

Project Lead/Key Contact
<ul style="list-style-type: none"> • Kristi Hildebrand, MSN, RN, CPNP-AC, CNRN • <i>kristi_hildebrand@med.unc.edu</i> • <i>Work (984) 974-4556 or cell (252) 904-0521</i>
Why are you interested in the Improvement Scholars Program?
<p>I am interested in participating in the Improvement Scholars Program to address surgical site infection (SSI) to improve patient outcomes, as well as to help grow and strengthen my skills in quality improvement. I will be working with our pediatric neurosurgery nurse coordinator to implement this project. Our goal is to promote health equity, patient harm prevention, and mortality reduction through a project aimed at improving pediatric neurosurgical incision site care, preventing surgical site infections, and reduce emergency departments visits and hospital readmissions. This program is the perfect opportunity to receive training and guidance to further my scholarly approach to patient care as a pediatric nurse practitioner. As a part of my professional growth and development, it will equip me with the necessary skills to apply evidence-based research to improve patient safety and lead successful QI projects in the future. Additionally, SSI prevention is an area of interest for me as I am actively involved with incision care teaching, management of post-op incisions, and treatment of SSIs.</p> <p>We plan to utilize a family-centered, team approach to the project by involving:</p> <ul style="list-style-type: none"> - Inpatient pediatric nurse coordinators - Nurse educators - Parents and caregivers - Nursing staff - Neurosurgery team <p>The IHQI teaching and support is an invaluable asset to help design and implement an effective strategy to address SSI prevention. It would also be beneficial to the Department of Neurosurgery to have a successful, coached project. This could potentially involve residents and faculty so that everyone gains from this experience. I have leadership support from Dr. Scott Elton, Director of the Division of Pediatric Neurosurgery.</p>
Problem Statement: What is the problem you are looking to solve?
<ul style="list-style-type: none"> • What is the problem? <p>Our pediatric neurosurgery team has noticed a significant disparity in preop and postop care recommendations for prevention of surgical site infection (SSI). We are particularly concerned regarding the number of patients impacted who are racial minorities and/or speak a language other than English.</p> <ul style="list-style-type: none"> • What happens? <p>The patient returns to the outpatient clinic or the ED with signs and symptoms of a surgical site infection or complications related to wound care. In interviewing the parent and patient, we observe there are gaps in understanding appropriate incision care that can lead to these infections and complications. There are numerous barriers to SSI prevention, including:</p> <ul style="list-style-type: none"> - Limited patient/family education - Language barriers - Inconsistent staff training - Inadequate documentation

- Lack of adherence to policies SSI contributes to significant morbidity and mortality of patients, as well as substantial financial burdens and increased risk for unplanned readmissions (Owens & Stoessel, 2008; Sherrod & Rocque, 2017; Stone et al., 2005). There are several UNC Medical Center policies addressing SSI prevention, including the Infection Prevention Plan FY2022, Operative/Procedural Management, and Infection Prevention Guidelines for Perioperative Services policies. However, it is well-recognized in research and practice observation that there is a noticeable gap between recommendations and implementation for SSI prevention.

- When does it happen?

These infections were noted within days to weeks after post-operative discharge. Symptoms may not be observed or reported until the patient and their family return for their post-surgical clinic visit. There are also times where patients send messages via MyChart with concerns.

- How often/how much?

Of the total 82 pediatric neurosurgery cases between November 1, 2024 until January 30, 2025, we have observed 11 incision site complications, accounting for 13% of total pediatric neurosurgery cases in this 3-month period review.

- To whom (which patients and or providers) does it happen?

Patients impacted by this problem are all pediatric neurosurgical patients who have had surgery at UNC. Of the cases noted between 11/1/24 and 1/30/25, 82% of the patients with complications are non-white and/or non-English speaking (Latino, African American, Native American or biracial). This project can significantly impact health disparities. However, this project has the potential to benefit all surgical patients if these improvements demonstrate effectiveness within our institution. In reviewing the socioeconomic background of the above noted patients, 6 of the 11 patients live in areas that are ranked in the most disadvantaged areas based on the Neighborhood Atlas' Area Deprivation Index (Center for Health Disparities Research, n.d.). They are at more risk for SSI and less likely to follow recommendations or reach out with concerns. This project would help address the barriers for the socioeconomically disadvantaged patients.

Importance Statement: Why is this project important?

