Intersecting epidemics: STIs, HIV, and substance use disorder

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Clinical Associate, Johns Hopkins School of Medicine
Medical Director for STI services,
Sexual Health Clinic, Baltimore City Health Department
Overview

• Context
• Mini STI review
• National trends in HIV/STIs, substance use
• Intersectional examples
• Opportunities for integrated care
• Pennsylvania initiatives
• Resources
Show of hands! Are you a….

Medical provider (MD, DO, NP, PA, RN)?

Social worker?

Behavioral health worker (therapist, counselor, navigator)?

Public health worker?

Student?
Individual and Structural Factors

- Gender
- Sexual identity
- Stigma
- Poverty
- Access to health care
- Substance use
- Sexual network
- Policy/Legislation
- Program funding
- Biomedical interventions
- Asymptomatic disease
- Age

Sexual Health
Substance use is a determinant of sexual health

- Alcohol & substance use can increase the risk of HIV/STI acquisition
- Linked with multiple sex partners, concurrent sexual partnerships, inconsistent condom use, exchange of sex or drugs for money
- 1980-1990s: crack cocaine and heterosexual syphilis
- More recently: Methamphetamine & Injection use
Mini STI Review
Infections characterized by urethritis, cervicitis (discharge)

- Gonorrhea
- Chlamydia

Infections characterized by sores

- Syphilis
- Herpes
- And more...

We won’t be talking about: Human Papillomavirus (HPV), Trichomonas, Herpes, Mycoplasma genitalium, and other more rare diseases.
Gonorrhea and Chlamydia

• Bacterial infections
• Can infect the urogenital tract, throat and rectum

• Why we care:
  • Women can develop infertility
  • Infection can increase risk of HIV acquisition
  • Vertical transmission

• Treatment
  • Antibiotics
  • Rising concern for antimicrobial resistance in gonorrhea
Gonorrhea and Chlamydia

Normal cervix

Cervicitis

Pelvic Inflammatory Disease

Epididymitis
Most infections are asymptomatic!
Syphilis

- Bacterial infection
- Primary syphilis - ulcer/“chancre”
- Secondary syphilis - rash
- Neurosyphilis
- Ophthalmic and Otic Syphilis
- Asymptomatic = Latent
Syphilis- Why do we care?

• Neurosyphilis
  • Can have permanent vision loss, hearing loss, and stroke-like complications

• Increases risk for HIV acquisition

• Congenital syphilis
  • More on this in a second
Syphilis Diagnosis

• Requires detection of **two** types of antibodies
• Need help with interpreting labs?
• Need records on prior testing?
• Call your friendly local health department!!

<table>
<thead>
<tr>
<th>Treponemal tests</th>
<th>FTA-Abs, TPPA, EIA/CIA, MHA-TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non- Treponemal tests</td>
<td>RPR, VDRL</td>
</tr>
</tbody>
</table>

Congenital Syphilis

- Transmission of syphilis from pregnant mother
- Left untreated, can lead to:
  - Stillbirth
  - Neonatal death
  - Neonatal deafness, neurologic impairment, bone abnormalities
- Screening for pregnant women- CDC
  - First prenatal visit
  - Third trimester
  - At delivery
  - Any stillborn infant
National Trends in HIV/STIs & Substance Use Disorder
Total HIV diagnoses | 2017 | United States

Footnotes: HIV data for the year 2017 are preliminary and based on 6 months reporting delay.
Diagnoses of HIV Infection among Adults and Adolescents, by Transmission Category, 2010–2016—United States and 6 Dependent Areas

Note. Data have been statistically adjusted to account for missing transmission category. “Other” transmission category not displayed as it comprises less than 1% of cases.

a Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.
HIV diagnoses | 2017 | Injection drug use | United States

Footnotes: HIV data for the year 2017 are preliminary and based on 6 months reporting delay. Data adjusted for missing transmission category.
THE U.S. IS EXPERIENCING STEEP, SUSTAINED INCREASES IN SEXUALLY TRANSMITTED DISEASES

Combined diagnoses of chlamydia, gonorrhea, and syphilis increased sharply over the past five years

