Wexner Medical Center

THE CITY OF COLUMBUS
MICHAEL B. COLEMAN, MAYOR
COLUMBUS PUBLIC HEALTH

Syphilis
"The Current State of Affairs"

Jose A. Bazan, DO
Medical Director, Sexual Health Clinic
Columbus Public Health
Assistant Professor, Clinical Internal Medicine
Division of Infectious Diseases
The Ohio State University Wexner Medical Center

Objectives

- Recognize the national and local epidemiologic trends and risk factors for syphilis in the U.S.
- Review the clinical manifestations, screening algorithms, and current treatment recommendations for syphilis.

Speaker has no conflicts of interest or financial disclosures to report.

Outline of Talk*

- Introduction
- Epidemiology of syphilis in the U.S. & Ohio
- Risk factors & Clinical Manifestations
- Diagnosis and Screening Algorithms
- Treatment Recommendations & Follow-up

*Ambitious outline (i.e. some slides have been deleted in interest of time)

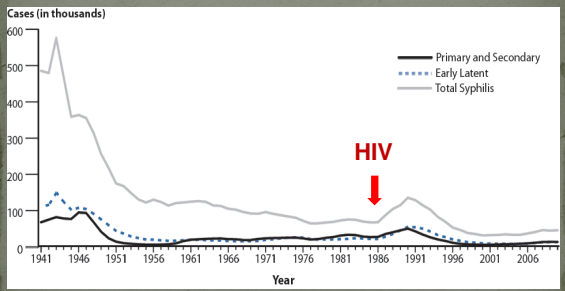
Introduction

- Etiologic agent of syphilis is ***Treponema pallidum***
- Stages of infection & Classification:
  - **Primary Syphilis**
  - **Secondary Syphilis**
  - **Early Latent Syphilis (< 1 year duration)**

  "Early Syphilis (ES)" (Increased risk of transmission to susceptible partners)
  - **Late Latent Syphilis (> 1 year duration)**
  - **Latent Syphilis of "Unknown Duration"**
  - **Tertiary Syphilis**
  - **Neurosyphilis (can occur at any stage!)**
  - **Congenital Syphilis**

Sources: Infectious Diseases. Cohen J, et al. 3rd Ed, 2010. Chapter 161; Vol. 2: pp. 1590-7.

Syphilis – Reported Cases by Stage of Infection, U.S., 1941-2010



Source: http://www.cdc.gov/std/stats10/figures/34.htm

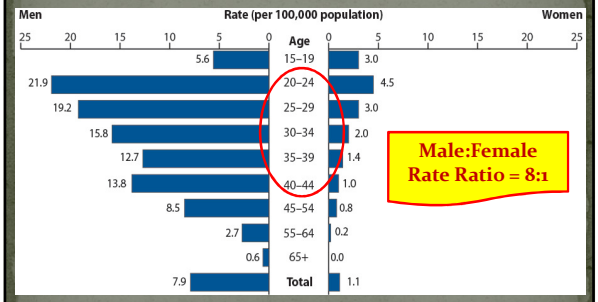
Syphilis Cases & Rates, U.S., 2010

- **All Stages** → 45,834 cases (Rate: 14.9 cases / 100,00)
- **Primary & Secondary Syphilis**
  - U.S. → 13,774 cases (Rate: 4.5 cases / 100,0
    - Ohio → 528 cases (Rate: 4.6 cases / 100,000)

  Ohio Ranked 13th in U.S.
- **Early Latent Syphilis (ELS)**
  - U.S. → 13,604 cases (Rate: 4.4 cases/ 100,000)
    - Ohio → 189 cases (Rate: 1.6 cases / 100,000)

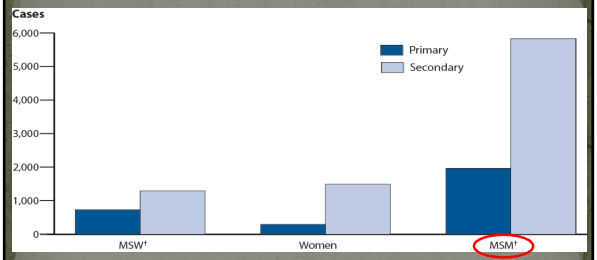
Sources: http://www.cdc.gov/std/stats10/syphilis.htm; http://www.cdc.gov/std/stats10/tables/36.htm

Primary and Secondary Syphilis Rates by Age & Sex, U.S., 2010



Source: http://www.cdc.gov/std/stats10/figures/35.htm;http://www.cdc.gov/std/stats10/figures/39.htm

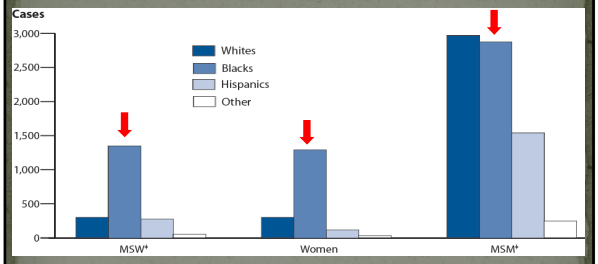
Primary and Secondary Syphilis Cases by Stage, Sex, & Sexual Behavior, U.S., 2010



* Of the reported male cases of primary and secondary syphilis, 18.3% were missing sex of sex partner information.
† MSW = men who have sex with women only; MSM = men who have sex with men.

