



SPECTRUM HEALTH

Helen DeVos

children's hospital

Working Toward Zero Cases of Congenital Syphilis

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Background

Although congenital syphilis is rare, incidence is increasing in the US and specifically in Michigan

Morbidity and Mortality Weekly Report

Increase in Incidence of Congenital Syphilis — United States, 2012–2014

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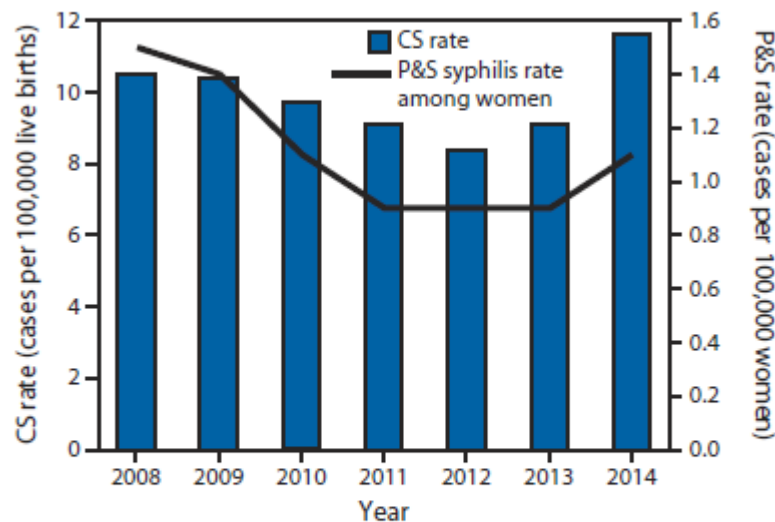
Background

There have been 22 cases in 2016!!!

Disease Group	Reportable Condition	Cases Reported In The Last 4 Weeks**				Total Cases Reported In Each Of The Last 5 Years***				
		35-2016	36-2016	37-2016	38-2016	2012	2013	2014	2015	2016
STD	Chancroid	0	0	0	0	2	1	0	0	0
	Chlamydia (Genital)	946	761	1,017	1,201	47,709	45,195	45,280	48,102	34,625
	Gonorrhea	258	263	310	344	12,573	10,785	9,738	10,676	9,040
	Granuloma Inguinale	0	0	0	0	0	0	0	0	0
	Lymphogranuloma venereum	0	0	0	0	0	0	0	19	18
	Syphilis - Congenital	1	2	2	2	18	9	16	11	22
	Syphilis - Early Latent	2	3	3	1	154	208	249	285	203
	Syphilis - Late Latent	2	2	0	1	126	154	414	376	249
	Syphilis - Late with Manifestations	0	0	1	0	14	9	22	24	10

Background

FIGURE. Congenital syphilis (CS) rate* among infants aged <1 year and rate of primary and secondary (P&S) syphilis among women† — United States, 2008–2014[§]



* CS rates during 2008–2013 were calculated by using annual live birth data as denominators. Available at <http://wonder.cdc.gov/nativity-current.html>.

† P&S syphilis rates during 2008–2013 were calculated by using bridged race U.S. Census population estimates as denominators. Available at <http://wonder.cdc.gov/bridged-race-v2013.html>.

§ The CS rate and P&S syphilis rate for 2014 were calculated by using 2014 case counts and 2013 denominators.

Background

TABLE 1. Number and rate* of congenital syphilis (CS) cases by race/ethnicity of mother and region of birth of infant — United States, 2008–2014†

Characteristic	2008		2009		2010		2011		2012		2013		2014	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Race/ethnicity of mother														
White, non-Hispanic	67	2.9	65	2.9	63	2.9	50	2.3	50	2.3	61	2.8	80	3.7
Black, non-Hispanic	226	35.9	216	35.1	216	36.3	211	35.9	189	32.1	185	31.4	225	38.2
Hispanic	135	13.0	128	12.8	91	9.6	73	8.0	80	8.8	92	10.2	110	12.2
Asian/Pacific Islander	7	2.9	11	4.6	9	3.8	14	5.7	6	2.3	9	3.5	18	7.0
American Indian/Alaska Native	6	13.8	5	11.8	1	2.5	2	5.0	2	5.1	5	12.8	5	12.8
Other	1	N/A	2	N/A	3	N/A	3	N/A	4	N/A	3	N/A	7	N/A
Unknown	4	N/A	4	N/A	4	N/A	5	N/A	3	N/A	4	N/A	13	N/A
Region of birth of infant[§]														
Northeast	37	5.5	30	4.5	26	4.0	23	3.6	17	2.7	17	2.7	30	4.8
Midwest	37	4.2	41	4.7	45	5.3	41	4.9	57	6.8	53	6.4	71	8.5
South	265	16.4	263	16.7	253	16.6	234	15.5	206	13.7	213	14.1	234	15.5
West	107	10.1	97	9.5	63	6.4	60	6.2	54	5.5	76	7.9	123	12.8
Total	446	10.5	431	10.4	387	9.7	358	9.1	334	8.4	359	9.1	458	11.6

* CS rates during 2008–2013 were calculated as cases per 100,000 live births by using annual live birth data as denominators. Available at <http://wonder.cdc.gov/nativity-current.html>.

