

# Congenital Syphilis

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# Disclosures

- Relationship with financial sponsors: Consultant for Verity Pharmaceuticals, Principle investigator for PIPE study (CIHR funding), PI for COVID studies (SHRF and OVDR)
- Grants/Research Support: CIHR, SHRF, OVDR COVID rapid response fund
- Speakers Bureau/Honoraria: Verity Pharmaceuticals (unrelated to Syphilis)
- Consulting Fees: Verity Pharmaceuticals (unrelated to Syphilis)
- I will be receiving an honorarium for this presentation

# Objectives

## Recognize

- **Clinical manifestations of Congenital Syphilis**

## Identify

- **Standard workup for Syphilis exposed and likely infected infants**

## Formulate

- **A management plan for the infant exposed or infected with Syphilis**

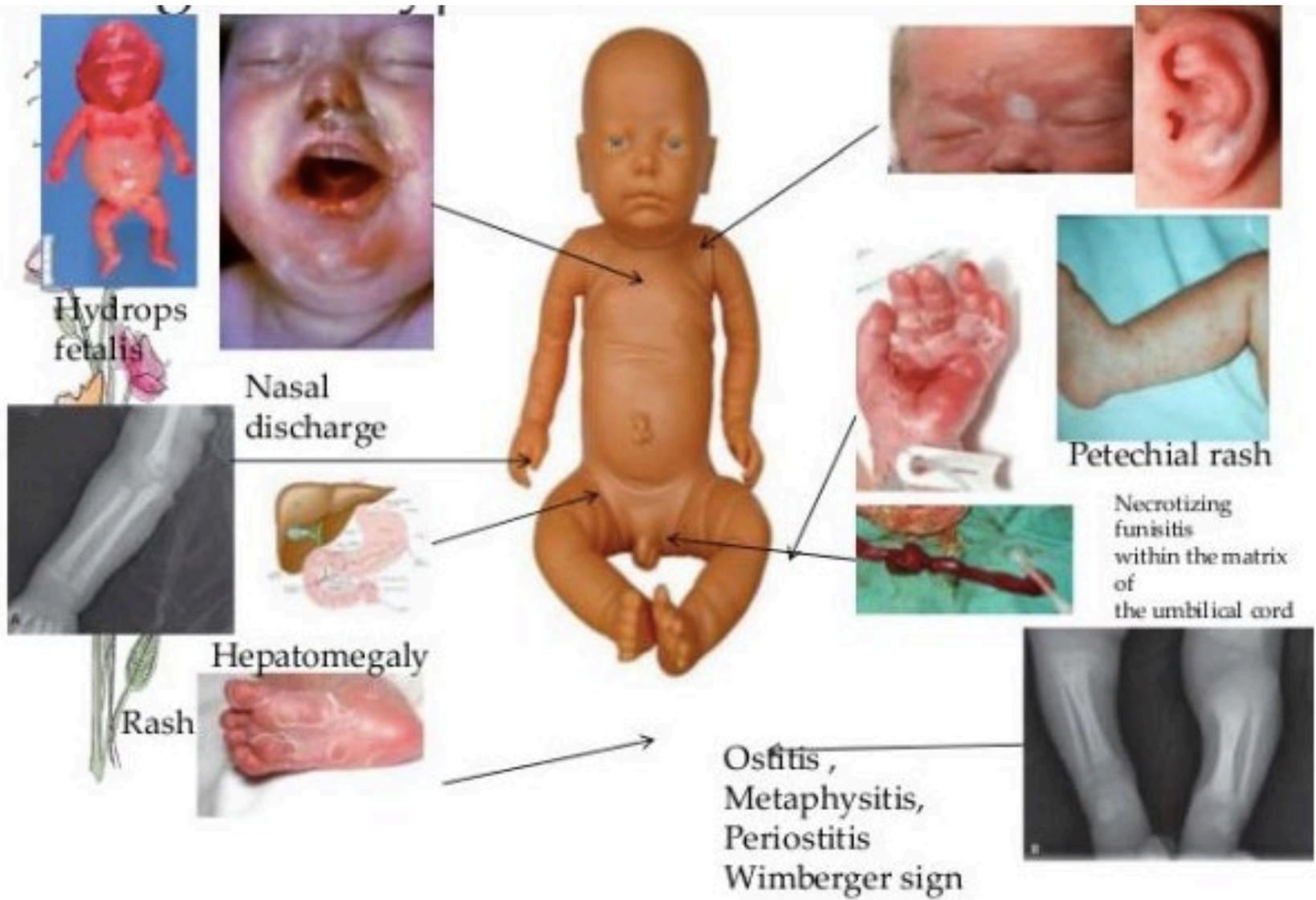
## Review

- **Pediatric cases of infant exposed to Syphilis**

## Features of congenital syphilis (CPS 2018)- Majority are **ASYMPTOMATIC**

Early after birth (< 2 yrs)	Late (top three are Hutchinson's triad)
Hydrops fetalis (HSM, abdominal swelling)	Interstitial keratitis @ 2-20 yrs
Necrotizing funisitis (barbershop pole) rare	Hutchinson's teeth (wide-space screwdrivers in permanent dentition)
Rhinitis/snuffles 40%	Mulberry molars (dwarfing of cusps and hypertrophy of enamel) @ 13-19 mos
Rash in first 8 wks 50%	Hearing loss, deafness @ 10-40 yrs
