STDs in Michigan: an overview

CHRISTINE CONVERY
STD EPIDEMIOLOGIST
MICHIGAN DEPARTMENT OF HEALTH AND HUMAN SERVICES
# Reportable Conditions

<table>
<thead>
<tr>
<th>Chlamydia</th>
<th>Gonorrhea</th>
<th>Syphilis</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Caused by bacteria Chlamydia trachomatis</em></td>
<td><em>Caused by bacteria Neisseria gonorrhoeae</em></td>
<td><em>Caused by bacteria Treponema pallidum</em></td>
</tr>
<tr>
<td>Most people who have chlamydia have no symptoms</td>
<td>Some men and most women who have gonorrhea have no symptoms</td>
<td>Syphilis is divided into stages with different signs and symptoms; primary and secondary syphilis generally present with symptoms</td>
</tr>
<tr>
<td>Serovariants of chlamydia can cause lymphogranuloma venereum (LGV)</td>
<td>Antibiotics have successfully treated gonorrhea for several decades; however, the bacteria has developed resistance</td>
<td>Without treatment, syphilis can spread to the brain and nervous system (neurosyphilis) or to the eye (ocular syphilis)</td>
</tr>
<tr>
<td>Treatable by azithromycin or doxycycline</td>
<td>Treatable by dual therapy of ceftriaxone and azithromycin</td>
<td>Treatable by benzathine penicillin or doxycycline</td>
</tr>
</tbody>
</table>

Reference and more information at [https://www.cdc.gov/std](https://www.cdc.gov/std)
# Reportable Conditions
(less common)

<table>
<thead>
<tr>
<th>Lymphogranuloma venereum</th>
<th>Chancroid</th>
<th>Granuloma inguinalae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caused by a serovariant of the bacteria Chlamydia trachomatis</td>
<td>Caused by bacteria Hemophilus ducreyi</td>
<td>Caused by bacteria Klebsiella granulomatis</td>
</tr>
<tr>
<td>Symptoms range from none to serious gastrointestinal disease. 19 cases were reported in 2018</td>
<td>Usually presents as one or more genital ulcers that bleed on contact</td>
<td>A disease of the skin and mucous membranes in the genital area, often with granuloma lesions.</td>
</tr>
<tr>
<td>Most recent cases in Michigan are among men who have sex with men with multiple partners</td>
<td>Rare in the U.S., more common in tropical countries. No cases reported in Michigan in 2018.</td>
<td>This is rare in the U.S.; no cases were reported in Michigan in 2018.</td>
</tr>
<tr>
<td>Treatable by long doses of doxycycline</td>
<td>Treatable by either ceftriaxone or azithromycin</td>
<td>Treatable by doxycycline</td>
</tr>
</tbody>
</table>

Reference and more information at [https://www.cdc.gov/std](https://www.cdc.gov/std)
STD Surveillance

- Chlamydia is the most commonly reported disease in Michigan and nationwide.
- Gonorrhea is the second most commonly reported disease.
- Primary & Secondary syphilis are symptomatic stages of early syphilis.
- There were approximately 1,000 additional latent syphilis diagnoses during 2018, including both early latent and late latent cases.
Chlamydia case rates are highest among:

**WOMEN AND MINORITIES**

- Female
- Male

- Black
- Hispanic
- White
- Other

Women make up **67 percent** of Chlamydia cases largely due to increased screening during routine visits. Black women have a **5.7 times** higher chlamydia rate than white women.

**ADOLESCENTS**

- *Less than 15 years*
- *15-19 years*
- *20-24 years*
- *25+ years*

**68 percent** of Chlamydia cases were diagnosed among patients less than 25 years old.
Gonorrhea case rates are highest among:

AFRICAN AMERICANS

Blacks/African Americans have a **13.6 times** higher rate of gonorrhea than whites. Among men, this disparity is even higher with black men **18.2 times** more likely to be diagnosed than white men.

