NEWBORN NURSERY INFECTIOUS DISEASES PROTOCOLS FOR SCREENING &PREVENTION

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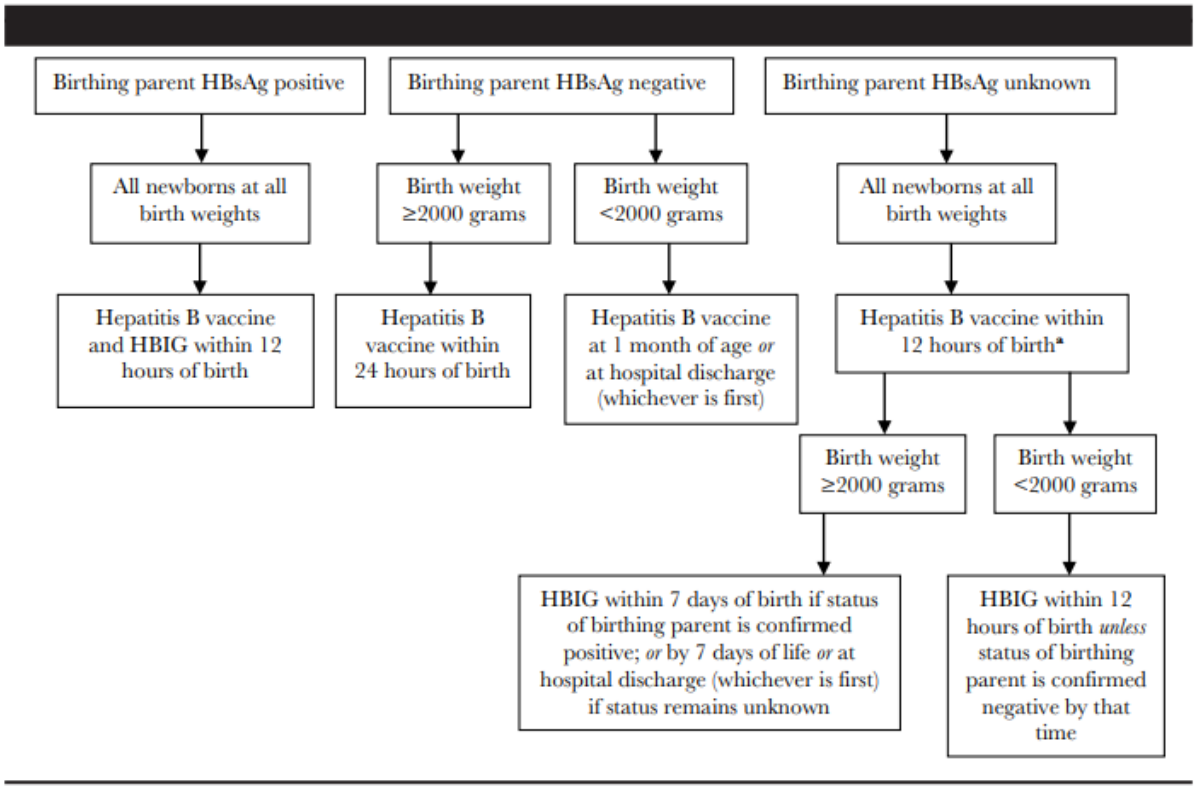
Hepatitis B

Recommended schedule of hepatitis B immunoprophylaxis to prevent perinatal transmission of Hepatitis B virus

FIG 3.5. ADMINISTRATION OF BIRTH DOSE OF HEPATITIS B VACCINE BY BIRTH WEIGHT AND HBSAG STATUS OF BIRTHING PARENT



Modified from American Academy of Pediatrics, Committee on Infectious Diseases, Committee on Fetus and Newborn. Elimination of perinatal hepatitis b: providing the first vaccine dose within 24 hours of birth. *Pediatrics*. 2017;140(3):e20171870

[a]For newborn infants with birth weight <2000 g, this dose will not count toward total doses in series.

Dosage

Hepatitis B vaccine 0.5 ml administered IM

Hepatitis B immune globulin (HBIG) – 0.5 mL administered IM at a site different from that used for vaccine.

Thereafter, see vaccine schedule in Red Book 2024 Table 3.22, pg 451 (depends on birth weight; if infant is < 2 kg the initial Hep B vaccine at birth is given and an additional 3 dose series to follow. If infant is > 2 kg, the Hep B vaccine at birth counts as the first of the 3 dose series).

Breastfeeding poses no additional risk of HBV infection (assuming no cracked or bleeding nipples) acquisition with the appropriate administration of vaccine and immunoglobulin.

Hepatitis C

Transmission of Hepatitis C virus (HCV) to infants born to infected HIV-negative mothers is 6-7%. Seroprevalence in pregnant women in the United States is estimated at 1-2% but is higher in some areas. The exact timing of vertical HCV transmission is not known. Method of delivery has no effect on perinatal risk. Other factors that may increase risk include invasive prenatal diagnostic testing, internal fetal monitoring, vaginal lacerations and prolonged rupture of membranes (>6 hours). Poorly controlled HIV increases risk of HCV transmission two-fold.

****Send for ID follow up between 2-4 months old for testing if mother is HCV RNA positive**

The transmission of HCV infection through breast milk has not been documented. OK to breastfeed if nipples are intact. If nipples cracked/bleeding may express and discard until healed. HCV antibodies and HCV RNA have been detected in colostrum but risk of transmission is similar in breast-fed and formula-fed infants.

