1.0 Introduction

Patients with hydrocephalus requiring cerebrospinal fluid diversion via a shunt were identified as a population that Neurosurgery cared for that required streamlining of care due to high volumes and complications such as infection which were relatively high compared to other procedures. This clinical practice guideline has been updated to reflect emerging changes in evidence (initial document developed 1997/98).

Target Population

- Inclusion: (May include cysto-peritoneal shunting and subdural peritoneal shunts)
- Infant/child with hydrocephalus requiring 1st shunt intervention.
- Child with existing shunt for hydrocephalus management.
- Newborn to 18 years of age with signs/symptoms of shunt malfunction (i.e. nausea/vomiting, headache, lethargy, irritability &/or altered level of consciousness (LOC))

Target Users

- All health care providers who may encounter a patient with a shunt or requiring a shunt.

2.0 Definitions

- **Shunt**: Referring only to a ventricular-peritoneal shunt
- **Shunt Revision**: Surgical replacement or change to an existing shunt

3.0 Clinical Practice Recommendations

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# Ventricular Peritoneal Shunt Insertion or Revision

**Expected Date of Discharge:** Post-op Day (POD) #2

## Pre-Admission
- **History & physical assessment** (including fontanelle assessment and head circumference if less than 10 months)
- CT scan or MRI (new diagnosis should have a 4.4 MRI, otherwise could just be FAST MRI to assess ventricular size) or Head US (if infant and clinically appropriate)
- Short stature if CT/EMG or US is equivocal, abnormal or short components out of place (could be targeted with short series looking at specific area if recent revision)
- Abdominal ultrasound (recent shunt insertion, abdominal examination)
- Pregnancy screening as per policy: Pregnancy, Screening Policy
- Routine labs including CBC, Electrolytes, PTT-INR and Type/Sens
- If suspected sepsis, medical team to consider initiating the sepsis protocol
- Short shunt should be surrogated considered in patients who have had a shunt surgery within the past 6 months
- If suspected infection, medical team to consider decubitus, ultrasonography
- Call neurosurgery immediately if the symptoms are noted or rapidly progressive
- Pre-op bathing as per policy pre-op bathing policy
- Assess pre-operative co-morbidities and hospitalization
- Assess familiarity understanding of plan of care

**Consults**
- Neurosurgery consultant is responsible for investigations and orders
- Use interdisciplinary and family team approach
- Postoperative: head and arms for 6 months
- Use team to follow-up on recommendations for change

## Admission/Pre-OP
- Neurological Vital Signs 0-45 min and any changes assessed and recorded
- If > 10 months of age, check and record fontanelle (0-45 min and head circumference daily)
- Monitor for signs & symptoms of increased ICP
- Neurosurgeon to review pre-operative results (consult as appropriate)
- Pre-op bathing as per policy pre-op bathing policy
- See Shunt Insertion Protocol Checklist to be completed in OR (sitting room staff only)

**Intra-Operative**
- Time, date,vents, and involved team
- Neurosurgeon to obtain consent (from pediatrician/adult)
- Consent form is completed and signed (for example Endorsa, Hematology, General Pediatrics, General Surgery)
- Social Work, Child Life consult as indicated

**Post-OP**
- Neurological Vital Signs 0-45 min
- Vital signs & neurological vital signs at discharge
- Head circumference recorded
- Signs and symptoms of increased ICP
- Child and family verbalized pain & assessed well controlled prior to discharge
- Ensure patient has had a bowel movement
- When stable, patient may be discharged

## Discharge
- Vital signs and Neurological Vital Signs pre-discharge
- Head circumference recorded
- Signs and symptoms of increased ICP
- Child and family verbalized pain & assessed well controlled prior to discharge
- Ensure patient has had a bowel movement
- Patient is assessed

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Ventricular Peritoneal Shunt Insertion or Revision
| Procedure | Medication reconciliation
| --- | --- |
| | Complete medication reconciliation. Ensure to evaluate if child is on any antimicrobial or other medications (prescription or over-the-counter) that may affect surgery or G.A.
| | Anesthesia
| | Analgesia ordered based on pain assessment.
| | Morphine or Ketorolac
| | Antibiotics to be given in OR Room – See intra-operative phase
| | Discharge
| | Review with family/ward care
| | Review/Provide short run/medication
| | Medications
| | Follow-up appointment (if imaging required)
| | Child/family understand awareness and understanding of plan of care post-discharge.
| | If child has a programmable valve: MPRP to document setting and ensure family is aware of programmable valve! Current setting and MPRP
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**Pre-operative teaching:**
- NPO instructions
- Call time
- IV insertion if applicable
- Prone bath
- Transport to OR
- Answer questions or offer resource for short related questions
- Recovery room
- Post-op medications/Pain management
- Assess child & family's understanding
- Child/family verbalize awareness/understanding of plan of care

**Post-operative teaching:**
- Wound to remain dry for 48 hours
- Pain management
- Pain
- Follow-up appointment (if imaging required)
- Child/family verbalize awareness and understanding of plan of care post-discharge.
- If child has a programmable valve: MPRP to document setting and ensure family is aware of programmable valve! Current setting and MPRP
4.0 Guideline Group and Reviewers

Guideline Group Membership:
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5.0 References


Attachments:
Shunt protocol.pdf
ventricular shunt_CPG_September 2021.pdf