Resurgence of the Great Masquerader - Preparing PAs for the Fight!

Jennifer Feirstein, MSPAS, PA-C, DFAAPA
W. Cody Black, MHS, PA-C
Faculty Disclosures

- None
Syphilis rates are increasing among women and their babies, and men throughout the United States.

67% increase from 2011-2015

Healthcare providers can and should take action.

https://www.cdc.gov/std/syphilis/default.htm
Specific Populations

Pregnant women

• Increases in CS have paralleled the national increase in P&S syphilis.

• After a steady decline from 2008 to 2012, cases of CS increased by 46% between 2012 and 2015.

Men who have sex with men

• Syphilis rates are increasing among gay, bisexual, and other MSM.

• They comprise 82% of all syphilis cases among men (who comprise 90% of all cases of P&S syphilis).
# Epidemiology: Arizona and Syphilis

Table 26. Primary and Secondary Syphilis — Reported Cases and Rates of Reported Cases by State, Ranked by Rates, United States, 2015

<table>
<thead>
<tr>
<th>Rank</th>
<th>State</th>
<th>Cases</th>
<th>Rate per 100,000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Louisiana</td>
<td>696</td>
<td>15.0</td>
</tr>
<tr>
<td>2</td>
<td>Georgia</td>
<td>1,413</td>
<td>14.0</td>
</tr>
<tr>
<td>3</td>
<td>California</td>
<td>4,908</td>
<td>12.6</td>
</tr>
<tr>
<td>4</td>
<td>North Carolina</td>
<td>1,196</td>
<td>12.0</td>
</tr>
<tr>
<td>5</td>
<td>Nevada</td>
<td>335</td>
<td>11.8</td>
</tr>
<tr>
<td>6</td>
<td>Florida</td>
<td>2,083</td>
<td>10.5</td>
</tr>
<tr>
<td>7</td>
<td>New York</td>
<td>2,006</td>
<td>10.2</td>
</tr>
<tr>
<td>8</td>
<td>Arizona</td>
<td>589</td>
<td>8.7</td>
</tr>
<tr>
<td>9</td>
<td>Oregon</td>
<td>345</td>
<td>8.7</td>
</tr>
<tr>
<td>10</td>
<td>Maryland</td>
<td>509</td>
<td>8.5</td>
</tr>
</tbody>
</table>
## Syphilis Screening: CDC Recommendation

<table>
<thead>
<tr>
<th>Group</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant Women</td>
<td>- All pregnant women at the first prenatal visit(^{11})</td>
</tr>
<tr>
<td></td>
<td>- Retest early in the third trimester and at delivery if at high risk(^{12})</td>
</tr>
<tr>
<td>Men Who have Sex With Men (MSM)</td>
<td>- At least annually for sexually active MSM(^{13})</td>
</tr>
<tr>
<td></td>
<td>- Every 3 to 6 months if at increased risk(^{7})</td>
</tr>
<tr>
<td>Persons with HIV</td>
<td>- For sexually active individuals, screen at first HIV evaluation, and at least annually thereafter(^{14,15,16})</td>
</tr>
<tr>
<td></td>
<td>- More frequent screening might be appropriate depending on individual risk behaviors and the local epidemiology(^{13})</td>
</tr>
</tbody>
</table>
Overview

- **Infecting organism** - *Treponema pallidum*
  - Spirochete bacteria
  - Transmission occurs with direct contact or transplacental

- **Stages**
  - Early syphilis
    - Primary
    - Secondary
    - Early latent
  - Late syphilis
    - Late latent
    - Tertiary
  - Neurosyphilis

Clinical presentation

● Primary syphilis
  ○ Characterized by the chancre
    ■ Painless
    ■ Initially a papule, then ulcerates
    ■ Raised, indurated border
  ○ Occurs at site of inoculation
    ■ Genitalia
    ■ Anorectal
    ■ Oral
  ○ Incubation: 21 days
Clinical presentation

- Primary syphilis
  - Chancres persist 3-6 weeks
  - Spontaneous healing
  - Systemic dissemination
Clinical presentation

- Secondary syphilis
  - Timing: weeks to a few months after chancre
  - Symptoms
    - Constitutional symptoms
    - Lymphadenopathy
      - Epitrochlear nodes
    - Dermatologic signs
      - Classic rash - diffuse, symmetric, macular or papular
        - Trunk, extremities, **palms and soles**
      - Condyloma lata
  - Spontaneous healing
Clinical presentation

- Secondary syphilis
  - Uncommon clinical findings
    - Alopecia - “moth-eaten” alopecia (scalp, eyebrows, beard)
    - Hepatitis
    - GI infiltration/ulceration
    - Musculoskeletal involvement (synovial fluid, bone, periosteum)
    - Renal abnormalities
    - Early neurosyphilis (headache, CNS manifestations/meningitis, ocular abnormalities)
Clinical presentation

● Early congenital syphilis (manifestations prior to 2 years)
  ○ Asymptomatic at birth
  ○ Symptom onset: usually about 5 weeks

● Clinical findings
  ○ Placenta/umbilical cord abnormalities
  ○ Hepatomegaly
  ○ Jaundice
  ○ Nasal discharge
  ○ Rash
  ○ Generalized lymphadenopathy
  ○ Deformed bones

Clinical presentation

- Early congenital syphilis (manifestations prior to 2 years)
  - Organs affected:
    - Bones
    - Liver
    - Pancreas
    - Intestine
    - Kidney
    - Spleen
  - CNS syphilis
  - Long-bone abnormalities
  - Pneumonia
  - Severe anemia
Clinical presentation

- Late congenital syphilis (manifestations after 2 years old)
  - Gumma formation
  - High specificity = Hutchinson triad
    ■ Hutchinson teeth
    ■ Interstitial keratitis
    ■ Sensorineural hearing loss