Source: http://www.cdc.gov/std/stats10/figures/43.htm

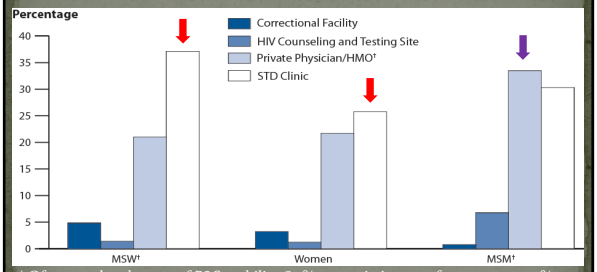
Primary and Secondary Syphilis Cases by Sex, Behavior and Race/Ethnicity, U.S., 2010



* Of the reported male cases of P&S syphilis, 18.3% were missing sex of sex partner; 2.0% of male cases with sex of sex partner data were missing race/ethnicity data.
† No imputation done for race/ethnicity
‡ MSW = men who have sex with women only; MSM = men who have sex with men

Sources: http://www.cdc.gov/std/stats10/figures/44.htm

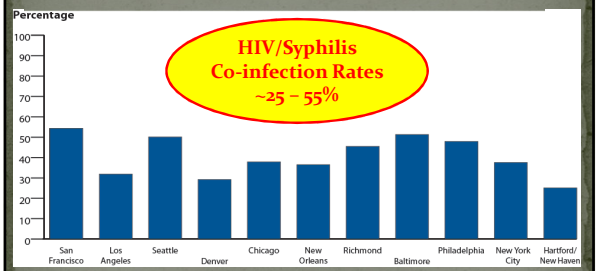
Primary and Secondary Syphilis Cases by Sex, Behavior, and Reporting Sources, U.S., 2010



* Of reported male cases of P&S syphilis, 18.3% were missing sex of sex partner; 2.7% of male cases with sex of sex partner data were missing source.
† HMO = health maintenance organization; MSW = men who have sex with women only; MSM = men who have sex with men

Sources: http://www.cdc.gov/std/stats10/figures/46.htm

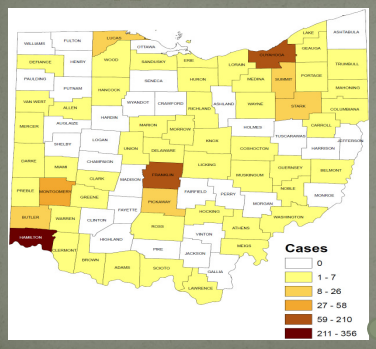
STD Surveillance Network (SSuN), Proportion of MSM* with Primary and Secondary Syphilis Who Are Co-infected with HIV, 2010



* MSM = men who have sex with men.
NOTE: Includes sites that reported data on at least 5 MSM with P&S syphilis in 2010.

Sources: http://www.cdc.gov/std/stats10/figures/x.htm

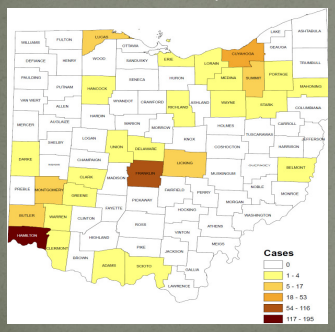
Total Syphilis Cases in Ohio, 2011



Cincinnati 356 cases
Columbus 190 cases
Cleveland 99 cases
Dayton 56 cases
Akron 20 cases
Toledo 15 cases

Source: Ohio Department of Health, STD Surveillance. Data reported through 4/15/2012 & 8/27/2012

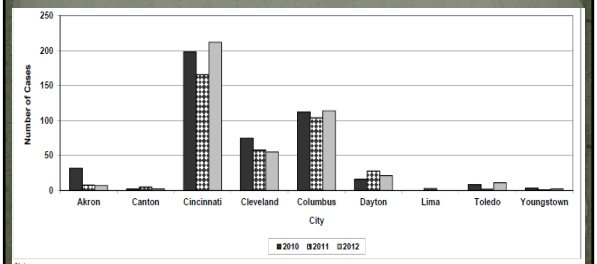
Primary and Secondary Syphilis Cases in Ohio, 2011



Cincinnati 192
Columbus 104
Cleveland 37
Dayton 17
Akron 6
Toledo 8

Source: Ohio Department of Health, STD Surveillance. Data reported through 4/15/2012 & 4/28/2012

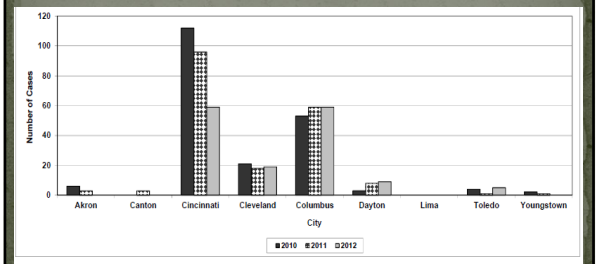
Total Syphilis Cases in Selected Ohio Cities, 2010 – 2012 (2nd Quarter)



Notes:
(1) In this presentation, date of diagnosis is defined as the date the specimen was collected by the provider.
(2) Rates are shown per 100,000 persons and were calculated using census estimates for 2010.
Small numbers are unstable and should be interpreted with caution.
Provisional data. Numbers subject to change when additional information is gained.