Testing guidance: Red Book: 2024–2027 Report of the Committee on Infectious Diseases, 2024

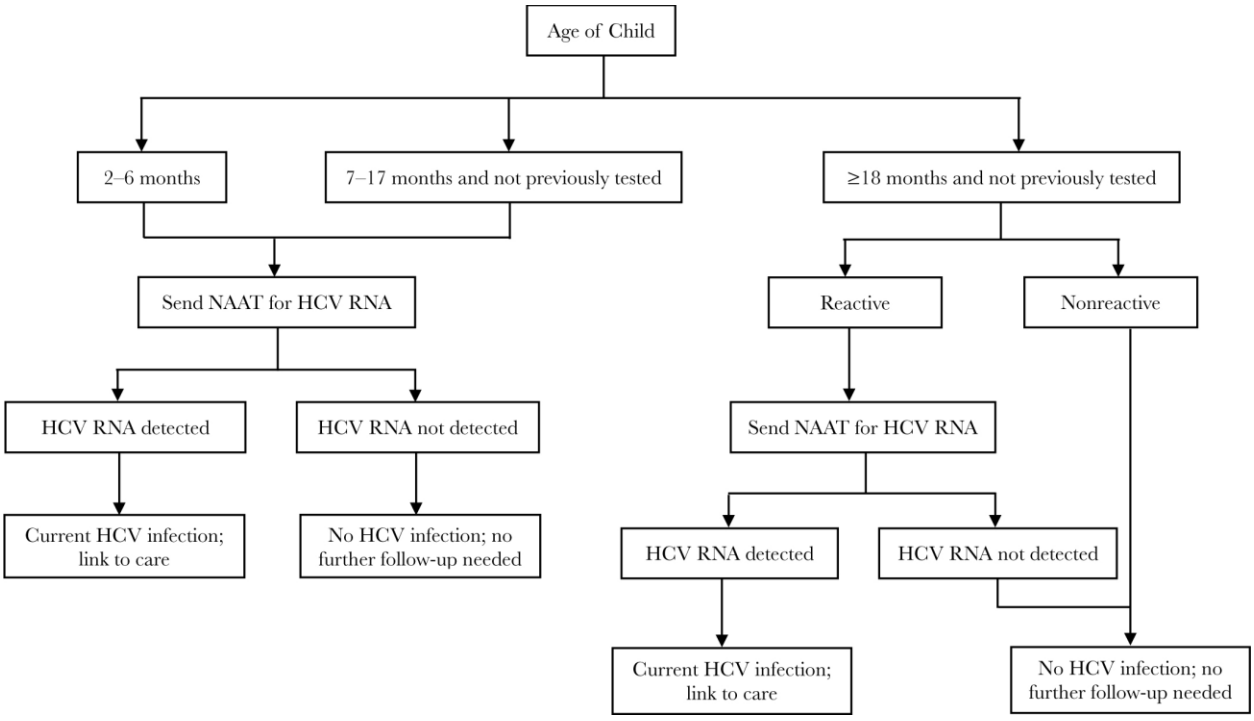


Figure Legend:
Modified from Panagiotakopoulos L, Sandul AL, Conners EE, Foster MA, Nelson NP, Wester C. CDC recommendations for hepatitis C testing among perinatally exposed infants and children—United States, 2023. MMWR Recomm Rep. 2023;72(RR-4):1-19.

Covid 19 or SARS-CoV-2

All ***symptomatic*** women are tested upon entry. **If SARS-CoV-2 positive or unknown as a PUI you must wear PPE including goggles and N95 mask.**

For circumcision or other bedside procedures: use the isolation room with terminal clean after procedure complete (call Housekeeping).

Vertical transmission from maternal infection during the third trimester probably does not occur or occurs very rarely.

It is safe to feed infant breastmilk of mother with COVID 19.

NOTE: Care and parental education

For Infants: presently newborn in NBN.

- Early bathing is NO LONGER recommended (unless indicated for other reasons, ie perinatal HIV exposure).
- Encourage good hand hygiene of parents/caregivers before handling/feeding baby. Mother may consider washing breasts prior to nursing if she has a bad cough to prevent transmission via droplets. Mother and other caregivers should wear a mask during feeding.
  -This should continue until everyone in household is asymptomatic.
- Should use plastic divider to keep infant separated from particles when in bassinette and family is unmasked
- There is no contraindication for Hepatitis B vaccine
- Newborns with signs and symptoms of COVID-19 should be tested for SARS-CoV-2 immediately. However, most infants born to people with COVID-19 do not test positive for the virus at birth so routine testing is not required unless being transferred to another unit
- At discharge provide family with most up to date CDC recommendations about isolation after infection

HIV

A Prenatal HIV testing protocol has been designed that significantly reduces vertical transmission of the HIV virus.

HIV status of the mother *must be identified within 12 hours of delivery*.
If the mother's HIV status is unknown at the time of delivery an *expedited test must be done.*

Treatment for Infants born to HIV Positive mothers (all infants require ID consult):
Zidovudine (Retrovir, ZVD)

- **4 mg/kg/dose orally every 12 hours**
- **(If infant <35 weeks or NPO, then refer to dosing in Lexicomp)**
- First dose given soon after birth (goal within 6 hours after delivery), and continued until 4 weeks of age if no concerning risk factors (see below)
- No labs are required to obtain on infant prior to giving ZDV (can write in
- following statement when pop up box appears "infant prophylaxis, no labs needed to start therapy")

- **Sample collection and processing:**
- Draw 2-4mL of whole blood. As below, plasma-preparation tube (PPT) or serum-separation tube (SST) is preferred over whole blood in a purple or lavender tube
- Venipuncture is optimal.