† The CS rates for 2014 were calculated by using 2014 case counts and 2013 denominators.

[§] *Northeast*: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; *Midwest*: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; *South*: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; *West*: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Why is syphilis missed in pregnancy?

Syphilis is easy to miss in all patient groups hence the nickname “The Great Imitator”

It is often missed or mis-diagnosed

Syphilis is spread through direct contact with an infectious lesion during oral, vaginal or anal sex

Treponema pallidum readily crosses the placenta at any gestational age and at any maternal stage of disease

Risk for perinatal transmission

The frequency of mother to baby transmission depends on:

Gestational age: transmission increases as gestation advances, but severity of fetal infection decreases with infection later in pregnancy

Duration of maternal infection: transmission *increases* with *shorter* duration of maternal infection: the risk of congenital infection is 50% for primary/secondary syphilis, 40% for early latent syphilis, and 10% for late syphilis

Maternal treatment: Treating mom at least 30 days before delivery dramatically decreases rate of infection in baby (70-100% down to 1-2%)

Stages of syphilis

Primary syphilis appears 10-90 days after exposure

A single chancre where the bacteria inoculates and is a 1-2cm, round, indurated and painless lesion with raised edges

Chancre lasts 3-6 weeks then resolves



Stages of syphilis

Secondary syphilis occurs weeks to months after the initial chancre in 25% of patients

Looks like a diffuse, rough, red rash that is found on the palms/soles but can be diffuse, mucosal and fleeting

Systemic symptoms are often present (fever, adenopathy, fatigue, myalgia)



Stages of syphilis

Tertiary syphilis occurs at least a year after infection in 25-40% and manifests as

Cardiovascular (aortitis, vasculitis)

Gummatous (granulomas)

Neurologic disease (paresis, tabes dorsalis)

Stages of syphilis

Congenital infection can vary widely in its manifestations

Stillbirth

Hydrops fetalis

Prematurity

Asymptomatic

Hepatosplenomegaly

Snuffles

¹²Lymphadenopathy

Mucocutaneous lesions

Pneumonia

Osteochondritis

Pseudoparalysis

Edema

Rash

Hemolytic anemia

Thrombocytopenia

Seizures

Developmental delay

Screening for syphilis during pregnancy

All pregnant women should be tested for syphilis in the 1st trimester as part of routine care, with confirmatory testing sent on all positive screens

Women should be tested again at 28 weeks gestation and at delivery, **REGARDLESS** of previous test results and perceived risk

All pregnant women diagnosed with syphilis should receive treatment per CDC STD Treatment Guidelines

Screening for syphilis during pregnancy

No infant should be discharged from the hospital without documentation of maternal status

Pediatric Infectious Diseases should be notified of any suspected syphilis case in a pregnant woman so an evaluation and treatment plan can be developed

All infants exposed to syphilis require an evaluation and penicillin treatment per CDC STD Treatment Guidelines

Screening has gotten confusing

Nontreponemal tests (VDRL, RPR):

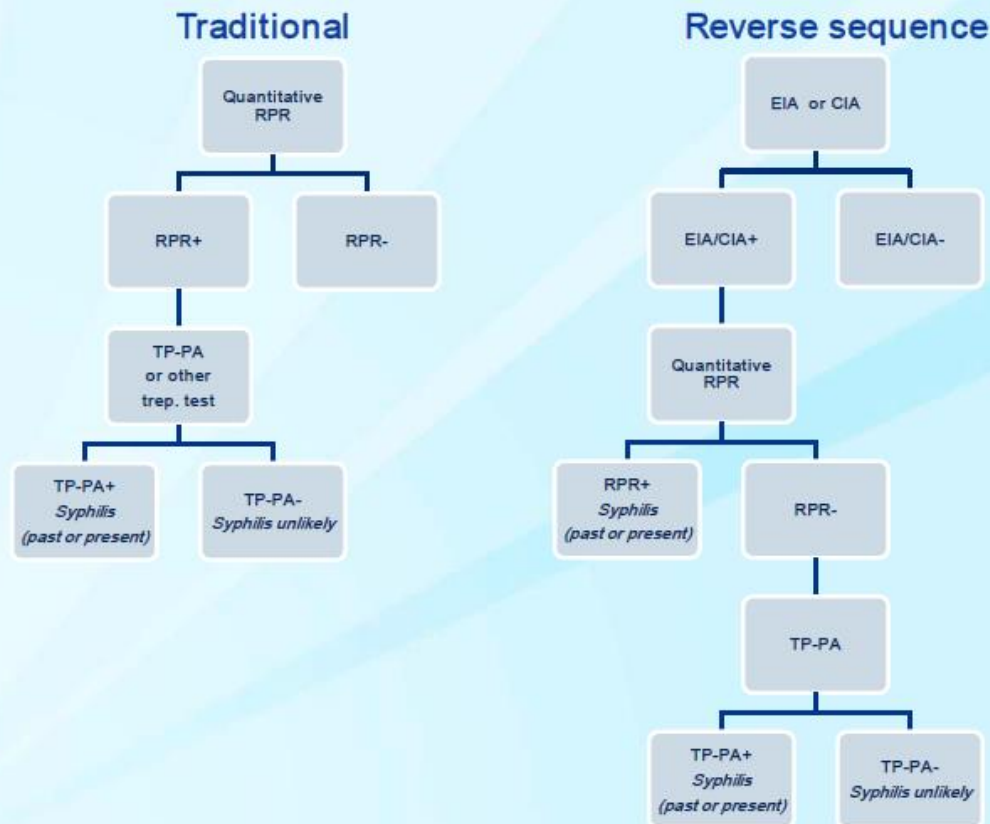
- Are nonspecific and false-positives are common
- Titer correlates with disease activity
- More intensive for lab staff

