“SYPHILIS EDUCATION TODAY”
Local Outbreaks: How to Contain One in your Area and Syphilis and Pregnancy, a Growing Concern

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Disclosure

• Dr. Klausner is an employee of the City & County of San Francisco and a Faculty member of the University of California, San Francisco

In the past 12 months:

• The NIH, CDC, California HIV Research Program and Gen-Probe, Inc., Focus Technologies, and Cerexa provided research funding to Dr. Klausner

• Communications Strategies, Inc., CSI Medical Education and King Pharmaceuticals, Inc. supported Dr. Klausner to conduct various educational programs
Syphilis Biology

- *Treponema pallidum*, a spirochete bacterium spread through sexual contact—oral, anal, or vaginal sex
- Humans only host
- Facilitates HIV transmission

San Francisco City Clinic Web site [www.dph.sf.ca.us/sfcityclinic/stdbasics/syphilis.asp](http://www.dph.sf.ca.us/sfcityclinic/stdbasics/syphilis.asp)
Primary syphilis—chancre
Primary syphilis—chancre

anorectal

finger

Photos courtesy of Jeffrey D. Klausner, MD
Secondary syphilis

Rash

Mucous patches

Condylomata lata

Photos courtesy of Jeffrey D. Klausner, MD
Secondary syphilis—annular rashes

Photos courtesy of Jeffrey D. Klausner, MD
Case 1-- Outbreak
Early Syphilis Cases

Reported Cases

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>41</td>
</tr>
<tr>
<td>1999</td>
<td>44</td>
</tr>
<tr>
<td>2000</td>
<td>71</td>
</tr>
<tr>
<td>2001</td>
<td>185</td>
</tr>
<tr>
<td>2002</td>
<td>495</td>
</tr>
</tbody>
</table>

Clinical Information on file, Jeffrey D. Klausner, MD
Case-control studies identified factors associated with syphilis, San Francisco

- Male same-sex behavior
- HIV-infection/ HAART
- Decreased concern about HIV/AIDS
- Increased number of sex partners
- Increased proportion with multiple partners
- Methamphetamine use
- Viagra use
- Internet use

Public Health Response
Enhanced surveillance

- Quarterly blinded syphilis testing at anonymous HIV testing sites
- Monthly review of syphilis results at clinics, hospitals, emergency rooms, jails
- Weekly case review
- Neurosyphilis case review

Expanded screening and clinical services

- Targeted screening programs in care settings
- Easy, free online testing service [www.stdtest.org](http://www.stdtest.org)
- City STD Clinic prioritized cases and persons exposed to syphilis
- Community prevention center (MAGNET)
- Provider Bicillin distribution program

Prophylactic syphilis treatment for adults

- **Penicillin G benzathine** (Bicillin® L-A)* 2.4 million units (MU) intramuscular (IM) once

- **Penicillin-allergic:**
  - **Non-Pregnant:**
    - Doxycycline 100 mg PO BID x 14 days
  - **Pregnant:**
    - Test for hypersensitivity, desensitize, treat with penicillin G benzathine 2.4 MU IM once

*Do not substitute Bicillin® C-R for Bicillin® L-A in the treatment of syphilis. Bicillin® C-R is NOT indicated for the treatment of syphilis.

Expanded health provider education

- Grand rounds, noon conferences
- Mailings, education packets, website
- Strong encouragement of partner notification and prophylactic treatment
- Provider visits

Expanded health promotion

- Coalition development
- Venue notification & outreach
- Social marketing
- Internet

Healthy Penis 2002-2003

Healthy Penis Campaign awareness and syphilis testing, 2003 and 2005

Proportion Tested for Syphilis in Prior 6 Months by Number of Sex Partners, 2003

Data on file, STD Prevention and Control Services, SFDPH
Viagra use

- Research demonstrated strong association between Viagra use and new syphilis cases
- Public Health advocacy
  - Pfizer
  - FDA
  - Media
  - CDC

Role of the Internet

• Collaborated with major Internet social network providers to increase awareness and education

• Linked Internet sex-seeking sites to prevention and testing services

Klausner JD et al, AIDS Care, Nov. 2004
We're a drop-in clinic providing free and low-cost diagnosis & treatment of sexually transmitted diseases for more than 50 years.

Use the pull-down menus at right to find out about lifestyle choices & STDs that could concern you.

SYPHILISTESTING
Print a lab form, have your blood tested at any Unilab/Quest Diagnostics office in San Francisco, then access your results online.

ASK DR. K
When giving a man a blow job, am I any safer (STD-wise) if I spit instead of swallow his ejaculate?