Source: Ohio Department of Health (ODH), STD Surveillance. Data reported through 8/27/2012

Primary and Secondary Syphilis Cases in Selected Ohio Cities, 2010 – 2012 (2nd Quarter)



Notes:
(1) In this presentation, date of diagnosis is defined as the date the specimen was collected by the provider.
(2) Rates are shown per 100,000 persons and were calculated using census estimates for 2010.
Small numbers are unstable and should be interpreted with caution.
Provisional data. Numbers subject to change when additional information is gained.

Source: Ohio Department of Health (ODH), STD Surveillance. Data reported through 8/27/2012

Risk Factors for Early Syphilis (ES) among MSM

- Non-white race (OR 2.1, 1.1 – 4.4)
- Income >$30,000 / year (OR 2.7, 1.4 – 5.2)
- HIV-positive status (OR 7.3, 3.5 – 15.4)
- Anonymous sex partners (OR 2.0, 1.1 – 3.6)
- "Barebacked" (OR 2.8, 1.6 – 4.8)
- Stronger gay community affiliation (OR 2.3, 1.2 – 4.6)
- Recent internet sex partners (OR 2.1, 1.0 – 4.3)

Sources: Wong W, et al. Sex Transm Dis 2005;32(7):458-463; Paz-Bailey G, et al. Sex Transm Dis 2004;31:581-7; Zetola et al. CID 2007;44:1222-8.

Risk Factors for Early Syphilis (ES) among MSM

- Recreational illicit and/or prescription drug use
  - Crystal methamphetamine (OR 3.2, 1.3 – 7.6)
  - Viagra® (OR 2.1, 1.2 – 3.8)
  - Crystal methamphetamine + Viagra® (OR 6.2, 2.6 – 14.9)
- Oral sex ("safe sex"?)
  - Risk for syphilis vs. HIV transmission (13.7% vs. 0.31%)
- Availability of HAART = False sense of security
  - Patients with HIV and syphilis that reported being on HAART (69%) and having an undetectable VL (58%)

Sources: Wong W, et al. Sex Transm Dis 2005;32(7):458-463; Paz-Bailey G, et al. Sex Transm Dis 2004;31:581-7; Page-Shafer K, et al. AIDS 2002;16:2350-2; Katz MH, et al. Am J Public Health 2002;92:388-94; Zetola et al. CID 2007;44:1222-8

Syphilis: Clinical Manifestations

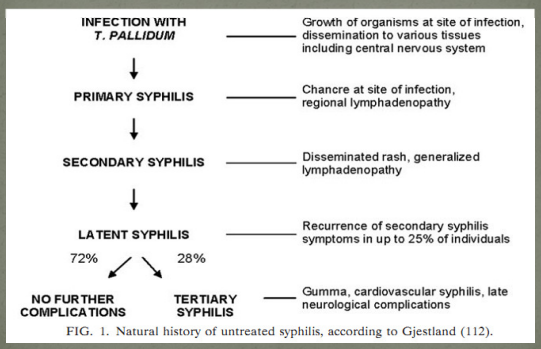
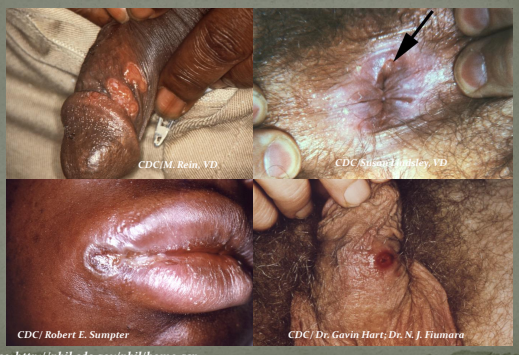


FIG. 1. Natural history of untreated syphilis, according to Gjestland (112).

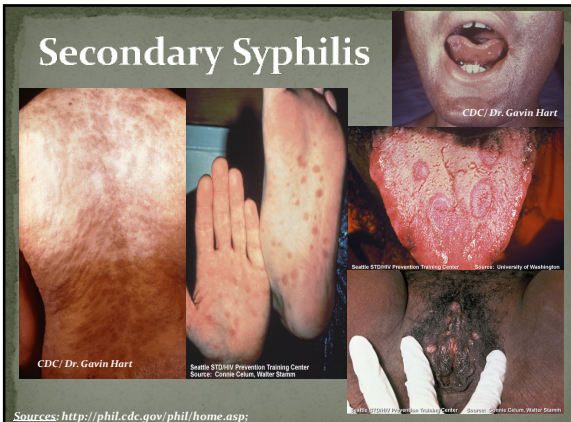
Source: LaFond RE, Lukehart SA. Clin Micro Rev 2006;19(1):29-49

Primary Syphilis



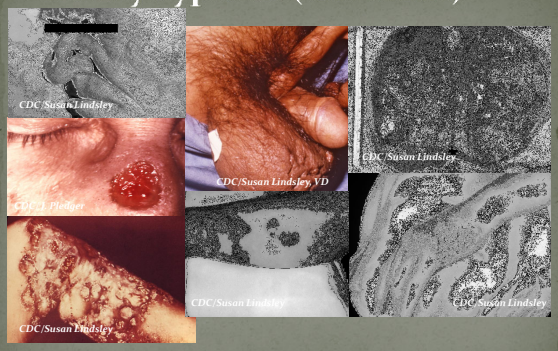
Source: http://phil.cdc.gov/phil/home.asp

