



# Multidisciplinary Approach to Reduce Neurosurgical Shunt Infections



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## Description of Team

Neurosurgical infections accounted for 45% of our infection rates in 2017. At our facility, ACS NSQIP (American College of Surgeons National Surgical Quality Improvement Program) odds ratio was 1.87 for neurosurgical infection rates. A multidisciplinary team was developed which included: preoperative, intraoperative, and postoperative care to discuss incentives for achieving compliance with simplification and whole team buy in strategies.

## Preparation and Planning

Once the multidisciplinary team was formed, a literature review was performed, and meetings were implemented once a month. The goal was to develop a simplified bundle that could easily be implemented and followed to ensure compliance by family members, patients, and all staff involved in the three phases of care.

## Assessment

Over a three-year period, between 2015-2018 at our facility, the number of shunt infections ranged from 3-20%. In 2018, a three-tiered evidence-based bundle was developed and implemented in order to reduce the number of infections in pediatric shunt patients.

APMC Neurosurgical Bundle Checklist				PILS LABEL
Implement: Defined as Shunt, VNS or Baclofen Pump (EVDs and JP Drains are NOT considered implants)	YES	NO	Date Time & Initial Documented Summary/SS by RN/Tech	COMMENTS
<b>Pre-Operative Care</b>				
1. Hospital antiseptic protocol: a. Shampoo right before: CHG if > 2 months of age and NO CHG allergy. Use Johnson's Baby Shampoo if < 2 months of age, CHG allergy, or surgical incision < 48 hours old. b. CHG Bath with wipes right before				
c. Shampoo morning of: (to be done in pre-op or ICU): CHG if > 2 months of age and NO CHG allergy. Use Johnson's Baby Shampoo if < 2 months of age, has CHG allergy or has a surgical incision < 48 hours old.				
d. Antiseptic Protocol Completed: CHG Bath with wipes morning of surgery done in pre-op or ICU; Nasal Betadine/Mupirocin and Peridex if age appropriate				
<b>Intra-Operative Care</b>				
1. Limit traffic: a. Sign on door b. All supplies/implants in the room prior to opening c. For implants: Open supplies for the case after the patient is in the room and after intubation				
2. All operative staff must wear hospital laundered scrubs and shoe covers				
3. Aseptic Spines prior to incision (2hr if Vancoc)				
4. All staff double gloved				
5. OR Triple Skin Prep: (see comments section for aseptic prep) a. CHG scrub (CHG allergy use Betadine Scrub + Paint) b. Alcohol c. Duraprep				<28 weeks gestation: Betadine Scrub and Paint ONLY >28 weeks gestation but <2 months: CHG scrub, alcohol, Clear Chloraprep
6. Verify implant with surgeon before opening				
7. Sterile Gloves Changed prior to touching implant				
8. Copious wound irrigation before closing				
<b>Post-Operative Care</b>				
1. Order one dose of Antibiotics post-operatively for implants only				
2. Occlusive dressing >2 days; Remove POD 2 (by PA/ARNP or surgeon) and cleanse incision with betadine and re-cover				
3. Patient and family hand hygiene education documented				
4. Daily CHG bath starting POD 1 (NICU-IBU) documented				

## Outcome

The compliance rate for the bundle once the protocol was implemented was 92%. Infection rates dropped post protocol to less than 2%. The NSQIP odds ratio for FY20 dropped to 0.86, which is AS EXPECTED.

## Implementation

Our shunt bundle was presented and approved by surgical PIPS (Project Improvement Patient Safety). The beginning phase of implementation included educating all staff involved within the three phases of care. Once all staff felt knowledgeable and comfortable on the protocol and processes that needed to be followed and documented for compliance, the protocol was put into place. The shunt bundle begins during the PAT/pre-op visit, the patients and families are educated and given the products by nursing staff in the office.

## Implications for Perioperative Nursing

Perioperative nursing and compliance to a protocol play a major role in decreasing infection rates in shunt patients. Through the implementation of a multidisciplinary team shunt bundle, the number of surgical site infections have been reduced. Due to the decrease in infections and improved patient outcomes, the shunt bundle was implemented to include all neurosurgical patients. The shunt bundle is a continuous process of re-evaluation and refining as needed. Data capture is done in REDCap and reviewed monthly for compliance.

