups. High-risk groups have been identified and it is recommended that they are routinely screened for hepatitis B as part of a sexual health screen. Some sexual health services, including Warrington and Halton Foundation Trust, routinely screen for hepatitis B in all patient regardless of risk status.

Method: To assess the number of low-risk patients exposed to hepatitis B, in one year at a sexual health department, all patients' notes that tested positive for hepatitis B core antibody (57) were examined for risk factors. A 10% sample of the negative tests (343) was also examined for risk factors.

Results: Of the positive tests 22/57 (38.6%) were identified as low-risk and of the negative tests 274/343 (79.9%) were identified as low-risk. Partner notification was successfully carried out in 4/57 positive tests.

Analysis: Results were extrapolated producing an estimate of total low-risk patients tested for hepatitis B in one year (2795) which approximates at an exposure rate in the low-risk population of 0.79%. The exposure rate in the high-risk population was roughly six times higher (4.77%). The approximate cost to establish one exposure in the low-risk population is £76.20.

Conclusion: The low exposure rate combined with the low rate of chronic carriage results in very few cases being diagnosed in the low-risk population. This generates an expensive cost-per-case (≈£1524). Although this is a high figure if testing is coupled with appropriate partner notification it could be argued that more cases may be identified therefore justifying the process. Further study is required into the success and effectiveness of partner notification for patients with a positive hepatitis B core antibody. As a secondary outcome; injecting drugs intramuscularly was identified as a risk for Hepatitis B exposure which has not previously been outlined by BASHH. This secondary outcome certainly warrants further study.

Poster

P-21

High risk behaviors and syphilis/HIV infection among men who have sex with men aged 50 and older in Shenzhen

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Objective: To investigate the high risk behaviors and syphilis/HIV infection among men who have sex with men aged 50 and older in Shenzhen.

Methods: Snowball sampling and respondent driven sampling were used to recruit MSM from 2009 to 2015 in Shenzhen. Questionnaire-based interviews were conducted on a one-on-one basis to collect data of socio-demographic information, Human immunodeficiency virus(HIV) testing history, history of blood donation in recent two years, self-identified sexual orientation, role in homosexual behavior, ever being money boy(MB) and clients of MB. 5 ml blood samples were taken and tested for treponema pallidum and HIV antibodies. Categorical data were analyzed by chi-square test using SAS statistical software version 8.01 (SAS Institute, Cary, NC).

Results: Among the total of 5221 MSM recruited, 186(3.56%) cases were aged 50 years and older. MSM age 50 years and older were more likely to get married, have high school or below level of education, have monthly income less than 3000 Yuan, work in service industry or be jobless. Most of them never used condoms for every act with female sexual partners. About one-third had more than 5 anal sexual partners in recent six months. They had higher rate of never using condoms when having anal sex compared with MSM aged less than 50 years. The rate of syphilis, HIV infection and syphilis-HIV co-infection among MSM aged 50 and older were 1.8917, 1.7387, 2.0365 times as high as that among MSM aged less 50 years, respectively.

Conclusion: MSM aged 50 and older had higher prevalence of syphilis and HIV and acted as bridge population to transmit syphilis/HIV. It is necessary to carry intervention measures targeted to them.

Poster

P-22

High Prevalence of Sexual Transmitted Diseases and Its Correlates among Males Attending Sexually Transmitted Infection Clinics (MSC) in Guangdong Province, China

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Objective: To estimate the prevalence of sexually transmitted infections (STI) including syphilis, gonorrhoea, genital warts, genital herpes and genital chlamydial infections, and to identify the correlates of STI among male sexually transmitted infection clinics attendees.

Methods: As a cross-sectional study, using convenience sampling, 456 consenting male adult were recruited, interviewed and tested between June to November, 2014. The distributions of STI prevalence, socio-demographic characteristics, and risk behaviors were determined and compared between STI and non STI. Simple and multiple logistic regressions were performed to measure the strength of association between socio-behavioral factors and the likelihood of being STI with reference to other MSC, while the multiple logistic regression models were adjusted for age (continuous), education, monthly income and marital status to control for potential confounders.

Results: Among recruited participants, 30.3% (n=138) were infected at least one listed STI, while the prevalence of listed STI (syphilis, gonorrhoea, genital warts, genital herpes and genital chlamydial infection) were 4.0%, 4.2%, 16.2%, 6.8% and 5.5%, respectively. Multiple logistic regression revealed that compared to non STI group, people who got STI were more likely to belong to ethnical minority group (adjusted OR (aOR)=2.74, 95% CI=1.05-7.11), lived with spouse or other female partners (aOR=1.90, 95% CI=1.07-3.39), received STI related health services in last year (aOR=1.67, 95% CI=1.09-2.55) and had STI related symptoms in last year (aOR=3.96, 95% CI=2.53-6.20) while aOR for using condom with FSWs every time in last six months being 0.35 (95% CI=0.75-0.97).