Secondary Syphilis



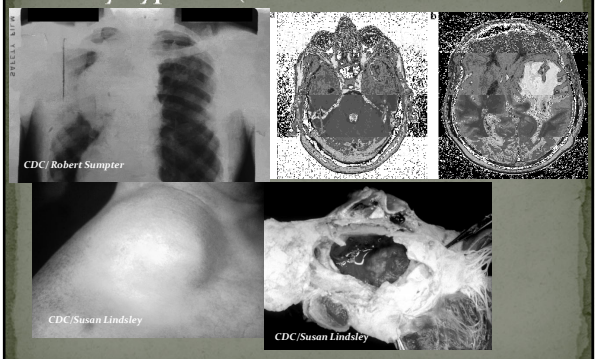
Sources: http://phil.cdc.gov/phil/home.asp; http://depts.washington.edu/nnptc/online_training/std_handbook/gallery/index.html

Tertiary Syphilis (Gummas)



Sources: http://phil.cdc.gov/phil/home.asp; http://phil.cdc.gov/phil/details.asp

Tertiary Syphilis (Aortitis & CNS Gummas)



Source: http://phil.cdc.gov/phil/details.asp; Darwish BS, et al. J Clin Neurosciences 2008;15:308-10

Neurosyphilis (Can occur at any stage!)

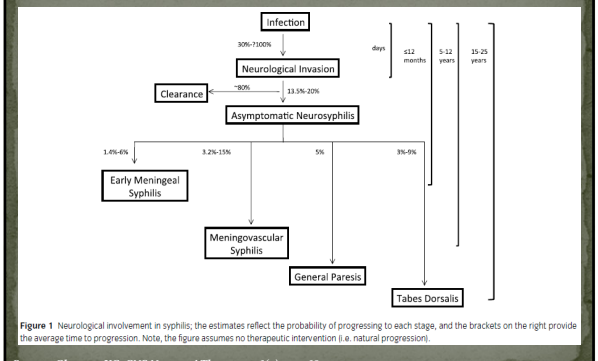


Figure 1 Neurological involvement in syphilis; the estimates reflect the probability of progressing to each stage, and the brackets on the right provide the average time to progression. Note, the figure assumes no therapeutic intervention (i.e. natural progression).

Source: Ghanem KG. CNS Neurosci Ther 2010;16(5):e157-68.

Syphilis Screening Recommendations (CDC)

- Routine screening of asymptomatic adolescents is NOT recommended
- **Certain groups should be screened:**
  - **Pregnant women**
  - **MSM (especially if risk factors are present)**
  - **HIV-positive patients**
  - **Blood donors**
  - **Inmates at correctional facilities, depending on local prevalence of infectious ES**

Source: 2010 CDC STD Treatment Guidelines; CDC . Morb Mortal Wkly Rep. 2011 Feb 11;60(5):133-7.

Pregnant Women & the Risk of Congenital Syphilis

- Vertical transmission of syphilis can occur at any stage of maternal infection.
- If syphilis is acquired within 4 years of pregnancy and goes untreated, fetal infection will develop in up to 80% of cases.
- In the setting of untreated ES in the mother, fetal demise may occur in up to 40% of cases

Sources: Infectious Diseases. Cohen J, et al. 3rd Ed, 2010. Chapter 161; Vol. 2: pp. 1590-7; http://www.cdc.gov/std/stats10/Syphilis.htm#foot1; Ingraham NR. Acta Derm Venereol. 1951;31 (Suppl 24):60-88.

Pregnant Women & the Risk of Congenital Syphilis

- **All pregnant women should be screened at 1st pre-natal visit (early pregnancy).**
- **Re-screening at 28 – 32 weeks gestation and at delivery if at high risk or prevalence of syphilis in the community is high.**
- **Any woman who delivers a stillborn infant at ≥20 weeks gestation, must screen for syphilis**
- **All pregnant women with syphilis should be screened for HIV!!!**

Source: 2010 CDS STD Treatment Guidelines

Pregnant Women & the Risk of Congenital Syphilis

- All pregnant women with reactive screening and confirmatory syphilis serology need to be considered actively infected unless:
  - Adequate treatment history is clearly documented and there is evidence of serial decline in antibody titers (i.e. RPR).
  - Persistent low antibody titers after treatment (i.e. serofast status) may not need re-treatment.
  - Persistent high antibody titers my be suggestive of re-infection and require clinical evaluation and possible re-treatment.

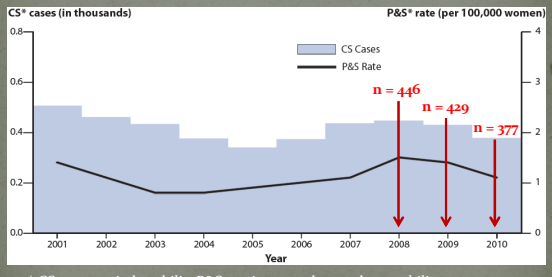
Source: 2010 CDS STD Treatment Guidelines

Pregnant Women & the Risk of Congenital Syphilis

- Women diagnosed during the 2nd half of pregnancy (after 20 weeks gestation) should be evaluated by OB specialist and have a fetal U/S to look for evidence of placental or fetal infection.
  - Sonographic findings suggestive of fetal syphilis (i.e. thickened placenta, hepatomegaly, hydrops, fetal anemia, hydramnios, and ascites) are associated with higher risk of fetal treatment failure.
  - DO NOT delay therapy while waiting for fetal U/S
- Concerns for "inadequate" maternal treatment:
  - Delivery of infant within 30 days of maternal treatment
  - Clinical signs of infection present at delivery
  - Maternal RPR titer ≥4 fold higher at delivery compared to pre-treatment titer.
- Must ensure that sex partners (SP) are screened and treated to minimize chances of re-infection

Source: 2010 CDS STD Treatment Guidelines; Wendel GD, et al. CID 2002;35(Suppl 2):S200-9

Congenital Syphilis: Reported Cases Among Infants by Year of Birth and Rates of Primary and Secondary Syphilis Among Women, U.S., 2001–2010



* CS = congenital syphilis; P&S = primary and secondary syphilis.

