An Overview of Syphilis in West Virginia

September 2022
Syphilis Background

- Syphilis is caused by the bacteria *Treponema pallidum*
- Occurs in stages and can cause serious health effects without adequate treatment
  - Early syphilis (ES) is when most transmission occurs
- **Transmitted by:**
  - Direct contact with a syphilitic sore (chancre) during anal, vaginal, or oral sex
  - Direct contact with condyloma lata or mucous lesions during anal, vaginal, or oral sex
  - Transplacental (from mother to baby)
- **Congenital syphilis** is reportable to DHHR within 24 hours
- All adult **syphilis** is reportable to DHHR within seven days
Stages of Syphilis
• **Primary**: One or more painless ulcerative lesions (i.e., chancre) that develops 9-90 days after infection

• **Secondary**: Localized or diffuse mucocutaneous lesions that occur 3-6 weeks following the primary stage

• **Early Latent**: Asymptomatic stage (less infectious) that occurs 12 months after infection

• **Late/Tertiary Syphilis**: Infection lasting greater than 12 months where transmission is unlikely to occur
Progression of Untreated Syphilis

- **Incubating Infection [9-90 days]**
- **Primary**
- **Secondary**
- **Early Latent**
- **Late Latent**

**Possible recurrence to secondary stage if untreated**

- **Early Neurosyphilis**
- **Early Ocular or Otic Syphilis**

- **Tertiary (Cardiovascular/Gummatous)** and/or **Late Neurosyphilis** and/or **Late Ocular/Otic Syphilis**

- Usually 1 or more decades after acquisition

- Exposure

- ~ 6 months
- 12 months
• **Primary** is marked by *single or multiple ulcerative lesions* on the genitals, mouth, or anus of an individual.
  ○ Occurs at the point of inoculation within 9-90 days

• The chancre is *indurated, with a raised edge*

• The chancre is *not painful*, but can be tender in places like the mouth or on the tongue

• They are moist in the center, teeming with spirochaetes
  • **Most infectious** stage of syphilis
Primary Syphilis (cont’d)
Secondary Syphilis

- Occurs 3-6 weeks after appearance of primary chancre
  - Primary and secondary symptoms can be concurrent, especially among immunocompromised patients

- Secondary syphilis is marked by a variety of possible symptoms that can imitate other diseases

- The patient can have a **body rash**, typically on the torso, but can also be on the hands and feet (palmar-plantar rash).
  - The rash is diffuse, macular-papular, and non-itchy

- Other symptoms of secondary are:
  - Swollen lymph nodes
  - Fever and flu-like symptoms
  - Patchy hair loss (Alopecia)
  - Oral mucous patches
  - Large, fleshy genital warts (condyloma lata)
Secondary Syphilis (cont’d)

A 0-10 days

B 11-20 days

C 21-30 days

D > 30 days
Secondary Syphilis (cont’d)

Alopecia

Mucous Patches

Condyloma lata
Late/Tertiary Syphilis

• Late or tertiary syphilis occurs after 10 or more years after initial infection without any treatment

• Clinical manifestations of late syphilis include:
  o Cardiovascular Disease
  o Gummatous disease of skin or other organs
  o Late neurological complications

Narrowing of coronary ostia in the Aortus

Ulcerating Gumma
Neurosyphilis can happen at any point in the disease when spirochetes invade neural tissue.

All syphilis patients should be screened for the following:
- Visual disturbances (blurry or missing spots of vision)
- Sudden and persistent eye pain
- Hearing loss
- Difficulty keeping one’s balance while standing
- Headache that will not go away with medication

If neurosyphilis is suspected, refer the patient immediately to an emergency room, ophthalmologist, or neurologist for further evaluation (based on severity of symptoms)
- Send lab results to the referred provider
Congenital Syphilis

- Congenital syphilis (CS) is the vertical transmission of syphilis from mother to baby *in utero*

- CS can cause stillbirth, birth defects, or later disability in children

- CS is a preventable disease, given prompt treatment and follow-up during pregnancy

- Screening Recommendations:
  - Test at first prenatal visit
  - Test at 28-32 weeks gestation
  - Test at delivery

- Any child born to a mother with a history of syphilis should be *tested at delivery*
Testing for Syphilis
Two different serology test types are necessary to verify active syphilis infection:

1. **Treponemal**
   - *T. pallidum* particle agglutination (TP-PA)
   - Fluorescent treponemal antibody absorption (FTA-ABS)
   - Enzyme immunoassay (EIA)
   - Chemiluminescence immunoassay (CIA)

2. **Non-Treponemal**: *quantitative and qualitative*
   - Rapid plasma reagin (RPR)
   - Venereal Disease Research Laboratory (VDRL)
Traditional Testing Algorithm

