The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP®) Best Practices Case Studies have been developed for quality improvement purposes. The documents may be downloaded and printed for personal use by health care professionals at participating hospitals. The documents may also be used in conjunction with ACS NSQIP-related initiatives or programs. The documents may not be distributed for non-ACS NSQIP-related activities or for profit without the written consent of the American College of Surgeons.
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ACS NSQIP PROGRAM OVERVIEW

The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) is the first nationally validated, risk-adjusted, outcomes-based program to measure and improve the quality of surgical care. The program prospectively collects clinical data to quantify 30-day, risk-adjusted surgical outcomes and allows for external benchmarking of outcomes among participating hospitals. Hospital administrators, quality improvement officials, and their clinical staff are provided with the tools, reports, analyses, and support necessary to make informed decisions about improving the quality of care.

The ACS NSQIP collects data on variables, including preoperative risk factors, intraoperative variables, and 30-day postoperative mortality and morbidity outcomes for patients undergoing major surgical procedures in both inpatient and outpatient settings. The data are collected, validated, and submitted by a trained surgical clinical reviewer (SCR) at each site. Once trained, the SCR submits data to the ACS NSQIP through a secure Web-based system with built-in software checks and prompts to ensure completeness, uniformity, and validity of the data. Data automation tools are also available to lower the data entry burden on the SCRs and to improve the quality of data being captured. In addition, inter-rater reliability (IRR) audits are conducted to ensure the data quality on a routine basis.

Using stepwise logistic regression and hierarchical modeling, 30-day, risk-adjusted morbidity and mortality outcomes are computed for each participating hospital. Outcomes are reported as observed versus expected (O/E) ratios and odds ratios (OR). An O/E ratio or OR less than one indicates the hospital is performing better than expected given the complexity of its patient population and surgical cases. An O/E ratio or OR greater than one indicates the hospital is not performing as well as would have been expected.

ACS NSQIP hospitals obtain feedback on their performance via two avenues: a comprehensive semiannual report and real-time, continuously updated, online benchmarking reports. Through the ACS NSQIP website, participants can view their non-risk-adjusted data and produce reports by surgical subspecialty and specific procedures. Thus, participants can continually monitor their quality improvement efforts and compare, on a blinded basis, their surgical outcomes with those of peer hospitals and with national averages.

The ACS NSQIP provides feedback and information to participants through IRR audits, support services, online training, and testing. Beyond the technical and data collection elements of the program, the ACS NSQIP supports participants in achieving their quality improvement goals. SCR and surgeon champion conference calls, local and regional collaboratives, and the ACS NSQIP Annual Conference serve as forums for participants to share their impediments to and triumphs in achieving quality surgical care. Through the ACS NSQIP Best Practices Case Studies and Guidelines, the ACS NSQIP presents participants with tools for implementing initiatives in quality improvement. Finally, the ACS NSQIP encourages participants, surgical specialty groups, and other quality improvement organizations to share their experience and expertise so as to advance the quality of surgical care.

For more information regarding the application process, requirements, or benefits of ACS NSQIP, or to apply online, visit our website at acnsqip.org or e-mail acnsqip@facs.org.
THE GOAL OF THE ACS NSQIP BEST PRACTICES CASE STUDIES

The goal of the ACS NSQIP Best Practices Case Studies is to showcase how participating hospitals have used ACS NSQIP data to improve their performance and outcomes. It is hoped that this volume in a series of ACS NSQIP Best Practices Case Studies publications will allow ACS NSQIP participants to learn from the experience of other hospitals and develop similar quality improvement initiatives within their own facilities.

The idea for this guide was conceived after feedback from ACS NSQIP sites via the annual conference. Additional feedback indicated that some hospitals were looking for information on how to more specifically use ACS NSQIP in their efforts to improve surgical care and outcomes. The ACS NSQIP Case Studies were designed to be one of several initiatives intended to aid hospitals in getting started with local quality improvement efforts. To this end, the Case Studies outline not only the objectives and end results of the improvement effort, but also the planning, development, and troubleshooting process.

Each case study was developed as a collaborative effort between the ACS and the participating hospital’s SCR and/or surgeon champion, as well as other surgical and quality improvement professionals. The Case Studies follow a structured outline, including sections on the description of the problem addressed, the context of the quality improvement process, the planning and development process, a description of the activity, the resources needed, the results, and tips for others. ACS staff held an interview with each hospital, loosely following the case study outline. The documents were written by ACS NSQIP hospital staff in conjunction with the ACS staff.

As previously mentioned, the Case Studies are meant to provide easily accessible information to hospitals starting their own quality improvement efforts using ACS NSQIP data. While quality improvement is not an exact science, these examples may provide a starting point to assess what kind of activities could be applied locally. Many times, a successful quality improvement activity can begin by talking to the right people and getting their buy-in and assistance. Each case study provides information on the details of the quality improvement effort that the reader can envision using at his or her own hospital. If necessary, more information can be obtained by contacting the SCR at the hospital where the case study has taken place.

