



## CLINICAL PRACTICE GUIDELINE

Guideline coverage includes NICU KEMH, NICU PMH and NETS WA

# Herpes Simplex Virus (HSV)

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Herpes Simplex Viruses (HSV) are enveloped, double-stranded DNA viruses. HSV infections are ubiquitous and are transmitted from people who are asymptomatic or symptomatic with primary or recurrent infections. Infection can occur with HSV-1 and HSV-2. In neonates HSV-2 causes 75% of infections and HSV-1 25%. HSV infection in newborns has an incidence of 1:3000 to 1:20000 depending on the geographical location. There is concern that with the increasing incidence of HSV-2 infection numbers of newborn HSV infection will increase.

## Transmission

- Neonatal HSV is most commonly transmitted perinatally by passage through an infected genital tract or through an ascending infection. HSV can transmit through intact membranes.
- The risk of neonatal HSV is about 50% if the mother has primary genital herpes; the risk to an infant born to a mother shedding HSV as a result of a reactivated lesion is less than 5%. Distinguishing between primary and recurrent HSV infection in women by history and examination may be impossible.
- **More than 75% of infants with HSV infection have been born to women with no history or clinical findings suggestive of active HSV infection during pregnancy.**
- Congenital HSV infection may also occur, but is very rare.
- Rarely HSV is acquired through postnatal transmission from a parent or caregiver with oro-labial HSV or herpetic whitlow.

## Clinical Manifestations

In newborns HSV can manifest as:

- Disease localised to skin, eye and mucous membranes (SEM disease; ~45%).
- Central nervous system disease (~30%).
- Disseminated disease involving multiple organ systems including liver, lungs and CNS (~25%).

Neonates may present any time between birth and 4 weeks. Disseminated disease has the earliest onset, often during the first week of life; CNS disease manifests latest, usually between 2-3 weeks. **In up to 40% of newborns with HSV there are no skin lesions.** In the absence of skin lesions diagnosis may be delayed.

It is important to consider HSV infection in the differential diagnosis of all acutely unwell neonates, especially if there is a sepsis-like presentation and a maternal history of HSV.

Disseminated disease presents with viral sepsis, and may be indistinguishable from sepsis of another cause, i.e. respiratory collapse, pneumonitis, liver failure, DIC. CNS disease presents with lethargy, poor feeding, bulging fontanel and seizures.

## Diagnostic Tests

- Serology is of limited value, as IgG is of maternal origin.
- Surface swabs (transport in viral medium) for immunofluorescence, HSV culture and HSV PCR:
  - Skin vesicles if present.
  - Umbilical stump.
  - Mouth or nasopharynx.
  - Eyes (conjunctival swabs).
  - Rectum (rectal swab).
  - Urine.
  - Tracheal aspirate (if ventilated).
- HSV PCR from blood. This requires 0.5 mL EDTA blood.
- Lumbar puncture for HSV PCR: indicated in all cases, where clinically stable.

Other tests:

- FBC, Coagulation screen, Liver function tests.
- Chest Xray if respiratory symptoms.

## Treatment

Aciclovir should be given whilst awaiting the results of laboratory investigations. See [Aciclovir](#) for dosing. **There is no place for oral Acyclovir in neonatal treatment of acute HSV.**

**Contact precautions:** either in single room or isolette for the duration of IV therapy unless advised earlier by Infection Control/Clinical Microbiologist. Refer to Infection Prevention Manual - [Transmission Based Precautions](#).

These neonates continue to excrete HSV for some days. A review of all the latest culture/PCR results should be done before taking out of isolation.

Despite treatment, the mortality in disseminated disease is 20-30%. Survivors of disseminated infection have adverse neurological sequelae in 13% of cases, while survivors of CNS disease have adverse neurological sequelae in 35% of cases.

## Long Term Oral Suppressive Therapy after Acute Treatment

This is currently recommended, as relapses have been described following successful treatment. Discuss with a Clinical Microbiologist regarding duration of therapy; 6 months is recommended. Monitor for adverse effects.

## Follow Up

Infants with neonatal HSV infection should be followed up and evaluated for recurrent disease and neurological sequelae.

### **Management of Infant with Presentation Compatible with HSV**

Obtain virological specimens as detailed above, including CSF, and commence treatment with IV Aciclovir (high dose), see NCCU Medication Protocol [Aciclovir](#).

Contact precautions: either in single room or isolette for the duration of IV antiviral therapy. Isolation may need to be prolonged beyond this period pending results of virological investigations. Refer to Infection Prevention Manual - [Transmission Based Precautions](#).

Length of treatment will be determined by extent of disease. If there are CSF abnormalities there is a role for repeat CSF examination towards the end of the treatment course. Consultation with Clinical Microbiologist is advised.

### **Management of Infant Born Vaginally or after Prolonged Rupture of Membranes (Greater than 4 Hours) to a Woman with Clinically First Apparent Genital Episode at Delivery**

From the asymptomatic infant collect surface swabs from the baby **at 24 hours** post-delivery (in this situation CSF collection is not necessary). Pre-emptive/prophylactic therapy with high-dose acyclovir IV for 10 days is recommended from birth. If disease develops then CSF examination is recommended and treatment continued according to CSF results.

### **Management of Infant Born Vaginally or after ROM for More Than 4 Hours to a Woman with Recurrent Genital Herpes but not Obvious Lesion at Delivery**

The parents should be educated about the signs of neonatal herpes, but as the risk of transmission is very low pre-emptive acyclovir is **not** recommended. Swabs and/or isolation are **not** required in this situation.



## References

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## Related WNHS policies, procedures and guidelines

Infection Prevention Manual - [Transmission Based Precautions](#).

[Neonatal Medication Protocol - Aciclovir](#)

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