356 7th Street
San Francisco, CA 94103
415-487-5500

DROP-IN HOURS
8:00-4:00 M-W-F
1:00-6:00 Tuesday
1:00-4:00 Thursday

Partner Notification

• Enabled disease investigators to use Internet for partner notification

• Created online peer-to-peer notification system
  – Empowers community
  – Provides choice—anonymous vs. confidential disclosure

Crystal methamphetamine use associated with more STDs, increased number of sex partners, San Francisco, 2002-2003.

Methamphetamine use increases HIV incidence
Loeb et al, XIV International AIDS Conference, Bangkok, 2004

• Harm reduction
• Fund and create new treatment programs with STD screening and sexual risk reduction

Mitchell S, Klausner J et al., CDC National STD Conference, Philadelphia, 2004
Syphilis cases by quarter
January 1999 – October 2007
San Francisco

Early syphilis cases by sexual orientation

- GAY/BI MALE + TG
- MALE UNK
- HETERO MALE
- FEMALE
CONGENITAL SYPHILIS

Special Thank You to:
Dr. Stephanie Taylor
Louisiana State University Health Sciences Center
Department of Medicine, Section of Infectious Diseases
New Orleans, LA
Congenital Syphilis

- Congenital Syphilis (CS) occurs when the spirochete *Treponema pallidum* is transmitted from a pregnant woman to her fetus

- Untreated syphilis during pregnancy can lead to stillbirth, neonatal death, and infant disease

- Worldwide more than 1 million babies are born with CS each year – two to three times more than the number of babies born with HIV infection.

TRANSMISSION

- Most fetal infections result from hematogenous spread of the organism from an infected mother

- Transmission from contact with infectious genital lesions at time of delivery can also occur

- Transmission nearly 100% if mother has early syphilis

Centers for Disease Control and Prevention, 2006 STD Treatment Guidelines, MMWR, 2006. Available at www.cdc.gov/std
TRANSMISSION

- Risk of congenital syphilis is directly related to the stage of maternal syphilis during pregnancy
  - Primary, secondary syphilis has greatest risk

- Also related to the duration of exposure in utero

- Highest risk during the first 4 years after acquisition of syphilis
## OUTCOME AND STAGE OF MATERNAL SYPHILIS

<table>
<thead>
<tr>
<th>Outcome</th>
<th>1° and 2°</th>
<th>Early Latent</th>
<th>Late Latent</th>
<th>No Syphilis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Maturity</td>
<td>50%</td>
<td>20%</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>Perinatal Death</td>
<td>0</td>
<td>20%</td>
<td>11%</td>
<td>1%</td>
</tr>
<tr>
<td>Congenital Syphilis</td>
<td>50%</td>
<td>40%</td>
<td>10%</td>
<td>0</td>
</tr>
<tr>
<td>Healthy Child</td>
<td>0</td>
<td>20%</td>
<td>70%</td>
<td>90%</td>
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</table>

Note: The surveillance case definition for congenital syphilis changed in 1988.

CDC STD Surveillance, United States 1970-2003

CS cases (in thousands)

<table>
<thead>
<tr>
<th>Year</th>
<th>CS cases</th>
<th>P&amp;S Syphilis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>0.9</td>
<td>0.3</td>
</tr>
<tr>
<td>1998</td>
<td>0.6</td>
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<tr>
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<td>0.05</td>
</tr>
<tr>
<td>2006</td>
<td>0.05</td>
<td>0.05</td>
</tr>
</tbody>
</table>

P&S rate (per 100,000 women)

Provisional data courtesy of Centers for Disease Control
Case #2

- 23 year old delivered at 35 weeks
- One pre-natal care visit at 28 weeks
- VDRL 1:16 – Treated with Bicillin 2.4 MU x 1
- At delivery – Maternal VDRL still 1:16
Management of Suspect Congenital Syphilis

- Test infant with serum RPR or VDRL
  - umbilical cord blood can become contaminated with maternal blood and could yield a false-positive result
  - Treponemal test (i.e., TP-PA or FTA-ABS) on a newborn’s serum is not necessary
  - No commercially available immunoglobulin (IgM) test can be recommended
  - 4-fold ratio of infant:maternal titer suggests infection

CDC STD Treatment Guidelines, 2006. www.cdc.gov/std
Management of Suspect Congenital Syphilis

- Examine RPR/VDRL+ infants thoroughly for evidence of congenital syphilis (e.g., edema/ascites, jaundice, hepatosplenomegaly, rhinitis, skin rash, and/or pseudoparalysis of an extremity)
- Examine the placenta or umbilical cord by using specific fluorescent antitreponemal antibody staining
- Perform darkfield microscopic examination or DFA staining of suspicious lesions or body fluids (e.g., nasal discharge)