Hepatosplenomegaly in 1 <sup>st</sup> 8 wks 20%	Higoumenakis' sign (swelling sternoclav)
Lymphadenopathy 5%	Rhagades
Neurosyphilis (asymptomatic) 50%	Frontal bossing
Osteochondritis/pseudoparalysis 25%	Clutton's joints @ 8-15 yrs
Anemia/thrombocytopenia	

Lists NOT complete – as it can affect literally any system



# Case definitions (modified from Manitoba table)

Early-onset congen syphilis	Clinical/Lab/Imaging	Serological	Organism
Lab-confirmed (the majority)	± Compatible findings (S&S, anemia/thrombocytopenia, long-bone x-rays +, CSF/VDRL ±)	≥ 4X maternal RPR at birth, rising RPR, reactive RPR/TPPA persisting ≥ 18 mos, OR	NAT/PCR, Fluor Ab, Darkfield micros
Clinically-confirmed (a minority)	Compatible findings (S&S, anemia/thrombocytopenia, long-bone x-rays +, CSF/VDRL ±)	Reactive RPR/TPPA at birth AND mom reactive/PCR + during preg AND had inadequate Rx or reinfected after Rx	-/Not available
Probable	No Compatible findings	Reactive RPR/TPPA at birth AND mom had inadequate Rx	

**CDC:** 0-30 days of life, CSF WBC count of > 25 WBC or CSF protein >1.5 mg/L;  
 > 30 days, CSF WBC count of > 5 WBC or CSF protein > 0.60 mg/L are abnormal.



# Clinical Case

You are the family physician covering call today at Jim Patterson Children's Hospital.

- Receive a call from the Maternity Ward that a mom just delivered a baby girl at 38 weeks gestation age.
- The nursing staff just got notified that mom was syphilis positive in pregnancy.