Conclusion: The prevalence of STI was observed to be high among MSCs in Guangdong. Targeted interventions that focused on STI related services uptakes including STI related education, condom promotion, frequent STI screening and standard treatment should be implemented urgently in this province.

Poster

P-23

Trends in male sexually transmitted infections of 8 urology clinics in Kagoshima, Japan

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INTRODUCTION AND OBJECTIVE: Sexually transmitted infection (STI) surveillance is a basic component of STI measurement. Current literature comparing the prevalence rates of STIs in various global regions is limited. As a result, the prevalence rates of STIs vary around the world, differing by country and particular STI. The aim of this study was to know the trends in patient with STIs in limited southern region of Japan.

METHODS: A survey on STIs was conducted in 8 urology clinics in Kagoshima, Japan from January 2007 through December 2013. The numbers of patients, route of exposure, and treatment of gonococcal infections, chlamydial infections, male non-chlamydial non-gonococcal urethritis, genital herpes, condyloma acuminatum, and syphilis were examined.

RESULTS: Of 3,543 male patients diagnosed with STIs, 827 (23.3%) had gonococcal infections, 848 (23.9%) had chlamydial infections, 1175 (33.2%) had male non-chlamydial non-gonococcal urethritis, 272 (7.7%) had condyloma acuminatum, 398 (11.2%) had genital herpes, 23 (0.6%) had syphilis, and 208 patients had mixed infections. The number of patients included many in their twenties. The number of male patients with gonococcal infections increased from 2007 to 2010, and slightly decreased afterwards. On the other hand, the number of male patients with non-gonococcal infections increased from 2007 to 2013. The patients with gonococcal infections were treated with intravenous administration of ceftriaxone(258 cases, 40.1%), oral administration of azithromycin (170 cases, 26.4%) in order. The patients with chlamydial infections were treated with oral administration of azithromycin(534 cases, 75.0%) and fluoroquinolones (296 cases, 41.6%) in order.

CONCLUSIONS: STIs are among the common causes of illness in Japan. Our study suggests that trends in male STI will require more well designed epidemiological studies on the prevalence of infections.

Poster

P-24

Viral Sexually Transmitted Infections (STIs) among pregnant women in Southwestern Nigeria: A hidden epidemic potential.

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Background: Viral STI epidemics are emerging and sometimes rapidly increasing in vulnerable population such as the pregnant women. In Nigeria, there is a dearth of data on prevalence of viral STIs such as Herpes Simplex Virus-2, Hepatitis B and C among pregnant women and no clear understanding of the dynamics of STI transmission pathways. Hence it is not easy to inform specific interventions, models for feasible and cost effective STI service delivery within the socio-cultural and gender specific contexts. This study aimed at identifying outlets for tailored interventions to curb the prevalence of HIV, HBV, HCV and HSV-2 infections among pregnant women in southwestern Nigeria.

Methods: A total of 270 counseled pregnant women aged 20 to 44 years, attending antenatal clinic of the University College Hospital Ibadan were enrolled in this cross-sectional study and were tested for HSV 2 IgG using type specific third generation ELISA and HIV-1, using Uni-Gold Recombigen and ALERE determine, while 180 consented to HBV and HCV testing using third generation ELISA. Questionnaires were used to obtain data and analyses was done using SPSS version 20.

Results: Sero-prevalence rates of 33.3% (90/270), 19.6% (53/270), 8.3% (15/180) and 1.7% (3/180) were observed for HSV-2, HIV-1, HBV and HCV respectively, co-infection rates of 26.7% (HBV/HIV) and 39% (HSV-2/HIV). Overall, low educational level, early age at sexual debut and multiple sexual partners were independently associated with these viral STIs. Although a poor knowledge of STIs, low access to and utilization of STI and vaccination services was observed, there was a strong willingness for behavioral change.

Conclusion: Pregnant women represent a lower-risk than the general population however these high prevalence and co-infection rates suggest that these viral STIs are mutually enforcing with a hidden epidemic potential. There is need for structural, behavioural and biomedical interventions tailored to the macro-epidermic.

Poster

P-25

Correlates of cervical cancer screening behavior among unmarried sexually active Japanese women aged 20-29 years old: Results from an Internet-based survey

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Background: The prevalence of cervical cancer has been continuously increasing among females in their 20s-30s. Better understanding of the correlates of pap smear testing behavior for cervical cancer prevention is essential to identifying target individuals and developing effective interventions. However, few quantitative research design studies have examined the correlates of pap smear testing. The purpose of the present study was to assess the prevalence and correlates of pap smear testing among unmarried sexually active Japanese women in their 20s.