Total Cases
- 2013: 1.8 Million
- 2017*: 2.3 Million
  - 31% Increase

Gonorrhea
- 2013: 333,004
- 2017*: 555,608
  - 67% Increase

Syphilis
- 2013: 17,375
- 2017*: 30,644
  - 76% Increase

Chlamydia
- 1.7 MILLION
  - In 2017* chlamydia was the most common condition reported to CDC

*Preliminary data
Chlamydia — Rates of Reported Cases by Sex, United States, 2000–2017

NOTE: Data collection for chlamydia began in 1984 and chlamydia was made nationally notifiable in 1995; however, chlamydia was not reportable in all 50 states and the District of Columbia until 2000. Refer to the National Notifiable Disease Surveillance System (NNDSS) website for more information: https://wwwn.cdc.gov/nndss/conditions/chlamydia-trachomatis-infection/.
Reported Cases of Chlamydia By Gender
Pennsylvania 2010 through 2018

*Exclusive of Philadelphia

- **TOTALS**
- **MALES**
- **FEMALES**

![Bar chart showing reported cases of chlamydia by gender in Pennsylvania from 2010 to 2018.](chart.png)
Gonorrhea — Rates of Reported Cases by Sex, United States, 2008–2017
Reported Cases of Gonorrhea in Pennsylvania
1976 through 2018

*Exclusive of Philadelphia
Reported Cases of Gonorrhea
Lancaster County 2010 through 2018

Number of Reported Cases vs Year

Year:
- 2010
- 2012
- 2014
- 2016
- 2018

Number of Reported Cases:
- 0
- 100
- 200
- 300
- 400
- 500
Primary and Secondary Syphilis — Reported Cases by Sex and Sexual Behavior, 37 States*, 2013–2017

* 37 states were able to classify ≥70% of reported cases of primary and secondary syphilis as either MSM, MSW, or women for each year during 2013–2017.

ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.
Primary and Secondary Syphilis — Distribution of Cases by Sex and Sexual Behavior, United States, 2017

- Men who have sex with men only (n = 15,953)
- Men who have sex with men and women (n = 1,783)
- Men who have sex with women only (n = 4,548)
- Men without data on sex of sex partners (n = 4,601)
- Women (n = 3,722)
- Cases with unknown sex (n = 37)
Reported Cases of Primary and Secondary Syphilis in Pennsylvania 2004 to 2018

Number of Reported Cases

Year

Female Cases  Male Cases  TOTALS

* Exclusive of Philadelphia
Reported Cases of Primary and Secondary Syphilis in Lancaster for 2004 to 2018

Number of Reported Cases

Year

Female Cases
Male Cases
TOTALS
SHARP INCREASES in syphilis among newborns in the US continue.

918 cases in 2017

Improved testing and treatment needed for pregnant women.

#STDreport

2017 STD Surveillance Report
Congenital Syphilis — Reported Cases by Year of Birth and Rates of Reported Cases of Primary and Secondary Syphilis Among Women Aged 15–44 Years, United States, 2008–2017

ACRONYMS: CS = Congenital syphilis; P&S = Primary and secondary syphilis.
Reported Cases of Early Syphilis Lancaster from 2013 to 2018 for Females

Number of Reported Cases

Year

Pennsylvania Department of Health
Reported Cases of Congenital Syphilis in Pennsylvania from 1990 through 2018

*Exclusive of Philadelphia
Intersecting Epidemics: Areas of focus
Drug Overdose Mortality

Age-adjusted rates\(^a\) of drug overdose deaths by drug or drug class and year — United States, 1999–2016

![Line graph showing age-adjusted rates of drug overdose deaths by drug or drug class and year from 1999 to 2016. The rates are expressed as rate per 100,000 persons. The graph includes lines for synthetic opioids other than methadone, prescription opioids, heroin, cocaine, and psychostimulants with abuse potential.]

Source: National Vital Statistics System, Mortality File, CDC WONDER.

\(^a\)Rate per 100,000 population age-adjusted to the 2000 U.S. standard population using the vintage year population of the data year. Because deaths might involve more than one drug, some deaths are included in more than one category. Specification on death certificates of drugs involved with deaths varies over time. In 2016, 15% of drug overdose deaths did not include information on the specific type of drug(s) involved. Some of these deaths may have involved opioids or stimulants.

