STI-HIV “Hot Topics” 2018

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The STATE of STDs in the United States in 2016

1.59 million
CASES OF CHLAMYDIA
4.7% increase since 2015

468,514
CASES OF GONORRHEA
18.5% increase since 2015

27,814
CASES OF SYPHILIS
17.8% increase since 2015

Anyone who has sex is at risk, but some groups are more affected
- YOUNG PEOPLE AGED 15-24
- GAY & BISEXUAL MEN
- PREGNANT WOMEN

LEFT UNTREATED, STDs CAN CAUSE:
- INCREASED RISK OF GIVING OR GETTING HIV
- LONG-TERM PELVIC/ABDOMINAL PAIN
- INABILITY TO GET PREGNANT OR PREGNANCY COMPLICATIONS

HELP INTERRUPT THE STEADY CLimb IN STDs WITH THESE THREE STEPS:

TALK
Talk openly about STDs with your partners & healthcare providers.

TEST
Get tested. It's the only way to know if you have an STD.

TREAT
If you have an STD, work with your provider to get the right medicine.
Hot(est) Topics


2. Syphilis-HIV

3. STI Pathogen Antimicrobial Resistance and Therapeutic Limitations
Other “Hot Topics” Not Discussed Today

1. Sexual transmission of Hepatitis C
2. Mycoplasma genitalium
3. Bacterial vaginosis as a dysbiosis
4. Diagnostics
   Syndromic
   Point of Care
   Multiplexed
5. Vaccines for STD Prevention
   Hepatitis B and A
   HPV
   In Development
5. Sexual transmission of Zika and Ebola

2. Syphilis-HIV

3. STI Pathogen Antimicrobial Resistance and Therapeutic Limitations
More People Living with HIV

Courtesy of Susan Phillip and the SFDPH Population Health Division, Applied Research Community Health Epidemiology and Surveillance Branch
More People Living with HIV are Being Diagnosed with an STD

Courtesy of Susan Phillip and the SFDPH Population Health Division, Applied Research Community Health Epidemiology and Surveillance Branch
San Francisco: STD Increasing while HIV Diagnoses Decline

Gonorrhea
Syphilis
HIV

Year

# HIV and Early Syphilis Cases

# Gonorrhea Cases

2002
2009

0
500
1000
1500
2000
2500
3000
3500
4000
4500

0
200
400
600
800
1000
1200
1400

Courtesy of Susan Phillip and the SFDPH Population Health Division, Applied Research Community Health Epidemiology and Surveillance Branch
Frequency of Any Bacterial STI infection by HIV Status and PrEP Use among Male Patients, Fenway Health

Courtesy of Dr. Ken Mayer, OFID, 2017

2. Syphilis-HIV

3. STI Pathogen Antimicrobial Resistance and Therapeutic Limitations
Syphilis: Global Impact

1. Global Perspective
   a. 17-20 million cases
   b. Most prevalent on the margins of society
   c. Leading preventable cause of adverse pregnancy outcomes

2. North America/Western Europe
   a. Recurring epidemics
   b. Critical consideration GUD diagnosis
   c. A diagnostic challenge- protean manifestations
   d. A driving force for incident HIV
   e. A public health embarrassment

88% CS case increase from 2012 to 2016
111% female P&S rate increase
Primary and Secondary Syphilis — Reported Case Rates by Sex and Male-to-Female Rate Ratios, United States, 1990–2016

![Graph showing the rate of primary and secondary syphilis cases by sex and male-to-female rate ratios from 1990 to 2016. The graph displays the rate per 100,000 population and the male-to-female rate ratio over time.]
Primary and Secondary Syphilis — Reported Cases by Sex, Sexual Behavior, and HIV Status, United States, 2016

Half of syphilis cases among MSM are co-infected with HIV

* MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.
Syphilis-HIV Interactions: Epidemiologic Considerations

P&S Syphilis 2016: 27,814 (+17%)
EL Syphilis 2016: 28,173 (+20%)
~50% HIV Infected

~20% Previously Infected

HIV Incidence Following Syphilis Diagnosis
1 Year = ~3.5%
10 Years= 17.5%

• Peterman et al. Public Health Reports 2014; 129: 184-169
HIV Prevention & Care Opportunities, California MSM, with Early Syphilis, 2017

- 38% HIV Positive & In-Care
- 34% HIV Negative & Not on PrEP
- 11% HIV Negative & On PrEP
- 10% HIV Status Unknown
- 4% New HIV
- 3% HIV Positive & Out of Care

Courtesy, Dr. Heidi Bauer
Ca. Dept. of Public Health
Proportion of Sexually Active HIV-Infected MSM in Medical Care Screened for Syphilis in the Prior 12 Months, Medical Monitoring Project 2009-2013

Syphilis screening of MSM with HIV is slowly improving, but as of 2013, still under 70%

Test for trend p<0.01
2015 CDC STD TREATMENT GUIDELINES
Early Syphilis

- **Recommended**
  - Benazthine Penicillin G, 2.4 Mu IM

- **Penicillin Allergy**
  - Doxycycline 100 mg PO, BID x 14d

- **Limited Data**
  - Ceftriaxone 1.0 g IM or IV x 8-10d
    - Azithromycin 2.0g PO

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The Emerging Threat of Untreatable Gonococcal Infection

Gail A. Bolan, M.D., P. Frederick Sparling, M.D., and Judith N. Wasserheit, M.D., M.P.H.