Methods: The participants were 700 Japanese women aged 20-29 years old who responded to an Internet-based cross-sectional survey conducted by a Japanese marketing research company. Associations between lifetime pap smear testing and demographic profile, sexual behavior and psychosocial factors were assessed by univariate analysis. The variables displaying significant values of $P < 0.05$ in the univariate analysis were forcedly entered into a multivariate model to determine the adjusted odds ratios (AOR).

Results: Overall, 383 (54.7%) respondents had undergone pap smear testing in their lifetime. Multiple regression analysis revealed that age, employment status, income, lifetime number of sexual partners, having received an HPV vaccination, having received an invitation to receive a discounted pap test from the local government, perceived susceptibility to cervical cancer, perceived logistical barriers (e.g., cost and time), and confidence in receiving a pap test from a male physician were statistically significantly correlated with lifetime pap smear testing. Specifically, respondents with the following characteristics were more likely to have had testing experience: aged 28-29 years old (AOR=1.86), employed full-time (AOR=3.30), income over \geq ¥4,000,000 (AOR=1.60), more than five sexual partners in their lifetime (AOR=1.97), received an HPV vaccination (AOR=4.88), received a coupon from local government (AOR=3.14), higher perceived level of susceptibility to cervical cancer (middle: AOR=1.77, high: AOR=3.23), lower perceived logistical barriers (middle: AOR=0.55, high: AOR=0.31), and higher confidence in receiving a pap test from a male physician (AOR=2.66).

Conclusions: Younger women, unemployed women, those with more than five sexual partners in their lifetime, those with lower perceived susceptibility to cervical cancer, those with higher perceived logistical barriers and those with lower confidence in receiving a pap test from a male physician were less likely to report lifetime testing. In order to increase the pap smear testing rate among young females, younger, unemployed women should be targeted. Interventions aimed at increasing perceived susceptibility to cervical cancer as well as providing tests that alleviate psychosocial barriers might also be effective.

Poster

P-26

Association between Student Personality with Stigmatization Attitudes towards People Living with HIV/AIDS among New Undergraduate Medical Students in Bali

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Nowdays stigma towards people living with HIV/AIDS (PLWHA) is still a major problem in public health issue and have not been completely resolved. Undergraduate medical students who are going to become healthcare providers in the future should therefore be included as targets of anti-stigma intervention. Doctors will become candidates in the frontline to against HIV/AIDS for all aspect, specially in preventive and curative. Based on literature, personality showed a significant impact for students perspectives about stigma in their personal life. This study was aimed to examine the association between student personality with stigmatization towards PLWHA among new undergraduate medical students in Bali.

A cross-sectional study who involve 191 undergraduate medical students in first semester in Udayana University. Samples are asked to complete the questionnaires about stigmatizing attitudes towards PLWHA contained 42 items (covering eight dimensions based on the literature review), and 35 item Big Five Personality Inventory. Demographic data (age, gender, domicile, ethnic group, duration of stay in Bali) were assessed. Data were analyzed using univariate and bivariate analysis (Pearson Correlation).

From a total 191 respondents, a half of students (52.4%) showed the high scores of stigmatization and discrimination towards PWLHA. Our study found a negative weak correlation between openness to experience personality and total scores of stigmatization attitudes towards PWLHA ($r = -0.166$; $p = 0.021$). Positive correlation between agreeableness personality with total scores of stigmatization attitudes towards PWLHA ($r = 0.144$; $p = 0.047$) were reported. There was no correlation between conscientiousness, extraversion, and neuroticism with stigmatization attitudes towards PWLHA ($p \geq 0.05$).

Some personality such as openness to experience and agreeableness had role toward stigmatization and discrimination attitudes. Students who had openness to experience personality indicate the less stigmatizing attitude and discrimination towards PWLHA than the other personality. Future research needed to examine external and internal factors of students may associated with stigmatizing towards PLWHA.

Poster

P-27

Non penetrative anal sex and saliva exposure: associations with use of smart phone applications in men who have sex with men in Melbourne, Australia

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Background: In Australia smart mobile applications have become a primary source for men who have sex with men (MSM) to meet sexual partners. This study aimed to investigate whether MSM who met their partners via smart phone applications are more likely to engage in sexual practices other than penile-anal intercourse including rimming (oro-anal sex), fingering, and use of partner's saliva as a lubricant compared with MSM using other sources for meeting partners.