[Diagram showing gender and race distribution]

AYOLESCENTS

51 percent of Gonorrhea cases were diagnosed among patients less than 25 years old.

- **20-24 years**: 29%
- **15-19 years**: 21%
- **Less than 15 years**: 1%
- **25+ years**: 49%

[Diagram showing age distribution]
Syphilis case rates are highest among:

MEN WHO HAVE SEX WITH MEN

89 percent of P&S syphilis cases are men. The majority of those men report sex with other men.

- MSM: 61%
- Heterosexual Males: 17%
- Heterosexual Females: 9%
- Undetermined risk: 11%
- PWID: 2%

MINORITIES

Black men have the highest rates of P&S Syphilis of any racial/ethnic group at 47.0 cases per 100,000.

This equates to a 8.9 times higher rate of diagnosis for black men compared to white men.

MSM = men who have sex with men
PSWID = people who inject drugs
Following an outbreak in 2013, Michigan primary and secondary syphilis cases had dropped one-quarter but began to rise again during 2016.
Congenital Syphilis

There were **14** cases of congenital syphilis in Michigan in 2018. Michigan law requires that all women be tested for syphilis (and other conditions) at their first prenatal exam. An infected woman should be treated promptly and followed to assure the syphilis infection is cured and there is no risk of transmitting the infection to the newborn.

MDHHS works with clinicians to assure that all pregnant women are tested and treated, and that infants with infection are also treated.
Repeat infections, co-infections, and risk of HIV

RE-INFECTION AND MULTIPLE INFECTIONS

• 13% of STD patients had multiple STDs diagnose in the same year
  • 31% of gonorrhea patients also had chlamydia in the same year, often at the same time as gonorrhea diagnosis
  • Patients under the age of 25 were 1.4 times more likely to have multiple STDs in one year compared to patients 25 years and older (p<0.0001)

RISK OF FUTURE INFECTIONS

• 10% of primary or secondary syphilis patients are later diagnosed with HIV
  • 22% of people newly diagnosed with HIV in 2018 had recent history of STD infection reported in Michigan
  • An additional 15% of people newly diagnosed with HIV in 2018 were co-diagnosed with an STD, usually syphilis

All estimates based on analysis of reported STD cases diagnosed in 2014, completed by MDHHS epidemiologists
STD/HIV co-infection

CO-INFECTION WITH HIV IS COMMON AMONG STD PATIENTS IN MICHIGAN. IN 2018, 33 PERCENT OF P&S SYPHILIS PATIENTS AND 4.8 PERCENT OF GONORRHEA PATIENTS ALSO HAD DIAGNOSED HIV.
Compared to all people living with HIV (PLWH) in Michigan, syphilis patients in 2018 were more likely to be engaged in HIV care but less likely to be virally suppressed as measured at the time of STD diagnosis.

**EARLY SYPHILIS (N=421)**
- HIV Diagnosed: 100%
- In Care (Labs within past year): 97%
- Virally Suppressed (VL < 200 c/ml): 69%

**LATE OR UNKNOWN DURATION SYPHILIS (N=189)**
- HIV Diagnosed: 100%
- In Care (Labs within past year): 96%
- Virally Suppressed (VL < 200 c/ml): 53%

**ALL PLWH (N=14913)**
- HIV Diagnosed: 100%
- In Care (Labs within past year): 82%
- Virally Suppressed (VL < 200 c/ml): 71%
WHAT THE DATA TELLS US

• Vulnerable populations for different sexually transmitted infections overlap
  • Similar characteristics and co-infection observed between chlamydia and gonorrhea as well as between syphilis and HIV
  • Major disparities by race, age, and sexual orientation exist

• STD diagnoses are increasing nationwide
  • In Michigan, these increases are primarily in gonorrhea and syphilis and are observed statewide

WHAT THE DATA CAN’T TELL US

• A large proportion of STD cases are likely undiagnosed and unreported
  • Partner services attempts to identify some of these cases, but is only routinely offered for syphilis and HIV patients

• Missing data on race, specimen collection site, pregnancy status, etc. limit our ability to characterize and monitor trends
  • Special projects, clinical research, and community perspectives enhance our understanding
Questions?