Treponemal tests (TP-PA, FTA-ABS, EIA)

- Measure *T. pallidum* antibodies
- More specific
- Does not correlate with disease activity

Screening has gotten confusing

Syphilis serologic screening algorithms



Missed Opportunities

TABLE 2. Number and percentage* of congenital syphilis cases by vital status of infant — United States, 2008–2014

Vital status of infant	2008	2009	2010	2011	2012	2013	2014
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Alive	419 (94.0)	402 (93.3)	357 (92.3)	338 (94.7)	314 (94.0)	332 (92.5)	420 (91.7)
Born alive, then died [†]	3 (0.7)	1 (0.2)	7 (1.8)	4 (1.1)	3 (0.9)	4 (1.1)	8 (1.7)
Stillborn	24 (5.4)	27 (6.3)	23 (5.9)	13 (3.6)	15 (4.5)	22 (6.1)	25 (5.5)
Unknown	0 (0)	1 (0.2)	0 (0)	3 (0.8)	2 (0.6)	1 (0.3)	5 (1.1)
Total	446 (100.0)	431 (100.0)	387 (100.0)	358 (100.0)	334 (100.0)	359 (100.0)	458 (100.0)

* Percentages might not add to 100% because of rounding.

[†] "Born alive, then died" includes live births that died <30 days after birth where death occurred before case investigation and case report were completed.

Missed Opportunities

TABLE 3. Characteristics of infants with congenital syphilis (CS) and their mothers — United States, 2008–2014

Characteristic	2014 (N = 458) No. (%*)
Infant	
Symptom status of infants born alive	
Total born alive	428 (100.0)
Signs or symptoms of CS [†]	28 (6.5)
Asymptomatic	343 (80.1)
Unknown	57 (13.3)
Treatment regimen of infants born alive	
Total born alive	428 (100.0)
Aqueous or procaine penicillin (10 days)	301 (70.3)
Benzathine penicillin (1 dose)	50 (11.6)
Other	33 (7.7)
No treatment	42 (9.8)
Unknown	2 (0.5)
Mother	
Mother received prenatal care	
Yes	314 (68.6)
No	100 (21.8)
Unknown	44 (9.6)
Treatment status among mothers who received prenatal care	
Total receiving prenatal care	314 (100.0)
Adequate treatment [‡]	43 (13.7)
Inadequate treatment: <30 days before delivery	78 (24.8)
Inadequate treatment: Nonpenicillin therapy	3 (1.0)
Inadequate treatment: Not enough penicillin for mother's stage of infection	13 (4.1)
No treatment	135 (43.0)
Unknown	42 (13.4)

* Percentages might not sum to 100% because of rounding.

[†] Signs and symptoms of CS in an infant or a child aged <2 years included condyloma lata, snuffles, syphilitic rash, hepatosplenomegaly, jaundice/hepatitis, pseudoparalysis, or edema (nephrotic syndrome, malnutrition, or both).

[‡] Treatment is considered adequate if mothers are treated with a course of benzathine penicillin G appropriate for their stage of syphilis infection and treatment is initiated ≥30 days before delivery. Syphilis treatment guidelines are available at <http://www.cdc.gov/std/tg2015/syphilis.htm>.

You're Not Alone!

Contact your local Peds ID specialist

https://www.michigan.gov/documents/mdch/Guidelines_for_Perinatal_Testing_and_Reporting_488717_7.pdf

<http://www.cdc.gov/std/tg2015/>



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