\(^b\)Drug overdose deaths that involve synthetic opioids other than methadone (T40.4).

\(^c\)Drug overdose deaths that involve natural and semi-synthetic opioids (T40.2) or methadone (T40.3).

\(^d\)Drug overdose deaths that involve psychostimulants with abuse potential (T43.6).
Rural Indiana- January 2015

By September 2016, 205 people diagnosed with HIV in a community of 4400

Community factors:
- 8.9% unemployment
- 21.3% of adults had not completed high school
- Poverty 19%
- Limited access to health care

Response included education, linkage to HIV/HCV care, syringe exchange services
Primary & Secondary Syphilis increased 73% nationally, 155.6% among women

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methamphetamine use</td>
<td>6.2%</td>
<td>16.6%</td>
</tr>
<tr>
<td>Sex with PWID</td>
<td>4.2%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Used heroin</td>
<td>0.8%</td>
<td>1.7%</td>
</tr>
<tr>
<td><strong>Heterosexual Men</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methamphetamine use</td>
<td>5.0%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Sex with PWID</td>
<td>3.6%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Use of injection drugs</td>
<td>2.8%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Used heroin</td>
<td>0.8%</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Men who have sex with men</td>
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<td>5.2%</td>
</tr>
<tr>
<td>Used injection drugs</td>
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</tr>
<tr>
<td>Used heroin</td>
<td>0.7%</td>
<td>0.8%</td>
</tr>
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</table>
# Congenital syphilis: Challenges

## Social determinants
- Commercial sex work
- Stigma
- Mistrust of healthcare system
- Poverty
- Unstable housing
- Incarceration
- Lack of health insurance

## Decreased healthcare utilization among women who use drugs
- Inability to locate partners
- Delays in testing & treatment

Gunn et al, Sex Transm Dis, 1995; 22
Opportunities for integrated HIV/STI care
Taking thorough Sexual & Substance Histories

- Connection to needed services depends on thorough history taking
  - Partners
  - Practices
  - Prevention of pregnancy/Protection
  - Past STI’s
  - Context (substance use, exchange for money, consent, access to care)
HIV screening

- Consider integrating into primary care, behavioral health, emergency, and correctional facility settings
- Opt-out screening

<table>
<thead>
<tr>
<th>Group</th>
<th>Screening frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults 13-64</td>
<td>screen at least once</td>
</tr>
<tr>
<td>Men who have sex with men</td>
<td>Annually if sexually active, every 3-6 months if higher risk</td>
</tr>
<tr>
<td>Higher risk: People who inject drugs, Partners of PWID, People engaged in transactional sex, People with HIV+ partner, People with &gt;1 partner since last test</td>
<td>Annually or more frequently</td>
</tr>
<tr>
<td>Pregnant women</td>
<td>At first prenatal visit</td>
</tr>
<tr>
<td></td>
<td>If possible exposure during pregnancy- in 3rd trimester</td>
</tr>
</tbody>
</table>

CDC, 2006 and 2017
## STI screening

<table>
<thead>
<tr>
<th>STI</th>
<th>Group &amp; Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gonorrhea and chlamydia</strong></td>
<td>Women &lt;25 years: annually</td>
</tr>
<tr>
<td></td>
<td>Women ≥ 25 years: a new sex partner, more than one sex partner, a sex partner with concurrent (overlapping) partners, or a sex partner who has been diagnosed with an STI</td>
</tr>
<tr>
<td></td>
<td>Men who have sex with men: Annually- every 3 months</td>
</tr>
<tr>
<td></td>
<td>Pregnant women: first prenatal visit if &lt;25 or ≥ 25 years and higher risk</td>
</tr>
<tr>
<td><strong>Syphilis</strong></td>
<td>High risk women and men: commercial sex workers, persons who exchange sex for drugs, and those in adult correctional facilities- USPSTF</td>
</tr>
<tr>
<td></td>
<td>Men who have sex with men: Annually- every 3 months</td>
</tr>
<tr>
<td></td>
<td>Pregnant women: First prenatal visit</td>
</tr>
<tr>
<td></td>
<td>If higher risk: third trimester and at delivery</td>
</tr>
</tbody>
</table>