The ACS NSQIP is continually looking for participant feedback on making the program more conducive to the participating hospital’s surgical care goals. Please contact us if you have comments or questions regarding the Case Studies, or if you would like information on how to submit your own Best Practices Case Study for publication in a future volume.
A. GENERAL INFORMATION

1. INSTITUTION NAME: Boston Medical Center, Boston University

2. SUBMITTER NAME AND TITLE: Ryan Macht, MD; Pamela Rosenkranz, RN, BSN, Med; David McAneny, MD FACS; and David Twitchell, BS, PharmD, MBA

3. NAME OF THE CASE STUDY: The Affordability of Outpatient Low-Molecular-Weight Heparin: Addressing a Key Barrier to Venous Thromboembolism Prophylaxis in a Safety-Net Hospital

B. WHAT WAS DONE?

1. GLOBAL PROBLEM ADDRESSED
Postoperative venous thromboembolism (VTE) events are a leading cause of morbidity and mortality. In the United States, the estimated annual incidence of VTE is 117 per 100,000.1 Surgery patients are at particular risk for VTE due to the inflammatory response and hypercoaguable state induced by an operation, combined with limited postoperative mobilization. Several risk factors have been identified for development of VTE and can be used to determine perioperative VTE prophylaxis regimens.

2. IDENTIFICATION OF LOCAL PROBLEM
Initial American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) data from our center in calendar year 2009 showed that we were high outliers for VTE in general surgery, with an observed to expected (O/E) ratio of 3.02. No standardized protocol for perioperative VTE risk assessment and prophylaxis was practiced at that time, nor were extended courses of prophylaxis commonly prescribed. In addition, many high-risk patients could not afford postoperative low-molecular-weight heparin for extended outpatient prophylaxis.

C. HOW WAS THE QUALITY IMPROVEMENT (QI) ACTIVITY PUT IN PLACE?

1. CONTEXT OF THE QI ACTIVITY
Boston Medical Center (BMC) is a merged entity of the former University Hospital and Boston City Hospital with 496 licensed beds. It is the largest safety-net hospital in New England. Approximately 59 percent of the patient population is classified as underserved, and 31 percent of the patients do not speak English as a primary language.

2. PLANNING AND DEVELOPMENT PROCESS
A multidisciplinary VTE prevention team was convened to respond to the initially high VTE rates. The Caprini risk-assessment scoring system was selected due to its prior validation and applicability on an individual level. Using this scoring system, the team developed prophylaxis protocols for patients depending on their risk category for
VTE. These protocols entail recommendations for prophylaxis both in the hospital and following discharge. After this protocol was implemented, the affordability of outpatient low-molecular-weight heparin (LMWH) was identified as a key barrier to compliance with the recommended regimens. A new task force was developed and included representatives from pharmacy, and case management departments.

D. DESCRIPTION OF THE QUALITY IMPROVEMENT ACTIVITY

The Caprini risk assessment and corresponding prophylaxis protocol was integrated into the electronic medical record (EMR). The EMR requires that the Caprini score be calculated for all patients upon admission, preoperatively, postoperatively, and at discharge, as certain hazards change during a patient’s hospitalization. Order sets automatically advise prophylaxis regimens based on the calculated Caprini score. The department of surgery leadership educated attending surgeons, residents, and mid-level providers about the new system prior to its implementation in February 2011.

Once the affordability of outpatient LMWH was identified as a barrier to compliance, several organization-level changes addressed this issue. The LMWH selection on formulary was exchanged for another one with slightly higher inpatient cost but significantly lower outpatient copayments for patients. A free-care program was used to wave fees for the outpatient regimen for uninsured patients or those otherwise unable to afford LMWH. These changes were rendered financially sound by participation in the 340B drug discount program, increased utilization of the institution’s outpatient pharmacies, and allocated hospital resources based on shared priorities instead of departmental budgets.

E. RESOURCES USED AND SKILLS NEEDED

1. A multidisciplinary team consisting of surgery, pharmacy, information technology, case management, and quality improvement leadership was critical to the success of this project at each stage of its development and implementation.

2. We were able to use existing information technology resources devoted to surgery department projects to build the VTE order sets. A $25,000 patient safety grant was awarded to our department for support of this project. In order to make LMWH more affordable for patients, the pharmacy incurred some costs associated with the exchange of LMWH agents, with the newer type being more expensive on the inpatient formulary. However, this change was considered to be prudent in that a decreased postoperative VTE rate would potentially result in diminished overall costs.
F. WHAT WERE THE RESULTS?