**As the physician/nurse, what information do you require to formulate a plan for this baby?**

# Questions to ask/know about mom?

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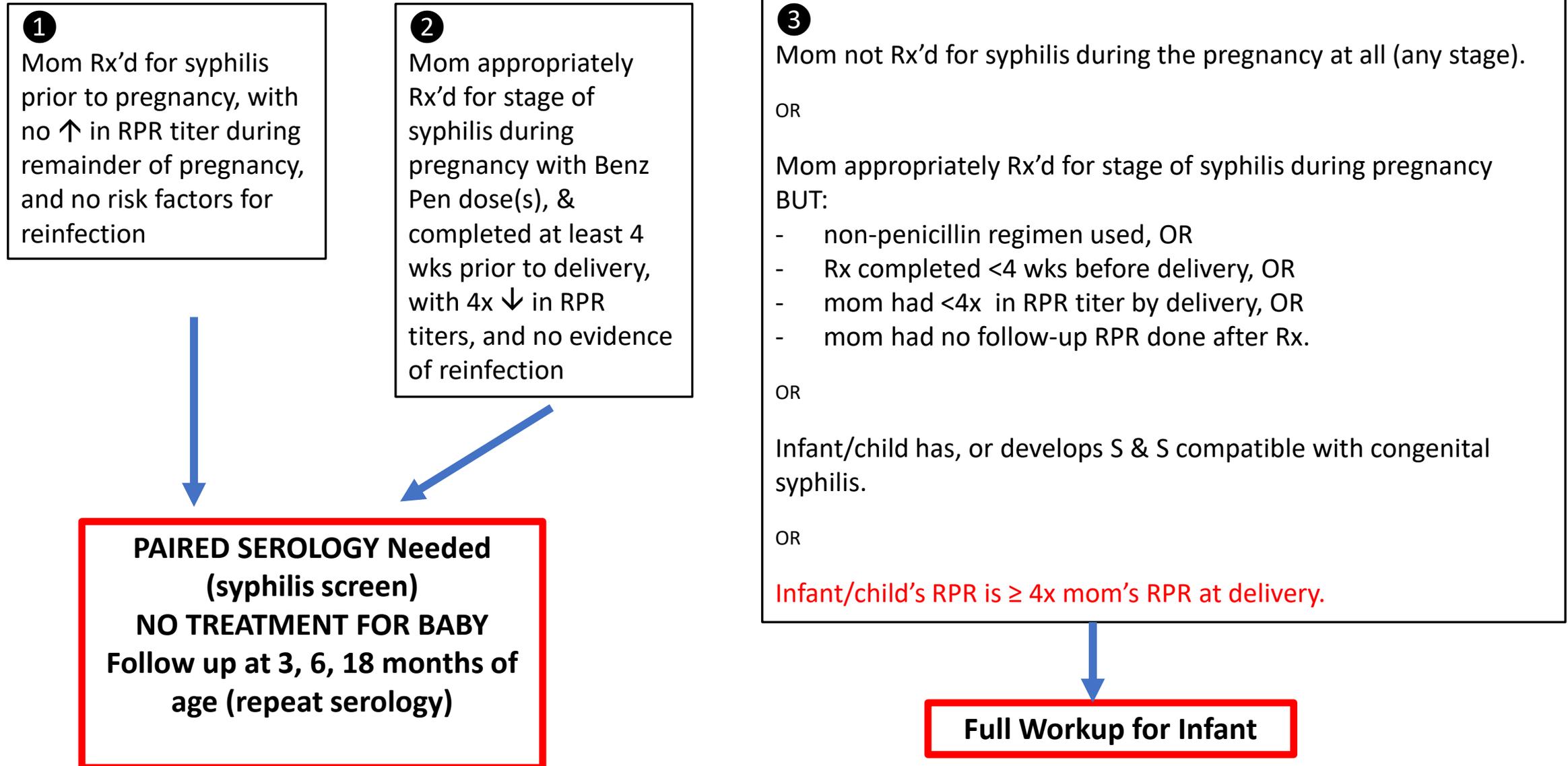
1. When did she acquire syphilis? What stage, if known?
2. What was her initial titre?
3. When did she get treatment- need exact dates.  
➤ **Can call Public Health @ 306-655-4322 M-F**
4. Which antibiotic did she receive for treatment?
5. Did she have a repeat titre drawn? What was that titre?
6. Is it a 4-fold drop?
7. Any concerns for reinfection? Did mom have serology sent at delivery?

# Questions to ask/know about baby at delivery?

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1. Is baby symptomatic?
  - Clinical signs
  - Lab findings- pancytopenia, HSM (see previous slides)
2. Is baby asymptomatic?
3. What is baby's titre at birth? **Was paired serology sent already?**

# Algorithm- Infant Exposure to Syphilis



MOTHER

FETUS/NEWBORN

Treponema pallidum

Benz  
Pen



P

L

A

C

E

N

T

A

BUT IF INFECTION OCCURS, FETUS/BABY  
WILL MAKE OWN RPR AND TPPA Ab's

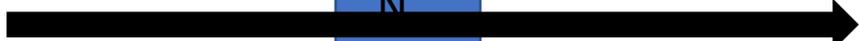
RPR Ab



"Screen" pos

RPR pos titre

TPPA Ab



TPPA pos

Passive Ab's linger  
for up to 18 mos!