CONVERYC@MICHIGAN.GOV

248-424-7912
Partner Notification: Using Social Media to Improve Outcomes for Teens Exposed to Syphilis

BRY FRYCZYNSKI

DISEASE INTERVENTION SPECIALIST

MICHIGAN DEPARTMENT OF HEALTH AND HUMAN SERVICES
GC and CT are managed in MDSS by LHD STD programs

Syphilis labs are reviewed by Disease Intervention Specialist

Reports are put into a designated queue, based on patient residence

Laboratories report electronically

Reactive syphilis testing must be reported to a local health department within 24 hours

Web-based communicable disease reporting system developed for the State of Michigan
Used for all reportable infections, including STDs

Michigan Disease Surveillance System (MDSS)
SYPHILIS TESTING REFERENCE GUIDE

Syphilis is caused by the infection of treponema pallidum, a spirochete bacterium. There are two types of tests used to detect syphilis, treponemal and non-treponemal:

**Treponemal tests** include: CIA, EIA, FTA, TP-PA, Trep. pallidum IgG/IgM (MIA)

- Considered confirmatory tests.
- If reactive = current or past infection.
- Typically stays reactive, regardless of treatment.
- If non-reactive = client not infected with syphilis.

**Non-treponemal antigen tests** include: RPR, USR, VDRL, STS* (*plasma center only)

- Considered screening or monitoring tests.
- May be non-reactive or reactive, if reactive, should be diluted to establish titer.
- A titer is a measure of the amount of antibody formed in response to syphilis.
- Titers decline after proper treatment over a period of months to years.
Below are some titer dilutions depicting a fourfold increase and decrease:

- 1:128
- 1:64
- 1:32
- 1:16
- 1:8
- 1:4
- 1:2
- 1:1
- NR

A fourfold increase/higher indicates a new infection.

Titers should decline at least fourfold after proper treatment and can take from a few months to two years.

RPRs are typically 1-2 titer dilutions higher than a VDRL or USR (possibly 3 dilutions higher than USR) on the same sample.

RPR 1:32 is comparable to:

- VDRL 1:16 or 1:8
- USR 1:16, 1:8, or 1:4 (possible)

It is preferable to compare the same non-treponemal tests when determining a new infection or to verify adequate response to treatment on an individual.

Titers can fluctuate after treatment by increasing twofold (one dilution) while still decreasing overall.

Syphilis testing is typically done by reverse algorithm.

This indicates that the treponemal (confirmatory) test is done initially and if reactive it should reflex (allow for) a non-treponemal test to be run on the sample. If the sample doesn’t reflex, a non-treponemal test should be ordered immediately.
Reverse Testing Algorithm at BOL

Total IgG/IgM MIA

- Reactive or Equivocal
  - USR
    - Reactive
      - If MIA is Reactive
        - Presumptive evidence of syphilis infection
      - If MIA is Equivocal
        - Perform TP-PA
    - Nonreactive
      - Reactive
        - Primary or latent infection, or previously treated or untreated syphilis*
      - Nonreactive
        - Indeterminate or Atypical
          - Reactive
            - Indeterminate for syphilis infection; potentially early infection or false positive*
            - Presumptive evidence of syphilis infection
          - Indeterminate
            - If MIA is Equivocal
              - Reactive
              - Indeterminate for syphilis infection; potentially early infection or false positive*
              - Presumptive evidence of syphilis infection
          - If MIA is Reactive
            - Reactive
            - Indeterminate for syphilis infection; potentially early infection or false positive*
            - Presumptive evidence of syphilis infection

- Nonreactive
  - 1. No serologic evidence of infection
  - 2. Unable to rule out early syphilis*
    - May collect convalescent specimen in 2-4 weeks for repeat testing (or one week if patient is pregnant)

*Recommend additional testing consistent with clinical history findings
What is the role of a Disease Intervention Specialist (DIS)?