- **NYS DOH test requisition can be completed by Peds ID service through:**
- CLIMS application on Health Commerce System, or
- Paper requisition:
- https://wadsworth.org/sites/default/files/WebDoc/DOH-4463%20Infectious%20Disease%20Requisition%2007_2022.pdf

- Blood collection kits will be stocked by Pediatric Infectious Disease. Additional tests may be ordered through the Wadsworth Order Desk for Pediatric HIV Collection Kit (518-474-4175)

The infant's risk of HIV acquisition is classified as:

[ ] **Low risk**: Mothers with viral suppression
- HIV prophylaxis initiated within 6-12 hours of life: 4 weeks of ZDV

[ ] **High risk**: Mothers not on ARV or not virally suppressed or with acute HIV
- Presumptive HIV treatment: 6 weeks of ZDV, 3TC, and either NVP or RAL/DTG. Dosing will be recommended in patient EMR note.

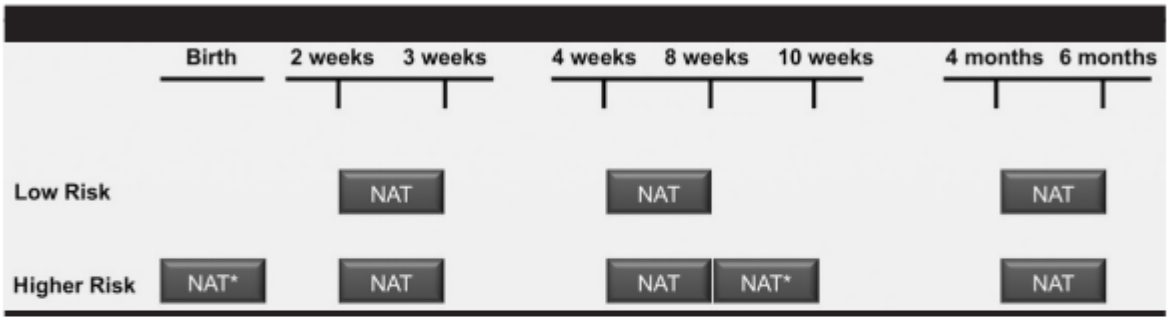
Blood/plasma HIV PCR timing:

[ ] Birth (<48 hours old)
[ ] 2 weeks old
[ ] 4-6 weeks old

[ ] 8-12 weeks old **(high risk infants only)**
[ ] 4-6 months old

Additional testing may be needed if new onset in pregnancy or Day of Delivery
In house viral PCR load run on Thursday 4-3747 (6 Lavender micro tubes) HIV-1 Viral load by PCR MOM and baby
HIV AB testing Immunology 4-3744
HIV antibody test send out call lab. 4-7626 Joan /4-2323 Linda
T cells order Flow lymphocyte subset Full C4/ C8 - on mom flow lab 4-8978

FIG 3.9. RECOMMENDED VIROLOGIC TESTING SCHEDULES FOR INFANTS EXPOSED TO HIV BY PERINATAL HIV TRANSMISSION RISK



NAT indicates nucleic acid amplification test (referred to as NAAT in this chapter).

Low Risk: Infants born to people who received standard antiretroviral therapy (ART) during pregnancy with sustained viral suppression (usually defined as confirmed HIV RNA level below the lower limits of detection of an ultrasensitive assay) and no concerns related to adherence.

Higher Risk: Infants born to people with HIV infection who did not receive prenatal care, did not receive antepartum or intrapartum antiretrovirals (ARVs), received intrapartum ARV drugs only, initiated ART late in pregnancy (late second or third trimester), received a diagnosis of acute HIV infection during pregnancy, or had detectable HIV viral loads close to the time of delivery, including those who received ARV drugs and did not have sustained viral suppression.

*For higher-risk infants, additional virologic diagnostic testing should be considered at birth and 2 to 4 weeks after cessation of ARV prophylaxis (ie, at 8–10 weeks of life).

Reproduced with permission from Spach DH. Preventing Perinatal HIV Transmission. Seattle, WA: National HIV Curriculum, Infectious Diseases Education and Assessment, University of Washington. Available at: **www.hiv.uw.edu/go/prevention/preventing-perinatal-transmission/core-concept/all.**

CMV

NYS is currently screening all infants for congenital CMV via NYS DOH Newborn Screen blood spot testing (10/1/23 - 10/1/24). Any positive tests still require confirmatory urine CMV PCR testing. In addition, any child with clinical signs/symptoms of congenital CMV should have a CMV urine PCR performed. In addition, consider screening these children for congenital Toxoplasmosis. Pediatric ID will be notified of positive testing and consulted for further work-up and potential antiviral treatment.

As required by NYS law: ANY infant who has failed either unilateral OR bilateral hearing screened must be tested for CMV via urine PCR.

Screening Guidance for Congenital CMV

Cytomegalovirus (CMV) is the most common vertically transmitted infection in the United States. Nearly 90% of infants born with congenital CMV (cCMV) are asymptomatic, though many have subtle symptoms that may be detected with careful assessment.