The Division of Pediatric Neurosurgery seeks to improve SSI prevention and incision care across the perioperative period. We plan to use a multidisciplinary approach to tackle these barriers, with a special focus on health disparities and improving equity of access to care and resources. If properly addressed, SSI is a largely preventable problem that would significantly improve patient outcomes. Our goals include:

- Reduce ED visits and hospital readmission due to wound issues
- Health equity promotion by reducing racial disparities in health outcomes
- Improving coordination for post-op incision checks and follow-up appointments
- Improve parent compliance with post-op incision care
- Improve parent and patient centered approach for incision care (i.e return demonstration of washing incisions, dressings, applying antibiotic ointment)
- Reduce surgical site infections.
- Improve communication and care team ordering process with inpatient nursing and provider care teams to promote better patient/parent health education.

Project Scope

In Scope:

- *What is the specific patient population your project will impact?*
 - Pediatric Neurosurgical patients
- *How many patients are in the population?*
 - In 2024, Total of 319 neurosurgical cases completed, 42.3% were non-white and/or non-English speaking
- *In what setting(s) would this problem be addressed? (e.g., hospital unit, outpatient practice setting, non-clinical setting, etc.)?*
 - Inpatient pediatric unit, neurosurgery outpatient clinic, emergency department, and patient homes

Out of Scope:

- Non-neurosurgical patients; plan to expand project to include multispecialties as needed.

Measures: (Process, Balancing, Structure)

Please describe the anticipated outcome measure(s), 2-3 process measures, and one balancing measure. Please do not include more than 5 measures total.

Measure Name	Measure Type	Measure Calculation	Measure Exclusion	Data Source	Baseline	Goal	Collection Frequency
Reduction in SSI Rate	Outcome	(Number of SSIs / Total number of surgeries) x 100	Patients with pre-existing infections or immunocompromised conditions	Patient medical records, infection control reports	13% of total pediatric neurosurgery cases in this 3-month period review.	<5%	Monthly
Compliance with Incision Care Protocols	Process	(Number of properly documented cases / Total number of cases) x 100	None	Patient medical records, documentation audits, patient care audits, compliance checklists	Unknown	>80%	Monthly
Patient/Family Education	Process	(Number of participants / Total number patients/caregivers) x 100	None	Patient survey	Unknown	>80%	Monthly
Staff Workload and Satisfaction	Balancing	Average staff satisfaction score	Staff not providing care for neurosurgical patients.	Nursing and provider surveys	Unknown	>80%	Quarterly

Root Cause Analysis

- What do you think are the underlying causes of the problem?
 - Inconsistent implementation of protocols
 - Health care literacy
 - Language barriers

<ul style="list-style-type: none"> • Why do you think the problem is happening? <ul style="list-style-type: none"> ○ Lack of consistent communication and education between parents, patients and providers ○ Limited patient/family education ○ Inconsistent staff training/ staff turnover ○ Inadequate documentation ○ Lack of adherence to policies SSI
<p>Ideas for Improvement</p>
<ul style="list-style-type: none"> • <i>What ideas do you have for changes that will result in improvement?</i> <ul style="list-style-type: none"> ○ Training to improve consistency in orders placed by resident physicians for post-op incision care and teaching. ○ Provide improved resources for use of inpatient nurses to provide care and teaching to patients and their families. This might include handbooks and incision care “goodie bags” with soap to prompt washing the incisions. ○ Improve consistent messaging to patients and families for washing the incisions and return instructions. This would ideally begin in the pre-op phase (outpatient clinic/precare), continuing throughout the hospital stay post-op, discharge instructions, and in the post-op appointment. ○ Provide learning opportunities in the pre and post op periods to improve adherence to wound care. ○ Enhance UNC MyChart access to improve access to care. ○ Increase access to UNC medical Spanish interpreter to reduce language barrier.
<p>Risks and Opportunities</p>
<p>Factors that will foster improvement:</p> <ul style="list-style-type: none"> • Education and Training: <ul style="list-style-type: none"> ○ <i>Comprehensive training for nursing staff on SSI prevention protocols</i> ○ <i>Ongoing education sessions for parents and caregivers on proper incision care</i> • Data-Driven Approach: <ul style="list-style-type: none"> ○ <i>Regular monitoring and analysis of SSI rates</i> ○ <i>Use of data to identify trends and areas for improvement</i> • Standardized Protocols: <ul style="list-style-type: none"> ○ <i>Development and implementation of standardized care protocols for incision management</i> ○ <i>Consistent use of evidence-based practices across all team members</i> • Communication and Coordination: <ul style="list-style-type: none"> ○ <i>Effective communication between all team members</i> ○ <i>Coordination of care during the transition from inpatient to outpatient settings</i> <p>Major Challenges anticipated:</p> <ul style="list-style-type: none"> • Resource Limitations: <ul style="list-style-type: none"> ○ <i>Availability of sufficient resources (staff, time, materials) to implement and sustain interventions</i> ○ <i>Potential financial constraints</i> • Compliance and Adherence: <ul style="list-style-type: none"> ○ <i>Ensuring consistent adherence to protocols by all staff members</i> ○ <i>Encouraging active participation and compliance from parents and caregivers</i> • Cultural and Behavioral Barriers: <ul style="list-style-type: none"> ○ <i>Addressing any cultural or behavioral resistance to new practices</i> ○ <i>Overcoming any reluctance to change established routines</i> • Variation in Patient Population:

