**Fronto-Occipital Ratio**

FOR = (A+B)/2C and is calculated using the labeled measurements.

* A = Widest distance across frontal horns
* B = Widest distance across occipital horns
* C = Widest biparietal diameter

Calculate FOR on multiple slices, and use maximal FOR for clinical decision making.

**Normative Absolute Values**

* Normal = 0.4 Mild HC = 0.55
* Moderate HC = 0.60 Severe HC = 0.7
* Good inter-rater reliability (> 0.9)



 **Frontal and Temporal Horn Ratio (FTHR)**

 FTHR = A+D/2E

* A = Widest distance across frontal horns
* D = Widest difference across temporal horns
* E = Broadest skull diameter at level of foramen Monro

Correlates highly with volumetric determinations



Kulkarni AV, et al. Measurement of ventricular size: reliability of the frontal and occipital horn ratio compared to subjective assessment. *Pediatr Neurosurg*. 1999;31(2):65–70.

O'Hayon BB, et al. Frontal and occipital horn ratio: A linear estimate of ventricular size for multiple imaging modalities in pediatric hydrocephalus. *Pediatr Neurosurg*. 1998;29(5):245–249.

Antes S, et al. The frontal and temporal horn ratio to assess dimension of paediatric hydrocephalus: a comparative volumetric study. *Acta Neurochir Suppl*. 2013;118:211–214. doi:10.1007/978-3-7091-1434-6\_39.

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| **CHOP protocol - Consider Reservoir if the Neonate Meets the Following Criteria** |
| **Birth Weight** | < 1500 g> 1500 g consider VP shunt |
| **Intraventricular Hemorrhage** | Grade III or IV |
| **Life Expectancy** | > 72 hours |
| **FOR or FTHR**  | ≥ 0.55 (moderate hydrocephalus) or an increase in FOR of 0.1 |

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| **PLUS at least 2 of the following:** |
| **Bradycardia** | ≥ 3 episodes requiring intervention or lasting more than 30 seconds per 24 hours not explained by other cause |
| **Split Sutures** | > 2 mm (roughly a fingertip) measured 1 cm from the fontanelle |
| **Bulging Fontanelle** | Above the level of the bone while calm, sitting |

**Decision to Convert Reservoir**

|  |  |
| --- | --- |
| **Observe** | FOR is not ≥ 0.55 *and*No persistent tapping by term date |
| **Continue Taps** | FOR ≥ 0.55Persistent tapping by term dateExtra-choroidal IVHCurrent weight is < 1500 gAbdomen not usable |
| **Surgeon Preference** | FOR ≥ 0.55Persistent tapping by term dateExtra-choroidal IVHCurrent weight is 1500-2000 gAbdomen usable |
| **Shunt/ETV** | FOR ≥ 0.55Persistent tapping by term dateExtra-choroidal IVHCurrent weight ≥ 2000 gAbdomen usable*When considering conversion, patient should get MRI so an Endoscopic Third Ventriculostomy (ETV) with CPC coagulation can be considered* |