Sexually Transmitted Infection Screening in the Emergency Department: Early detection and linkage to care

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Background

National Data

- Sexually transmitted infections are on the rise
- Syphilis
  - 35,063 new cases since 2014, 71% increase
- HIV
  - 37,832 new cases in 2018, 11% decrease
  - HOWEVER
    - 1.1 million people living with HIV and estimated 15% don’t know they are infected
    - This share accounts for 40% new transmissions
    - Several demographics have shown increased case numbers
    - Gonorrhea and syphilis increase the likelihood of transmission of HIV
    - Inadequate care, virologic suppression to decrease transmission
STI testing in Urban Emergency Departments

Ideal Population

- Indigent population
- Uninsured
- No Primary Care
- ED is first line of care
- High risk populations:
  - homeless
  - IVDU
  - prostitution
  - multiple partners with diverse sexual orientation
- Perfect opportunity to screen for HIV/syphilis in a population that is under tested and under treated

National Data

The State of STDs in the United States in 2018

STDs surge for the fifth straight year, reaching an all-time high.

- 1.8 million cases of chlamydia
- 583,405 cases of gonorrhea
- 115,045 cases of syphilis
- 1,306 cases of syphilis among newborns

Learn more at: www.cdc.gov/std
Syphilis — Rates of Reported Cases by Stage of Infection, United States, 1941–2018

* Per 100,000.
NOTE: See section A1.3 in the Appendix for more information on syphilis case reporting.

Primary and Secondary Syphilis — Rates of Reported Cases by State and Territory, United States, 2018

* Per 100,000.
NOTE: Section A1.11 in the Appendix for more information on interpreting reported rates in US territories.
Primary and Secondary Syphilis — Distribution of Cases by Sex and Sex of Sex Partners, United States, 2018

Cases with unknown sex (n = 34)
- Women (n = 4,995) 14%
- Men without data on sex of sex partners (n = 5,858) 17%
- Men who have sex with women only (n = 5,416) 15%
- Men who have sex with men only (n = 16,905) 48%
- Men who have sex with men and women (n = 1,855) 5%

Syphilis, Local Data: Franklin County, Ohio

Franklin County Syphilis Cases by Year (Primary and Secondary Syphilis)

Number of Cases
Primary and Secondary Syphilis — Rates of Reported Cases by Age Group and Sex, United States, 2018

Primary and Secondary Syphilis — Rates of Reported Cases by Race/Hispanic Ethnicity, United States, 2014–2018

NOTE: See Section A1.5 in the Appendix for information on reporting STD case data for race/Hispanic ethnicity.

ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOP = Native Hawaiians/Other Pacific Islanders.
Estimated HIV Incidence among Persons Aged ≥13 Years 2010–2016—United States

Note. Estimates were derived from a CD4 depletion model using HIV surveillance data. Bars indicate the range of the lower and upper bounds of the 95% confidence intervals for the point estimate.

New HIV Diagnoses in the US and Areas for Most-affected Subpopulations 2018

<table>
<thead>
<tr>
<th>Subpopulation</th>
<th>Number (Men)</th>
<th>Number (Women)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black/African American, Male-to-Male Sexual Contact</td>
<td>9,499</td>
<td></td>
</tr>
<tr>
<td>Hispanic, Male-to-Male Sexual Contact</td>
<td>7,543</td>
<td></td>
</tr>
<tr>
<td>White, Male-to-Male Sexual Contact</td>
<td>6,423</td>
<td></td>
</tr>
<tr>
<td>American Women, Heterosexual Contact</td>
<td>3,768</td>
<td></td>
</tr>
<tr>
<td>White Women, Heterosexual Contact</td>
<td>1,678</td>
<td></td>
</tr>
<tr>
<td>Hispanic Women/Latinas, Heterosexual Contact</td>
<td>1,109</td>
<td></td>
</tr>
<tr>
<td>White Women, Heterosexual Contact</td>
<td>999</td>
<td></td>
</tr>
</tbody>
</table>
Linkage to Care, Retention, Appropriate Treatment

For every 100 people with HIV in 2016:

- 64 received some HIV care
- 49 were retained in care
- 53 were virally suppressed

A person with HIV who takes HIV medicine as prescribed and gets and stays virally suppressed or undetectable can stay healthy and has effectively no risk of sexually transmitting HIV to HIV-negative partners.