Methods: A cross-sectional survey was conducted among MSM attending the Melbourne Sexual Health Centre, Australia, between 31 July 2014 and 30 June 2015. Multivariate logistic regression was conducted to examine the associations between sources of meeting partners and the three aforementioned sexual practices.

Results: A total of 1672 MSM completed the questionnaire. MSM who used smart phone applications were 1.78 (95% CI: 1.38-2.28) times more likely to get rimmed, 1.53 (95% CI: 1.13-2.06) times more likely to have receptive fingering or penis dipping by their partners, and 1.63 (95% CI: 1.27-2.09) times more likely to use partner's saliva as a lubricant for anal sex, compared to other sources, after adjusting for age and other sources for meeting partners.

Conclusion: MSM who met their partners via smart phone applications were more likely to have receptive rimming, fingering and use of partner's saliva. These practices are highly associated with gonorrhoea.

Poster

P-28

Relationship of Level of Knowledge on HIV/AIDS and Attitude towards People Living with HIV/AIDS among Undergraduate Students of the University of the Philippines Diliman

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Despite the low prevalence rate of HIV/AIDS in the Philippines, the country is one of the seven countries in the world and the only country in Southeast Asia which reported an increasing trend in the number of people infected with HIV. People getting infected with HIV are becoming younger every year. Eighty-five percent (7,103) of the total number of youth (15-24 years old) with HIV were recorded in the past five years. The rising rates of HIV infection suggest the need to understand HIV knowledge, attitudes, and sexual behaviors among the youth in the Philippines. The University of the Philippines, having a population that represents all regions of the country, can be reflective of the current situation of the Filipino youth in the issue of HIV/AIDS. This paper attempted to: (1) assess the level of knowledge on HIV/AIDS; (2) describe the attitude towards people living with HIV/AIDS; (3) identify socio-demographic and sexual behaviors associated with the level of HIV/AIDS knowledge; and (4) determine how knowledge on HIV/AIDS is related with attitude towards people living with HIV/AIDS among tertiary students of UP Diliman. Self-administered survey was used to collect data from 308 randomly selected respondents. Data was encoded using CS Pro 6.2 and it was exported to SPSS v23 for further analysis. Findings of the study revealed that comprehensive correct knowledge on HIV/AIDS is associated with a somewhat accepting attitude towards PLWHA. Sociodemographic and sexual behavior characteristics do not contribute to the association between level of knowledge about HIV/AIDS and attitude towards PLWHA.

Poster

P-29

Research of Quality of life on syphilis patients and related influencing factors in Nanshan District, Shenzhen, 2015

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Background: Syphilis is not only a public health problem, but also a social problem. Studies on the prevalence and consequences caused by syphilis might not fully reflect the impacts on the individual of the physical, psychological, social, etc., while the quality of life (QOL) can comprehensively evaluate the quality of the four dimensions of social relations, environment syphilis. The aims of this study were to evaluate the QOL of syphilis patients and explore influencing factors, in order to provide reference for improving the QOL of syphilis patients and formulating effective interventions.

Methods: World Health Organization Quality of Life-Abbreviated Version was adopted as a questionnaire to measure QOL of patients who were under the convergence case-management in Nanshan district, Shenzhen in 2015. The investigation contents included basic information and 26 clauses of QOL. The potential influencing factors were analyzed by t-test, analysis of variance and non-parametric tests.

Results: Among all the participants, the mean scores of global life quality(G1) and global health condition(G4) were 3.23 ± 0.73 , 2.91 ± 0.94 respectively, which were significantly lower below the average level of Chinese adults(3.50 ± 0.69 , 3.59 ± 0.74 , respectively). Mean scores of physical, psychological, social relationship and environment domains appeared as 12.60 ± 1.74 , 12.98 ± 2.00 , 13.91 ± 2.55 , 12.75 ± 2.34 , respectively. Besides social relationship domain, all the other domains demonstrated statistical difference compared with Chinese norm (15.10 ± 2.30 , 13.89 ± 1.89 , 13.93 ± 2.06 , 12.14 ± 2.08 , $P < 0.05$). Univariate analysis of social relationship domain showed that, the score of high school or technical secondary school group (14.19 ± 2.49) was higher than that of college degree or above group (13.28 ± 2.61), women group (14.59 ± 2.22) was higher than the men group (13.28 ± 2.69), married or cohabiting group (14.37 ± 2.45) was higher than other groups(13.29 ± 2.57), and the difference was statistically significant ($P < 0.05$). Univariate analysis of G4 showed that the older the age, the higher the score, and high school or technical secondary school group (3.04 ± 0.98) is higher than college or above group (2.63 ± 0.80), married or cohabiting group scored (3.07 ± 1.00) more than other groups(2.71 ± 0.82), and the difference was also statistically significant ($P < 0.05$).

