Syndemic Conditions: STIs in the Era of TasP/PREP

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Key Messages

- Ending HIV requires a syndemic approach, including rising STIs
- Communities are mobilizing around HIV and STIs
- New international guidelines/publications
- Fast track cities can lead the way both on HIV and STIs
- Apply lessons learned/deploy resources in the future for sexual health
Goals

- Understanding the intersection of STIs and HIV
- Current developments
- Opportunities
Global STIs - At a glance

- 1 million sexually transmitted infections (STIs) each day worldwide
- 376 million new infections of chlamydia, gonorrhea, syphilis and trichomoniasis annually
- More than 500 million people are estimated to have genital infection with herpes simplex virus (HSV)
- More than 290 million women have a human papillomavirus (HPV) infection → 266,000 cervical cancer deaths a year
- STIs such as gonorrhea, chlamydia, and syphilis can increase the risk of HIV acquisition.
- Nearly one million cases of congenital syphilis resulting in 212,000 stillbirths and newborn deaths
- Increasing gonorrhea azithromycin resistance and emerging resistance to extended-spectrum cephalosporins.
WHO Global STI Estimates of 4 Curable STIs

Curable STIs: chlamydia, gonorrhea, syphilis, trichomoniasis
Global STIs: A Growing Threat

BBC NEWS
Sex diseases on the rise in England
By Michelle Roberts
Health editor, BBC News online 4 June 2019

WHO Reports Increase in STDs in Sub-Saharan Africa

VOA
Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People

STDs at record high, indicating urgent need for prevention
Latest U.S. data reveal threat to multiple populations

QUARTZ
The real infectious disease problem in Brazil isn’t actually Zika, it’s syphilis

ABC NEWS
Sexually transmissible infections: Why are STDs on the rise in Australia?

nature MIDDLE EAST
Emerging science in the Arab world

Middle East chlamydia rates comparable to other regions
Published online 27 August 2019

A data review reveals three per cent of the Middle East population is infected with the sexually transmitted disease, chlamydia.
**Global STIs: WHO strategy**

<table>
<thead>
<tr>
<th>2030 targets (where we want to go)</th>
<th>Baseline (where we are)</th>
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<tbody>
<tr>
<td>90% reduction in the incidence of <em>Treponema pallidum</em> infection globally</td>
<td>6.3 million people newly infected with <em>Treponema pallidum</em> in 2016</td>
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<tr>
<td>90% reduction in the incidence of <em>Neisseria gonorrhoeae</em> infection globally (2018 global baseline)</td>
<td>~87 million people newly infected with <em>Neisseria gonorrhoeae</em> in 2016</td>
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<tr>
<td>50 or fewer cases of congenital syphilis per 100,000 live births in 80% of countries</td>
<td>473 congenital syphilis cases per 100,000 live births in 2016, a decline of 12% in 4 years</td>
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<tr>
<td>Sustain 90% national coverage with the HPV vaccine and at least 80% in every district (or equivalent administrative unit) in the national immunization programmes in countries</td>
<td>Of 51 countries surveyed, 14 (27%) reported &gt;80% HPV vaccine coverage</td>
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US STIs: High and Climbing

STDs in the U.S. are at the highest levels ever recorded and continue to increase yearly

- Syphilis increased 196%
- Chlamydia increased 95%
- Gonorrhea increased 66%
- Congenital Syphilis increased 113%

Cases, between 2003 and 2017

- All-time highs – 4th year
- Congenital syphilis resurgence
- STIs and opioids: merging epidemics
- ARGC on the horizon
- STIs threaten HIV advances
- Condom Use declining
The U.S. Syphilis Epidemic: 2017

Primary / Secondary Syphilis in Men

- 88% of cases
- 80% in MSM
- 46% in MSM HIV+

Primary / Secondary & Congenital Syphilis in Women

- Primary / Secondary: 156% increase compared with 2013
- Congenital syphilis: 154% increase
- 918 congenital cases
- >50% of cases without prenatal care
- Strong links to drug use

Source: Marrazzo, CROI 2019
Consequences of STIs

- STIs increase risk of HIV acquisition up to 5-fold or more
- Mother-to-child transmission of STIs can result in stillbirth, neonatal death, low-birth-weight and prematurity, sepsis, pneumonia, neonatal conjunctivitis, and congenital deformities. Approximately 1 million pregnant women were estimated to have active syphilis in 2016, resulting in over 350,000 adverse birth outcomes of which 200,000 occurred as stillbirth or neonatal death.
- HPV infection causes 570,000 cases of cervical cancer and over 300,000 cervical cancer deaths each year.
- STIs such as gonorrhea and chlamydia are major causes of pelvic inflammatory disease (PID) and infertility in women.
Emerging Threats - ARGC

Rare strain of gonorrhea identified in Canada, compounding fears of drug resistance