Figure 1 is a graph of our center’s risk-adjusted VTE ratios before and after implementation of the Caprini protocol in February 2011. We have observed a sustained decrease in odds ratios for VTE following implementation of this program, with several recent periods in the lowest decile of the ACS NSQIP program.

While the affordability of LMWH was an initial barrier, we overcame this challenge with a multidisciplinary effort to conceive and implement the program described above. Another obstacle of this initiative was a change in the hospital’s EMR several years after the initial implementation. However, we have replicated the protocol and order sets fairly well, despite differences between the two EMRs. Using the ACS NSQIP Return on Investment calculator, we estimate that the cost savings regarding VTE complications, between the two-year periods before and after the implementation of the Caprini protocol, to be more than $1.1 million.

G. TIPS FOR OTHERS

1. Integrating a VTE risk assessment, with corresponding automated prophylaxis orders in the EMR, is crucial to reducing the incidence of VTE events. When possible, utilize hard stops that remove the human element from quality initiatives.

2. Data presentation to the frontline practitioners about VTE rates and compliance with practices is important to promote sustainability. It can also help convince clinicians who are hesitant about changes implemented in a standardized VTE program.

3. A multidisciplinary effort is absolutely necessary for a program of this nature. Pharmacists and others with expertise in rules, regulations, and legislation about
medications, particularly pricing and special programs, are invaluable. Furthermore, a mature institutional administration can appreciate overall improvements in outcomes and costs, even while one department may incur greater expenses.

4. Even though surveillance bias can be an issue, longitudinal evaluation of VTE occurrences is helpful in assessing VTE prevention processes and outcomes. It is also worthwhile to examine local practices for VTE surveillance.

REFERENCES


BRITISH COLUMBIA CHILDREN’S HOSPITAL
A. GENERAL INFORMATION

1. INSTITUTION NAME: British Columbia Children’s Hospital

2. SUBMITTER NAME AND TITLE: Julie Bedford, RN, MSN, Leader for Clinical Quality and Data Review

3. NAME OF THE CASE STUDY: Reduction of Postappendectomy Surgical Site Infections Using a Standardized Pathway

B. WHAT WAS DONE?

1. GLOBAL PROBLEM ADDRESSED

Surgical site infection (SSI) reduction represents one of the greatest opportunities for quality improvement in pediatric surgery. Despite ongoing quality improvement initiatives, SSIs remain a significant source of morbidity after surgery. Infections range from simple superficial infections requiring minimal intervention to readmission and returns to the operating room. Estimates from the U.S. health care system put annual SSI costs at more than 3 billion dollars.¹

2. IDENTIFICATION OF LOCAL PROBLEM

Our site was identified as being a high outlier for surgical site infections over three risk-adjusted, semi-annual reports. Pediatric surgery had the highest risk-adjusted rates for SSIs and also contributed the highest proportion of infectious occurrences. In review of the pediatric surgery cases, more than half were related to appendectomies, with an infection rate of 27.7 percent for perforated appendicitis and 4.2 percent for nonperforated appendicitis.

At the time of the quality initiative, British Columbia (BC) Children’s was the only Canadian pediatric site participant. Compared with our U.S. counterparts, our unadjusted infection rates were consistently double for appendectomies. In comparison with another Canadian pediatric site reporting non-American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) appendectomy SSI rates, our rates were also higher for perforated appendectomies.²

C. HOW WAS THE QUALITY IMPROVEMENT (QI) ACTIVITY PUT IN PLACE?

1. CONTEXT OF THE QI ACTIVITY

BC Children’s Hospital is a quaternary care, free-standing children’s hospital in British Columbia. It services all children in the province, as well as the Yukon Territories (total population 4.7 million).

Prior to joining ACS NSQIP Pediatric in May 2011, SSI surveillance was conducted by the infection control team but was limited to admitted patients or those patients readmitted with a clear diagnosis of infection. Due to the lack of benchmarked outcome comparisons with other Canadian hospitals, we had no prior awareness of a problem with SSIs.
2. PLANNING AND DEVELOPMENT PROCESS

Based on the above mentioned raw and risk-adjusted rates, a detailed analysis of all appendectomy cases from 2011 and 2012 was completed. Results of these analyses showed a variation in practice among five pediatric surgeons in antibiotic use (including pre-, peri-, and postoperative administration, as well as choice and duration of therapy), surgical prep used in the operating room, and use of postoperative imaging for patients with suspected deep organ space infection.

The descriptive analysis of appendectomy cases was reviewed with the pediatric surgery group. The group readily agreed to standardization of care with evidence-based best practices when shown the evidence of higher-than-expected SSI rates and extreme practice variation.

Starting in early 2013, pediatric surgeons conducted a review of the literature to determine best practices. The Antimicrobial Stewardship Team also was consulted for antibiotic recommendations (choice, timing-including re-dosing prior to surgery, and overall duration for perforated appendicitis). Final decisions were made on the basis of consensus by the pediatric surgeons.

