Routine Cranial Ultrasound Screening in Preterm Infants

**Purpose**

To detect brain injury in at-risk infants so that appropriate management can be provided

**Background**

Intraventricular Hemorrhage (IVH) and Periventricular Leukomalacia (PVL) are the most frequently documented cause of brain injury in premature infants leading to long term neurodevelopmental disabilities. These injuries are often “silent”, therefore clinical evaluation of these infants may not provide either adequate diagnostic or prognostic information. Bedside Cranial Ultrasonography (CUS) is an excellent screening tool to reliably identify these brain abnormalities and to study the progression of these lesions. MRI is more sensitive, but at present impractical as a screening/routine investigation in this age group.

**Infants with Gestational Age < 30 weeks**

- The first CUS should be performed between 7 and 14 days of age and a repeat CUS should be performed at approximately 28 days of age in a clinically stable infant.
- A “discharge” CUS may be repeated between 36 and 40 weeks post menstrual age (or before discharge if the infant is ready to be discharged before 36 weeks) to document status of previous intracranial hemorrhage / PVL and to detect new parenchymal injury. A discharge CUS may be deferred in infants with two negative CUS and a stable clinical course.
- CUS should be obtained regardless of the baby’s age or maturity when clinical signs and/or symptoms suggest that intracranial hemorrhage may have occurred.
- If there is evidence of brain injury in the initial CUS:
  - repeat at weekly intervals until stable
  - Monitor Head Circumference closely
- A Cranial MRI may be obtained in selected infants with the following diagnosis
  - PVL
  - Severe IVH (Grade 3-4)
  - Enlarging ventricles
- May consider consultation with Neurology/Neurosurgery if available prior to obtaining MRI

**Infants with Gestational Age ≥ 30 and ≤ 31 6/7 weeks**

CUS is indicated in this group in the following clinical circumstances

- Hemodynamic instability
- Significant drop on Hemoglobin
- Thrombocytopenia or evidence of coagulopathies
- Seizures
- Persistent apneas
- Resuscitation/Cardiopulmonary support out of proportion to GA
- Low Apgar scores (less than 5 at 5 minutes)
- Pneumothorax
- Persistent metabolic acidosis
- Significant intrauterine growth restriction (Birth weight less than 1000 grams)
- Suspected/proven chorioamnionitis
- None or inadequate antenatal steroids
- Multiple Gestation (except Di-Di Twins)
- Mechanical ventilation for >48 hours after birth
References