Remember TPPA and  
RPR antibody will  
always be positive  
on mother for life

# Full Workup- Presumed CS

## Labs:

- Syphilis serology (RPR) on mom and baby at birth
- CBC/differential +/- liver function tests
- Lumbar puncture: CSF (cell count and differential, protein, glucose, VDRL)

## Imaging:

- Long bone x-rays (upper & lower extremity), if abnormal, need to repeat (3-6 months of age)
- +/- Abdominal Ultrasound (if HSM or hydrops)
- +/- Head Ultrasound (if concerning)

## Treatment:

- The treatment of choice is a 10-day course of IV Crystalline Penicillin G of 50,000 units/kg/dose q12h DOL 0-7, then q8h DOL 8-10

## Consults:

- Ophthalmology for eye screen and Audiology for hearing screen
- Pediatric Infectious Diseases for follow-up – at 3 months, 6 months, 18 months of age for syphilis screens, developmental follow up and physical examination

# Audience Interactive Case

- Situation: Community Physician calling Infectious Diseases to help with management of presumed syphilis case
- Community Physician: Call from nursery that mom was infected with syphilis in pregnancy and baby is a 1 day old term, well newborn infant
- **Roles:**
  - Rupeena: Community Physician
  - Participant: Infectious Diseases Physician



**Community Physician:**

I have a baby in my nursery that delivered today on October 6, 2021, and mom had syphilis during pregnancy.

**ID Specialist:**

Can you tell me more about mother and her syphilis history?

**Community Physician:**

What kinds of information would like to know?

## When did she acquire syphilis? What stage, if known?

- She was negative in January 2020 (Reagin Ab negative). Poor prenatal care. May 23, 2021, she tested positive and had oral chancre. Staged as unknown

## What was her initial titre?

- 1:64

## When did she get treatment?

- May 23rd, May 30<sup>th</sup> and June 6<sup>th</sup>

## Which antibiotic did she receive for treatment?

- Penicillin IM 2.4 million units for all 3 doses

## Did she have a repeat titre drawn? What was that titre?

- 1:16 on September 6, 2021

## Any concerns for reinfection? Did mom have serology sent at delivery?

- Mom is sure that her partner was treated. She did have serology sent and its pending.

## Is baby well?

- Yes, baby examines well. Feeding well

**Community Physician:** Do I need to start treatment for baby? How should I manage the baby?

**ID Specialist:** Let's follow our algorithm:

②

Mom appropriately Rx'd for stage of syphilis during pregnancy with Benz Pen dose(s), & completed at least 4 wks prior to delivery, with 4x ↓ in RPR titers, and no evidence of reinfection



**PAIRED SEROLOGY at birth  
(syphilis screen)  
NO TREATMENT FOR BABY  
Follow up at 3, 6, 18 months of age (repeat serology)**

**Remember: Rules of 4:**

- Mom is treated 4 weeks before delivery
- Titre is adequate if it drops 4-fold
- Baby's titre is not 4-fold > mom's titre

# Summary

Most infants with syphilis (even if infected) will be asymptomatic at birth

If **symptomatic**, can present with hematological abnormalities, organomegaly, nonspecific rash, or severe cases with hydrops fetalis

If **asymptomatic**, then we assess maternal response to treatment and if adequate, only requires blood work and follow up

**ALL symptomatic infants** exposed to syphilis in pregnancy **require full workup and treatment** regardless if mother was treated/responded

# References

1. Seña AC, Wolff M, Behets F, et al. Response to therapy following retreatment of serofast early syphilis patients with benzathine penicillin. *Clin Infect Dis*. 2013;56(3):420-422. doi:10.1093/cid/cis918
2. <https://www.cps.ca/documents/position/congenital-syphilis>
3. Choudhri Y, Miller J, Sandhu J, Leon A, Aho J. Infectious and congenital syphilis in Canada, 2010-2015. *Can Commun Dis Rep*. 2018 Feb 1;44(2):43-48. doi: 10.14745/ccdr.v44i02a02. PMID: 29770098; PMCID: PMC5864261.

Questions/Comments?