- *Managing the diverse needs and conditions of the pediatric patient population*
- *Tailoring interventions to accommodate individual patient differences*
- **Sustainability:**
 - *Maintaining the momentum of improvement efforts over the long term*
 - *Ensuring that improvements are sustained beyond the initial project period*

Stakeholders and Project Team Members

- *Who are the key stakeholders in your system and processes?*
 - Inpatient pediatric nurse coordinators
 - Nurse educators
 - Parents and caregivers
 - Nursing staff (7CH and ED)
 - Precare nursing staff
 - Neurosurgery team
- *Who are the key project team leaders to design and implement change?*
 - *Kristi Hildebrand, PNP – Pediatric Neurosurgery and APP Supervisor of Children’s Surgery*
 - *Meredith Cuthriell, RN – Inpatient Nurse Coordinator, Children’s Services*
 - *Daniel Hill, NR – Inpatient Nurse Coordinator, Children’s Services*
 - *Crystal Wagner, MSN, RN – Patient Services Manager III, 7 Childrens Pediatric Surgery/Trauma/Burn, Children’s Short Stay Unit/Children’s Emergency Response Team*
 - *Jessica Sangutei, MSN, RN – Nurse Coordinator, Pediatric Neurosurgery*

Name	Role
Dr. Scott Elton	<i>Sponsor, Subject Matter Expert</i>
Crystal Wagner, MSN, RN, CPEN, TCRN, NPD-BC, EMT	<i>Sponsor</i>
Daniel Hill, RN	<i>Sponsor</i>
Meredith Cuthriell, RN	<i>Sponsor</i>
Kristi Hildebrand, CPNP	<i>Team Lead</i>
Jessica Sangutei, MSN, RN	<i>Data Lead</i>

Impact on the Quintuple Aim

- *Improved health*
 - *Enhanced patient experience*
 - *Enhanced clinician and staff experience*
 - *Health equity*
 - *Reduced costs*
- The Pediatric Neurosurgery SSI Prevention Project will primarily address the UNC Health Improvement Priority Area of preventing patient harm and reducing health disparities. However, this project is multifocal by nature, and we anticipate it would also address social determinants of health, virtual visits, reducing ED/hospital use, and mortality reduction.

Sustainment Plan

- Ideas for Sustaining the Improvement:**
- **Ongoing Education and Training:**
 1. *Regular reminders for staff on SSI prevention and incision care.*
 2. *Education for parents and caregivers on proper post-op care techniques.*