D. DESCRIPTION OF THE QUALITY IMPROVEMENT ACTIVITY

The Care Pathway for appendicitis was created to standardize care for all children with appendicitis from time of diagnosis by a pediatric surgeon through to discharge. The Care Pathway was implemented at BC Children’s Hospital in the fall of 2013.

Figure 1. Care Pathway for Appendicitis.

Pre-Operative Care (Emergency)

- A set of pre-printed order sets was created for pre-operative care, including preoperative investigations, IV fluids, antibiotics, pain and anti-emetic management.
- Antibiotic regimens were commenced preoperatively with confirmation of diagnosis, based on an impression (clinical and/or radiologic) of either simple or perforated appendicitis.
- When required for diagnosis, abdominal ultrasound was the preferred modality of abdominal imaging.
- If a definitive diagnosis of appendicitis was made at an outside hospital, IV antibiotics were initiated prior to transfer.
- A standing order ensured that the patient had voided before being brought to the OR (to avoid bladder catheterization prior to laparoscopy).
- Appendectomy was undertaken as soon as reasonably possible.
Intra-Operative Care

- Antibiotics were re-administered prior to skin incision, unless the last dose had been given within 60 minutes. Confirmation for need of re-dosed antibiotic was made during the operative “huddle.”
- At sign-in, verbal confirmation of last urinary void and timing of last antibiotic dose was conducted.
- 2% chlorhexidine would be the surgical prep of choice unless the patient had a known CHG allergy.
- For cases of perforated appendicitis with abscess formation, suctioning of pus was performed, with decisions regarding use of irrigation and drains left to the individual surgeon.
- At sign-out, wound class and plan for additional antibiotics were confirmed.

Post-Operative Care

- A post-operative, pre-printed order set (with non-perforated and perforated pathways) was utilized.
- Urinary catheters, if inserted for any reason, would be removed by post-op day 2.
- PICC placement was considered based upon age, pre-op nutrition, and expected NPO duration.
- Ultrasounds (for suspected postoperative abscess formation) were not performed before post-op day 5, and only after consultation with the attending surgeons as to necessity.

A laminated index card of key elements was provided to the pediatric surgeons and to house staff as they rotated on to the pediatric surgical service. Emergency room (ER) and inpatient units were alerted to the use of the new preprinted order sets and told where to access these resources.

E. RESOURCES USED AND SKILLS NEEDED

Engagement of all pediatric surgeons was crucial to the success of this initiative. No additional costs were incurred.

F. WHAT WERE THE RESULTS?

The appendectomy pathway implementation was completed in the fall of 2013. Our perforated appendectomy SSI rate dropped from 27.6 percent in 2012 to 14.7 percent in 2014. In 2015, our perforated appendectomy SSI rate has dropped further to 8.8 percent. There was no significant change in nonperforated appendectomy SSI rates. Variation in antibiotic practice has been eliminated, and administration within 60 minutes of incision has increased from 69 percent in 2012 to 87 percent in 2015.
1. SETBACKS

Barrier 1: Surgeons thought that the care of appendicitis was already standardized and initially saw little value to this exercise.

Solution: The practice audit proved that despite this preconception, there was tremendous practice variation that was mostly due to residents writing orders. This unexpected finding resulted in the group’s full engagement in this QI project.

Barrier 2: Despite reaching early consensus on a standard order set, the process of implementing new order sets, which, according to hospital policy, requires iterative committee approval, could have taken months to achieve.

Solution: The ACS NSQIP team met with committee chairs, informing them of the patient safety and quality of care implications of delayed implementation, which facilitated a special joint committee meeting to approve the order sets.

2. COST SAVINGS

Cost analysis is ongoing at this point.

G. TIPS FOR OTHERS

1. Getting started: Demonstrate a care gap or improvement opportunity within the data set.

2. Engage stakeholders, including surgeons, quality and safety managers, patient advisory groups, hospital administrators (managers, directors).

3. Seek standardization opportunities (for example, practice audit to demonstrate practice variation).
4. Ensure high-fidelity implementation by conducting a postimplementation audit of both compliance and clinical outcomes. Don’t assume that everything will remain “fixed”! There will always be future opportunities improvement.

REFERENCES


CHS CLEVELAND
A. GENERAL INFORMATION

1. INSTITUTION NAME: CHS Cleveland

2. SUBMITTER NAME AND TITLE: Michael Barringer, MD, Medical Director of Surgical Affairs and Informatics

3. NAME OF THE CASE STUDY: Effect of Colon Bundle Implementation in a Community Hospital

B. WHAT WAS DONE?

1. GLOBAL PROBLEM ADDRESSED
Elective colon surgical site infection (SSI) is the most predominant, occurring in up to 20 percent of cases.¹

2. IDENTIFICATION OF LOCAL PROBLEM
Our nontargeted American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) data indicated a slightly higher than expected colon surgery SSI, and a review of all elective cases showed a rate approaching 12 percent.

