Procedure Name: Cranial

Updated 08/16/19

Indications:
May include but not limited to prematurity, congenital head abnormalities, increased head circumference, persisting large fontanelle, craniosynostosis, known hypoxia, follow up of known pathology, suspected intracranial mass or infection.

Limitations:
Generally limited to performance at 4 months and under or until anterior fontanelle is no longer open.

Patient Preparation:
In outpatient setting, NPO 3 hrs prior to study. Bottle feeding during exam to help induce calming effect or breast feeding immediately prior to start of exam. No prep in NICU setting.

Equipment Selection and Settings:
The highest frequency vector transducer possible that still allows for adequate penetration should be used. The preprogrammed cranial setting should be selected and gain, depth and focal zone settings optimized.

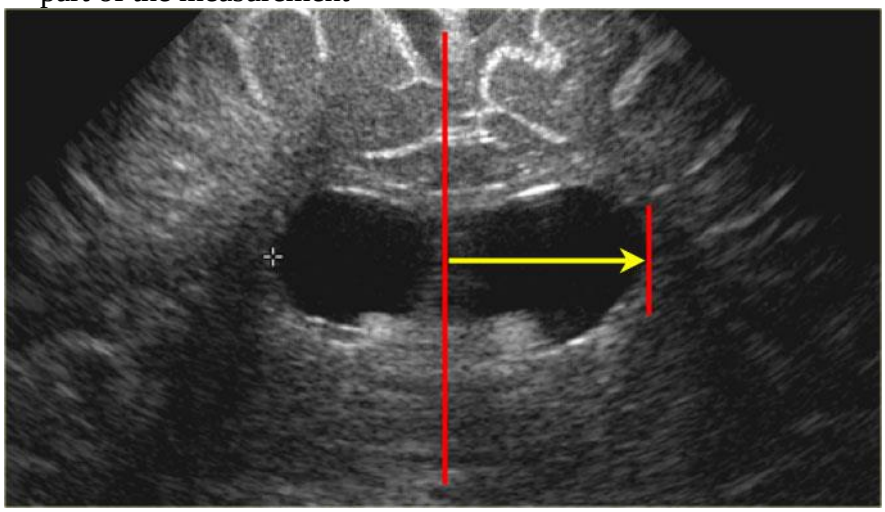
Imaging Sequence:
The following imaging sequence is for a normal exam. Include additional images of pathology to demonstrate dimensions in three planes, texture, size, shape, and relationship to adjacent anatomy.

Image Patient Data (demographics page)

Coronal

- At the anterior fontanel, the transducer notch must be towards the patient's right ear
- Start anterior and slowly sweep posteriorly to include still images with the following landmarks as well as a cineclip from anterior to posterior
    - Orbital ridge, frontal lobes and interhemispheric fissure
    - Anterior horns of lateral ventricles, cavum septum pellucidum, corpus collosum, 3rd ventricle, caudate nucleus and thalamus
    - Choroid plexus
    - Cerebellum and posterior white matter
- Decrease depth (do not res) and take a couple more images thru the lateral ventricles at the 3rd ventricle level to evaluate for hemorrhage.

- For patients with known grade 3 hemorrhage, the Levene index must be obtained
    - The Levene index is the absolute distance between the falx and the lateral wall of the anterior horn in the coronal plane at the level of the foramen of Monroe
    - Measurement should be obtained from the larger of the two frontal horns and this same ventricular side used on all follow up exams
    - If there is midline shift, use the medial and lateral margin of the larger frontal horn and keep consistent on all follow up exams
    - Take care NOT to include the porencephalic cyst adjacent to the ventricle as part of the measurement



Sagittal

- At the anterior fontanel, the transducer notch must be towards the patient's nose
- Start Midline, slowly sweep through the right, back to Midline and then sweep through the left to include still images with the following landmarks as well as a cineclip from far lateral right to the far lateral left
    - Midline images must include corpus callosum, cavum septum pellucidum, 3rd ventricle, 4th ventricle, and cerebellum
    - Several images thru the lateral ventricles to include choroid plexus, caudate nucleus, thalamus and caudo-thalamic groove (this is where small grade I hemorrhage will be seen)
    - Sylvian fissure, periventricular white matter

Mastoid Views

- Additional images of the posterior fossa must be obtained through the mastoid fontanelle. For consistency, try to scan from the same side on follow up exams.
- For axial views, the transducer notch must be toward the patient's face and include 3 images, high, mid and low cerebellar
- For coronal views, the transducer notch must be toward the top of the head and include 3 images, anterior, mid and posterior