HIV Local Data: Franklin County, Ohio

Franklin County, Ohio
New Diagnoses of HIV Infection by Age
2017 Data

Rates of Diagnoses of HIV Infection among Adults and Adolescents
2018—United States and 6 Dependent Areas

N = 37,741 Total Rate = 13.6

Note. Data for the year 2018 are considered preliminary and based on 6 months reporting delay.

Rates of Diagnoses of HIV Infection among Adults and Adolescents by Age at Diagnosis, 2010–2017—United States
Stage 3 (AIDS) Classifications, Deaths, and Persons Living with Diagnosed HIV Infection Ever Classified as Stage 3 (AIDS) 1985–2017—United States and 6 Dependent Areas

Note: Deaths of persons with HIV infection, stage 3 (AIDS) may be due to any cause.

Estimated HIV Incidence among Persons Aged ≥13 Years, by Area of Residence 2016—United States

Total = 38,700

Note. Estimates were derived from a CD4 depletion model using HIV surveillance data. Estimates rounded to the nearest 100 for estimates >1,000 and to the nearest 10 for estimates ≤1,000 to reflect model uncertainty.
Trends in Annual Age-Adjusted* Rates† of Death among Persons with Diagnosed HIV Infection Ever Classified as Stage 3 (AIDS)

1987–2017 — United States

Conclusions

- After rapidly increasing since the 1980s, the annual rate of death due to HIV infection peaked in 1994/1995, decreased rapidly through 1997, and continued to decrease much more slowly thereafter.
- Persons dying of HIV infection increasingly consist of:
  - women (26% in 2017)
  - blacks/African Americans (52% in 2017)
  - residents of the South (55% in 2017)
  - persons 45 years of age or older (75% in 2017)
- HIV infection continues to remain among the 10 leading causes of death among persons aged 25 to 44 years, particularly among blacks/African Americans.
HIV in the United States

Not all people with HIV are getting the care they need.

An estimated 1.1 million people had HIV in the US in 2016.

86% diagnosed
64% received care
49% retained in care
53% virally suppressed

Sources: CDC. Monitoring selected HIV prevention and care objectives using HIV surveillance data—United States and 6 dependent areas, 2017. HIV Surveillance Supplemental Report 2018;24(3).
CDC. Selected national HIV prevention and care outcomes indicators.


Sources: the most recent data available as of November 2019.

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Figure 46. Primary and Secondary Syphilis — Reported Cases by Sex and Sex of Sex Partners and HIV Status, United States, 2018

Cases

10,000
8,000
6,000
4,000
2,000
0

HIV-
HIV+
Unknown HIV Status

MSM
MSW
Women

ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men; MSW = Men who have sex with women only.
How do we improve?

- 150 million visits to EDs each year nationally
- 16 billion dollars in costs to treat new STIs
- STI related complaints are very common in the ED – between 2011 and 2013, there were more than 500,000 ED visits associated with an STI diagnosis in the United States.
- OSU East ED 2775 visits/year for STIs
  - Total ED visits East ED 51,000/year (5% ED visits)
- CDC recommendations:
  - Routine HIV screening for all adults 13-64 yo with repeat screening for high risk individuals annually
- LTC and treatment
- PrEP opportunities for high-risk individuals

Emergency department visits: trends

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NHAMCS ESTIMATED ED VISITS (MILLIONS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>107.5</td>
</tr>
<tr>
<td>2002</td>
<td>110.2</td>
</tr>
<tr>
<td>2003</td>
<td>113.9</td>
</tr>
<tr>
<td>2004</td>
<td>110.2</td>
</tr>
<tr>
<td>2005</td>
<td>115.3</td>
</tr>
<tr>
<td>2006</td>
<td>119.2</td>
</tr>
<tr>
<td>2007</td>
<td>116.8</td>
</tr>
<tr>
<td>2008</td>
<td>123.8</td>
</tr>
<tr>
<td>2009</td>
<td>136.1</td>
</tr>
<tr>
<td>2010</td>
<td>129.8</td>
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<tr>
<td>2011</td>
<td>136.3</td>
</tr>
<tr>
<td>2012</td>
<td>130.9</td>
</tr>
<tr>
<td>2013</td>
<td>130.4</td>
</tr>
<tr>
<td>2014</td>
<td>141.4</td>
</tr>
<tr>
<td>2015</td>
<td>135.9</td>
</tr>
<tr>
<td>2016</td>
<td>145.6</td>
</tr>
</tbody>
</table>


Order practice prior to initiation of study

![STI Testing in the OSU East Emergency Department 2012-2017](chart)

[Number of Tests for different STIs: Chlamydia, Gonorrhea, Syphilis, HIV, Comprehensive Testing]
Why didn’t we do this sooner?