Conclusions: QOL of syphilis patients in Nanshan District, Shenzhen in 2015 was inferior to China norm. In addition, age, sex, marital status, education were important factors in social relationship domain and G4 of syphilis patients. Probably because syphilis is a sexually transmitted disease, patients have more special mental inferiority. Therefore, when clinical treatment administered, pay attention to the patient's mental state meanwhile. Propose Prevention - Treatment - Psychological intervention integrated, particularly for male, divorced and younger age.

P-30

Analysis of bacterial community using pyrosequencing in semen from the sexually active patient with chronic pelvic pain syndrome: A pilot study

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Although antibiotics represent the first line of treatment for chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS), physicians cannot verify infection in almost cases. Moreover, patients with CP/CPPS are known to be twice as likely to have had a sexually transmitted disease (STD). For collection of infectious evidence, the microbiota of semen was investigated with pyrosequencing.

17 CP/CPPS patients and 4 healthy volunteers were enrolled with informed consent. Whole DNA purification from their semen was done and the DNA was amplified with PCR using universal primer for bacterium. All semen samples were cultured in conventional method as well. Pyrosequencing analysis of PCR-amplified DNA was performed.

All of the semen samples showed no colony in conventional culture. However, using pyrosequencing, all samples were identified to contain multiple bacterial genera. Especially, fastidious bacteria were abundant. *Corynebacterium*, *Rhodobacter*, *Anoxybacillus*, *Streptococcus*, *Sphingomonas*, *Ralstonia*, *Pseudomonas*, *Staphylococcus* and *Bradyrhizobium* were frequently detected non-specifically between patients and control group. However, *Achromobacter*, *Sediminibacterium*, *Pseudogluconobacter*, *Stenotrophomonas*, *Herbaspirillum* and *Brevibacillus* have some trend that were found more frequently in CP/CPPS patients.

Bacterial colonization or invasion of the prostate may be associated with CP/CPPS in some cases. Improvement of microbiological assays can convey important diagnostic and therapeutic implications. It is necessary to setup delicate-designed study with many cases enough to confirm clinical significance.

P-31

Late presentation in HIV: the burden of hospitalization in an Australian tertiary health care centre

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Background: Late presentation of Human Immunodeficiency Virus (HIV) can be defined as presenting with an AIDS defining illness or CD4 count <350 cells/microL. While there is research addressing morbidity, mortality and optimal starting time of antiretrovirals in HIV-infected patients who present late, less is known about the consequences when hospital presentation is required in the early diagnosis of HIV in Australia. Particularly in terms of, co-morbidities, length of stay, re-admissions, engagement with healthcare providers after diagnosis, and how these patients differ from other patients presenting with HIV. We looked to examine these questions within our own HIV cohort at Monash Health - a tertiary health network in the state of Victoria, Melbourne. Monash Health services a population of 1.3 million people, including referrals from rural and regional areas, as well as a large population of migrants.

Method: A retrospective cohort study was performed, of morbidity and mortality, admission data and viral parameters for patients admitted to a tertiary referral hospital with first diagnosis of HIV or presenting with a CD4 count <350 cells/microL. Presentations between 2000-2014 were compared to the general cohort of HIV patients cared for by the hospital who had been diagnosed during the same period. Descriptive statistics applied to a pre-existing administrative data set. Comparisons were made using Fischer's, Chi squared or Student's T test when appropriate.

Results: 82 patients fulfilled the case criteria over 14 years and there were a total of 436 HIV patients cared for by Monash Health in that time, meaning there were 354 controls. The average age of late presenters was 45 years (Range 9-85). Sixty eight (83%) were males. Of the fourteen females, three were pregnant. 50/82 (61%) were born outside Australia. In the control group, the mean age was 39 years (Range 0-82), two hundred and seven (58%) of whom were born in Australia. Two hundred and sixty four (75%) were male. One hundred and nine (31%) of the control group identified heterosexual transmission as the likely transmission risk. The average CD4 count for this control group was 472 cells/microL and the average viral load approximately 195,000 with a median of 16,000 copies/microL. The average CD4 count at diagnosis was 58 cells/microL for the late presenters admitted to hospital and 212 cells/microL for the control patients. The majority of late presenters (42/82, 51%) reported heterosexual transmission as the main risk for HIV acquisition. Many patients admitted to hospital had existing co-morbidities unrelated to HIV. Admissions were mainly for opportunistic infections, the most common being *Pneumocystis jirovecii* pneumonia presumed or proven (17/82). Other common diagnoses included CMV end organ disease (9), oesophageal candidiasis (13) and cryptococcal meningitis (3). The mean viral load for the late presenters at diagnosis was approximately 386,000 copies/microL. Mean CD4 was 92 cells/microL with a median of 65 cells/microL. Admitted patients had an average time to starting anti-retroviral medication of 3.6 weeks and 23% of patients required changes to their antiretroviral regimen in the first 12 months, most commonly due to side effects. The two populations differed statistically by age ($p < 0.0001$), birth outside Australia and risk factor ($p < 0.001$), Viral load difference approached statistical significance ($p = 0.08$) and gender was not significant ($p = 0.11$). Although most patients had only one admission in the first 12 months after diagnosis, some had multiple admissions related to opportunistic infections or complications related to prophylaxis for opportunistic infections. Nine admitted patients (14.75%) died in the first 12 months after diagnosis.

