

NICU MEDICAL GUIDELINE

Title:	Post-Hemorrhagic Ventricular Dilatation (PHVD) in Preterm Newborns
This document is attached to:	NICU Guideline for Screening Brain Ultrasounds

1. PURPOSE AND SCOPE:

To guide the surveillance, monitoring, and approach to intervention for Post-Hemorrhagic Ventricular Dilatation (PHVD) in preterm newborns hospitalized at the Montreal Children's Hospital (MCH) Neonatal Intensive Care Unit (NICU).

This guideline applies to physicians and neonatal nurse practitioners (NNPs) who have read and understood this guideline.

2. GUIDELINE HAS BEEN APPROVED BY:

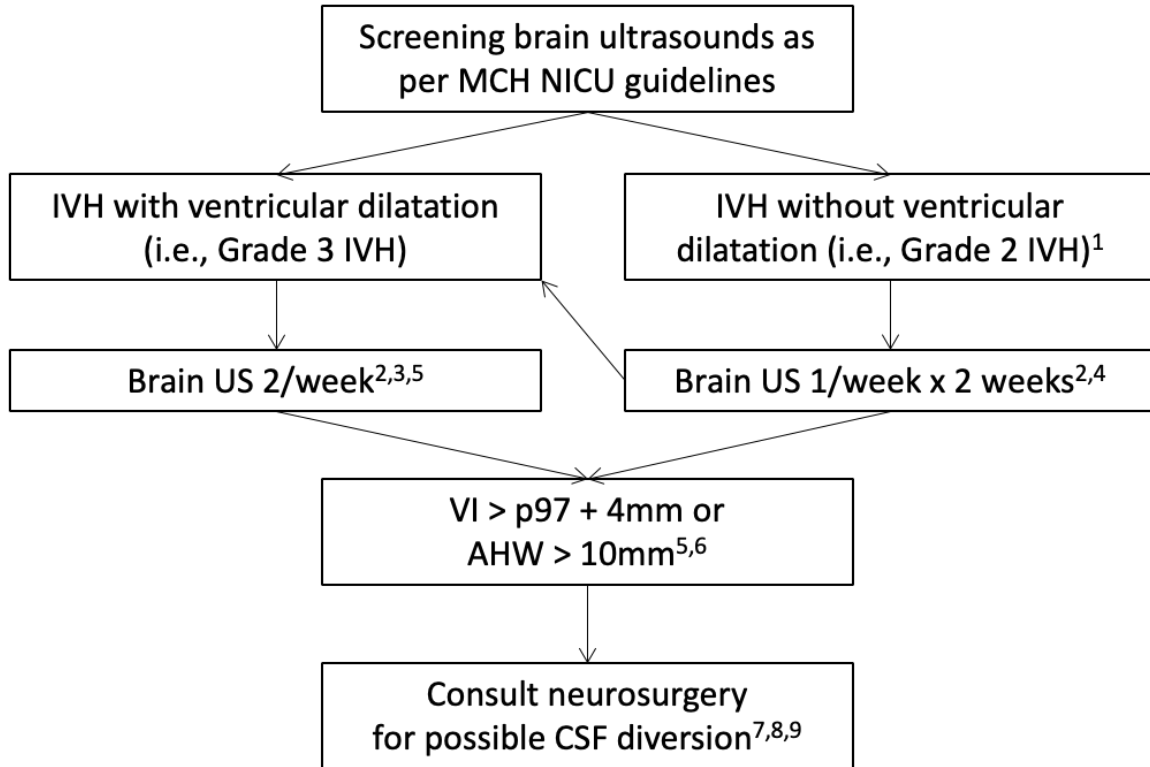
The Divisions of Neonatology and Neurosurgery of the MCH.

3. ELEMENTS OF CLINICAL ACTIVITY:

See below

Post-Hemorrhagic Ventricular Dilatation (PHVD) in Preterm Newborns Clinical Guideline

Surveillance of preterm newborns for PHVD



¹ If intraventricular hemorrhage (IVH) without ventricular dilatation is identified after 4 weeks of age, follow-up of ventricular size is not indicated.

² In the brain US requisition, please request in the Comment box measurements of the ventricular index (VI) and anterior horn width (AHW) bilaterally.

³ If after 2 weeks of identification of IVH with ventricular dilatation there is stabilization or resolution of the dilatation, the frequency can gradually be reduced to 1/week x 2 weeks, and then to 1x every 2-4 weeks.

⁴ If after 2 weeks of identification of IVH without ventricular dilatation there is no dilatation, the US can be repeated in 4-6 weeks.

⁵ See guideline for measurement of ventricles. Each time a brain US of a newborn with IVH with ventricular dilatation is performed, the clinician (MD/NNP) should measure (if not done by the radiologist), plot, and document the newborn's VI and AHW.