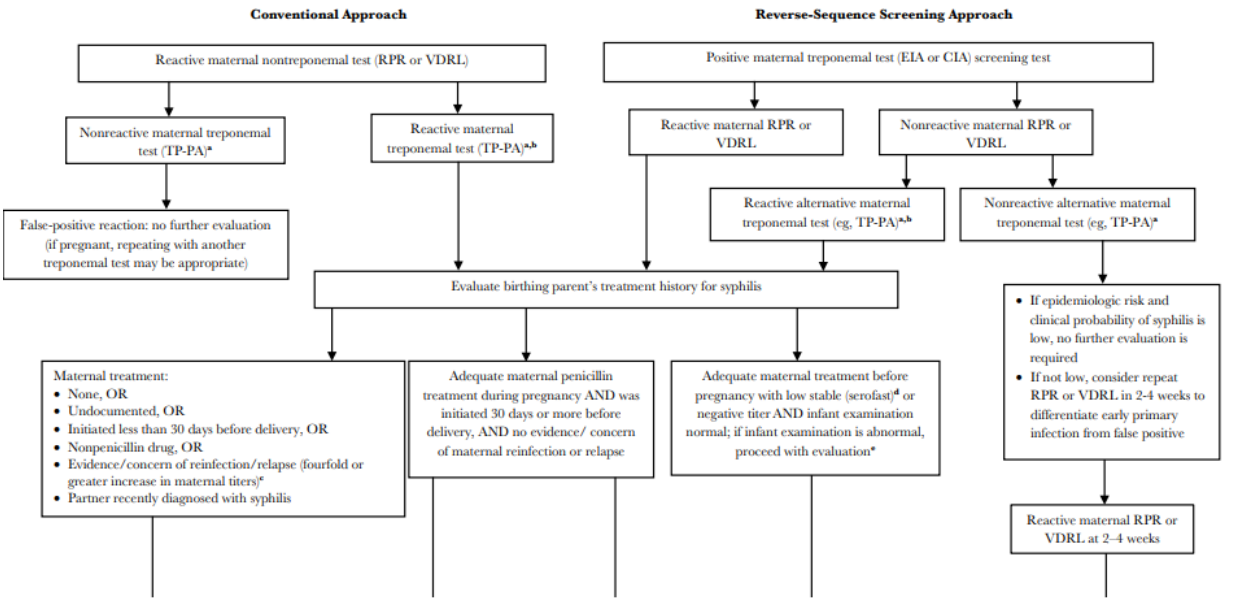
Congenital CMV diagnostic testing by **quantitative urine CMV PCR** should be performed for infants with **any** of the following features. As urine CMV PCR is highly specific, the risk of a false-positive is very low.

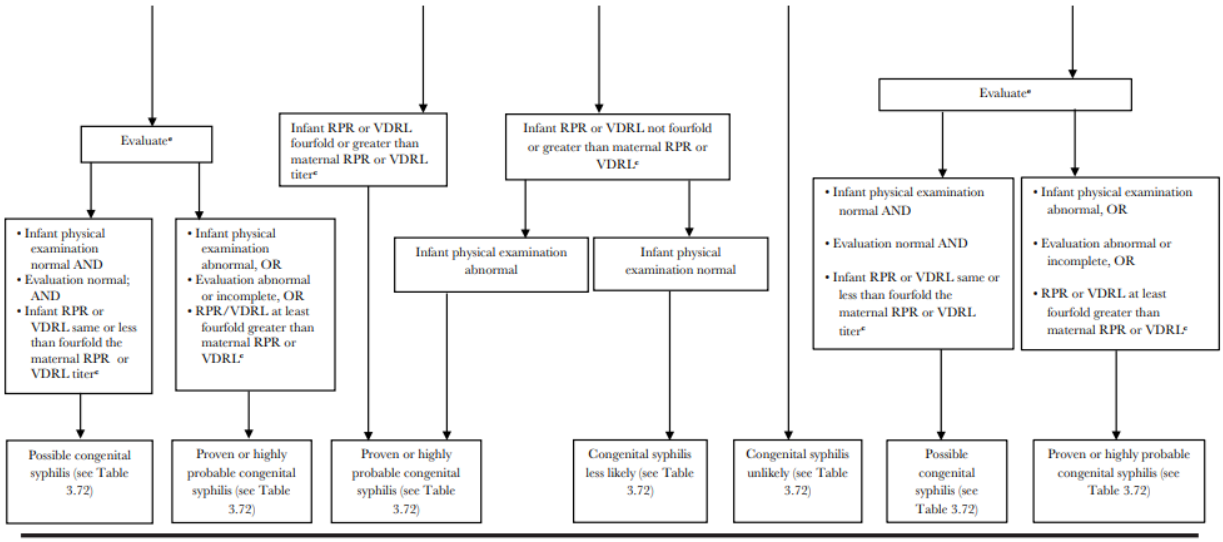
- Known maternal CMV acute infection or reactivation during or within 6 months prior to pregnancy
- CMV detected by New York State Newborn Screen
- Presence of **any** findings suggestive of CMV in a neonate:
    - **IUGR/SGA**
    - **Microcephaly**
    - Thrombocytopenia
    - Neutropenia
    - Elevated AST, ALT, or bilirubin (total or indirect)
    - Hepatomegaly and/or splenomegaly
    - Petechiae
    - Failed newborn hearing screen (CMV testing required by law)
    - Radiographic CNS abnormalities: Ventriculomegaly, intracerebral calcifications, white matter changes, periventricular echogenicity, cortical or cerebellar malformations, migration abnormalities
    - Chorioretinitis
    - Severe organ dysfunction in the absence of an alternative diagnosis

Syphilis

Consult Peds ID but review algorithm first.