CDC 2015 STD Treatment Guidelines  
United States Preventive Services Task Force
Extragenital Gonorrhea & Chlamydia Testing

- Extragenital= Testing at any body site other than genitourinary (urethral/urine/vaginal/cervix)

- Among MSM at STD clinics:
  - >70% of extragenital tests were isolated (ie, urethral testing negative)

- Among women getting pelvic exams:
  - Rectal chlamydia positivity 11-13.5%

- Among men who have sex with women (MSW):
  - Gonorrhea positive at pharynx- 3.1%
  - This represented 35% of all GC cases in MSW; 36% had negative genital GC testing

*Extragenital gonorrhea and chlamydia NAAT testing is not FDA approved but is widely validated in many academic and commercial labs

Patton et al, Clin Infect Dis, 2014
Gratix et al, Clin Infect Dis, 2015
Bamberg et al., Sex Transm Dis, 2019
Gonorrhea and Chlamydia self-testing

Available in English & Spanish through the Johns Hopkins HIV/STD Prevention & Training Center
PrEP Basics

PrEP stands for Pre-Exposure Prophylaxis

The word “prophylaxis” means to prevent or control the spread of an infection or disease

PrEP is an HIV prevention option that works by taking one pill every day

PrEP can help prevent you from getting HIV if you are exposed to the virus

HIV Pre-exposure prophylaxis (PrEP)

- Tenofovir DF/emtricitabine (Truvada)
- Highly effective in many populations
  - Heterosexual men and women
  - Men who have sex with men
  - People who inject drugs
- Gilead drug assistance programs & local initiatives for low-cost/ free medication

Post-Exposure Prophylaxis: Non-Occupational (nPEP)

PEP involves taking anti-HIV drugs as soon as possible after having been exposed.

To be effective, PEP must begin within 72 hours of exposure, before the virus has time to rapidly replicate in your body.

PEP consists of 2-3 antiretroviral medications taken for 28 days.

Undetectable = Untransmittable

- Individuals with HIV who receive antiretroviral therapy (ART) and have achieved and maintained an undetectable viral load cannot sexually transmit the virus to others
- For those sharing injection equipment, risk is unknown but likely reduced risk

Rodger AJ et al. JAMA 2016;316.
Bavinton BR et al. Lancet 2018

https://www.cdc.gov/hiv/risk/art/index.html
Initiatives in Pennsylvania
Pennsylvania Department of Health STD Initiatives: STD prevention planning and intervention of disease transmission

- STD Clinics
- Expanded STD Testing – 3 Tiers of testing support
- Private Provider Technical Support
- STD /HIV Field Staff- Disease Intervention Specialist
- Tracking Reported STD morbidity and trends
- CDC STD Testing and Treatment Guideline Adherence
- STD Education
Pennsylvania Department of Health- Health Advisory
Historic Increase In Reported Congenital Syphilis

In response to the recent increase in both Congenital Syphilis and reported Early Syphilis in women of child bearing age, PADOH is recommending that all pregnant women be offered a syphilis test at the following intervals:

• At the first prenatal visit
• At the third trimester of pregnancy
• At the delivery of a child, or
• At the delivery of a stillborn child
6 Confirmed Congenital Syphilis Cases in 2018

Highest Rates of Syphilis in 20 Years

47% Increase in Early Syphilis in Women ages 15-44

Treat with Benzathine penicillin G
Pennsylvania Department of Health Community Health Districts

Northwest
- Erie
- Crawford
- Warren
- McKeans
- Clearfield
- Cameron
- Jackson Center
- Mercer
- Venango
- Forest
- Clarion
- Jefferson
- Armstrong
- Indiana
- Fayette
- Greene
- Washington
- Somerset

Northcentral
- Potter
- Tioga
- Bradford
- Williamsport
- Lycoming
- Union
- Montour
- Columbia
- Northumberland

Northeast
- Susquehanna
- Wyoming
- Lackawanna
- Luzerne
- Wilkes-Barre
- Pike
- Wayne
- Carbon
- Lehigh
- Northampton
- Allentown

Southwest
- Beaver
- Allegheny
- Westmoreland
- Cambria
- Indiana
- Bedford
- Huntingdon
- Juniata
- Mifflin
- Dauphin