C. HOW WAS THE QUALITY IMPROVEMENT (QI) ACTIVITY PUT IN PLACE?

1. CONTEXT OF THE QI ACTIVITY
CHS Cleveland is an acute care community hospital with 180 active beds. It is a Level III trauma center. We engaged in an ongoing process improvement project to reduce all surgical site infections.

2. PLANNING AND DEVELOPMENT PROCESS
• As part of a quality improvement activity aimed at reducing all surgical site infections, the reduction of elective colon surgical site infections was chosen as a focus subset.

• Biweekly meetings of key stakeholders, including surgical physician champions, infection control, quality management, nursing educators, and nursing leaders from the pre-, intra- and postoperative care areas reviewed and chose perioperative best practices from the literature, relying heavily on ACS NSQIP publications and information obtained at the ACS NSQIP Annual Conference.²³

• The five surgeons performing colon surgery met to review the local surgical site infection rate and a compilation of factors evidenced to reduce infections and recovery time. Elements were chosen by consensus to be included in the Colon Bundle, including those that would require some stretch. These elements included preoperative bowel and skin preparation as well as patient “bundle process” education; intraoperative process changes, including a separate closure setup; a postoperative order set and care
plan, including early mobilization and diet advancement; and postdischarge wound care instructions with telephone contact and a surgeon office visit within five days.

D. DESCRIPTION OF THE QUALITY IMPROVEMENT ACTIVITY

Following the development of the planned quality improvement process elements:

- The surgeon champions educated their office staff, who began the Colon Bundle with patient education of the expectations for both the patient and the perioperative team. Specifically, the preoperative bowel prep, antibiotics, and smoking cessation were reviewed.

- The preoperative screening nurses, educated by the outpatient nurse leaders, instructed the patient in how to practice using their incentive spirometer and proper night-before bathing with chlorhexidine soap while completing their regular processes.

- Outpatient nurses reviewed and performed chlorhexidine wipes of the surgical site and administered the preoperative antibiotics.

- The operating room staff ensured proper chlorhexidine wound prep and provided a separate sterile setup, including gowns and gloves for wound closure.

- Postoperative nurses received education on bundle elements completion, including early ambulation, oral intake, incentive spirometry, and would chlorhexidine bathing after dressing removal on day two. They were also responsible for ensuring office follow-up within seven days and a postdischarge telephone contact with specific Colon Bundle questions.

- Full Colon Bundle implementation began on October 1, 2014.

E. RESOURCES USED AND SKILLS NEEDED

- The entire perioperative team, including the outpatient, operating room, and surgical floor staff in addition to the team members, were involved in the program.

- There were no additional costs beyond normal hospital operations utilized to implement and maintain the QI program.

F. WHAT WERE THE RESULTS?

All colon surgeries as defined by ACS NSQIP were reviewed for one year prior to and after Colon Bundle implementation. We identified infections utilizing TheraDoc®, an electronic clinical infection surveillance tool, confirming the same and calculating surgical site infection rates. Charts were reviewed postimplementation to ensure Colon Bundle compliance. Hospital length of stay and cost were obtained from financial data extraction.
For the 12 months prior to implementation, 43 patients underwent elective colon surgeries. In the subsequent 12 months, 55 patients qualified for inclusion. The Colon Bundle order set was employed in 42 of the 55. For this group of 42 patients, compared with patients prior to implementation, there was a decrease in the SSIs (11.6% to 2.4%), the mean length of stay (LOS) (8.22 days to 6.4 days), and average cost per patient ($20,508 to $17,172). The 13 patients who had colon surgery after the program began but did not use the Colon Bundle order showed a decrease in SSIs and cost but not in length of stay, and the decreases were not as marked.

Concurrent surgical site infection rate surveillance also revealed a decrease in surgical abdominal hysterectomy SSIs (3.1% to 1.4%). This decrease appeared to be related to a general organizational adoption of components of the process, though no formal bundle was put into effect.

1. SETBACKS

• Barriers encountered during the QI activity implementation included:
  a. 100 percent usage of the Colon Bundle order set and utilization of separate setup for wound closure.
  b. Usual learning curve of new processes in all perioperative areas.

• Solutions to barriers
  a. Bundle components were concurrently monitored and variances addressed by the team member responsible for that element by direct communication resulting in system compliance within six months of startup.
  b. Ongoing continued monitoring of process compliance using auditing tool, which traveled with patient, and reeducation as needed.

• There were no revisions in original plan due to limitations encountered during the process.

2. COST SAVINGS

• No additional investment.

• Estimate of the average cost per patient decreased from $20,508 to $17,172.