FIG 3.18. ALGORITHM FOR DIAGNOSTIC APPROACH OF INFANTS BORN TO MOTHERS WITH REACTIVE SEROLOGIC TESTS FOR SYPHILIS





RPR indicates rapid plasma reagin; VDRL, Venereal Disease Research Laboratory.

[a] *Treponema pallidum* particle agglutination (TP-PA) (which is the preferred treponemal test) or fluorescent treponemal antibody absorption (FTA-ABS).

[b] Test for human immunodeficiency virus (HIV) antibody. Infants of HIV-infected mothers do not require different evaluation or treatment for syphilis.

[c] A fourfold change in titer is the same as a change of 2 dilutions. For example, a titer of 1:64 is fourfold greater than a titer of 1:16, and a titer of 1:4 is fourfold lower than a titer of 1:16. When comparing titers, the same type of nontreponemal test should be used (eg, if the initial test was an RPR, the follow-up test should also be an RPR).

[d] Stable VDRL titers 1:2 or less or RPR 1:4 or less beyond 1 year after successful treatment are considered low serofast.

[e] Complete blood cell (CBC) and platelet count; cerebrospinal fluid (CSF) examination for cell count, protein, and quantitative VDRL; other tests as clinically indicated (eg, chest radiographs, long-bone radiographs, eye examination, liver function tests, neuroimaging, and auditory brainstem response). For neonates, pathologic examination of the placenta or umbilical cord with specific fluorescent antitreponemal antibody staining, if possible.

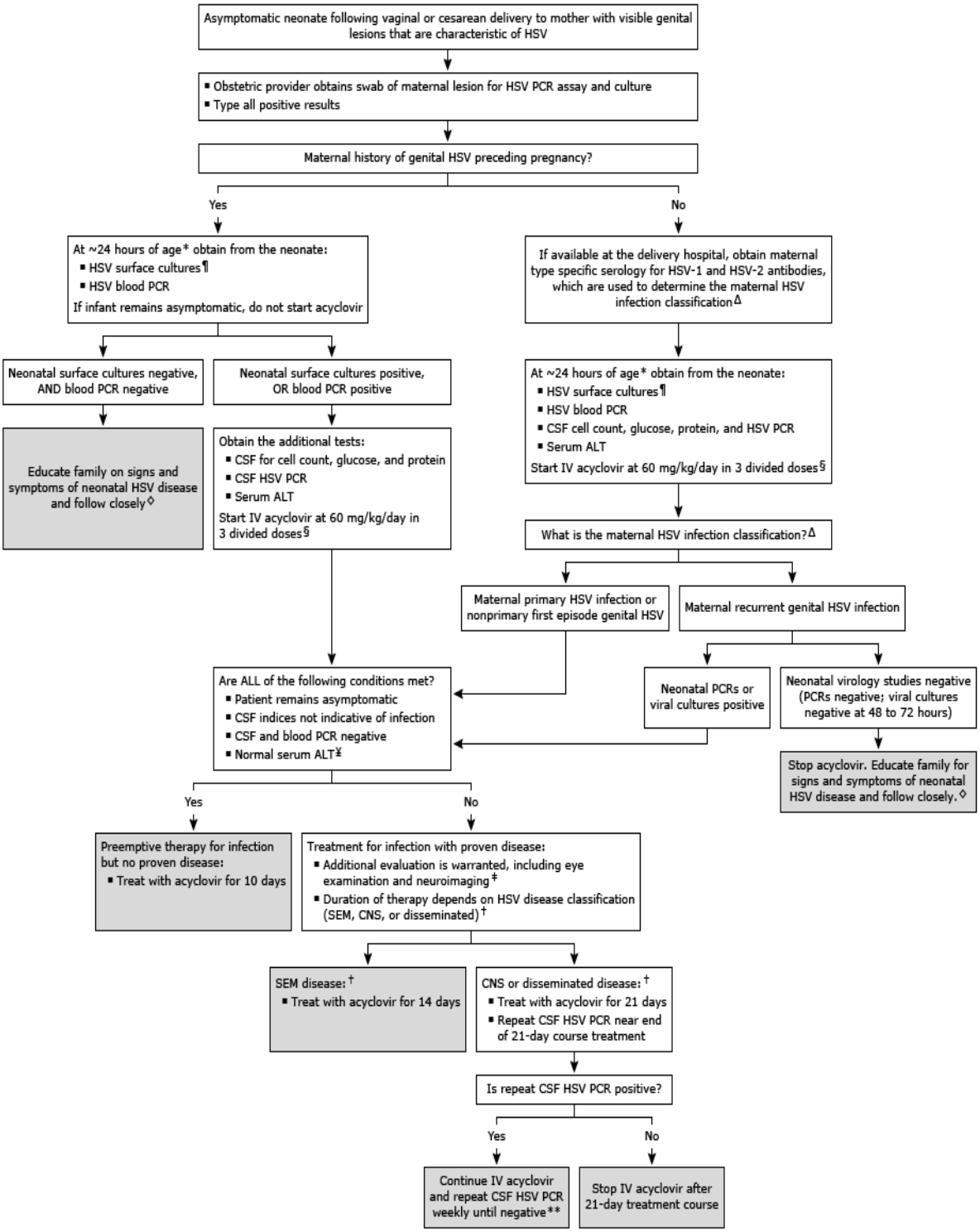
For treatment see Table 3.72 as noted in the AAP Red Book 2024, pgs 833-836.

