CONGENITAL SYPHILIS – NEONATE

EVALUATION & LAB VALUES



EVALUATION

All neonates born following a reactive nontreponemal and treponemal tests during pregnancy should be evaluated with nontreponemal testing (i.e., RPR or VDRL) on the neonate's serum.

Most neonates have no symptoms at birth. Neonates should not be discharged without confirmation of serologic syphilis status during pregnancy.

- Do not delay bathing

Cord blood should not be used for testing the neonate as it can be contaminated with maternal blood. Additionally, Wharton's jelly may cause a false-positive result.

- A nonreactive nontreponemal test at delivery does not rule out congenital syphilis.

CONFIRMED OR HIGHLY PROBABLE CONGENITAL SYPHILIS:

- Abnormal physical examination consistent with congenital syphilis, **OR**
- Nontreponemal titer is ≥4-fold higher than pregnant woman's titer at delivery, **OR**
- Positive darkfield test or PCR assay of placenta, umbilical cord, or neonatal lesions or body fluid or a positive silver stain of the placenta or cord.

Recommended Evaluation:

- CSF analysis for VRDL, cell count, and protein
- Complete Blood Count (CBC) with differential and platelet count
- Long-bone radiographs for further diagnostic support
- Other tests as indicated
  - Chest radiography
  - Aminotransferases
  - Neuroimaging
  - Ophthalmologic exam
  - Auditory brain stem response
  - HIV testing

POSSIBLE CONGENITAL SYPHILIS:

- Normal physical examination, **AND** nontreponemal titer ≤4-fold that of pregnant woman's titer at delivery, **AND one of the following is true:**
  - Pregnant woman not treated, inadequately treated, or no documentation of treatment.
  - Pregnant woman was treated with regimen other than recommended by CDC STI Treatment Guidelines.
  - Pregnant woman received recommended treatment, but it was initiated <30 days before delivery.

Recommended Evaluation:

- CSF analysis for VRDL, cell count, and protein
- Complete Blood Count (CBC) with differential and platelet count
- Long-bone radiographs for further diagnostic support

LESS LIKELY CONGENITAL SYPHILIS:

- Normal physical examination AND nontreponemal titer ≤4-fold that of pregnant woman's titer at delivery, **AND BOTH of the following are true**:
  - Pregnant woman received recommended treatment during pregnancy, treatment was appropriate for stage of infection, initiated ≥30 days before delivery,
  - Pregnant woman has no evidence of reinfection or relapse.

Recommended Evaluation: No evaluation is recommended.

UNLIKELY CONGENITAL SYPHILIS:

- Normal physical examination, AND nontreponemal titer ≤4-fold that of pregnant woman's titer at delivery, **AND BOTH of the following are true**:
  - Pregnant woman received recommended treatment before pregnancy, AND
  - Pregnant woman's nontreponemal titer remained low and stable (serofast) before and during pregnancy and at delivery.

Recommended Evaluation: No evaluation is recommended.

*RPR = polymerase chain reaction; VDRL = Venereal Disease Research Laboratory slide test
**TP-PA = *T pallidum* particle agglutination; TP-EIA = *T pallidum* enzyme immunoassay; TP-CIA = *T pallidum* chemiluminescence assay; FTA-ABS = fluorescent treponemal antibody absorption
***CSF = Cerebrospinal fluid tests

TREATMENT

Treatment dependent on whether congenital syphilis is confirmed or highly probable, possible, less likely, or unlikely.

CONFIRMED OR HIGHLY PROBABLE:

- Aqueous crystalline penicillin G 100,000–150,000 units/kg/body weight/day, administered as 50,000 units/kg body weight/dose IV every 12 hours during the first 7 days of life and every 8 hours thereafter for a total of 10 days.
- **Alternative:**
  - Procaine penicillin G 50,000 units/kg body weight/dose IM in a single daily dose for 10 days

POSSIBLE:

- Aqueous crystalline penicillin G 100,000–150,000 units/kg body weight/day, administered as 50,000 units/kg body weight/dose IV every 12 hours during the first 7 days of life and every 8 hours thereafter for a total of 10 days.
- Alternatives:
  - Procaine penicillin G 50,000 units/kg body weight/dose IM in a single daily dose for 10 days, or
  - Benzathine penicillin G 50,000 units/kg body weight/dose IM in a single dose

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LESS LIKELY:

- Benzathine penicillin G 50,000 units/kg body weight/dose IM in a single dose.
- **Alternative approach:**
  - Not treating the neonate if close serologic follow-up every 2-3 for 6 months is certain and the pregnant woman's nontreponemal titers decreased >4-fold after appropriate treatment for early syphilis or remained stable for low titer.

UNLIKELY

- No treatment, but neonates with reactive nontreponemal tests should have recurrent serological testing to ensure results remain negative.
- Neonates with negative test, but the pregnant woman's was reactive at delivery, retest at 3 months.

- Benzathine penicillin G 50,000 units/kg body weight as a single IM injection if follow-up is uncertain or neonate has reactive test.

- If >1 day of therapy is missed, restart the entire course.
- During an aqueous crystalline OR procaine penicillin G shortage, prioritize using Bicillin L-A®. Penicillin is the only recommended treatment for syphilis among pregnant women and neonates

Refer to CDC STI Treatment Guidelines for a detailed information on evaluation, treatment, and follow-up.

Assessment		Nontreponemal assay		Other	Interpretation
Abnormal and consistent with congenital syphilis	OR	≥4-fold higher that pregnant woman's titer at delivery	OR	Positive darkfield test or PCR assay of placenta, cord, lesions or body fluids, or a positive silver stain of the placenta or cord.	Confirmed or highly probable
Normal	AND	≤4-fold that of pregnant woman's titer at delivery	AND	One of the following is true: 1. Pregnant woman not treated, inadequately treated, or no documentation of treatment 2. Pregnant woman treatment regimen other than recommended treatment 3. Pregnant woman received recommended treatment but was initiated <30 days before delivery.	Possible
Normal	AND	≤4-fold that of pregnant woman's titer at delivery	AND	Both of the following are true: 1. Pregnant woman received recommended and appropriate treatment during pregnancy, initiated ≥30 days before delivery 2. Pregnant woman has no evidence of reinfection or relapse	Less Likely
Normal	AND	≤4-fold that of pregnant woman's titer at delivery	AND	Both of the following are true: 1. Pregnant woman received adequate treatment before pregnancy, 2. Pregannt woman's titer remained low and stable (serofast) before and during pregnancy and at delivery	Unlikely

References

American Academy of Pediatrics. (2024). *Red Book®: 2024-2024 report of the Committee of Infectious Diseases* (33rd ed., pp. 825-841).

Arrieta, A. C. (2023). Congenital syphilis; clinical manifestations, evaluation and diagnosis. *UpToDate*. Retrieved August3, 2024, from https://www.uptodate.com/contents/ congenital-syphilis-clinical-manifestations-evaluation-and-diagnosis

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