Source: http://www.cdc.gov/std/stats10/figures/47.htm

Congenital Syphilis Cases in Ohio, 2010 – 2012 (2nd Quarter)

Cases Reported to the Ohio Department of Health

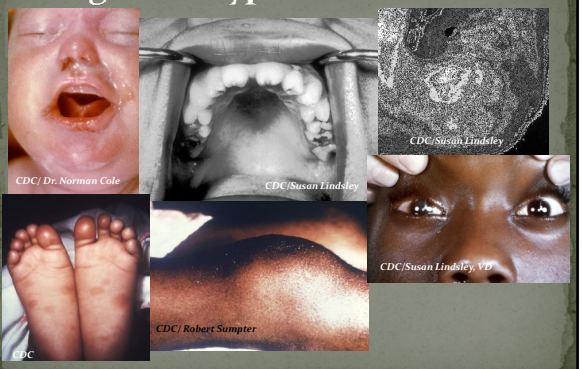
	January - June Cases			January - December Cases				Rate[2]	
	2010	2011	2012	2010	% of Total	2011	% of Total	2010	2011
RACE									
Am. Indian/Alaskan Native	0	0	0	0	0.0	0	0.0	0.0	0.0
Asian/Pacific Islander	0	0	0	0	0.0	2	15.4	0.0	56.7
Black/African American	4	4	3	9	81.8	9	69.2	35.4	35.4
White	0	2	0	1	9.1	2	15.4	0.9	1.7
Other[3]	0	0	1	1					--
Not Specified	0	0	0	0					--
ETHNICITY									
Hispanic	0	0	0	0					0.0
Non-Hispanic	4	6	4	11					9.5
Not Specified	0	0	0	0					--
SEX									
Male	2	3	2	6	54.5	6	46.2	8.1	8.1
Female	2	3	2	5	45.5	7	53.8	7.1	9.9
Not Specified	0	0	0	0	0.0	0	0.0	--	--
TOTAL	4	6	4	11	100.0	13	100.0	7.6	9.0

Franklin Co. = 2
Hamilton Co. = 2

Notes:
(1) In this presentation, date of diagnosis is defined as the date the specimen was collected by the provider.
(2) Disease rates are shown per 100,000 live births and were calculated using live birth estimates for 2009.
(3) Cases are included in the Other race category if multiple races are chosen or if the case did not fit into any of the listed categories.
Small numbers are unstable and should be interpreted with caution.
Provisional data. Numbers subject to change when additional information is gained.

Source: Ohio Department of Health (ODH), STD Surveillance. Data reported through 8/27/2012

Congenital Syphilis



Source: http://phil.cdc.gov/phil/details.asp

Tissue Diagnosis

- Dark-field (DF) microscopy examination of lesions

Sources: Infectious Diseases. Cohen J, et al. 3rd Ed, 2010. Chapter 161; Vol. 2: pp. 1590-7; Darkfield Microscopy. St. Louis STD/HIV Prevention Training Ctr. Washington Univ. School of Medicine; http://depts.washington.edu/nnptc/online_training/std_handbook/gallery/index.html

Serologic Diagnosis: Screening Tests

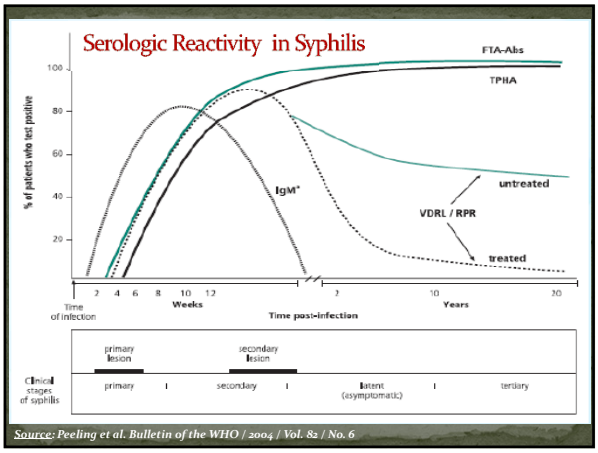
- **Non-Treponemal Tests** → Antibodies directed against human lipoidal antigens (i.e. cardiolipin, cholesterol, & lecithin)
  - Rapid Plasma Reagin (RPR)
  - Venereal Disease Research Laboratory (VDRL)
  - Toluidine Red Unheated Serum Test (TRUST)
- **Markers of disease activity (quantitative; "titers")**
- **Used to monitor response to treatment**
- False (+) and False (-) results can be seen.

Sources: 2010 CDC STD Treatment Guidelines; Infectious Diseases. Cohen J, et al. 3rd Ed, 2010. Chapter 161; Vol. 2: pp. 1590-7; Larsen SA, et al. Clin Microbiol Rev. 1995;8(1):1.

