The PSQC is busy with our NSQIP based and pilot projects. All pilot projects have launched as of October 24th. To review our plan, these will be pilot projects designed to ultimately roll into the NSQIP. Individual DUA templates between participating hospitals and UTHealth Houston have been distributed to all hospitals which volunteered to be a pilot site. In an effort to assist those of you who may have some challenges around the DUA process, a source document has been created to provide an overview of each project-background, purpose, data needs, data storage and measurement-to hopefully ease the process. That document text is included in this newsletter and will be available on the PSQC website.

We anticipate our next webinar will be in April 2023. At that time, we plan to share the findings of our second project on Reduction of Post-Op CT Utilization in Complicated Appendicitis patients. We are conducting qualitative interviews with several of our member hospitals, collecting information on their practices and challenges. We will compile an implementation guide as we did with our first project.

Please be sure to mark your calendars for our next in-person meeting on **Sunday, July 9, 2023 at Minneapolis Children’s Hospital.** This will be the day before the ACS Quality and Safety Conference commences. More info will follow.

I wish you all a safe and joyous holiday season.

Kevin Lally, MD, MS, FACS
PSQC Executive Director
Surgeon-in-Chief, Children’s Memorial Hermann Hospital
Houston, TX
PSQC Projects

Introduction/Background:
There is no universally accepted post-op treatment path in regard to pain management and reduction of surgical site infections (SSI) in pediatric general surgery patients. In the NSQIP-P cohort there is wide variability in antibiotic prescription practice: the most recent NSQIP-P SAR reveals usage of oral antibiotics on discharge for complex appendicitis patients ranging from zero to 100%, with a median of about 65%. Antibiotic stewardship protects patients from harms caused by unnecessary antibiotic use and combats antibiotic resistance. Opioid stewardship reduces the need for unnecessary pain management therapies and potential misuse of narcotics.

The Pediatric Surgery Quality Collaborative (PSQC) launched three independent quality improvement projects to address these concerns-Antibiotic Duration Post Appendectomy, Colorectal Bundle Checklist and Opioid Stewardship. Each project workgroup is comprised of surgeons and SCRs to assist in the design of project objectives and operationalization of data collection needs. Some project workgroups also include pharmacists and infectious disease physicians to provide additional insight into any proposed interventions. Feasibility is tantamount in each project approach which equates to having a meaningful effect on the outcome of interest as well as keeping any additional data abstraction requirements as low a burden as reasonable on participating hospitals’ SCRs.

Below you will find information on what each project aims to accomplish, how project effect will be measured, what data will need to be collected and shared with the Data Coordinating Center (DCC) (UTHouston) and frequency of data collection and reporting. None of the projects will collect any protected health information ( PHI). The option of a data use agreement (DUA) between the University of Texas and participating hospitals will be offered for those sites who deem it necessary before participating.

Participating in any or all of these projects is completely voluntary. There is no expectation that any PSQC member hospital serve as a pilot site for any of the projects. Project findings will be shared with every PSQC member hospital through the development of an implementation guide at project conclusion. PSQC member hospitals can use the guide to make changes at their respective site if they choose to do so.

By piloting these projects, the PSQC hopes to demonstrate the information garnered is of value and eventually roll these additional variables into the NSQIP data platform.

For all projects, as there is no PHI in the data, the excel spreadsheet can be emailed directly to the DCC coordinator without need for encryption. The data will be stored in a secure REDCap database housed at the University of Texas. Only the DCC coordinator will have access to the database. The DCC coordinator will use the submitted data to create graphs for each participating site which will outline their current practice pattern (baseline) and demonstrate
what change, if any, is made over the course of project participation. These graphic reports will be created and shared quarterly. This approach mimics the classic Plan-Do-Study-Act (PDSA) approach to practice change.