<p>3. <i>Consistent training of resident physicians to provide orders and patient teaching.</i></p> <ul style="list-style-type: none"> ● Monitoring and Feedback: <ol style="list-style-type: none"> 1. <i>Establishing a system for regular monitoring and reporting of SSI rates.</i> 2. <i>Providing feedback to staff and caregivers on their performance and outcomes.</i> ● Standardized Protocols: <ol style="list-style-type: none"> 1. <i>Ensuring that standardized care protocols are integrated into routine practice.</i> 2. <i>Regularly updating protocols based on the latest evidence and feedback.</i> ● Leadership and Support: <ol style="list-style-type: none"> 1. <i>Securing ongoing support from leadership to prioritize and resource the initiative.</i> 2. <i>Appointing nursing champions within the team to lead and advocate for the project.</i> ● Engagement and Communication: <ol style="list-style-type: none"> 1. <i>Maintaining open lines of communication among all team members.</i> 2. <i>Encouraging active participation and collaboration from all stakeholders.</i> ● Recognition and Incentives: <ol style="list-style-type: none"> 1. <i>Recognizing and rewarding staff and caregivers for their contributions to SSI prevention.</i> 2. <i>Creating incentives for adherence to best practices and protocols.</i> <p>Continuing Work with IHQI's Support:</p> <ul style="list-style-type: none"> ● Integration into Routine Practice: <ol style="list-style-type: none"> 1. <i>Embedding the improvement strategies into daily operations and standard care practices, ranging from pre-op/precare, hospital stay, and post-op care.</i> 2. <i>Ensuring that the new protocols become part of the organizational culture.</i> ● Building Capacity: <ol style="list-style-type: none"> 1. <i>Developing internal capacity for continuous quality improvement through training.</i> 2. <i>Empowering staff to take ownership of the improvement initiatives.</i> ● Expanding the Scope: <ol style="list-style-type: none"> 1. <i>Using the success of the initial project to expand SSI prevention efforts to other departments or patient populations.</i> 2. <i>Sharing best practices and lessons learned with other teams and units.</i> ● Leveraging Data and Technology: <ol style="list-style-type: none"> 1. <i>Utilizing data analytics to track progress and identify areas for further improvement.</i> 2. <i>Implementing technology solutions to support and streamline the improvement efforts.</i> 3. <i>Committing to regular evaluations and adjustments to maintain progress.</i>
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Carolina Quality Tools

<p>We plan to use the following Carolina Quality Tools to Support the Work:</p> <ol style="list-style-type: none"> 1. SAFE Reporting: <ol style="list-style-type: none"> a. Incident Reporting: <i>Encourage the use of SAFE reporting to document and analyze incidents related to SSI.</i> b. Data Utilization: <i>Use the data collected from SAFE reports to identify trends, root causes, and areas for improvement.</i> c. Feedback Loop: <i>Provide timely feedback to staff on reported incidents and actions taken to address them.</i> 2. TeamSTEPPS: <ol style="list-style-type: none"> a. Team Training: <i>Implement TeamSTEPPS training to enhance teamwork, communication, and collaboration among the care team.</i> b. Standardized Communication: <i>Use tools like SBAR (Situation, Background, Assessment, Recommendation) to ensure clear and effective communication.</i> c. Conflict Resolution: <i>Equip teams with strategies to resolve conflicts and improve team dynamics.</i> 3. Huddles:

- a. **Check-Ins:** Conduct regular huddles to discuss patient care plans, review safety concerns, and coordinate team efforts.
- b. **Team Engagement:** Foster a sense of teamwork and shared responsibility through regular team interactions.
- 4. **Visual Management Boards:**
 - a. **Progress Tracking:** Use visual management boards to display key metrics, progress, and outcomes related to SSI prevention and incision care.
 - b. **Continuous Improvement:** Use the boards to highlight areas needing attention and celebrate successes, driving ongoing improvement efforts.

References

- Sponsor letters:
 - Dr. Scott Elton
 - Meredith Cuthriell, RN
 - Crystal Wagner, RN
 - Dr. Ashley Sutton

To Whom It May Concern:

I am writing to express my enthusiastic support for the Improvement Scholars Project with our pediatric neurosurgery team, specifically focused on Neurosurgery Surgical Site Infection (SSI) Prevention.

This project will utilize a family-centered, team approach by involving:

Inpatient pediatric nurse coordinators
Nurse educators
Parents and caregivers
Nursing staff
Neurosurgery team

Our goals include:

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Prevent and reduce surgical site infections
Improve communication and care team ordering process with inpatient nursing and provider care teams to promote better patient/parent health education

Please accept this as my letter of support for the neurosurgery ISP application.

Sincerely,

Meredith Cuthriell, RN, BSN
Inpatient Nurse Coordinator – pediatric pulmonology and pediatric hospitalist teams
Contact Information: meredith.cuthriell@unchealth.unc.edu

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Sincerely,

Crystal Wagner

Crystal Wagner, MSN, RN, CPEN, TCRN, NPD-BC, EMT

Patient Services Manager III

7 Children's Pediatric Surgery/Trauma/Burn

Children's Short Stay Unit/Children's Emergency Response Team

North Carolina Children's Hospital

101 Manning Drive, Chapel Hill, NC 27514

p (984) 215-5038 | m (631) 457-3670

crystal.wagner@unchealth.unc.edu

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Please accept this as my letter of support for the neurosurgery ISP application and my confirmation of my role as subject matter expert.

Sincerely,

Scott W. Elton, MD

Senior Medical Director for Children's Surgery, UNC Hospitals
Surgeon in Chief, North Carolina Children's Hospital, UNC Health