Man has 'world's worst' super-gonorrhoea

2 UK Women Diagnosed with Antibiotic Resistant Gonorrhoea

Super gonorrhea threat — it's a public health crisis that is on the horizon

Antibiotic-resistant gonorrhoea on the rise, new drugs needed
Countries with reported decreased susceptibility/resistance (DS/R) to ceftriaxone & azithromycin in *N. gonorrhoeae*, WHO GASP 2015-16

Ceftriaxone
15/63 (23.8%) countries
7 countries ≥ 5%

Azithromycin
50/62 (81%) countries
30 countries ≥ 5%

Cole, MJ et al. 2017. BMC Infect Dis
Barbee Clin Infect Dis 2018
Emerging Threats – Treatment Shortages

Countries with reported shortages of benzathine penicillin G (BPG) 2014–2016

- Of 95 countries / territories, 41% reported shortage; 10 (12%) used alternatives for maternal syphilis
- Sterile injectable BPG expensive to make
  - Manufacturers abandon production or implement stringent ordering protocols; compromise supply
- Shortages compromise treatment of adult syphilis, prevention of congenital syphilis, and treatment of other conditions (rheumatic heart disease)

Source: Marrazzo, CROI 2019
HIV Risk Increased by STI

• Curable STIs increase risk of HIV acquisition up to 5-fold
• HSV-2 infection: 3-fold increased risk of acquiring HIV
• HSV-2 and HIV co-infection: more likely to transmit HIV
STIs in Era of PrEP and TasP

10% of New HIV in MSM caused by chlamydia and/or gonorrhea
MSM in England

San Francisco, U.S.

Source: Marrazzo, CROI 2019

Unemo M et al. Lancet Infect Dis 2017

Susan Philip, MD SFDPH
STI Incidence in Persons Using PrEP

STI rates were high, but no HIV occurred, in one large PrEP program from the US

Simelela, WHO, IAS 2018
PrEP for HIV: Gateway for STI services

Promoting sexual health in key populations and other groups

- STI screening and treatment
  - HIV syphilis dual test
  - PCR for gonorrhoea and chlamydia
  - Opportunity to accelerate point-of-care test development

- Partner management

- Provision of quality sexual health services

Source: Simelela, WHO, IAS 2018
STIs and TasP

• STI prevention/care and TasP must be regarded in broader sexual health context
• STIs complicate HIV control efforts
• Clinicians face new challenges in addressing STIs in the current treatment-as-prevention era
• Provision of quality sexual health services will rely on integrating STI and HIV care
• There is need for point-of-care tests for STIs and integration into routine HIV care

HIV and sexually transmitted infections: reconciling estranged bedfellows in the U = U and PrEP era
Kenneth H Mayer & Henry JC de Vries
First published: 30 August 2019 | https://doi.org/10.1002/jia2.25357
Current Developments - US

- Ending the HIV Epidemic
- Federal Funding for STI Prevention
- STI Federal Action Plan
- NAPA/NASEM Studies
- NIH calls for focus on STI research
Current Development - Global

PREVENTION AND CONTROL OF SEXUALLY TRANSMITTED INFECTIONS (STIs) IN THE ERA OF ORAL PRE-EXPOSURE PROPHYLAXIS (PrEP) FOR HIV

JULY 2019

THE LANCET
Infectious Diseases

Safety and immunogenicity of the chlamydia vaccine candidate CTH522 adjuvanted with CAF01 liposomes or aluminium hydroxide: a first-in-human, randomised, double-blind, placebo-controlled, phase 1 trial

Sonya Abraham, MD † Helene B Juel, PhD † Peter Bang, MSc † Hannah M Cheeseman, PhD † Rebecca B Dohn, MSc † Tom Cole, PhD † et al. Show all authors Show footnotes
Published: August 12, 2019 DOI: https://doi.org/10.1016/S1473-3099(19)30279-8

Understanding and addressing the HIV and STI syndemics

Guest Editors: Kenneth H Mayer, Henry JC de Vries
Supplement Editor: Marlène Bras
Opportunities: A Way Forward

- Update national STI, Treatment, and PrEP guidelines
- Fund STI prevention and care
- Increase STI research including POC diagnostics and vaccines
- Utilize STI public health system for sharing surveillance data, using DIS, ramping up PrEP and TasP at STD clinics, promoting community/consumer voices for both STIs/HIV
- Build on the current global momentum around drug resistance (AMR), HPV Vax, and viral hep elimination
- Integrate STI services into existing HIV services, including PrEP programs (and vice versa).
- Move beyond the syndromic approach to diagnosing STIs and invest in diagnostic testing.
- Develop and implement training in provision of both STI and PrEP services for health-care providers.
- Negotiate lower costs for NAAT assays, treatment and vaccines (e.g. HBV, HPV vaccines).
- Expand the use of multitesting platforms such as the dual HIV/syphilis test and POC test for GC and CT.
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