Stigmata of late congenital syphilis

<table>
<thead>
<tr>
<th>Facial features</th>
<th>Frontal bossing, saddle nose, short maxilla, protuberant mandible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ophthalmologic</td>
<td>Interstitial keratits, chorioretinitis, secondary glaucoma, corneal scarring, optic atrophy</td>
</tr>
<tr>
<td>Ears</td>
<td>Sensorineural hearing loss</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>Hutchinson teeth, mulberry molars, perforation of hard palate</td>
</tr>
<tr>
<td>Cutaneous</td>
<td>Rhagades, gummas</td>
</tr>
<tr>
<td>Central nervous system</td>
<td>Intellectual disability, arrested hydrocephalus, seizures, optic atrophy, juvenile general paralyisis</td>
</tr>
<tr>
<td>Skeletal</td>
<td>Saber shins (anterior bowing of the tibia), Higoumenakis sign (enlargement of the sternoclavicular portion of the clavicle), Cutton joints (painless arthritis), scaphoid scapula</td>
</tr>
</tbody>
</table>

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Diagnostics

- Non-treponemal serological assays
  - Non-specific for syphilis
  - Detect antibody response to release of cardiolipin
    - If reactive, titer of antibody is determined
  - Available assays
    - Venereal Disease Research Laboratory (VDRL)
    - Rapid Plasma Reagin (RPR)
    - Toludine Red Unheated Serum Test (TRUST)
Diagnostics

- Treponemal serological assays
  - Direct detection of *T. pallidum*
    - Dark-field microscopy
    - Polymerase chain reaction
    - Direct fluorescent antibody assay
  - Detection of antibody to *T. pallidum*
    - Available assays
      - *Treponema pallidum*-particle agglutination (TP-PA)
      - Fluorescent Treponemal Antibody-Absorption (FTA-ABS)
      - Immunoassays to detect IgG and/or IgM antibodies
        - *T. pallidum* enzyme immunoassay (TP-EIA)
      - Syphilis Health Check - CLIA waived, rapid POC serologic assay
  - Testing algorithms: Traditional vs. Reverse
Diagnostics

Figure 1: Traditional Syphilis Serology Testing Algorithm
- Qualitative Non-Treponemal
  - Reactive
  - Non-reactive
- Quantitative Non-Treponemal
- Treponemal
  - Reactive
  - Non-reactive

Lab Interpretation:
- Consistent with current syphilis infection*
- Syphilis infection unlikely; biological false positive likely
- No laboratory evidence of syphilis infection

Step 1a
Step 1b
Step 2

Figure 2: Reverse Syphilis Serology Testing Algorithm
- Treponemal (Immuoassay)
  - Reactive
  - Non-reactive
- Non-Treponemal
  - Reactive
  - Non-reactive
  - Supplemental Treponemal*
    - Reactive
    - Non-reactive

Lab Interpretation:
- Consistent with current or past syphilis infection
- Consistent with past or potential early syphilis infection
- Inconclusive for syphilis infection; potentially early infection or false positive
- No laboratory evidence of syphilis infection

Step 1
Step 2
Step 3

**Diagnostics**

- **+NT +T**
  - **No hx infection**
    - Syphilis
  - **Hx infection**
    - ✓Clinical presentation
    - ✓NT titer
- **+NT -T**
  - False positive
  - Positive = treat
  - Negative = false positive
- **+T -NT**
  - **Hx infection & successful treatment**
  - Nothing further
  - - sx/signs
  - ?Late latent
  - Repeat T test
- **+sx/signs**
  - Repeat NT
  - Empiric tx
- **No hx infection**
  - ✓H&P
Complications & Prognosis

- Continued transmission
- Pregnancy outcomes
  - Spontaneous abortion
  - Prematurity
  - Stillbirth
  - Low birth weight
  - Death shortly after birth
- Congenital syphilis
  - Developmental delay
  - Seizure disorder
  - Death
Complications & Prognosis

● Neurosyphilis
  ○ Early: meningitis, meningovascular disease
  ○ Late: involvement of brain and spinal cord parenchyma
  ○ Blindness, deafness
  ○ Can cause paralysis, sensory deficits, dementia

● Ocular syphilis
  ○ Most commonly - posterior uveitis, panuveitis
  ○ Can cause permanent blindness
Complications & Prognosis

● Tertiary syphilis
  ○ Multi-organ involvement: brain, nerves, eyes, heart, blood vessels, liver, bones, joints
  ○ Gummatous syphilis
    ■ Frequently involves skeletal, spinal, mucosal areas
  ○ Cardiovascular syphilis
    ■ Aortic regurgitation, coronary artery stenosis, aortitis

● Prognosis
Syphilis is Treatable

- **Penicillin** remains the best drug for treatment regardless of stage
  - **Preferred:**
    - Penicillin G benzathine 2.4 million units IM once
  - **Alternatives (choose one):**
    - Doxycycline 100 mg orally twice daily for 14 days
    - Ceftriaxone 1 to 2 g daily IM or IV for 10 to 14 days
    - Tetracycline 500 mg orally four times daily for 14 days
    - Amoxicillin 3 g plus probenecid 500 mg, both given orally twice daily for 14 days
- Treatment will kill the syphilis bacterium and prevent further damage, but it will not repair damage already done
Management considerations

● Test of cure: response to therapy

● Partner therapy: known contacts within the prior 90 days

● Report: public health priority

● HIV testing
Syphilis is Preventable

TALK. TEST. TREAT.
Patient Education

1. Use Condoms

1. Have Fewer Partners

1. Talk With Your Partner

1. Get Tested
Questions?
References