G. TIPS FOR OTHERS

1. GETTING STARTED

• Utilize ACS NSQIP data to identify an area and delve deeper into data.

• Focus on quality and outcomes and their new emerging role in the payment process to incentivize participation.
• Utilize best practices studies to develop a doable plan.

2. HOW TO SUSTAIN THE ACTIVITY

• Concurrent monitoring with group and individual feedback as directed by the surgeon champion and infection control officer.

• Meetings as necessary to address identified barriers created by system process changes.

• Be transparent with successes as well as failures, and especially include physician-focused feedback.

Figure 1. Colon Cases Pre- and Postbundle Implementation

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<th>10/1/2013-9/30/2014</th>
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<td>96</td>
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<tr>
<td><strong>Elective Colon Cases</strong></td>
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<td>55</td>
</tr>
<tr>
<td><strong>Bundle Orderset Used</strong></td>
<td>0</td>
<td>42</td>
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<tr>
<td><strong>Bundle Orderset Not Used</strong></td>
<td>43</td>
<td>13</td>
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<tr>
<td><strong>Median Patient Age</strong></td>
<td>64 yrs</td>
<td>65 yrs</td>
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<tr>
<td><strong>Surgical Site Infections</strong></td>
<td>11.60%</td>
<td>2.40%</td>
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<tr>
<td><strong>Average Hospital Cost</strong></td>
<td>$20,507.81</td>
<td>$17,171.56</td>
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<tr>
<td><strong>Average Length of Stay</strong></td>
<td>8.22 days</td>
<td>6.38 days</td>
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</tbody>
</table>

REFERENCES


A. GENERAL INFORMATION

1. INSTITUTION NAME: Fraser Health Authority, Royal Columbian Hospital

2. SUBMITTER NAME AND TITLE: Karen Donaldson, RN, BSN

3. NAME OF THE CASE STUDY: Patient Satisfaction and Experience Delivered to Frontline Action Teams

B. WHAT WAS DONE?

1. GLOBAL PROBLEM Addressed

Frontline teams conscientiously and actively perform best practices to ensure the best outcomes for patients, which ultimately contributes to the frontline teams’ own job satisfaction.\(^1\) The turnover of patients is faster than ever before, and often patients don’t get a chance to verbalize their appreciation of the difference nurses make to their hospital stay.\(^2\) Without patient feedback, the nurse can be left with the impression nursing efforts go unnoticed.\(^3\)

2. IDENTIFICATION OF LOCAL PROBLEM

While providing data to teams, the Surgical Clinical Reviewer (SCR) heard frontline nurses express uncertainty as to whether their efforts really made a difference with patient satisfaction and outcomes. The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) data could tell us how outcomes were improved through team diligence in adhering to best practices, but it did not provide data for patient satisfaction. However, there was an avenue, an unused resource, through data collection we could use: patient follow-up calls. Patients not only told us if they had had an occurrence or not, they also often told us how much they appreciated the care they received and how impressed they were with the nurses.

C. HOW WAS THE QUALITY IMPROVEMENT (QI) ACTIVITY PUT IN PLACE?

1. CONTEXT OF THE QI ACTIVITY

Royal Columbian Hospital (RCH) is a large tertiary academic site and the largest of 11 sites in Fraser Health Authority. The health authority encompasses areas that are the fastest growing in British Columbia.\(^3\) There are five surgical inpatient units, each serving patients in a particular subspecialty: cardiac surgery, general surgery, orthopaedic surgery, neurosurgery, and vascular surgery. The site has not grown at the same speed as the catchment area it services. Frontline teams on these surgical units often feel overwhelmed, which can contribute to teams feeling unappreciated and losing sight of how important their role is for patient satisfaction and patient outcomes. The discouragement was apparent for the ACS NSQIP SCR and the ACS NSQIP Surgeon Champion (SC). Thought was given to the possibility of providing some positive input
back to the frontline teams using the ACS NSQIP data collection methodology.

2. PLANNING AND DEVELOPMENT PROCESS

The plan was to develop tools to funnel patient comments back to the frontline teams.

• Further develop the existing follow-up call spreadsheet to include collecting patient comments.

• Develop unit-based posters to disseminate patient comments to the frontline teams of patients they had specifically cared for.

D. DESCRIPTION OF THE QUALITY IMPROVEMENT ACTIVITY

Upon reviewing the spreadsheet created for our health authority, it was easy to incorporate a text box for positive patient comments. When the follow-up calls were made to patients to ask about postop occurrences, ACS NSQIP staff simultaneously added the patient comments. ACS NSQIP clerks called the less complex cases, and the ACS NSQIP SCRs called the more complex cases.