Tuberculosis

- Asymptomatic pregnant woman with a positive tuberculin skin test (TST) or Quantiferon (QFT) and a normal chest X-ray may have unrestricted contact with the infant; mother has Latent Tuberculosis Infection (LTBI) and is NOT contagious.
- If the mother has clinical signs and symptoms or abnormal chest X-ray consistent with TB disease, she needs to be evaluated. The infant should be separated until evaluation and mother with diagnosis of TB disease is on anti-tuberculosis therapy. (Same policy holds for all household contacts of index case).
- If mother with positive TST or QFT and abnormal X-ray but no evidence of TB disease, then infant is considered to be a low-risk and no separation needed. The mother should be evaluated for treatment of LTBI.

Genital Herpes Infection

Algorithm for the evaluation and management of asymptomatic neonates after vaginal or cesarean delivery to women with active genital herpes lesions



This algorithm should be applied only in facilities where access to PCR and type-specific serologic testing is readily available and turnaround time for test results is appropriately short. In situations where this is not possible, the approach detailed in the algorithm will have limited, and perhaps no, applicability.

HSV: herpes simplex virus; PCR: polymerase chain reaction; CSF: cerebrospinal fluid; ALT: alanine aminotransferase; IV: intravenous; SEM: skin, eye, and mouth; CNS: central nervous system.

* Evaluation and treatment is indicated prior to 24 hours of age if the infant develops signs and symptoms of neonatal HSV disease (eg, mucocutaneous vesicles, seizures, lethargy, respiratory distress, thrombocytopenia, coagulopathy, hypothermia, sepsis-like illness, hepatomegaly, ascites, or markedly elevated transaminases). In addition, immediate evaluation and treatment may be considered if there is prolonged rupture of membranes (>4 to 6 hours) or if the infant is preterm (≤37 weeks gestation).

¶ Surface cultures should be obtained from ALL of the following sites: conjunctivae, mouth, nasopharynx, and rectum. In addition, if the neonate had a scalp electrode placed, its site should be cultured.

Δ For details regarding determining maternal HSV infection classification, refer to UpToDate's content on genital HSV infection in pregnancy.

◊ Discharge after 48 hours of negative HSV cultures (and negative PCRs) is acceptable if other discharge criteria have been met, there is ready access to medical care, and a person who is able to comply fully with instructions for home observation will be present. If any of these conditions are not met, the infant should be observed in the hospital until HSV cultures are finalized as negative or are negative for 96 hours after being set up in cell culture, whichever is shorter.

§ The dose of acyclovir must be adjusted for neonates with renal impairment and/or weight <1 kg. Refer to Lexicomp for additional dosing information. If IV acyclovir is not available, ganciclovir is an alternative. Refer to UpToDate's content on management of neonatal HSV infection for additional information.

¥ Serum ALT values in neonates may be elevated due to noninfectious causes (eg, delivery-related perfusion). For this algorithm, ALT values >2 times the upper limit of normal may be considered suggestive of neonatal disseminated HSV disease for HSV-exposed neonates.

ǂ Refer to UpToDate's content on clinical features and diagnosis of neonatal HSV infection for more details.

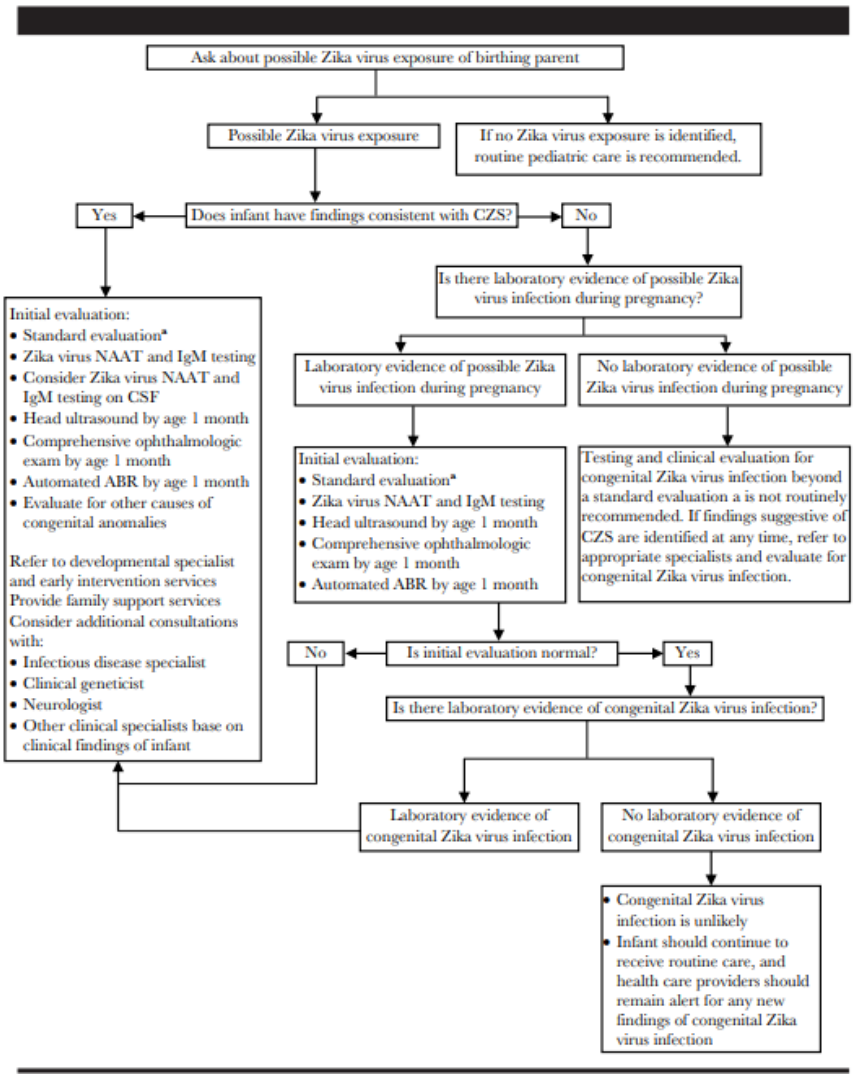
† Refer to UpToDate's content on diagnosis of neonatal HSV infection for details of distinguishing between the three disease categories (SEM, CNS, and disseminated disease).