Conclusion: Despite increased understanding of the importance for early diagnosis of HIV infection, some patients, particularly those born in countries outside Australia and older patients continue to have delayed presentation. This group have a high mortality rate and consume considerable health resources given their re-admissions over the next 12 months.

P-32

Risk factors affecting incidence of HIV/AIDS among men WHO have sex with men (MSM) in Semarang, Indonesia

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Background: Sexual behavior of MSM mapping in 2007 in 10 districts/cities in Central Java showed 52.1% of respondents have anal sex and only 19.3% used condoms consistently. MSM also perform activities at risk of HIV/AIDS as like as heterosexual. HIV/AIDS cases in the MSM continues to increase each year while not a lot of data and research conducted. This study wants to prove internal and external factors in MSM were shown to affect the incidence of HIV / AIDS among MSM.

Methods: This study used a mixed methods approach with case-control design studies were supported by indepth interview, a total sample is 108 with ratio 1:1 (54 respondents each group) in Semarang. Data were analyzed using bivairate analysis (chi square) and multivariate (multiple logistic regression).

Results: The factors that proved to be the first risk factor is the first age to have sex(\leq 16 years), level of knowledge, high-risk sexual behavior, unwilling to access condoms, unwilling to access lubricant and less communication with the family.

Conclusion: Health Institutions involves NGOs and other elements need to do education for MSM to carry and use condoms, education about sexual orientation to the community, providing counseling homosexual behavior and treatment of HIV/AIDS, providing and distributing condoms and lubricants, do mentoring, evaluation and monitoring the effectiveness of peer educators and condom-lubricant outlet and record MSM and the people start good communication in the family.

Keywords: men who have sex with men (MSM), HIV/AIDS, Semarang, Indonesia

P-33

Testing for HIV in Patients Treated with Tenofovir and Lamivudine Monotherapy for Hepatitis B Virus

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Background: Tenofovir disoproxil fumarate (TDF) and lamivudine (3TC) are nucleoside/nucleotide reverse transcriptase inhibitors commonly used in combination anti-retroviral therapy against Human Immunodeficiency Virus (HIV) (1). They are also used in monotherapy treatment for Hepatitis B Virus (HBV). HIV seroconversion has been associated with tenofovir resistance possibly developing in the HIV virus when monotherapy treatment was coincidentally given for HBV (2).

As part of a larger study on long-term antimicrobials known as SOLLA (3), we conducted a single center retrospective chart review of patients extracted from the SOLLA pharmacy database during the period of January 2014 to June 2014. This review found that 46% of patients (41% on TDF, 58% on TDF/3TC) had an HIV test before commencing treatment. Only 3.8% of patients had a test after commencing therapy, and 50% of patients had no documented HIV test during their treatment period (4).

Guidelines are limited in regards to timing of interval testing for HIV in patients HBV treatment. It is not known how the presence of risk factors for HIV may impact a physician's decision to test or re-test for HIV. However, the product information for TDF from Gilead (5) suggests testing for HIV in all patients with HBV, as does the European AIDS Clinical Society guideline (6) on HIV testing on the basis of "high risk" medical conditions such as HBV.

Aims: To assess the practices of prescribers of TDF and 3TC in Australia and New Zealand. With respect to HIV testing when treating HBV a survey was designed to explore if the attitudes and practice of prescribers regarding HIV testing in their patients being treated for HBV.

Methods: A cross-sectional cohort study of physician attitudes and practices was performed. An online survey was distributed to the mailing group for the Australasian Society of Infectious Diseases (ASID) via the Survey Monkey platform. Responses were collected over 5 weeks from the 19th July to 16th August, 2016. The survey consisted of 10 simple questions that could be completed in less than a 5 minute period.