- Conduct voluntary interviews
- Ensure proper treatment
- Partner elicitation/notification
- Breakdown barriers
- Educate
- Follow-up
- Provide additional resources/referrals
- Resource for providers, clinics, and labs
The Cycle of Partner Elicitation

1. Client receives reactive syphilis test.
2. Partner information is collected by DIS during interview.
3. DIS look for additional information on partner.
4. Partner is located and informed.
5. Partner receives testing and presumptive treatment, if needed.
Ingham County Youth Cluster

What makes this cluster unique?

- Ages (14-18)
- Sexual orientation
- Outreach methods
- Education
- Suspected Trafficking
- Living situations
- Additional involvement (parent/guardians, schools)
5 Index Cases

4 female, 1 male

Ages 14-17

History of STDs
- Chlamydia (5)
- Trichomoniasis (1)
- Herpes (1)

Youth Center
- 2 of the 5 index clients had a history with the juvenile detention center
10 Partners, 1 Social Contact

- 2 females, 9 males
- 9 partners found, tested, and presumptively treated
- Ages 15-18
- Of the 9 partners located, 7 had a history of an STD
- Youth Center
  - 4 out of 7 Ingham County partners have history with juvenile detention
Health Department and School-Based Clinics

Index clients
- All 5 index clients utilized the HD for treatment
- 4 index clients have history with a school-based clinic

Partners
- All 7 Ingham County partners tested and presumptively treated through HD
- 5 of the 7 Ingham County partners have history with a school-based clinic
(A) Female 14 y.o. Dx: 05/2018 Hispanic/Caucasian Secondary CT, HSV Moved out of state

(B) Female 15 y.o. Dx: 06/2018 African American Primary CT/CT Juvenile Detention

(C) Male 17 y.o. Dx: 07/2018 African American Primary CT

(D) Female 17 y.o. Dx: 07/2018 African American Early Latent CT

(E) Female 14 y.o. Dx: 08/2018 African American Secondary CT

Male, 17 African American CT x3, GC

Male, 15 African American/Caucasian CT

Female, 17 Caucasian Out of county Unable to locate

Female, 16 African American CT Pregnant- miscarried

Male, 17 African American CT

Male, 16 African American Out of county Unable to locate

Male, 17 African American CT

Male, 17 African American Out of county Deceased

Male, 39 (Social Contact) African American

Male, 18 African American

Male, 18 African American

Male, 18 African American CT
Response

School-based clinics increased syphilis testing

Syphilis testing at Youth Center

Michigan Health Alert Network (MIHAN)
The Vital Role of Social Media

- Profile name frequently different than legal name
- City, work, school, family members, DOB
- Photos
- Relationship status
- Provides insight on individual
- Risky behavior (alcohol and/or drug use)
- Real-time locating information
- Offers information on others who may be at risk
Providers

Test!
- It is likely that all partners have not been named
- Let the patient know we will be calling them
- In-person/telephone interviews

Utilize health department resources
- Free testing
- Free treatment

Call a DIS- We want to hear from you!
- Confirm syphilis history
- Assist with transportation
- Home visits
Legend

HIV Partner Services

[contact Local Health Department]

DIS Coverage Area

1 - Detroit DIS (313)446-8945
2A - Cathy Hollis (734)512-7116
2B - Jenine Clements (313)969-5023
3 - Shawn Woods (517)331-5862
4 N: Kara Reaves (517)331-5853
4 S: Lisa Johnson (517)331-5853;
5 - Adam Tinsman (616)560-2019
6 - Alana Thomas (517)331-5772
7 - Bry Fryczynski (517)290-1626
8 - Vacant (269)373-5263
9 - Central Michigan (989) 773-5921
Questions?
Bry Fryczynski
fryczynskib@michigan.gov
(517) 290-1626