⁶ Referring centers may choose to consult neurosurgery when the VI > p97 or the AHW > 6mm.

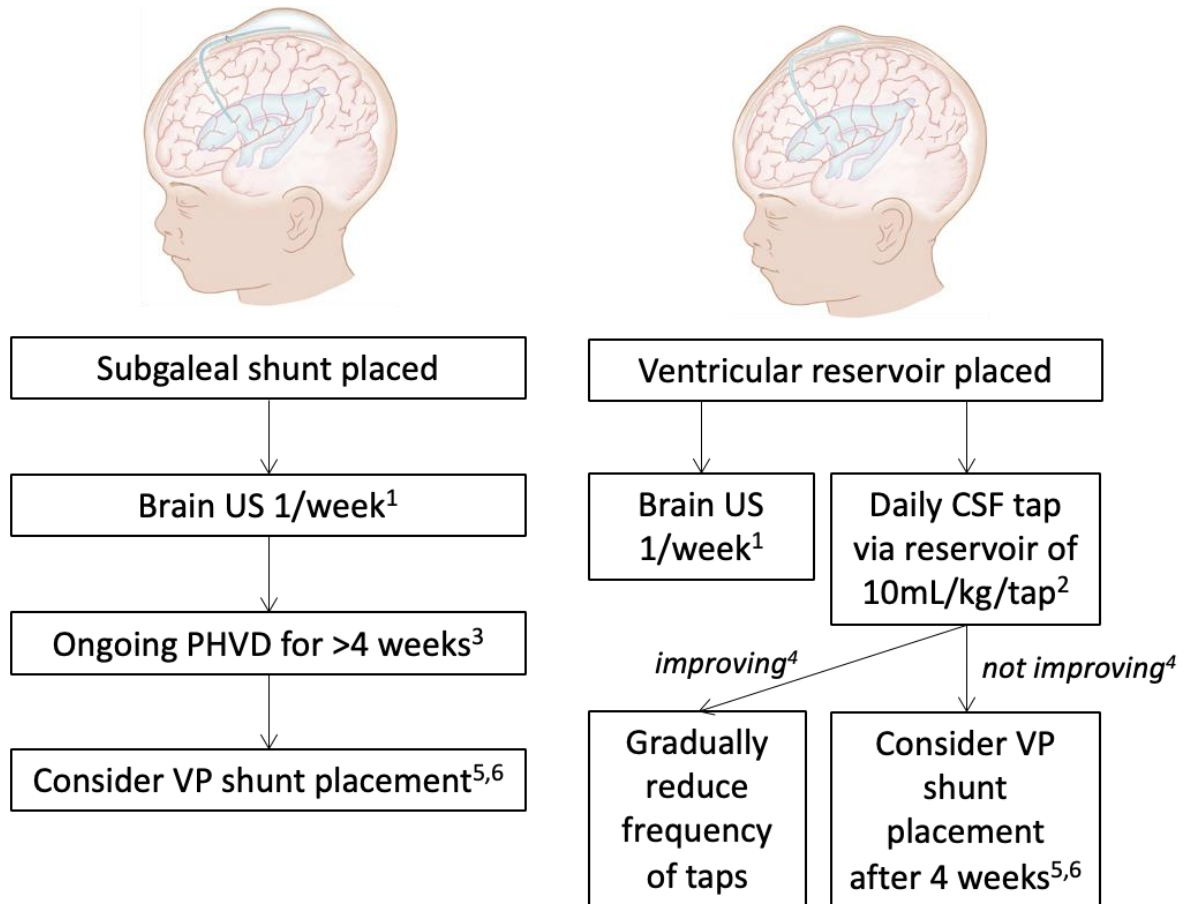
⁷ Strategies for cerebrospinal fluid (CSF) diversion include subgaleal shunt or ventricular reservoir and will be determined on a case-by-case basis by discussion with the neurosurgical team.

⁸ Serial lumbar punctures (daily LP on 2-3 consecutive days and remove up to 10mL/kg/LP) should be considered if a neurosurgical CSF diversion is delayed or not feasible (e.g., less than 700g, high risk for surgical morbidity) as a temporizing measure. Avoid LP if aqueductal stenosis (enlarged 3rd ventricle with small 4th ventricle).

⁹ Repeat brain US 2/week while awaiting possible intervention.

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Management of PHVD after placement of subgaleal shunt or ventricular reservoir



¹ Brain US may be requested more than 1/week until size of the ventricles has stabilized.

² Rate of CSF aspiration of 1mL/kg/min is recommended, and not to exceed 2mL/min. A separate guideline for aspiration of the ventricular reservoir will be developed for specific technical guidance.