- Most common sequence of syphilis testing
- Initial nontreponemal test is highly sensitive, thus leading to more false-positive results
Reverse Testing Algorithm

- Recommended by the Centers for Disease Control and Prevention
- Initial treponemal test is highly specific, and detects more incubating and primary syphilis cases
Serologic Testing Limitations

- Once infected, treponemal antibody tests remain positive
  - Exception is a patient who is treated at a very early stage
  - To determine reinfection, monitor the RPR titer for a 2-dilution/fourfold increase
- False positives may occur with the RPR due to autoimmune disease, drug use, pregnancy, etc.
- False negatives may occur with the RPR during secondary syphilis due to the prozone reaction, as there is so much antibody in the sample, it will not react with the reagent
  - If secondary is suspected and RPR is negative, request the lab to dilute the sample before beginning the test
Interpreting Titers for Reinfection

• For patients with a history of syphilis, the quantitative nontreponemal test results must be monitored
• A sustained 2-dilution/fourfold increase or higher in titer demonstrates a clinically significant difference
  ▪ Whether the rise is due to reinfection or treatment failure, the penicillin regimen needs to be repeated
  ▪ Only compare titers from the same serologic test type
• All positive syphilis results must be reported so that providers can call the state health department to access patient titer history
Treating Syphilis
• Always refer to the latest Sexually Transmitted Infections (STI) Treatment Guidelines: [www.cdc.gov/std/treatment-guidelines/default.htm](http://www.cdc.gov/std/treatment-guidelines/default.htm)

• Long-acting penicillin is the ONLY recommended treatment for syphilis infection

• If the patient has a clinical/documentated penicillin (PCN) allergy, then doxycycline may be used as an alternative
  o There is no alternative for pregnant patients, so desensitization would be necessary
  o People living with HIV (PLWH) should also be considered for desensitization, as documented treatment failure with non-PCN has been reported in this population

• Appropriate treatment regimen is based on staging

• Any patient requiring three doses should be scheduled for administration seven days apart (no more than nine days)
Syphilis Staging and Treatment Algorithm

Symptoms at the time of blood draw?

**YES**
- Presence of painless lesion (chancre)

**NO**
- Presence of palmar/plantar rash, body rash, alopecia, or condylomata lata

**YES**
- Was there a VERIFIED negative syphilis blood test in the last 12 months? -or-
- Did patient have signs or symptoms in the past 12 months? -or-
- Are there infected partners independently staged as primary/secondary/early? -or-
- If previously treated for syphilis, was there a 2 dilution (4-fold) increase in RPR titer?

**YES**
- PRIMARY SYPHILIS
  - RPR may be positive or negative; AND
  - Confirmatory test can be reactive or non-reactive

**NO**
- SECONDARY SYPHILIS
  - RPR is usually positive, but can be negative; AND
  - Confirmatory test is reactive

**YES**
- EARLY LATENT
  - RPR can be positive or negative; AND
  - Confirmatory test is reactive

**NO**
- LATE or UNK
  - RPR can be positive or negative; AND
  - Confirmatory test is reactive

**SYPHILIS TREATMENT**

Primary, Secondary, or Early Latent
Benzathine penicillin G*
2.4 million units IM in a single dose

*S*See CDC Guidelines for treatment if patient is allergic to PCN or has symptoms of neurosyphilis

**SYPHILIS TREATMENT**

Late Latent or Unknown Duration
Benzathine penicillin G*
7.2 million units total, administered as 3 doses of 2.4 million units IM each at 1-week intervals

**SPECIAL NOTE ABOUT PREGNANCY:** Penicillin is the only acceptable treatment for pregnant women. Penicillin administered at intervals greater than 7 days are unacceptable. If a single day of penicillin therapy is missed, patient must restart treatment if stage is late latent or unknown.
Treating Neurosyphilis

• Recommended: **aqueous crystalline penicillin G 18-24 million units per day IV**, as 3-4 million units IV every four hours or continuous infusion for 10-14 days

• Alternative: **procaine penicillin G 2.4 million units IM once daily & Probenecid 500 mg orally four times a day, both for 14 days** (when follow-up can be assured)

• **Penicillin is the ONLY recommended treatment option for neurosyphilis**
  - For PCN allergy, send patient to an allergist to undergo oral penicillin challenge and desensitization

• For late syphilis patients, additional 2.4 million units benzathine penicillin G IM once a week for 1-3 weeks after completion of neurosyphilis treatment can be considered to provide comparable duration of therapy
Treatment Considerations

• **Presumptive treatment** should be given to patients presenting with signs/symptoms of ES and/or those who had **contact with a partner diagnosed with ES**
  - Treatment should be administered even if serologic test results are negative, results are not immediately available, or if follow-up is uncertain