It is time to sound the alarm. During the past 3 years, the wily gonococcus has become less susceptible to our last line of antimicrobial defense, threatening our ability to cure gonorrhea and prevent severe sequelae.

Gonorrhea is the second most commonly reported communicable disease in the United States, with an estimated incidence of more than 600,000 cases annually. It disproportionately affects vulnerable populations such as minorities who are marginalized because of race, ethnic group, or sexual orientation. Unfortunately, Neisseria gonorrhoeae has always

Control and Prevention (CDC) are now limited to third-generation cephalosporins.²

But susceptibility to cephalosporins has been decreasing rapidly.³ The proportion of GISP isolates for which the minimum inhibitory concentration (MIC) of cefixime is elevated (≥0.25 μg per milliliter) has increased by a factor of 17 — from 0.1% in 2006 to (0.04% of those in the GISP) had a MIC of ceftriaxone of 0.25 μg per milliliter in the first half of 2011, the proportion of GISP isolates with an elevated ceftriaxone MIC (≥0.125 μg per milliliter) has increased by a factor of 10 since 2006 (from 0.05% to 0.50%). Again, increases were greatest in the west (from 0.04% to 1.90%) and among men who have sex with men (from 0.0% to 1.0%). These geographic and demographic patterns are worrisome because they mirror those observed during the emergence of fluoroquinolone-resistant N. gonorrhoeae.
MEDICAL DISPATCHES

SEX AND THE SUPERBUG

The rise of drug-resistant gonorrhea.

BY JEROME GROOPMAN

The New Yorker, October 1, 2012
Previously Recommended Medications For Gonorrhea Therapy

- Sulfonamides
- Penicillins
- Macrolides
- Tetracyclines
- Aminoglycosides
- Spectinomycin
- Fluroquinolones
Gonorrhea Therapy: The Shrinking Pipeline

Main resistance determinants:
- Novel penA mononucleic alleles (CRO resistance)
- 23S rRNA/ermme FA (AZM resistance)
- penA mosaic allele (CFM resistance)
- gyrA/asparC (CIP resistance)
- tetM (TET resistance)
- bll/bla/mlb (PEN resistance)
- rpsL (mtrR/penB) (TET resistance)
- 16S rRNA/rpsE (SPT resistance)
- penA (mtrR/penB/penA) (PEN resistance)
- folP (SUL resistance)

Super Bug Status!

Unemo & Shafer
2014. CMR
2015 CDC STD TREATMENT GUIDELINES
Uncomplicated Gonorrhea

Ceftriaxone 250 mg IM

PLUS

Azithromycin 1.0 g Single Dose PO
Gonorrhea Treatment - What’s Next

Salvage Therapy:
- Gentamicin 240 IM/ Azithromycin 2.0g PO
  (IM Administration/Toxicity)
- Gemifloxacin 340 mg/Azithromycin 2.0g PO
  (GI Toxicity)

On The Horizon:
- Solithromycin
- Delaflouxacin
- Zoliflodacin (ETX 0914 )
- Gepotidacin (BZT 116570)
- Others
A New Model for STD Treatment Trials

Collaborative, multinational trial of Zoliflodacin, a candidate antibiotic for treatment of uncomplicated gonorrhea.

Led by GARDP (Global Antibiotic Research and Development Partnership)

Collaborators: Entasis Pharmaceutics, NIAID, WHO

Study sites in: U.S. Thailand, South Africa, E.U.

Goal: Approval of a non-beta-lactam antibiotic effective vs. resistant gonorrhea
Chlamydia — Rates of Reported Cases by Sex, United States, 2000–2016

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>1,598,354</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>+9.2%</td>
<td>+2.6%</td>
<td>+4.7%</td>
</tr>
</tbody>
</table>

Female +2.6%
Total +4.7%
1,598,354 cases

Male +9.2%
STI Pathogen Drug Resistance and Therapeutic Limitations

1. Gonorrhea:
   a. Progressive resistance, limited alternative therapeutics
   b. Variation is therapeutic efficacy by site of infection

2. Chlamydia trachomatis:
   a. Azithromycin efficacy

3. Syphilis:
   a. Global penicillin shortages
   b. Lingering question as to optimal therapy
      i. Impact of HIV infection
      ii. Serological response to therapy

4. Trichomoniasis
   a. Optimal therapy

5. Bacterial vaginosis
   a. Poor therapeutic response, high recurrence rates
Hot(est) Topics


2. Syphilis-HIV

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Thank You
Impact of Screening Frequency on Syphilis Incidence

### TREATMENT OF EARLY SYPHILIS IN HIV-INFECTED AND UNINFECTED PERSONS

#### Proportion of Subjects with RPR Decline \( \geq 2 \) Dilutions

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>3 Mo.</th>
<th>6 Mo.</th>
<th>12 Mo.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usual</td>
<td>75% (175)</td>
<td>76% (157)</td>
<td>82% (137)</td>
</tr>
<tr>
<td>Enhanced</td>
<td>71% (189)</td>
<td>81% (172)</td>
<td>83% (144)</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>HIV-Status</th>
<th>3 Mo.</th>
<th>6 Mo.</th>
<th>12 Mo.</th>
</tr>
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<tbody>
<tr>
<td>Positive</td>
<td>62% (76)*</td>
<td>82% (69)</td>
<td>79% (61)</td>
</tr>
<tr>
<td>Negative</td>
<td>76% (287)</td>
<td>81% (259)</td>
<td>84% (219)</td>
</tr>
</tbody>
</table>

*P < 0.05

From Rolfs et al, NEJM 1997; 44: 307-14