CDC STD Treatment Guidelines, 2006. www.cdc.gov/std
Infants with proven or highly probable disease

Further Evaluation

- CSF analysis for VDRL, cell count, and protein
- Complete blood count (CBC) and differential and platelet count
- Other tests as clinically indicated (e.g., long-bone radiographs, chest radiograph, liver-function tests, cranial ultrasound, ophthalmologic examination, and auditory brainstem response)
Treatment Regimens for Congenital Syphilis

- Aqueous crystalline penicillin G 50,000 units/kg/dose IV every 12 hours during the first 7 days of life and every 8 hours thereafter for a total of 10 days
- Procaine penicillin G 50,000 units/kg/dose IM in a single daily dose for 10 days
  - If > 1 day of therapy is missed, the entire course should be restarted.
  - Data are insufficient regarding the use of other antimicrobial agents (e.g., ampicillin)

CDC STD Treatment Guidelines, 2006. www.cdc.gov/std
EARLY CONGENITAL SYPHILIS

- Osteochondritis 55%
- Snuffles 40%
- Rash 40%
- Anemia 30%
- Hepatosplenomegaly 20%
- Jaundice 20%
- Neurologic signs 20%
- Lymphadenopathy 5%
- Mucous Patches 5%
Occurrence of Congenital Syphilis After Maternal Treatment With Azithromycin During Pregnancy

- 5 pregnant women with syphilis (1:8 to 1:128) and penicillin allergy treated with azithromycin
- 5 babies born with skin rashes; 4 hepatomegaly and 1 osteochondritis
  - All had + FTA-ABS-19-sIgM

Zhou et al, STD, 2007
LATE CONGENITAL SYPHILIS

Saddle Nose  Frontal Bossing
Short Maxillas  Protruding mandible
Intersitial Keratitis  8th Nerve Deafness
High Palatal Arch  Hutchinson’s Teeth
Mulberry Molars  Clutton’s Joints
Saber Shins  Flaring Scapulas
Sternoclavicular Thickening

INTERSTITIAL KERATITIS

Photos from CDC
HUTCHINSON’S TEETH AND MULBERRY MOLARS

Photos from CDC
SADDLE NOSE DEFORMITY

Photos from CDC
CDC Guidelines
Syphilis in Pregnancy

- Screen for syphilis at first prenatal visit; repeat RPR/VDRL third trimester/delivery for those at high risk (women with > 1 partner) or high prevalence areas (Southern US)

- Treat for the appropriate stage of syphilis

- Management and counseling may be facilitated by sonographic fetal evaluation for congenital syphilis in the second half of pregnancy

Centers for Disease Control and Prevention, 2006 STD Treatment Guidelines, MMWR, 2006. Available at www.cdc.gov/std
Primary, Secondary or Early Syphilis Treatment for Pregnant Women

- **Penicillin G benzathine (Bicillin® L-A)** 2.4 million units (MU) intramuscular (IM) once

- **Penicillin-allergic:** Test for hypersensitivity, desensitize, treat with penicillin G benzathine

- **Do not substitute** Bicillin® C-R for Bicillin® L-A in the treatment of syphilis.

- **Bicillin® C-R** is NOT indicated for the treatment of syphilis.

Syphilis Prevention in Medical Settings

- Routinely obtain sexual history on all patients
- Counsel patients with > 1 partner on risk for STDs including syphilis
- Advise patients on importance of consistent and correct use of condoms for all types of sexual activity
- Regular screening is recommended for persons who have more than one sex partner and every 3-6 months in gay men and other men who have sex with men who have multiple partners


San Francisco City Clinic Web site www.dph.sf.ca.us/sfcityclinic/stdbasics/syphilis.asp (accessed August 15, 2007)
Summary

• Syphilis is increasing in the U.S. requiring enhanced disease prevention and control efforts

• Treatment of syphilis requires use of penicillin G benzathine (Bicillin® L-A)
  – *Bicillin® C-R is not indicated for syphilis*

• Congenital syphilis is a serious but preventable disease

Based on Jeffrey D. Klausner, MD’s clinical experience
More information and questions!

- **SFDPH City Clinic**
  - [www.sfcityclinic.org](http://www.sfcityclinic.org)
  - Jeff.Klausner@sfdph.org
- **State of CA STD Branch**
  - [www.ucsf.edu/castd](http://www.ucsf.edu/castd)
- **CDC STD Treatment Guidelines 2006**
  - [http://www.cdc.gov/std](http://www.cdc.gov/std)
- **www.Bicillin.net**