- Its Complicated

Why didn’t we do this sooner?

- Is HIV an emergent diagnosis? Is it an emergency department problem?
- History of consent
  - No written consent required
  - CDC recommends opt-out style
    “We will be testing for HIV unless you decline.”
- Unaware of syphilis surge
- Who is responsible for follow-up on these results?
- Interpretation of results
- Tracking patients down
- Collaboration with infectious disease, Equitas, THW clinic, FACES
- Linkage to care and initiation of PrEP
- Insurance coverage: US Preventative Services Task Force: HIV screening Grade A (must be covered)
  - Medicaid mostly cover routine screening or “medically necessary” testing
The test has been there. Why aren’t you ordering it?

- Survey of all EM faculty, residents, NPs at OSU Main and East

- Questions address hesitation to ordering HIV/syphilis testing from ED
I didn't remember to discuss screening

If you have not screened every high risk eligible patient for HIV or syphilis, what led to your decision?

- I don't want to be liable if the test is positive
- I don't believe in screening high risk patients in the ED setting
- I am not familiar with screening guidelines

If you have hesitations about screening people for HIV in the ED, what are your concerns?

- I don't think it's necessary
- I don't want to follow up on testing
- I don't want the liability if there are no available resources
- It's a waste of resources
- I don't have hesitations
- Other (specify)
Solution: Guarantee follow-up outside the ED

- ID generated list daily
  - All patients tested for HIV/syphilis and their results
- Interpretation of results
- Contacting patient
  - CPH and ODH help
- Arranging for treatment or continued surveillance
- PrEP
- STI ID Attending on call pager on WebExchange
ED STI Protocol
Management of STIs

Patient examination:
Previous STIs including HIV status, barrier protection, use of partners, number of partners, rectal, oral, vaginal intercourse

STI orders:
Female: gonorrhea and chlamydia (vagina)
Affirm (wet prep/ BV, yeast, trich)
Syphilis (STAT not next day lab)
Rapid HIV (blood)

Male: gonorrhea and chlamydia (urine/urethra)
Urine micro (trich)
Syphilis (STAT not next day lab)
Rapid HIV (blood)

If HIV or syphilis +, notification will be sent to infectious disease and the health department for follow-up (by lab, not the ED provider). ID will then contact the patient regarding treatment options, follow-up, and PrEP initiation for high-risk patients.

Current CDC treatment recommendations:
Chlamydia: Zithromax 1000mg PO x1 or Doxycycline 100mg BD x7 days
Gonorrhea: Rocephin 250mg IM x1 plus Zithromax 1000mg PO x1
Trichomoniasis: Flagyl 2000mg PO x1 or Flagyl 500mg BD x7 days
Syphilis: Benzathine (PCN G) 2.4 million units IM x1

ED protocol

- STI-related complaint

History
- Number sexual partners
- Known HIV or syphilis diagnosis?
- Barrier methods used
- Sexual contact
  • Need for oral, rectal, and/or vaginal swabs

Test for GC/Chlamydia (oral, urine, rectal, urethral, vaginal swabs), HIV (serum), syphilis (serum)