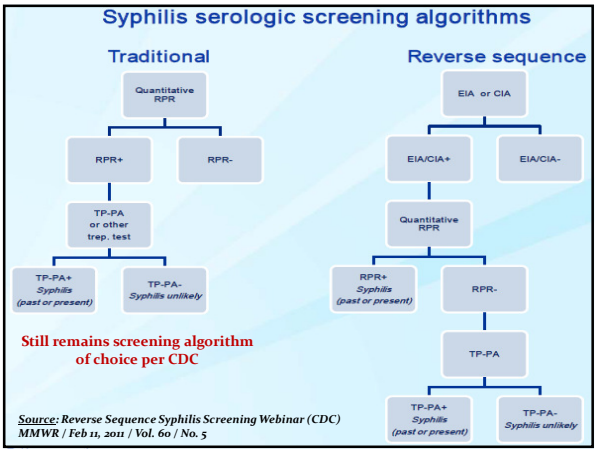
Serologic Diagnosis: Confirmatory Tests

- **Treponemal Specific Tests** → Antibodies directed against specific *T. pallidum* antigens
  - Fluorescent Treponemal Antibody Absorbed Assay (FTA-ABS)
  - *Treponema pallidum* particle agglutination Assay (TP-PA)
  - Immunoassays
    - Enzyme Immunoassay (EIA)
    - Chemiluminescence Immunoassay (CIA)
    - Microbead Immunoassays (MBIA)
- **Once positive, usually remain so for life**
- **Not used to monitor response to therapy (Qualitative)**
- False (+) and False (-) results can also be seen.

Sources: 2010 CDC STD Treatment Guidelines; Infectious Diseases. Cohen J, et al. 3rd Ed, 2010. Chapter 161; Vol. 2: pp. 1590-7 Larsen SA, et al. Clin Microbiol Rev. 1995;8(1):1; MMWR Morb Mortal Wkly Rep. 2011 Feb 11;60(5):133-7.



Source: Peeling et al. Bulletin of the WHO / 2004 / Vol. 82 / No. 6



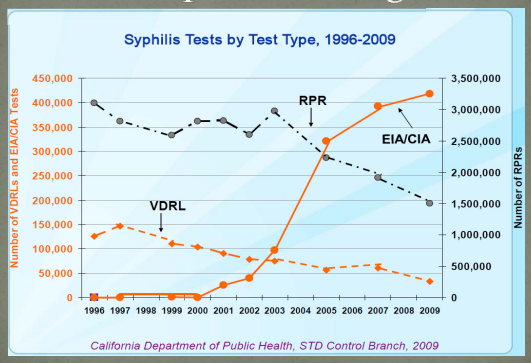
Source: Reverse Sequence Syphilis Screening Webinar (CDC) MMWR / Feb 11, 2011 / Vol. 60 / No. 5

Reverse Sequence Testing

- **Advantages of Screening using EIA/CIA:**
  - Automated / High throughput
  - ↓ Cost in high volume settings
  - ↓ Laboratory occupational hazard
  - No false negative results due to "Prozone" reaction
    - "Prozone" Effect → Excess antibodies results in small "Antigen-Antibody" complexes that fail to agglutinate, giving the appearance of a "negative" screening result (i.e. RPR).
  - Objective results
  - Can detect Early Primary Syphilis
    - Specific-TP antibodies become reactive before non-TP antibodies

Source: Reverse Sequence Syphilis Screening Webinar (CDC) MMWR / Feb 11, 2011 / Vol. 60 / No. 5

Reverse Sequence Testing



Source: Reverse Sequence Syphilis Screening Webinar (CDC)MMWR / Feb 11, 2011 / Vol. 60 / No. 5

Reverse Sequence Testing

- **Disadvantages of Screening using EIA/CIA:**
  - Can't distinguish "active" (untreated) vs. "old" (treated) disease
  - Need studies looking at performance of EIA/CIA compared to other serologic tests.
  - Need studies looking at performance of EIA/CIA in detecting IgM in Early Syphilis.
  - **Confusion regarding management of "Discordant" results (EIA/CIA+ and RPR-)**

Sources: Reverse Sequence Syphilis Screening Webinar (CDC) MMWR / Feb 11, 2011 / Vol. 60 / No. 5

Centers for Disease Control and Prevention
MMWR Morbidity and Mortality Weekly Report
Weekly / Vol. 60 / No. 5 February 11, 2011

Discordant Results from Reverse Sequence Syphilis Screening — Five Laboratories, United States, 2006–2010

TABLE. Results of reverse sequence syphilis screening (treponemal test screening followed by nontreponemal test confirmation) — five laboratories, United States, 2006–2010