• **Jarisch-Herxheimer Reaction:**
  - An acute febrile reaction frequently accompanied by headache, myalgia, and fever that can occur within the first 24 hours after initiation of syphilis therapy
  - Most common among patients with early syphilis with high bacterial loads
  - Can induce early labor or cause fetal distress in pregnant women, but should not prevent/delay therapy
  - Antipyretics can be used to manage symptoms, but have not been proven for prevention
Syphilis in West Virginia
Early Syphilis by County

Rates of Early Syphilis by County, 2020

Rates per 100,000*

- 0
- 1 - 13
- 14 - 24
- 25 - 28
- 29 - 48

*Includes confirmed and probable cases of primary, secondary, and early latent syphilis.
Early Syphilis by Year

Early Syphilis Cases by Sex and Year, 2018-2021

- Female
- Male

Year

Number of Early Syphilis Cases Reported

2018

2019

2020

2021
Congenital Syphilis by Year

Congenital Syphilis Cases By Year, 2017-2021

Number of Congenital Cases Reported

Year

2017  2018  2019  2020  2021

0  1  5  10  15
Early Syphilis by Age Group

Early Syphilis Cases by Age Group, 2020

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number of Early Syphilis Cases Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;19</td>
<td>10</td>
</tr>
<tr>
<td>20-30</td>
<td>90</td>
</tr>
<tr>
<td>31-40</td>
<td>70</td>
</tr>
<tr>
<td>41-50</td>
<td>40</td>
</tr>
<tr>
<td>50+</td>
<td>20</td>
</tr>
</tbody>
</table>

Female | Male

Legend:
- Red: Female
- Blue: Male
Reported Risk: Men

Reported Risk Factors Among Male Syphilis Cases, 2021

- Men who have sex with men (MSM): 38.3%
- Drug Use Only: 49.5%
- MSM + Drug Use: 12.1%

Does not include male syphilis cases where risk factor was not reported
Reported Risk Among Female Syphilis Cases, 2021

- Sex With Men & Drug Use: 58.3%
- Sex with Men Only: 39.7%
- Drug Use Only: 2.0%

Does not include female syphilis cases where risk factor was not reported
Provider Recommendations

- Be aware of local outbreaks and resurgence
  - West Virginia HAN 190 Early Syphilis and Congenital Syphilis
- Report positive lab results and treatment information
  - West Virginia Department of Health and Human Resources Sexually Transmitted Disease (STD) Surveillance Unit
  - Regional Disease Intervention Specialist (DIS)
- Consult with the STD Clinical Consultation Network
  - www.stdccn.org
- Reference the updated STI Treatment Guidelines
  - www.cdc.gov/std/treatment-guidelines/default.htm
- Know the screening recommendations for high-risk populations
  - People with substance use disorder (PWSUD)
  - Men who have sex with Men (MSM)
  - Pregnant patients
• www.cdc.gov/mmwr/preview/mmwrhtml/mm6318a4.htm
• www.cdc.gov/std/stats/casedefinitions-2014.pdf
• www.cdc.gov/std/training/clinicalslides/slides-dl.htm
• The Diagnosis, Management and Prevention of Syphilis: An Update and Review. The NYC Department of Health and Mental Hygiene Bureau of Sexually Transmitted Infections and the NYC STD Prevention Training Center. March 2019
• Internet-based site-specific interventions for syphilis prevention among gay and bisexual men. Klausner JD, Kent CK, Levine DK. *AIDS Care* 2004;16:964-970
• The Intersection Between HIV and Syphilis in Men Who Have Sex with Men: Some Fresh Perspectives. Fraser Drummond, Rebecca Guy, John M Kaldor, Basil Donovan. *HIV Ther*. 2010;4(6):661-673
Contact Information

West Virginia Department of Health and Human Resources
Bureau for Public Health
Office of Epidemiology and Prevention Services
Division of STD, HIV, Hepatitis, and Tuberculosis
350 Capitol Street, Room 125
Charleston West Virginia 25301

DSHHT Main Phone:  (304) 558-2195
West Virginia STD Hotline:  1 (800) 624-8244
STD Surveillance Fax:  (304) 558-6478
STD Surveillance Email:  WVSTD@wv.gov

Margret Watkins, MPH, CHES  
STD Program Director  
DHHR/BPH/OEPS/DSHHT  
Phone: (304) 352-6214  
Margret.A.Watkins@wv.gov

Bianca Huff  
STD Epidemiologist  
DHHR/BPH/OEPS/DSHHT  
Phone: (304) 352-6234  
Bianca.M.Huff@wv.gov