



The preterm infant's brain is vulnerable to both hemorrhagic and ischemic injury due to a tendency for preterm infants to experience periods of physiologic instability at a time when they have limited cerebral autoregulation. Most IVH occurs prior to 72 hours of age but can develop any time during the first 2 weeks of life. The incidence of IVH in infants <1500 g is about 15-20% with severe forms of IVH occurring approximately 5% of the time. About 50% of infants with IVH show no clinical signs.

Indication of HUS screening

- All infants born at <32 weeks of gestation or <1500 g birth weight
- Any infant presenting with acute symptoms:
 - Changes in neurologic status
 - Hemodynamically unstable
 - Rapidly decreasing hematocrit
- Doppler studies should not be routinely ordered in preterm infants

Timing of Screening HUS

- Initial: 7-10 days
- Subsequent: 36-40 weeks corrected gestational age or prior to discharge
 - If PVL or grade 2+ IVH seen on initial HUS, the infant should receive more frequent HUS monitoring

Follow up for abnormal findings

- If grade 2 IVH on initial imaging:
 - HUS every 2 weeks until stable or resolving
- If grade 3 or 4 IVH on initial imaging:
 - Consult neurosurgery
 - Perform daily OFC measurements
 - HUS weekly (every Monday) until stable or resolving
 - May require more frequent imaging depending on OFC and clinical symptoms
 - Approximately 15% of infants with severe IVH will require CSF diversion

Indications for CSF Diversion

The following signs and symptoms should raise concern for increasing intracranial pressure and may indicate the need for CSF diversion. This may be in the form of a shunt (usually performed when infant \geq 2 kg) or reservoir (usually performed when $<$ 2 kg)

- Contact neurosurgery for:
 - Rapidly increasing head circumference
 - Increased ventricular size on ultrasound
 - Increased apnea, bradycardia, lethargy, decreased activity, and/or splitting of sutures
- May need MRI to further evaluate ventricular size
 - Frontal occipital horn ratio (FOHR) \geq 0.5 will likely require diversion

Indications for MRI at term corrected gestation

- Infants with overt parenchymal injury:
 - Cystic PVL
 - Hemorrhagic parenchymal infarction
 - Severe IVH
 - Ventricular dilation