Results: Thirty-two physicians responded to the questionnaire. 56% of responders were practicing in Australia as Infectious Diseases physicians and 34% were gastroenterologists. Three responders were trainees. 90% of all responders practice in Australia. Responders had more patients on TDF monotherapy than 3TC monotherapy. Prescription of TDF and 3TC combination therapy was uncommon for HBV. The majority (63%) of participants reported "always" testing their HBV patients for HIV prior to commencing TDF or 3TC. Only one responder reported routinely rechecked HIV status on a regular basis thereafter. 74% performed HIV testing according to risk factors. 59% of responders had treated patients co-infected with HIV and HBV, and 16% had greater than 6 patients with co-infection. One responder reported a patient developing HIV while on TDF monotherapy. Whether resistance to TDF occurred is unclear. No cases of HIV seroconversion were reported on 3TC.

Conclusion: Based on our survey, we found that the majority of HBV providers screen before testing but it is not universal. Tenofovir monotherapy for HBV is commonly prescribed, and despite small survey numbers, HIV seroconversion on treatment has been reported. We aim to expand the survey to determine if there are any differences in practice between specialist groups before considering how to increase pre-treatment testing rates.

P-34

Factors for Japanese HIV positive patients to continue medical care

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In spite that the importance of the continuation of medical care increased among HIV infected patients due to the introduction of antiretroviral therapy (ART), the proportion of patients who have ever stopped medical care more than 6 month, or dropout rate, was reported to be 5.7% to 10.2% in Japan. The dropout of patients may well cause serious effects such as the weakening of the viral suppression and the increase of mortality, accompanying the increased risk of transmitting HIV to others.

Some studies have examined the relationships between the continuity of medical care and the attributes of patients from medical records. It was noted that the less patients continued medical care if they were younger, not Japanese, diagnosed within a year and at better level of immune condition. However, it is not sufficient to understand the behavioral background of discontinuity. Thus this study aimed to explore factors related retention in care from the qualitative data that researcher interviewed to the patient with HIV.

HIV-infected adults (≥ 20 years) were recruited from three hospitals in Japan. Two researchers carried out the semi-structured and face-to-face interviews. For each patient, sociodemographic and clinical data were also collected from the medical record. All interviews were audio recorded and transcribed. The transcribed data were analyzed by text mining approach to form categories depend on the words. The transcribed data were then transformed into quantitative data using SPSS Text Analytics for Surveys ver.4.0.1.

According to the result of cluster analysis, the facilitating factors for the retention of medical care consisted of 14 categories: 1) adjustment of appointment with work, 2) the recognition of mental and physical improvement due to visiting a doctor, 3) reminding the next follow-up date by reservation slip or family member, 4) using smartphone apps as a calendar or a reminder or an alarm, or writing on a paper calendar, 5) keeping attendance with fear of find out their status, 6) reliable doctor who can talk everything, 7) recognition of financial support by applying identification for the physically disabled, and a social worker, 8) expecting to keep medicine, calculating and remind rest of medicine on appointment day, 9) experiencing the bad physical condition, 10) expecting not to be AIDS, 11) having a person who gives consideration to appointment day, or wants to be healthy out of fear to find out their status, 12) feeling safe in waiting room or reliable medical staff, 13) filling in other appointments than medical ones in the same datebook, and 14) apprehensive about the result of blood test.

The result obtained in this study is helpful to provide a clue for the prevention of dropout from medical care.

P-35

Association of *C. difficile* infections in HIV-positive cases

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BACKGROUND: Patients with AIDS are immunodeficient and at a high risk for opportunistic infections because of frequent hospitalization, exposure to antibiotics and antibiotic prophylaxis. The occurrence of *C. difficile* infections in HIV-positive patients with diarrhea was assessed in a prospective study.

METHODS: A total of 237 single fecal samples of each patient were collected from HIV-positive patients with diarrhoea and processed for EIA (Premier toxins A and B; Meridian Diagnostic Inc.) and culture. Samples were inoculated on selective *C. difficile* agar i.e CCFA (Cycloserine cefoxitin fructose agar) and incubated anaerobically at 37 °C . Strains were identified by standard biochemical tests and API 20A. Clinical and laboratory data of the patients were analyzed.

RESULTS: *C. difficile* was found in 12 of 237 (5.1%, 95% CI 2.64%-8.68%) HIV-positive patients with diarrhoea (9 patients were positive by EIA and 3 by culture). Samples were culture negative for any other entero-pathogens. The presence of *C. difficile* in patients who had received antiretroviral therapy (7/66 [10.6%]) was significantly higher ($p < 0.016$) compared with those who had not (5/171 [3%]). Of the 12 patients positive for *C. difficile*, 7 were on antiretroviral therapy for a mean (SD) of 34.4 months with mean CD4+ count of 186 (98.81) cells/cmm and 5 patients were anti-retroviral-naïve with mean CD4+ count of 181 (68.7) cells/cmm. All the 12 patients were on antibiotics for previous 2 months and 4 of 12 had been hospitalized in the previous 30 days.