³ Goal of subgaleal shunt is to achieve VI < p97 and AHW < 6mm with minimal subgaleal pocket of fluid.

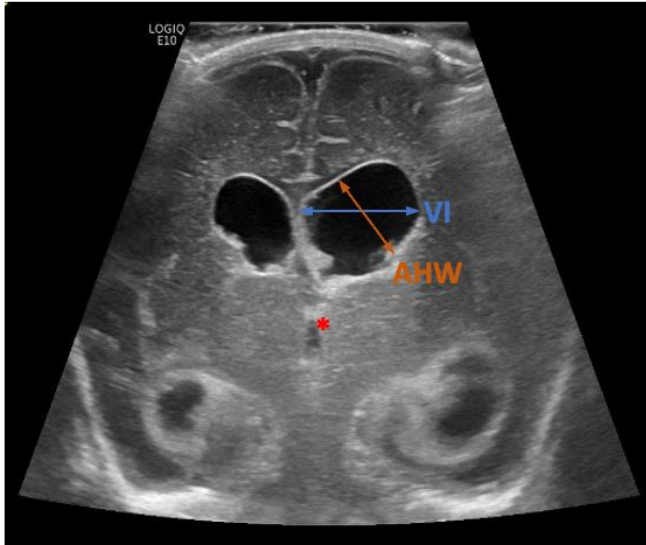
⁴ Goal of ventricular reservoir is to achieve VI < p97 and AHW < 6mm with no need for tapping of reservoir.

⁵ A minimum weight of 2kg is desirable prior to ventriculoperitoneal shunt (VP shunt) placement.

⁶ Endoscopic third ventriculostomy with or without choroid plexus cauterization may be considered in lieu of VP shunt in selected infants.

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Measurement and assessment of ventricular size



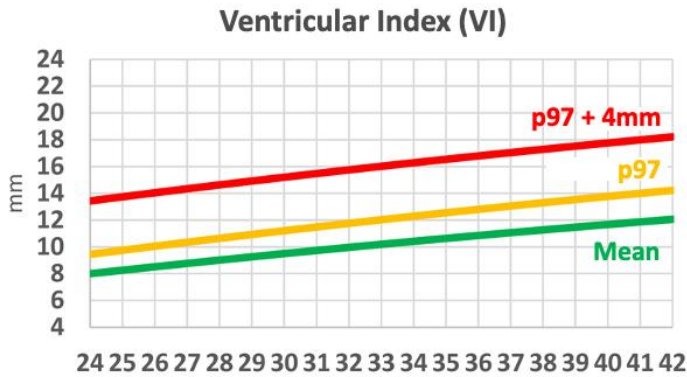
Choose a coronal section where the 3rd ventricle (*) is visible

Measure:

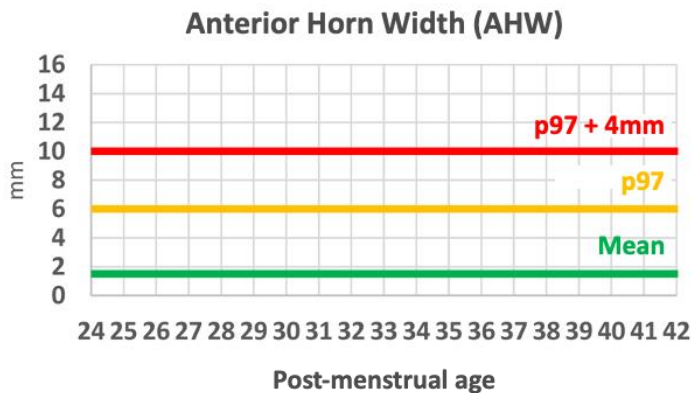
The **Ventricular Index (VI)** is the distance between the midline (falx) and the most lateral border of the lateral ventricle.

In case of midline shift: start the VI measurement from the shifted, 'new' midline.

The **Anterior Horn Width (AHW)** is the largest diagonal width between the walls of the anterior horns of the lateral ventricles at approximately a 45-degree angle.



Always record and plot measurements for both left and right ventricles.



Graphs modified from El-Dib M et al., J Ped 2020.

4. MAIN AUTHOR:

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5. CONSULTANTS:

6. SPECIAL CONSIDERATIONS:

7. APPROVAL PROCESS

Institutional and professional approval

Committees	Date [yyyy-mm-dd]
<input type="checkbox"/> Pediatric Clinical Practice Review Committee (CPRC) (if applicable)	
<input type="checkbox"/> Pediatric Pharmacy and Therapeutics (Peds P&T) (if applicable)	

8. REVIEW DATE

To be updated in maximum of 4 years or sooner if presence of new evidence or need for practice change.

Version History (for Administrative use only)			
Version	Description	Author/responsible	Date
1			