**Project #1: Antibiotic Duration Post Appendectomy**

**Project Overview:**
This project was inspired by the findings of the STOP-IT trial in the adult population\(^1\). The STOP-IT trial demonstrated that a set duration of 4+/−1 days of antibiotic administration after source control of intra-abdominal infections had similar outcomes to those treated with longer duration antibiotics. This project’s objective is to substantially reduce the prescribing of oral antibiotics post-operatively and at discharge, for our pediatric patients with complex appendicitis. Our balancing measure will be no increase in the rate of SSIs or readmissions in this patient group. Ultimately qualitative interviews may be conducted near project conclusion to collect best practices from good performers and barriers from less good performers. These qualitative findings will be collated into an implementation guide and broadly distributed. Project duration is estimated to be 12-18 months.

**Data Collection Requirements and Storage:**
The NSQIP-P Targeted Appendicitis SAR currently collects information on antibiotic use post at discharge. The project workgroup will create processes for which variables to collect. This is still under discussion but most likely will be antibiotic prescribed at discharge (yes/no); antibiotic type; number of days of in-house antibiotic use; length of stay (LOS); readmissions and SSIs. Education around how to download the Data Download Report (DDR) into an Excel spreadsheet with the correct variables selected and all PHI scrubbed; quarterly submission of the cultivated DDR to the DCC with an agreed upon start date; and how to save the report in the NSQIP workstation for ease of future abstraction.

**Project Assessment**
The project objective is to assess the efficacy of reducing antibiotic use in this patient population without increasing the incidence of SSIs and readmissions as demonstrated by the STOP-IT trial. The initial set of data submitted will provide a baseline measure of how a participating hospital is performing on antibiotic use in this patient population compared to SSIs and 30-day readmissions. As the project matures, data will be collected at quarterly intervals, analyzed and then shared with participating hospitals. The comparison between antibiotic usage and SSI incidence and readmissions will be displayed using run charts and scatterplots. We hypothesize that reducing antibiotic post op to no more than 4 days post-op will not result in an increase of SSIs and/or readmissions after appropriate source control.

**Project #2: Colorectal Bundle Checklist**

**Project Overview:**
The second project, Colorectal Bundle Checklist, builds on the bundle approach study\(^2\) which demonstrated a reduction in post-op SSIs in adult colorectal surgery patients through the use of a prescribed treatment bundle which targets pre-op, intra-op and post-op pathways and details the best utilization of antibiotics, the preparation of the surgical site, and instrument tray guid-
PSQC Projects

ance around surgical wound closure. This project has been piloted in the Western Pediatric Surgery Research Consortium and demonstrated a positive effect.

This project’s objective is to substantially reduce the incidence of SSIs postoperatively for our pediatric patients undergoing colorectal procedures with an anastomosis and abdominal closure through the use of a standard procedure checklist.

The project has a well-defined list of procedures for inclusion and a procedure bundle for standardization (below). Compliance to the checklist will be classified as low (1-4 bundle elements completed); high (5-8 bundle elements completed); or ideal (all bundle elements completed). Our balancing measure will be no increase in the rate of SSIs or readmissions in this patient group. Ultimately qualitative interviews may be conducted near project conclusion to collect best practices from good performers and barriers from less good performers. These qualitative findings will be collated into an implementation guide and broadly distributed. Project duration is estimated to be 18-24 months.

Data Collection Requirements and Storage:
The project workgroup will create processes for which variables to collect. Several are included in current NSQIP-P SARs. These are all GI mortality, morbidity, and SSIs (superficial, deep and organ space) filtered by the cpt inclusion criteria. Additional variables may include ED revisit, 30-day readmissions, unplanned return to OR, anastomotic leak and bundle compliance. Education will be provided around how to build custom variables into the NSQIP platform; mechanisms within various EMR platforms to embed the checklist; how to download the Data Download Report (DDR) into an Excel spreadsheet with the correct variables selected and all PHI scrubbed; and how to save the report in the NSQIP workstation for ease of future abstraction.