CONCLUSION: *C. difficile* infections occurred more frequently in patients who had received antiretroviral therapy. Although our study population had a lower frequency of *C. difficile* infections compared to previous studies, this pathogen should be looked for while investigating causes of diarrhea in HIV positive Patients.

Poster

P-36

Prevalence, socio demographic features and risk factors of Hepatitis B virus infection among pregnant women in Southwestern Nigeria.

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Introduction: In endemic countries, Hepatitis B virus infection occurs mainly during infancy and early childhood, with vertical transmission being a major route of infection. This study aimed at identifying the prevalence and risk factors for Hepatitis B virus infection among pregnant women in Ibadan, Nigeria.

Methods: A cross-sectional study was done at the Ante-natal clinic of the University College Hospital Ibadan. One hundred and eighty pregnant women were recruited from March to August 2013, tested for Hepatitis B surface antigen (BIORAD FRANCE) using third generation ELISA and HIV-1, 2 using Uni-Gold Recombigen and ALERE determine. Positive HBsAg samples were tested for Hepatitis B envelope antigen, antibody and Hepatitis B core antibody (DIAPRO Italy) while serum HBV DNA was detected using PCR. Data were obtained using questionnaires and analyzed using SPSS-20

Results: The seroprevalence of HBsAg was 8.3% out of which 26.7% were positive for HBeAg, 53.3% had HBeAb, 20% had neither HBeAg nor HBeAb, 100% had total HBcAb and 86.7% had HBV DNA in their serum. The mean age was 32.1years, the highest HBV infection rate occurred in 25-29 year age group. Multiple sexual partners (OR- 3.987, P- value=0.026), early age at sexual debut (OR -11.996, P-value=0.022) were independent risk factors for HBV infection.

Conclusion: Hepatitis B virus infection is highly endemic in Nigeria and requires routine screening for all pregnant women during Antenatal care, immunoprophylaxis for exposed newborns and surveillance for those with chronic infection. Health education programs on risk factors and mode of transmission must be instituted.

Poster

P-37

Interim report on sampling of vaginal human papillomavirus from gynecology patients: Difference in detection rate between gynecologist sampling and self-sampling

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Objective: We recently became interested in mail-in testing of human papillomavirus (HPV) sampled from the vagina by patients themselves. To investigate the effectiveness of HPV detection in vaginal secretion collected by patients using cotton swabs, we compared the positive detection rates of HPV in specimens collected by gynecologists and patients themselves.

Subjects and Methods: Subjects were 50 patients (age range, 21-55 years) with a cytological diagnosis of low-grade dysplasia or higher in an outpatient gynecology clinic. First, patients collected cytology specimens (S specimens) after nurses carefully explained how to perform self-sampling using cotton swabs. Then, gynecologists used cotton swabs to exfoliated cells (G specimens) from the uterine cervix in patients on an examination table. After floating exfoliated cells with a preservative fluid, both S and G specimens were sent to LSI Medience Co. for DNA typing.

Results: Mean HPV detection rates were 78% (39/50) in the S group and 70% (35/50) in the G group. Although 39 of 50 specimens were positive, only 34 specimens were positive in both groups, 4 were positive in only the S group, and 1 was positive in only the G group. Among the 34 specimens positive in both groups, 21 specimens showed a complete match between the groups, 10 had multiple HPV types in only the S group, and 3 had multiple HPV types in only the G group. Among all 50 specimens, HPV 16 was detected in 9 S specimens and 8 G specimens, whereas HPV 18 was detected in no S specimen and 1 G specimens.

Discussion: Compared with gynecologist-collected specimens, self-collected specimens had a higher positive detection rate and contributed to the detection of a higher number of HPV types, suggesting that the vaginal mucosa contains a higher number of HPV types than the uterine cervix. The findings of this study also showed that self-sampling could be a very useful HPV screening method.

List of Supporting Companies

Alere Medical Co.,Ltd.

EIDIA Co.,Ltd.

Hologic Japan,Inc

MSD K.K.

Roche Diagnostics K.K.

TAISHOTOYAMA PHARMACEUTICAL CO.,LTD.

The Federation of Pharmaceutical Manufacturers' Association of Japan

The Nisshin Oillio Group,Ltd.

TORII PHARMACEUTICAL CO.,LTD.