Population type/Laboratory	Treponemal test used	Conjugate type (anti-antibody or antigen)	Total no. of specimens	Reactive EIA/CIA treponemal test: No. of specimens	Reactive EIA/CIA treponemal test: (% of total)	Nonreactive reflex nontreponemal RPR test: No. of specimens	Nonreactive reflex nontreponemal RPR test: (% of reactive treponemal tests)	Nonreactive TP-PA or FTA-ABS confirmatory treponemal test: No. of specimens	Nonreactive TP-PA or FTA-ABS confirmatory treponemal test: (% of nonreactive reflex RPR tests)
Overall			140,176	4,834	(3.4)	2,743	(56.7)	866	(31.6)
Low-prevalence population*			127,402	2,984	(2.3)	1,807	(60.6)	737	(40.8)
Southern California†	Trep-Chek	Anti-antibody	47,952	1,278	(2.7)	765	(59.9)	459§	(60.0)
Northern California¶	Liaison	Antigen	21,623	438	(2.0)	287	(65.5)	88§	(30.7)
Southern California**	Trep-Sure	Antigen	57,827	1,268	(2.2)	755	(59.5)	190§	(25.2)
High-prevalence population††			12,774	1,850	(14.5)	936	(50.6)	129	(14.1)
New York City§§	Trep-Chek	Anti-antibody	7,607	1,165	(15.3)	639	(54.8)	78¶¶	(12.2)
Chicago***	Trep-Sure	Antigen	5,167	685	(13.3)	297	(43.4)	51¶¶	(18.6)†††

Source: CDC. Morb Mortal Wkly Rep. 2011 Feb 11;60(5):133-7.

Reasons for "Discordant" Results (EIA/CIA+ and RPR-)

1) **False (+) EIA/CIA → (-) TP-PA**
   - EIA/CIA's have high sensitivity, but lower specificity.
   - More common in "low prevalence" compared to "high prevalence" patient populations (40.8% vs. 14.1%) .
2) **Untreated or Treated Syphilis → (+) TP-PA**
   - Specific-TP antibodies can remain (+) for life
   - Non-TP antibodies can become (-) without treatment over time (latency) OR after successful treatment.
3) **Early Primary Syphilis → (-/+) TP-PA**
   - Specific-TP antibody titers may increase before non-TP ones
4) **"Prozone" Reaction → (+) TP-PA**

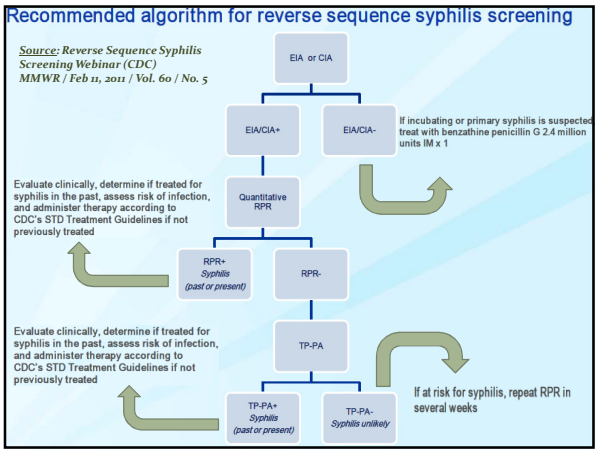
Source: Reverse Sequence Syphilis Screening Webinar (CDC) MMWR / Feb 11, 2011 / Vol. 60 / No. 5

Reverse Sequence Testing: CDC Recommendations

- All reactive EIA/CIA must be reflexively tested with a quantitative RPR so as to potentially detect "active infection".
- Recognize that EIA/CIA test performance varies by prevalence of syphilis in the population.
- All "Discordant" results (i.e. EIA/CIA + and RPR-) must be confirmed with a 2nd specific-TP test that has at least equal sensitivity and greater specificity (TP-PA is recommended, NOT the FTA-ABS).

Sources: Reverse Sequence Syphilis Screening Webinar (CDC) MMWR / Feb 11, 2011 / Vol. 60 / No. 5

Recommended algorithm for reverse sequence syphilis screening



Impact of Reverse Sequence Testing on Diagnosis of Late Latent Syphilis

Total # of Late Latent Syphilis Cases = 139

(EIA+, RPR+) = 58 (41.8%)

(EIA+, RPR-, TP-PA+) = 81 (58.3%)*

***Additional Public Health Resources required to investigate LLS cases that would have otherwise not been diagnosed by traditional screening methods (i.e. RPR first)**

2008 2009

Edmonton, Cana… …2009.

…ases after introduction of RSSS by testing volume by quarter,

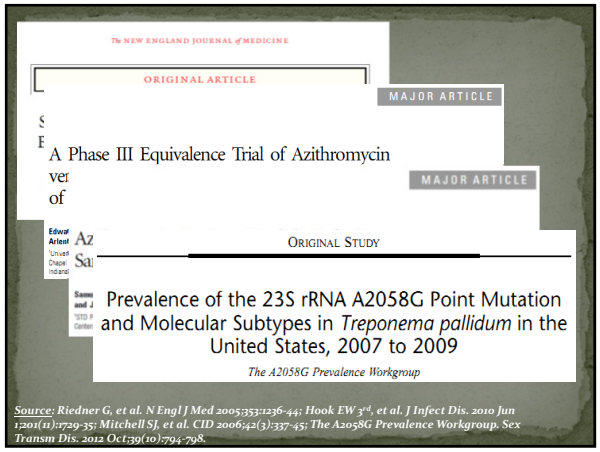
Source: Gratix J, et al. Sex Transm Dis 2012;39(7):528-30.

Treatment of Syphilis

- **Primary, Secondary, and Early Latent Syphilis**
  - **Benzathine PCN-G 2.4 MU IM x 1**
  - PCN Allergy:
    - **Doxycycline 100mg PO BID x 14 days**
    - **Tetracycline 500mg PO QID x 14 days**
    - **Ceftriaxone 1g IM/IV QD x 10 – 14 days**
    - **Azithromycin 2g PO x 1** (not in MSM or Pregnant women)

CAUTION!!!

