Congenital Syphilis: Maternal, Fetal, and Neonatal

Jeanne S. Sheffield, MD
Maternal-Fetal Medicine
Johns Hopkins Medicine
Poll Question #1
What is the best way to prevent Congenital Syphilis?

1. Test all infants at delivery
2. Treat all infants with Penicillin G at delivery
3. Counsel women on risks factors for syphilis acquisition
4. Screen and treat all pregnant women regardless of risk factors
Syphilis

- Systemic disease caused by the bacterium *Treponema pallidum*
- 2 stages
  - Early (<12 months from acquisition to diagnosis)
    - Primary syphilis
    - Secondary syphilis
    - Early latent syphilis
  - Late (>12 months acquisition to diagnosis)
    - Late latent syphilis
CDC Primary and Secondary Syphilis
CDC 2007-2016
27.6% increase 2016 compared to 2015
86.9% increase from 2012
Primary Syphilis

- Painless Chancre
  - raised, red firm border
  - smooth base
- Non-suppurative lymphadenopathy
- Resolves in 3-8 weeks without treatment
Secondary Syphilis

• Systemic dissemination
• 4-10 weeks after chancre appears
• Dermatologic (90%)
  – Diffuse macular rash
  – Plantar and palmar target-like lesions
  – Patchy alopecia
  – Mucous patches
Early Latent Syphilis

- Asymptomatic stage
- Duration < 12 months
- Relapses 20-25%
- INFECTIOUS

Late Stage Syphilis
Congenital Syphilis

- *T. pallidum* is transmitted across the placenta from a pregnant woman to her fetus
- May occur during any stage of syphilis and in any trimester
- Manifestations may not be noted at birth
  - Early lesions inflammatory
  - Late lesions immunologic and destructive
Poll Question #2
What is the best way to diagnose Congenital Syphilis?

1. Amniotic fluid PCR for syphilis
2. Syphilis IgM of umbilical cord blood
3. Neonatal serum for a quantitative nontreponemal test
4. Neonatal serum for a treponemal test
Congenital Syphilis

• The diagnosis is surprisingly difficult
  – All infants born to mothers with reactive syphilis serology should have an RPR or VDRL performed on the serum (not umbilical cord sample)
  – No adequate IgM available at this time
  – Physical exam: hydrops, HSM, jaundice, rhinitis, pseudoparalysis, skin rash
  – Examine the placenta and umbilical cord
  – Darkfield microscopy if suspicious lesions or available body fluids
Why is Congenital Syphilis on the Rise?

• There was a 36% increase when comparing 2015 to 2011
  – 56% increase in primary and secondary syphilis rates during the same time period
  – 22% of the cases in 2014 had no prenatal care

• If they had prenatal care, 43% did not receive prenatal treatment
  – 16% not tested
  – 39% seroconverted during pregnancy
• 17% were treated <30 days prior to delivery

CDC STD Surveillance data 2015
Serologic Testing for Syphilis

• Serologic detection requires the detection of two types of antibodies
  – Non-treponemal antibodies
    • Directed against lipoidal antigens
    • RPR and VDRL, TRUST
  – Treponemal antibodies
    • Antibodies directed against *T. pallidum* proteins
    • TP-PA, MHA-TP, FTA-ABS, EIAs, CIAs, MBIA
Syphilis serologic screening algorithms

Traditional

Quantitative RPR

RPR+

RPR-

TP-PA or other trep. test

TP-PA+ Syphilis (past or present)

TP-PA- Syphilis unlikely

Reverse sequence

EIA or CIA

EIA/CIA+

EIA/CIA-

Quantitative RPR

RPR+

RPR-

TP-PA

TP-PA+ Syphilis (past or present)

TP-PA- Syphilis unlikely
Clinical Features

- Pregnancy has little effect on the course of syphilis
- Syphilis has a major impact on the course and outcome of pregnancy
  - Abortion and Stillbirth
  - Preterm Delivery
  - Congenital Infection
Congenital Syphilis at Parkland Hospital 1988 to 1998

- **Primary** (N=26): 23%
- **Secondary** (N=53): 60%
- **Early Latent** (N=145): 36%
- **Late Latent** (N=27): 7%
- **Unknown** (N=97): 20%

- Stillbirth
- Congenital Syphilis
The only way to prevent congenital syphilis is to prevent or at least treat maternal syphilis
Identification of pregnant women infected with syphilis

- Screen ALL pregnant women
  - First prenatal visit
  - In high prevalence areas screen again at 28 weeks and then again at delivery
- No infant should ever be discharged from the hospital without confirmation of negative maternal serology
- Screen anyone who delivers a stillborn infant after 20 weeks gestation
Poll Question #3
What is the best way to treat Syphilis in pregnancy if allergic to Penicillin?

1. Erythromycin
2. Doxycycline
3. Desensitize and treat with penicillin
4. Azithromycin
Syphilis Treatment “Updates”

- Treatment – no updates. PCN still treatment of choice for pregnant women
  - Some evidence suggests that additional therapy is beneficial for pregnant women. For women who have primary, secondary, or early latent syphilis, a second dose of benzathine penicillin 2.4 million units IM can be administered 1 week after the initial dose

2015 STD Treatment Guidelines
Syphilis Therapy Efficacy by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Prim (27)</th>
<th>Sec (75)</th>
<th>EL (102)</th>
<th>LL (136)</th>
<th>Total (340)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success</td>
<td>100%</td>
<td>94.7%</td>
<td>98%</td>
<td>100%</td>
<td>98.2%</td>
</tr>
<tr>
<td>Failure</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>6</td>
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</tbody>
</table>

1999; 93:5-8
What is adequate maternal treatment?

• Missed doses are not acceptable for pregnant women
  – Pregnant women who miss any dose must repeat the full course of therapy
  – 7 day rule

• The CDC defines an appropriate reduction as a 4-fold drop in titer
Figure 1. Nontreponemal titer decline after treatment by stage of maternal syphilis.
A, Progression of fetal syphilis proposed by Hollier et al in 2001; B, resolution of fetal syphilis after treatment.

IgM, immunoglobulin M; MCA, middle cerebral artery; VDRL, venereal disease research laboratory.

Final Message

• The battle to decrease the congenital syphilis rate is waged on four fronts: the obstetric, the pediatric, the primary care and the public health service

• Only by working together can we hope to eradicate congenital syphilis