Project Assessment
The project objective is to assess the efficacy of implementing a bundle checklist in this patient population without increasing the incidence of SSIs and readmissions as demonstrated by various ERAS® protocols used in the adult population. The initial set of data submitted will provide a baseline measure of how a participating hospital is performing on SSI incidence in this patient population. As the project matures, data will be collected at quarterly intervals, analyzed and then shared with participating hospitals. The comparison between checklist usage and SSI incidence and readmissions will be displayed using run charts and scatterplots. We hypothesize that high to ideal compliance with the bundle checklist will result in a reduction of SSIs and/or readmissions after appropriate source control.
### Intestinal procedures with anastomosis by CPT code

INCLUDING ALL COLORECTAL PROCEDURES WITH INTRA-ABDOMINAL ANASTOMOSIS AND ABDOMINAL CLOSURE

<table>
<thead>
<tr>
<th>CPT code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>44140</td>
<td>Colectomy, partial; with anastomosis</td>
</tr>
<tr>
<td>44143</td>
<td>Partial removal of colon</td>
</tr>
<tr>
<td>44144</td>
<td>Partial removal of colon</td>
</tr>
<tr>
<td>44145</td>
<td>Colectomy, partial; with coloproctostomy (low pelvic anastomosis)</td>
</tr>
<tr>
<td>44146</td>
<td>Colectomy, partial; with coloproctostomy (low pelvic anastomosis), with colostomy</td>
</tr>
<tr>
<td>44147</td>
<td>Colectomy, partial; abdominal and transanal approach</td>
</tr>
<tr>
<td>44150</td>
<td>Colectomy, total, abdominal, without proctectomy; with ileostomy or ileoproctostomy</td>
</tr>
<tr>
<td>44150</td>
<td>Colectomy, total, abdominal, without proctectomy; with ileostomy or ileoproctostomy</td>
</tr>
<tr>
<td>44205</td>
<td>Laparoscopy, surgical; colectomy, partial, with removal of terminal ileum with ileocolostomy</td>
</tr>
<tr>
<td>44207</td>
<td>Laparoscopy, surgical; colectomy, partial, with anastomosis, with coloproctostomy (low pelvic anastomosis)</td>
</tr>
<tr>
<td>44208</td>
<td>Laparoscopy, surgical; colectomy, partial, with anastomosis, with coloproctostomy (low pelvic anastomosis) with colostomy</td>
</tr>
<tr>
<td>44227</td>
<td>Laparoscopy, surgical, closure of enterostomy, large or small intestine, with resection and anastomosis</td>
</tr>
<tr>
<td>44604</td>
<td>Suture repair; large intestine, without colostomy</td>
</tr>
<tr>
<td>44615</td>
<td>Intestinal stricturoplasty (enterotomy and enterorraphy) with or without dilation, for intestinal obstruction</td>
</tr>
<tr>
<td>44620</td>
<td>Closure of enterostomy, large or small intestine;</td>
</tr>
<tr>
<td>44625</td>
<td>Closure of enterostomy, large or small intestine; with resection and anastomosis other than colorectal</td>
</tr>
<tr>
<td>44626</td>
<td>Closure of enterostomy, large or small intestine; with resection and colorectal anastomosis (eg, closure of Hartmann type procedure)</td>
</tr>
<tr>
<td>44640</td>
<td>Closure of intestinal cutaneous fistula</td>
</tr>
<tr>
<td>44660</td>
<td>Closure of enterovesicular fistula, without intestinal resection</td>
</tr>
<tr>
<td>45111</td>
<td>Proctectomy; partial resection of rectum, transabdominal approach</td>
</tr>
<tr>
<td>45114</td>
<td>Proctectomy, partial, with anastomosis; abdominal and transsacral approach</td>
</tr>
<tr>
<td>45402</td>
<td>Laparoscopic surgical proctopexy with sigmoid resection for prolapse</td>
</tr>
<tr>
<td>45550</td>
<td>Open proctopexy for prolapse w. sigmoid colon resection</td>
</tr>
<tr>
<td>45800</td>
<td>Closure of rectovesicular fistula</td>
</tr>
</tbody>
</table>