Southcentral
- Blair
- Huntingdon
- Bedford
- Franklin
- Adams
- York

Southeast
- Schuylkill
- Berks
- Berks
- Chester
- Delaware
- Philadelphia
- Bucks
- Montgomery
- Delaware
2017 Reported Gonorrhea and 2018 Pennsylvania STD Clinics

Full listing of Free and Confidential STD/HIV Testing and Treatment Clinics available at: www.health.state.pa.us/std
PA District STD Resources

**Northcentral District, Williamsport**
Water Tower Square
1000 Commerce Park Drive, Suite 109
Williamsport, PA 17701
**Phone:** 570-327-3400  **Fax:** 570-327-3748

**Southeast District**
625 Cherry Street
Reading, PA 19602
**Phone:** 610-378-4352  **Fax:** 610-378-4527

**Northeast District, Wilkes-Barre**
665 Carey Avenue – Suite 5
Wilkes-Barre, PA 18706
**Phone:** 570-826-2062  **Fax:** 570-826-2238

**Southwest District**
233 W. Otterman Street
Greensburg, PA 15601
**Phone:** 724-830-2701  **Fax:** 724-832-5327

**Northwest District, Jackson Center**
19 McQuiston Drive
Jackson Center, PA 16133
**Phone:** 724-662-6068  **Fax:** 724-662-6086

**Southwest District**
233 W. Otterman Street
Greensburg, PA 15601
**Phone:** 724-830-2701  **Fax:** 724-832-5327

**State Health Centers**

**Delaware County State Health Center**
151 West 5th Street, Suite 1
Chester, PA 19013
**Phone:** 610-447-3250  **Fax:** 610-447-3008

**Lancaster County State Health Center**
1661 Old Philadelphia Pike
Lancaster, PA 17602
**Phone:** 717-299-7597  **Fax:** 717-396-7197

**York County State Health Center**
1750 N. George St
York, PA 17404
**Phone:** 717-771-4505  **Fax:** 717-854-0784
Pennsylvania Department of Health  
Sexually Transmitted Diseases (STD)

<table>
<thead>
<tr>
<th>Kris King STD Program Administrator</th>
<th>Steve Kowalewski CDC Sr Public Health Adv</th>
</tr>
</thead>
<tbody>
<tr>
<td>717.5476.3440</td>
<td>717.547.3443</td>
</tr>
<tr>
<td><a href="mailto:krisking@pa.gov">krisking@pa.gov</a></td>
<td><a href="mailto:c-skowalew@pa.gov">c-skowalew@pa.gov</a></td>
</tr>
</tbody>
</table>

Visit  
www.health.state.pa.us/std

If you are not routinely getting PA Health Alerts, please consider registering at:  
https://www.health.pa.gov/topics/prep/PA-HAN/Pages/HAN.aspx
Resources
STD Treatment Guidelines Resources

STD Treatment Guidelines Mobile App

- Designed and Developed by CDC
- Fast Access to Conditions

Available at: https://itunes.apple.com/us/app/std-tx-guide/id655206856?mt=8

STD Clinical Toolbox Mobile App

- Patients with TB and HIV should receive prompt coordinated treatment for both conditions
- Infectious Diseases Society of America
  09/06/18

- PreP Adherence Patterns Strongly Affect Individual HIV Risk and Observed Efficacy in R... Doblomir T. Dimitrov, PhD
  09/13/16

- University of Maryland unveils tool to gauge how public health taps EHRs in crises like Zika Jack McCarthy
  09/12/16

- UPDATED: Interactive Graphic: Zika Goes Local in the U.S. Dina Fine Maron
  09/12/16

Available at: https://appadvice.com/app/std-clinical-toolbox-for-iphone/1128491831

Wall charts, pocket guides, and the full MMWR article at: https://www.cdc.gov/std/tg2015/
National STD Curriculum
http://std.uw.edu
Additional Resources for Clinicians

CDC 2015 STD Treatment Guidelines
  • www.cdc.gov/std/tg2015

National Network of STD Clinical Prevention Training Centers (NNPTC)
  • www.nnptc.org

NNPTC STD Clinical Consultation Network
  • www.stdccn.org

CDC Division of STD Prevention
  • www.cdc.gov/std/training
Thank you!
Questions?