Source: 2010 CDS STD Treatment Guidelines



Source: Riedner G, et al. N Engl J Med 2005;353:1236-44; Hook EW 3rd, et al. J Infect Dis. 2010 Jun 1;201(11):1729-35; Mitchell SJ, et al. CID 2006;42(3):337-45; The A2058G Prevalence Workgroup. Sex Transm Dis. 2012 Oct;39(10):794-798.

Treatment of Syphilis

- **Late Latent Syphilis and Syphilis of Unknown Duration**
  - **Benzathine PCN-G 2.4 MU IM q weekly x 3**
  - PCN Allergy:
    - **Doxycycline 100 mg PO BID x 28 days**
    - **Tetracycline 500 mg PO QID x 28 days**
- **Tertiary Syphilis (Gummas and Cardiovascular syphilis*)**
  - **Benzathine PCN-G 2.4 MU IM q weekly x 3**

  *Some providers may treat as Neurosyphilis.
  - PCN Allergy:
    - **Unclear (consult ID Specialist)**

Source: 2010 CDS STD Treatment Guidelines

Treatment of Syphilis

- **Neurosyphilis**
  - **Aqueous Crystalline PCN-G 18 – 24 MU IV q 24 hours x 10 – 14 days**
  - **Procaine PCN 2.4 MU IM q 24 hours + Probenecid 500 mg PO QID x 10 – 14 days.**
  - PCN Allergy:
    - **Desensitization and PCN therapy**
    - **Ceftriaxone 2 g IM/IV q 24 hours x 10 – 14 days**

Source: 2010 CDS STD Treatment Guidelines

Treatment of Syphilis: Additional Pearls

- Monitor for ***Jarisch-Herxheimer*** reaction
  - Self-limited
  - Common in ES, higher baseline RPR titer, and in HIV positive patients.
- Pregnancy → Remember to use only PCN!!! (must desensitize if needed)
- **Recommended Benzathine PCN-G regimens are same for both HIV (-) and HIV (+) individuals.**

Source: 2010 CDC STD Treatment Guidelines

Syphilis Follow-Up

- **Primary & Secondary Syphilis** → Repeat RPR at 6 and 12 months for HIV (-) and 3, 6, 9, 12, and 24 months for HIV (+) patients
- **Latent Syphilis** → Repeat RPR at 6, 12, and 24 months for HIV (-) and 6, 12, 18, and 24 months for HIV (+) patients
- **Pregnant women** → Repeat RPR at 28 – 32 weeks gestation and again at delivery, then as recommended for specific stage of infection.
  - May check RPR monthly if at high risk of re-infection or in high prevalence areas.
- Appropriate serologic response to treatment:
  - **Primary & Secondary Syphilis** → ≥4-fold decrease in RPR titer between 6 and 12 months (i.e. 1:256 → 1:64)
  - **Latent Syphilis** → ≥4-fold decrease in RPR titer between 12 and 24 months
- **Response to treatment is variable and a slower decrease in titers may be seen in patients with prior history of syphilis and/or HIV infection**

Source: 2010 CDC STD Treatment Guidelines

Need for Lumbar Puncture (LP)

- Patients with any manifestation of **Tertiary syphilis**.
- Patients with syphilis and **neurologic symptoms** (i.e. cognitive dysfunction, motor or sensory deficits, ophthalmic or auditory symptoms, CN palsies, symptoms of meningitis)
- Patients who meet criteria for **suspected treatment failure**:
  - Recurrence or persistence of symptoms
  - **PS & SS** → Lack of ≥4-fold decrease in RPR titer by 6 – 12 months
  - **Latent Syphilis** → Lack of ≥4-fold decrease in titer by 12 – 24 months (especially if pre-treatment RPR ≥1:32).
  - Sustained ≥4-fold increase in titer after treatment
- No clear evidence to support routine LP of HIV-positive patients with syphilis and with RPR ≥1:32 and/or CD4 count ≤ 350 cells/mL and **no neurologic symptoms**. There is no association with improved clinical outcomes.

Sources: 2010 CDC STD Treatment Guidelines

Follow-Up with Sex Partners

- **Notification and screening of sex partners:**
  - **Primary Syphilis** → Last 90 days + symptom duration
  - **Secondary Syphilis** → Last 6 months + symptom duration
  - **Early Latent Syphilis** → Last 12 months
- **Presumptive treatment of exposed sex partners:**
  - All partners exposed < 90 days before diagnosis of Primary, Secondary, and Early Latent Syphilis.
  - All partners exposed >90 days before diagnosis of Primary, Secondary, and Early Latent Syphilis, if screening results not available immediately or follow-up is questionable.
  - Partners of patients diagnosed with "Syphilis of Unknown Duration" and **RPR ≥1:32**, should be managed as Early Latent Syphilis

Source: 2010 CDC STD Treatment Guidelines

Conclusions

- The epidemic of syphilis in this country is disproportionally affecting Men who have Sex with Men (MSM)
- Remember that there is a high prevalence of HIV co-infection.
- Screen according to CDC recommendations and risk factors.
- Reverse Sequence Testing may be coming to a medical center or STD clinic near you, so become familiar with it.
- PCN is still the treatment of choice for all forms of syphilis.
- Notification, screening, and treatment of exposed sex partners is still an integral part of the effort to help curve the epidemic.

THANK YOU!!

Jose.bazan@osumc.edu.