### COLON BUNDLE PROTOCOL CHECKLIST

**PROCEDURES TO INCLUDE:** All colorectal procedures WITH anastomosis and abdominal closure

**Preoperative**

(Optional) Bowel preparation

(Optional) Chlorhexidine (SAGE) bath/wipes

Umbilical cleansing (alcohol cleaning of umbilicus prior to skin prep)

Preoperative antibiotic given within 1 hour of incision

Includes gram negative and anaerobic coverage

**Intraoperative (Document in operative report)**

Anastomotic leak test

Dedicated closure tray (instrument change and new drapes prior to closure)

Glove change prior to closure

(Optional) Placement of subcutaneous drain in grossly contaminated cases

<table>
<thead>
<tr>
<th>Drain can be: vessel loop, penrose, umbilical tape, or other wicking object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance of normothermia (&lt; 36°C or &gt; 38 °C for less than 30 minutes)</td>
</tr>
</tbody>
</table>

**Postoperative**

Perioperative antibiotics discontinued at 24 hours

If present, occlusive dressing removed at 48 hours to examine wound
PSQC Projects

Project #3: Opioid Stewardship

Project Overview:
The Opioid Stewardship project builds on a study conducted by the Western Pediatric Surgery Research Consortium on post-op pain management in pediatric appendectomy patients. This study demonstrated an approach which significantly reduced the prescribing of narcotics for pain management at discharge without a significant increase in the number of readmissions or revisits for unmanaged pain complaints. This project’s objective is to substantially reduce the prescribing of opioids at discharge, for our pediatric patients undergoing any surgical procedure included in the NSQIP-P platform. Ultimately qualitative interviews may be conducted near project conclusion to collect best practices from good performers and barriers from less good performers. These qualitative findings will be collated into an implementation guide and broadly distributed. Project duration is estimated to be 18-24 months.

Data Collection Requirements and Storage:
The NSQIP-P SAR will begin collecting information on opioid prescribing at discharge in January 2023. The project will capitalize on the two required and one optional variable all SCRs will report via the NSQIP platform- opioid prescribed at discharge (yes/no); opioid type and dosing (how many days opioid prescribed) with no need for custom variables. Data will be stratified by surgical specialty (general surgery, orthopedics, otolaryngology, neuro, cardiothoracic, urology, and plastics) and procedure cpt code. The project workgroup will create processes for which variables to collect; education around how to download the Data Download Report (DDR) into an Excel spreadsheet with the correct variables selected and all PHI scrubbed; quarterly submission of the cultivated DDR to the DCC with an agreed upon start date; and how to save the report in the NSQIP workstation for ease of future abstraction.

Project Assessment
The project objective is to establish a baseline report on opioid prescribing practices by surgical specialty on a quicker timetable than the NSQIP-P SAR. The first project report showing comparison across all participating sites will be available and shared by July 2023. The first NSQIP-P SAR will not be available before July 2024. The initial set of data submitted will provide a baseline measure of how a participating hospital is performing on opioid prescribing. As the project matures, data will be collected at quarterly intervals, analyzed and then shared with participating hospitals. The comparison between antibiotic usage at baseline and after project start will be displayed using run charts and scatterplots. We hypothesize that reducing opioid prescribing at discharge by 50% between baseline and project maturation will not result in higher incidence of ED visits or readmissions.
PSQC Member Hospitals Map

July 9th, 2023
PSQC In-Person Meeting
Minnesota Children’s Hospital
Hello all!

I’m hopeful that after reading this issue of the PSQC Newsletter, you’ll have a better understanding of what each of our pilot projects are all about.

If you didn’t volunteer to be a pilot site in the first go round—no worries. You are welcome to join at any time if you wish.

Please email me at terry.Fisher@uth.tmc.edu if you have any questions or I can help in any way.