** Consultation with a pediatric infectious disease specialist is warranted in cases of persistently positive CSF HSV PCR.

Zika

Zika virus (ZIKV) infection is a recognized cause of severe congenital abnormalities for the infants of some women infected during pregnancy. CDC recommends that pregnant women not travel to areas with ZIKV outbreak (**wwwnc.cdc.gov/travel/page/zikatravel-information**), and that all travelers take precautions to avoid mosquito bites during travel. Recommendations for testing are based on the following per AAP Red Book 2024.

FIG 3.24. RECOMMENDATIONS FOR THE EVALUATION OF INFANTS WITH POSSIBLE CONGENITAL ZIKA VIRUS INFECTION BASED ON INFANT CLINICAL FINDINGS,[a,b] TEST RESULTS IN BIRTHING PARENT,[c,d] AND INFANT TEST RESULTS[e,f]



ABR indicates auditory brainstem response; CSF, cerebrospinal fluid; CZS, congenital Zika syndrome; IgM, immunoglobulin M; NAAT, nucleic acid amplification test; PRNT, plaque-reduction neutralization test.

Adapted from Adebanjo T, Godfred-Cato S, Viens L, et al. Update: interim guidance for the diagnosis, evaluation, and management of infants with possible congenital Zika virus infection—United States, October 2017. *MMWR Morb Mortal Wkly Rep*. 2017;66(41):1089–1099

[a] All infants should receive a standard evaluation at birth and at each subsequent well-child visit by their health care providers, including (1) comprehensive physical examination, including growth parameters; and 2) age-appropriate vision screening and developmental monitoring and screening using validated tools. Infants should receive a standard newborn hearing screen at birth, preferably using auditory brainstem response (ABR).

[b] Automated ABR by age 1 month if newborn hearing screen passed but performed with otoacoustic emission methodology.

[c] Laboratory evidence of possible Zika virus infection during pregnancy is defined as 1) Zika virus infection detected by a Zika virus RNA NAT on any maternal, placental, or fetal specimen (referred to as NAAT-confirmed), or 2) diagnosis of Zika virus infection, timing of infection cannot be determined or unspecified flavivirus infection, timing of infection cannot be determined by serologic tests on a maternal specimen (ie, positive/equivocal Zika virus IgM and Zika virus PRNT titer ≥10, regardless of dengue virus PRNT value; or negative Zika virus IgM, and positive or equivocal dengue virus IgM, and Zika virus PRNT titer ≥10, regardless of dengue virus PRNT titer). The use of PRNT for confirmation of Zika virus infection, including in pregnant people, is not routinely recommended in Puerto Rico (**www.cdc.gov/zika/laboratories/lab-guidance.html**).

[d] This group includes people who were never tested during pregnancy as well as those whose test result was negative because of issues related to timing or sensitivity and specificity of the test. Because the latter issues are not easily discerned, all birthing parents with possible exposure to Zika virus during pregnancy who do not have laboratory evidence of possible Zika virus infection, including those who tested negative with currently available technology, should be considered in this group.

[e] Laboratory testing of infants for Zika virus should be performed as early as possible, preferably within the first few days after birth, and includes concurrent Zika virus NAAT in infant serum and urine, and Zika virus IgM testing in serum. If CSF is obtained for other purposes, Zika virus NAAT and Zika virus IgM testing should be performed on CSF.

[f] Laboratory evidence of congenital Zika virus infection includes a positive Zika virus NAAT or a nonnegative Zika virus IgM with confirmatory neutralizing antibody testing, if PRNT confirmation is performed.

Table 3.91. Interpretation of Results of Laboratory Testing of Infant's Blood, Urine, and/or Cerebrospinal Fluid for Evidence of Congenital Zika Virus Infection[a]

Infant Test Result[b]			
NAAT	IgM	Interpretation	Comments
Positive	Any result	Confirmed congenital Zika virus infection	Distinguishing between congenital and postnatal infection is difficult in infants who live in areas where there is ongoing transmission of Zika virus and who are not tested soon after birth. If the timing of infection cannot be determined, infants should be evaluated as if they had congenital Zika virus infection.
Negative	Nonnegative[c]	Probable congenital Zika virus infection[d]	If Zika virus PRNT result is negative, this suggests that the infant's Zika virus IgM test is a false positive.
Negative	Negative	Congenital Zika virus infection unlikely[d]	Congenital Zika virus infection is unlikely if specimens are collected within the first few days after birth and the clinical evaluation is normal; however, health care providers should remain alert for any new findings of congenital Zika virus infection.