Since January 2015, the comments were collected and placed onto posters (Figure 1). Frontline teams and surgeons could see the postop calls to patients were made through ACS NSQIP. They were also able to identify these comments were from the patients who had stayed in the unit specific to the type of surgery. In the sample provided in Figure 1, these comments came from patients having neurosurgery and who had stayed on the neurosurgical unit. There were six different posters; each of the five surgical units had their own poster, as did the postanesthetic care unit. The posters were updated approximately three times yearly, depending on how many new comments could be gathered.

Feedback about the posters was sought from frontline teams. We asked questions to both help us create a better template and also to find out if they felt the posters had value. Questions included: Did they like the format? Was it helpful to know what patients were saying about them and the care they received? How did it make them feel? The template was modified with new colors when it was updated with new comments. The feedback about what patients were saying about frontline staff was very well received by staff.

E. RESOURCES USED AND SKILLS NEEDED

• Two ACS NSQIP staff members were trained to further develop the Excel document to correctly collect the patient comments. Extra time was taken by RCH ACS NSQIP staff to talk to patients to gather the comments. A document was created with instructions for new ACS NSQIP staff on the process of collecting the patient feedback and how to update the posters. When a new poster was created with updated comments, an e-mail was sent to the one SCR who was responsible for printing and sharing the poster with the frontline teams on the unit.
• When the ACS NSQIP data was delivered to frontline teams, the SCR offered more time to review and talk about the posters as part of the regular meetings with staff.

F. WHAT WERE THE RESULTS?

The nurses were delighted to know the comments were from the patients they had cared for. Reciprocating the positive comments back to frontline teams revealed they felt valued, pleased, and reaffirmed in their decision to become a nurse. It strengthened the nurse’s self-assurance and promoted future positive nurse-patient relationships, both of which are necessary for staff to continue passionate care for best patient outcomes.

As much as we would always like to see downward trends with our data, sometimes that is not possible. Sharing positive patient comments counterbalanced the times when it was required to share the upward trending data.

1. SETBACKS

Gathering new comments was sometimes challenging. Patients didn’t often deviate from general comments about satisfaction with either staff or their surgery. Original comments were always inspiring; however, they could be hard to come by, which resulted in updated posters having fewer new comments than we had hoped for.

2. COST SAVINGS

Greater job satisfaction can mean greater staff retention and reduced sick time, with potential savings to the health authority.4

G. TIPS FOR OTHERS

• Create a spreadsheet, or further develop an existing spreadsheet, where the patient comments are entered. Share with the staff carrying out the calls where to put the comments.

• Create posters that look appealing to your frontline teams and have one poster for each surgical unit if your hospital has several surgical units.

• When sharing the posters with the surgical unit staff, ask questions about how it makes them feel to see the positive comments from their own patients. Often one staff member says something that generates a discussion, which has sometimes developed into nurses offering words of praise to one another and to their own hospital recognizing the good patient care they all provide.
REFERENCES


LANCASTER GENERAL HEALTH
AT PENN MEDICINE
A. GENERAL INFORMATION

1. INSTITUTION NAME: Lancaster General Health at Penn Medicine

2. SUBMITTER NAME AND TITLE: Lori Abel, RN, ONC, M.Ed., Surgical Clinical Nurse Reviewer / ACS NSQIP Program Coordinator, and Deborah Mimnall, RN, MSN, Surgical Clinical Nurse Reviewer / ACS NSQIP Program Coordinator

3. NAME OF THE CASE STUDY: Postoperative Pneumonia Reduction in Surgical Patients

B. WHAT WAS DONE?

1. GLOBAL PROBLEM ADDRESSED

Nationally postoperative pneumonia is the third most common surgical complication behind urinary tract and wound infections.1 Numerous publications on ventilator-associated pneumonia (VAP) had been identified, but few studies have been published on pneumonia prevention programs outside of critical care units.

2. IDENTIFICATION OF LOCAL PROBLEM

Lancaster General Health began participating in the American College of Surgeons National Surgical Quality Program (ACS NSQIP) Multispecialty option in late 2013. Our first Semiannual Report (SAR) in July 2014 showed pneumonia to be in the 5th decile in the All Cases Model. This category jumped to the H10 decile in the interim SAR (ISAR) from October 2014 and was in the 8th decile in both our January 2015 SAR and April 2015 ISAR. Our in-depth chart review identified three problem areas within our surgical population:

- Interpretation of radiological reports
- Postoperative sedation causing increased aspiration risk
- Inconsistencies in pulmonary care

C. HOW WAS THE QUALITY IMPROVEMENT (QI) ACTIVITY PUT IN PLACE?

1. CONTEXT OF THE QI ACTIVITY

- Lancaster General Health at Penn Medicine is a health system with 631 beds located in Lancaster, PA. We are a not-for-profit health system with a comprehensive network of care performing more than 38,000 surgical procedures annually.