Terry

Terry Fisher, MPH, PMP, CPHQ
PSQC Program Manager
McGovern Medical School
Houston, TX

Recent Publications of Interest

**Shared decision-making in pediatric surgery: An overview of its application for the treatment of uncomplicated appendicitis**

Nonoperative management (NOM) of uncomplicated appendicitis is a safe and effective treatment alternative to surgery that may be preferred by some families. Surgery and NOM differ significantly in their associated risks and benefits. Choosing a treatment for acute appendicitis requires patients and their caregivers to make timely, informed decisions that allow for incorporation of personal perspectives, values, and preferences. This article will address the concept of shared decision-making and establish its role in patient-centered care. It will demonstrate the effectiveness of shared decision-making in a high acuity surgical setting for children and highlight how the choice for management of acute appendicitis may be impacted by patients’ and families’ individualized circumstances and values.

**Hospital Variation in Mortality after Inpatient Pediatric Surgery**

The minority of pediatric surgical deaths are preceded by a postoperative complication, but variation in risk adjusted mortality across academic, pediatric hospitals may be partially explained by differences in the recognition and management of postoperative complications. Additional work is needed to identify children at greatest risk of postoperative death from perioperative complications as opposed to those at risk from pre-existing chronic conditions.

**Implementation of enhanced recovery protocols reduces opioid use in pediatric laparoscopic cholecystectomy surgery**

Enhanced recovery protocols [ERPs] standardize care and have been demonstrated to improve surgical quality in adults. We retrospectively compared outcomes before and after implementation of ERPs in children undergoing elective laparoscopic cholecystectomy [ELC] surgery. The use of pediatric-specific ERP in children undergoing ELC is safe, effective, and provides compassionate pain control while leading to a reduction in opioid use perioperatively and at discharge. This improvement occurred without changes in RTS, nursing calls or complications.

**Complications and Failure to Rescue After Inpatient Pediatric Surgery**

To describe the frequency and patterns of postoperative complications and FTR after inpatient pediatric surgical procedures and to evaluate the association between number of complications and FTR. There is a dose-response relationship between the number of postoperative complications after inpatient surgery and FTR, ever after common, “minor” surgical procedures.
These findings suggest FTR may be a potential quality measure for pediatric surgical care.

**Association of dysglycemia with post-operative outcomes in pediatric surgery**

Perioperative dysglycemia is associated with adverse surgical outcomes in adults. We sought to determine the association between perioperative dysglycemia and 30-day adverse surgical events in pediatric patients undergoing non-cardiac surgery. Perioperative dysglycemia in children undergoing non-cardiac surgery is associated with increased risk of adverse events and outcomes. Interventions that screen and normalize blood glucose in the perioperative period may mitigate risk and improve quality of care.

**A Prospective Analysis of Opioid Use Following Outpatient Pediatric Urologic Surgery**

Data on opioid use was prospectively collected over 16 months via postoperative telephone calls to caregivers of patients undergoing outpatient urologic surgery. Patient characteristics, surgery type, analgesia, and opioid prescription and usage information were recorded. Patients were prescribed as needed oxycodone and scheduled acetaminophen and ibuprofen for 48 hours, then as needed. The relationships between the log mean of the number of opioid doses used and age, type of surgery, race, and opioid prescription were modelled using negative binomial regression with the robust standard errors. Our findings suggest that opioids are over-prescribed after outpatient pediatric urologic surgery, with 95% of patients having leftover medication and 54% not using any opioids at all. While opioid requirements were low across all sub-cohorts, patients who were prescribed more opioid doses used significantly more doses.

**Standardized perioperative care reduces colorectal surgical site infection in children: A Western Pediatric Surgery Research Consortium Multicenter analysis**

We conducted a prospective cohort study of patients ≤18 years of age undergoing colorectal surgery at ten United States children’s hospitals. Using a perioperative care protocol comprising eight elements, or “colon bundle”, we divided patients into low (1-4 elements) or high (5-8 elements) compliance cohorts. Procedures involving colorectal repair or anastomosis with abdominal closure were included. Demographics and clinical outcomes were compared between low and high compliance cohorts. Compliance was compared with a retrospective cohort. The primary outcome was superficial SSI incidence at 30 days. Standardization of perioperative care is associated with a reduction in superficial SSI in pediatric colorectal surgery. Expansion of standardized protocols for children undergoing colorectal surgery may improve outcomes and decrease perioperative morbidity.