

## Intensive Care Nursery House Staff Manual

# Other Congenital and Perinatal Infections

## I. CONGENITAL INFECTIONS

**BACKGROUND and PATHOPHYSIOLOGY:** Commonly called **TORCH** infections (Toxoplasma, Other agents, Rubella, Cytomegalovirus [CMV] and Herpes simplex virus [HSV]). **Transmission** may be transplacental, hematogenous, or via birth canal. Timing of infection influences fetal effects. **Maternal primary (usually) infection** in 1<sup>st</sup> trimester is more likely to result in fetal loss or organ malformation compared with infection later in pregnancy, which may be asymptomatic.

**SIGNS AND SYMPTOMS** common to **most congenital infections** are **hepatosplenomegaly, jaundice, fetal growth retardation and microcephaly**. Signs and symptoms more common with specific infections include:

**Toxoplasma:** Hydrocephalus with diffuse intracranial calcifications  
Chorioretinitis (may be isolated and may present late)

**Syphilis:** Osteochondritis (metaphyseal plates) and periostitis, symmetric osteomyelitic lesions (humerus and tibia), saber shins  
Hemolytic anemia  
Maculopapular rash on face, palms & soles (treponeme +) and bullous lesions on palms and soles  
Mucocutaneous lesions and “snuffles” (rhinitis)

**CMV:** Microcephaly with periventricular calcifications  
Thrombocytopenia and purpura  
Hepatitis  
Pneumonitis (interstitial)  
Hearing loss (late and progressive)

**Rubella:** Cataracts, glaucoma, chorioretinitis  
“Blueberry muffin” rash, purpura  
“Celery-stalking” lucency of long bones  
Peripheral pulmonary artery stenosis, PDA

**HSV:** Hepatitis, chorioretinitis, pneumonitis, fever

**Lymphocytic Choriomeningitis Virus (LCMV):** Hydrocephalus, chorioretinitis

**Parvovirus B19:** Hydrops fetalis and anemia

**Varicella:** Skin scarring, limb atrophy

### **DIAGNOSTIC WORK-UP:**

**(A) Maternal:** History of:

- (1) Maternal serologies and when obtained
- (2) Exposure to undercooked or raw meat, soil, animals
- (3) History of sexually transmitted diseases (STDs) for mother and partners

- (4) Risk factors for HIV exposure
- (5) Illnesses during pregnancy (fever, rashes)
- (6) Exposures during pregnancy to ill children (day care, teacher)

**(B) Neonatal:**

- (1) CBC, smear, platelets, reticulocyte count, total and direct bilirubin, liver enzymes
- (2) Directed studies (depending on clinical suspicion):
  - CSF: cell count and protein (See below under 3. HSV)
  - Ophthalmology exam
  - Radiographs of long bones
- (3) Specific diagnostic studies (Based on clinical suspicion; if in doubt, consult ID)
  - Toxoplasma IgG and IgM
  - VDRL: CSF & blood
  - Rubella IgM; Rubella cultures: eye, urine, nasopharynx (NP)
  - CMV: urine culture (<2 weeks of age; if older, may be postnatal transmission)
  - HSV: DFA; Cx: skin lesion, eye, NP, rectal; CSF PCR (per ID Consult)
  - Parvovirus: PCR (blood)
  - LCMV: Serology: IgM (infant), IgG (infant and mother)

**SPECIFIC TREATMENT** is indicated for specific infections (*e.g.*, Syphilis, HSV, Toxoplasma). Consult ID service or AAP **Red Book** for current recommendations.

**II. PERINATAL INFECTIONS**

**ENTEROVIRUS and HSV:** These infections present in the first 28 d after birth, although presentation before age 3 d is unusual.

**Enterovirus:** Systemic infection which may be very severe with myocarditis, meningoencephalitis, DIC and hepatitis. There is often a history of **maternal illness** a few days before birth. **Diagnosis** is by viral cultures of NP, rectum, CSF, blood (per ID only). **Treatment** is supportive only.

**HSV:** Encephalitis, fever, seizures, vesicular rash and keratoconjunctivitis. Maternal history of HSV may not be present. For **diagnosis**, see above. **Treatment** is with acyclovir and should be guided by ID Service. Neurologic sequelae are common.

**GENERAL MANAGEMENT ISSUES:**

- Universal body substance precautions** to prevent vertical and nosocomial spread.
- Consider **temporary isolation with untreated infections**, although this should be unnecessary with the universal precautions.
- Consider **screening** of family members for **HIV, syphilis, Hepatitis B infection (HBV)**.
- Consult ID Service** to help direct work up, ensure proper tests are done in a timely manner, appropriate treatment is started and appropriate follow up is arranged.

**III. OTHER CONGENITAL INFECTIONS/EXPOSURES**

**Human Immunodeficiency Virus (HIV):** Management of **infant of serology + mother**, whether or not she has received treatment:

- Laboratory work at birth: HIV-DNA PCR, CBC w/diff & platelets

**HIV (cont'd):**

- Consult with Immunology Service (476-9373)
- Begin AZT therapy according to current protocol.
  - >36 wks GA: 2mg/kg Q6h PO; <36 wk GA: Discuss with Immunology
- Age 1-2 wks: Immunology visit to adjust AZT dose as needed and repeat DNA PCR.
- Age 4-8 wks: Immunology visit to stop AZT after 2 negative DNA PCRs. Begin PCP prophylaxis with Septra (75 mg/m<sup>2</sup> BID 3 consecutive d/wk). Repeat DNA PCR. If rapid weight gain occurs before 6 wks, recalculate dose.
- If persistently negative DNA PCR, repeat test at age 4 months of age.
- Confirm HIV status with ELISA at age 12 months.
- Note:** Infant's HIV status or exposure is confidential under California law. Disclosure to biological father or others must be endorsed by the mother.
- Breastfeeding is contraindicated** with maternal HIV infection.
- Circumcision is not contraindicated.

**Hepatitis B Virus (HBV)****-Immunoprophylaxis:**

- Infants of mothers who are known to be hepatitis B surface antigen (**HBsAg**) **negative** should be immunized per the usual schedule of infant immunizations.
- Infants of mothers who are **HBsAg positive:** Give HepB Vaccine & hepatitis B immune globulin (HBIG) before age 12 h. Complete the HepB Vaccine series in 1<sup>st</sup> 6 months\*
- Infants of mothers with **unknown HBsAg status:**
  - A. **Term infants:**
    - HepB Vaccine before age 12 h.
    - If mother is found to be **HBsAg positive**, give HBIG before age 7 d\*\*
    - Complete HepB Vaccine series in 1<sup>st</sup> 6 months.
  - B. **Preterm infants (BW < 2 kg):**
    - HepB Vaccine & HBIG before age 12 h
    - If mother is found to be **HBsAg positive:** Complete 3 additional doses of HepB Vaccine series per usual preterm schedule

\*For preterm babies (BW < 2 kg), administer 3 additional vaccine doses per the usual preterm immunization schedule.

\*\*HBIG only effective if given within 7 d of birth. HepB Vaccine series is highly effective alone.

**Note:** Breastfeeding by HBsAg positive mother is not known to increase risk of transmission and, therefore, is not contraindicated

**Hepatitis C Virus (HCV)**

- No known immunoprophylaxis.
- Breastfeeding with HCV positive mother is not known to increase risk of transmission and is not contraindicated. However, because HCV RNA and HCV antibody have been detected in milk of mothers infected with HCV, transmission by breastfeeding is theoretically possible. **Therefore, the decision to breastfeed should be based on informed discussion between a mother and her health care professional.**