- Presentation of our ACS NSQIP data to our multidisciplinary surgical clinical effectiveness teams (CET) identified our need for action plans addressing a prevention focus on perioperative pneumonia.
2. PLANNING AND DEVELOPMENT PROCESS

Starting in October 2014, our pneumonia data was presented at various meetings that included key physicians from administration, radiology, anesthesiology, and medicine. Nursing, quality leadership, and infection control practitioners were also included. We completed a literature review of published guidelines that identified reduction strategies for postoperative pulmonary complications in surgical patients. After ongoing education of the ACS NSQIP data highlighting specific problem areas, it was apparent that an aggressive action plan was necessary to address perioperative pneumonia. Our July 2015 SAR confirmed pneumonia to be a significant outlier and justified our actions.

D. DESCRIPTION OF THE QUALITY IMPROVEMENT ACTIVITY

- Action plans included education on our ACS NSQIP data and findings provided by our chair of radiology to our radiologists. This education included pneumonia definitions, consistency of radiology readings/terminology, and the recommendations for follow-up studies.

- Our Surgical Clinical Effectiveness Teams (CET) reviewed order sets and recommended the removal of routine sedation orders. This change began in the spring of 2015 with the orthopaedic orders sets, and these results are being evaluated by the other clinical teams.

- Anesthesia evaluated the need for consistency of care in PACU regarding incentive spirometry use, head of bed >30 degrees, and early coughing and deep breathing exercises. Evaluation of new reversal agents of neuromuscular blockage to reduce the incidence of pharyngeal muscle dysfunction and hypoventilation in the immediate postoperative period is ongoing.

- Experts in the quality and nursing department led clinical inservices for staff on the importance of postoperative pulmonary care and the clinical effects of sedation causing increased risk of aspiration. We referenced the ICOUGH® program from Boston Medical Center to highlight the importance of the need to redefine our postoperative pulmonary care. Key areas included coughing and deep breathing, incentive spirometry (IS) instruction preoperatively in the holding area, head of bed elevation starting in PACU and continuing throughout hospital stay, early mobility, and education of patients and families.

- Revision of postoperative order set to reflect the new changes in pulmonary care. Revision of nursing documentation of pulmonary care in the electronic medical record (EMR).

- Respiratory therapy (RT) implemented a standardized electronic order set in August 2015 that enhanced the RT role in identifying at risk patients for early intervention.

- Continued review of the SAR/ISAR data at the division of surgery meetings, CET meetings, nursing staff, and with individual surgeons.
• These quality improvement activities began with our colorectal, orthopaedic, and neurosurgery patient populations and continued to be spread across all surgical services through 2016. Ongoing assessment of data led to further education and refining of the action plan.

E. RESOURCES USED AND SKILLS NEEDED

1. A time commitment for all staff involved meetings, review of data, education, and updates to the electronic medical record (EMR). These resources were appreciated by our multidisciplinary teams.

2. Increased time commitment of the nursing staff in the preop holding area for IS instruction and documentation of peak levels reached.

F. WHAT WERE THE RESULTS?

We utilized the ACS NSQIP SAR and ISAR data to measure our progress. Decile rank from H10 in ISAR October 2014 to Decile L1 in ISAR April 2016. Odds ratio went from 2.02 to 0.54.

Table 1. All Cases Pneumonia.

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<td>2</td>
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<td>L1</td>
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<td>22/1287</td>
<td>25/2060</td>
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<td>33/2882</td>
<td>17/2892</td>
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Table 2. All Cases Pneumonia.
1. SETBACKS

• Our major barrier was skepticism from our surgeons that we had a pneumonia problem and that the data was valid. This issue required support from our key leadership that included our Surgeon Champion (chair, department of surgery), chief of physician executives (pulmonologist), and the chairs of radiology and medicine departments. With their support and the ongoing education of the surgeons, they understood the validity of the ACS NSQIP data and that postoperative pneumonia was a problem.

• Another barrier was the time requirement need to update order sets, nursing documentation in the EMR, and the required education updates to staff. Despite this barrier, we continued to see improvement in our data with the ongoing education and heightened awareness of all staff to the pneumonia initiative.

2. COST SAVINGS

• ACS NSQIP return on investment calculation estimates each pneumonia case costs $22,000.\textsuperscript{3} To date we have prevented 22 cases—a savings $484,000—following implementation of our action plan. The multispecialty option for ACS NSQIP data includes 20 percent of surgical cases. Expanding our sample data to our surgical population we estimate cost savings for our surgical population to be in excess of $2.4 million.

G. TIPS FOR OTHERS

• Ask for feedback from key leadership and revise the team and action plan based on these recommendations.

• It is important the SCR present ACS NSQIP data at established surgical quality meetings on a regular basis.

• The SCR needs to be critically involved in the identification of the opportunities for improvement in the care of the surgical patient.

• Once opportunities are identified, begin working on the who, what, where, when, why as part of the Plan Do Study Act of process improvement.
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