Rapid HIV, with p24 antigen and syphilis AB with reflex RPR
ED Order Set

- Order set

### STI Labs & Medications Panel

**Please select gender appropriate orders for STI screening**

- **Check boxes**
- **Uncheck boxes**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHLAM &amp; GONORRHEA: AMP CERVIX</td>
<td>STAT, ONE TIME For 1 Occurrences: CERVIX</td>
<td></td>
</tr>
<tr>
<td>VAGINITIS DNA PROBES</td>
<td>Urgent, ONE TIME For 1 Occurrences: VAGINA</td>
<td></td>
</tr>
<tr>
<td>CHLAM &amp; GONORRHEA: AMP, URINE</td>
<td>STAT, ONE TIME For 1 Occurrences: URETHRA</td>
<td></td>
</tr>
<tr>
<td>CHLAM &amp; GONORRHEA AMP, ORAL</td>
<td>STAT, ONE TIME For 1 Occurrences: THROAT</td>
<td></td>
</tr>
<tr>
<td>CHLAM &amp; GONORRHEA AMP, RECTAL</td>
<td>STAT, ONE TIME For 1 Occurrences: RECTUM</td>
<td></td>
</tr>
<tr>
<td>SYPHILIS AB W/REFLEX RPR</td>
<td>STAT, ONE TIME For 1 Occurrences:</td>
<td></td>
</tr>
<tr>
<td>RAPID HIV-1/2AB W/ P24 ANTIGEN</td>
<td>STAT, ONE TIME For 1 Occurrences:</td>
<td></td>
</tr>
<tr>
<td>HIV VIRAL LOAD RNA PCR QUANT (Use in addition to rapid HIV test if acute HIV suspected)</td>
<td>STAT, ONE TIME For 1 Occurrences:</td>
<td></td>
</tr>
<tr>
<td>azithromycin (ZITHROMAX) tablet</td>
<td>1,000 mg, Oral, ONCE For 1 Doses</td>
<td></td>
</tr>
<tr>
<td>cefTRIAzone (ROCEPHIN) injection</td>
<td>250 mg, Intramuscular, ONCE For 1 Doses</td>
<td></td>
</tr>
<tr>
<td>metronidazole (Flagyl) tablet</td>
<td>2,000 mg, Oral, ONCE For 1 Doses</td>
<td></td>
</tr>
<tr>
<td>doxycycline (ZOEFLAN-DOT) disintegrating tablet</td>
<td>4 mg, Oral, ONCE For 1 Doses</td>
<td></td>
</tr>
</tbody>
</table>

### Data since initiation of project

**Number of tests ordered**

- Gonorrhea
- Chlamydia
- Syphilis
- HIV
- Comprehensive

**Timeline:**
- 6 months
- 13 months

**Graph:**

- 1,588
- 300
- 2,776
- 1,569
- 541
- 130

**Legend:**

- Gonorrhea
- Chlamydia
- Syphilis
- HIV
- Comprehensive
STI Testing in the OSU East Emergency Department 2012-2017

HIV and syphilis tests ordered from OSU EDs
HIV

- 20 reactive HIV tests during the study period 11/2018-11/2019
- 7 new cases of HIV identified in the ED
  - Five of the 7 patients were rapidly linked to care and started on antiretroviral therapy (mean time to ID evaluation 5.4 days)
  - Two of the 7 patients were unable to be contacted/located despite assistance from Columbus Public Health DIS
  - Four positive results were noted in patients with previously established HIV infection.
  - There were 9 positive results that were determined to be false positive results after confirmatory testing
  - 0.4% of those tested had a new HIV diagnosis

SYphilIS

- Between Nov 1 2018 and Nov 30 2019 there were 57 positive syphilis antibody tests
  - 24 positive tests in women
  - 33 positive tests in men

- Totals:
  - 27/57 Previously treated infections
  - 19/57 Late latent infections (6 fully treated, 4 partially treated, 9 untreated)
  - 2/57 Secondary syphilis (2/2 fully treated)
  - 1/57 Primary syphilis (1/1 fully treated)
  - 8/57 false positives
  - 16 positive and/or inadequately treated cases found
    - 1% of those tested had a positive result and inadequate/no treatment
Linkage to care/PrEP for positive patients

- Totals:
  - 3 Referrals for PrEP where patient showed up but declined PrEP
  - 14 Referrals for PrEP placed but not scheduled
  - 6 Referrals for PrEP that were scheduled but patient no-showed
  - 7 No referrals due to known HIV
  - 27 No referral was made

- For 22 patients with syphilis diagnosis requiring treatment (Late latent, primary/secondary)
  - 4 were not referred for PrEP at all
  - 6 were scheduled for PrEP appointment but no-showed
  - 3 were scheduled for appointment, showed up but declined PrEP
  - 6 were referred but appointment never scheduled
  - 3 were known HIV

Demographics of patients tested

- Age, Race, Gender, sexual orientation, insurance status, number of visits to ED
Moving Forward

- Protocol for STI testing in EDs nationally
- Exemplar of interdepartmental collaboration with OSU Infectious Disease and collaboration with Columbus Public Health
- Model for quick linkage to care and initiation of PrEP
  - PrEP can reduce risk of HIV acquisition through sex by 90%
- Social Work resources
- Nurse case manager, establish primary care

Goals

- PrEP referral in STI order set to specific sites
  - ID clinic, THW, FACES, Equitas, primary care, patient choice
- HPV vaccine in appropriate patients
- Introduce model to other area healthcare systems
- Retrospective analysis of how early detection/treatment of HIV reduces number of ED visits/year
- Study demographics of patient populations being tested
  - Visits to ED/year
  - Race
  - Age
  - Gender
  - Sexual Orientation
  - Insurance status
Special Thanks to

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