NAAT indicates nucleic acid amplification test; IgM, immunoglobulin M, PRNT, plaque-reduction neutralization test.

[a] Adapted from: Adebanjo T, Godfred-Cato S, Viens L, et al. Update: interim guidance for the diagnosis, evaluation, and management of infants with possible congenital Zika virus infection—United States, October 2017. *MMWR Morb Mortal Wkly Rep*. 2017;66(41):1089–1099.

[b] Infant serum, urine, or cerebrospinal fluid.

[c] Nonnegative serologic terminology varies by assay and might include "positive," "equivocal," "presumptive positive," or "possible positive."

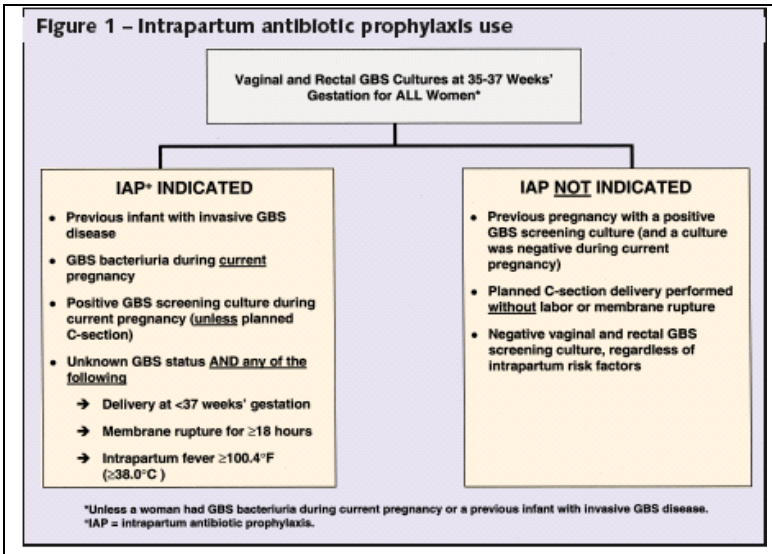
[d] Laboratory results should be interpreted in the context of timing of infection during pregnancy, serology results in birthing parent, clinical findings consistent with congenital Zika syndrome, and any confirmatory testing with PRNT.

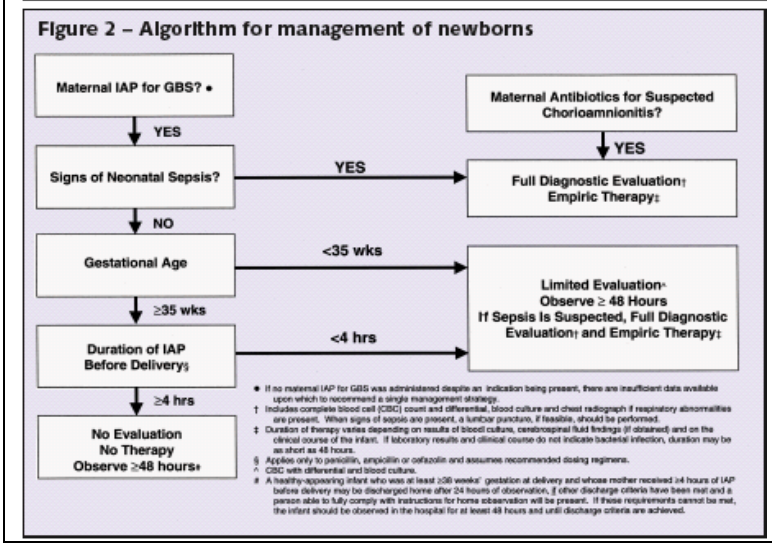
Care of infants born to mothers exposed to ZIKV:
https://www.cdc.gov/mmwr/volumes/66/wr/mm6641a1.htm?s_cid=mm6641a1_w.

Updated guidance on testing at the day of delivery, entitled "Zika Virus: Recommendations for Day of Delivery Testing and Specimen Collection," Testing is now done at SBUH.
https://www.health.ny.gov/diseases/zika_virus/providers.htm.

1. Where was the mother and for how long? Look at the CDC map for infection.
2. Did the mother experience infection? Flu like symptoms in the time frame?
3. Does the baby have any Newborn signs of Zika infection? Re-measure HC.

GBS evaluation /PROM





In addition to penicillin or ampicillin, IAP with cefazolin at least four hours before delivery is considered adequate, because cefazolin achieves bactericidal concentrations against GBS in amniotic fluid three hours after an IAP dose. The effectiveness of other antimicrobial agents in preventing GBS is unknown.

Evaluate Newborn, assess GA, PROM, and Maternal treatment.

Did Mother Received Intra partum Antimicrobial Prophylaxis (IAP) **a full 4 hours before delivery?**

If suspected maternal chorioamnionitis or fever, infant should have a diagnostic evaluation and consider the possibility of empiric therapy.

Use Kaiser Sepsis Calculator and your clinical exam (see additional hand out) to assess risk and need for higher level of care (NICU).

https://neonatalsepsiscalculator.kaiserpermanente.org/