Elective Colon Surgical Site Infection Reduction
Enhanced Recovery After Colon Surgery

Spartanburg Regional Health System

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I have no disclosures

I am a resident
Little bit about me

• Bachelors degree from University of Missouri in 2011
• Medical degree from University of Missouri in 2015
• Started General Surgery Residency in Spartanburg, SC in July 2015
• Current PGY-4 Resident with plans for fellowship in critical care
• Voluntold to participate in SCSQC in 2016
Little bit about SCSQC

• Established in 2015 with 8 hospitals
• Resident involvement required as part of $3.8 million BCBS Grant
• Began presenting projects in April of 2016
• Quarterly presentations at SCSQC meetings, monthly conference calls
• Annual meeting in conjunction with NC/SC ACS meeting
• Cases abstracted to date: 23,930
Little bit about Spartanburg Regional

- 540 bed Level 1 trauma center serving five counties in NC/SC
- General surgery residency with three residents per class
- Second largest medical center within the collaborative
- Main source of resident involvement within the collaborative
- Cases abstracted to date: 3,901
- Percentage of collaborative: 16%
Each hospital within the collaborative was given the assignment of developing a QI project.

**Supported by a Grant From:**
Timeline

- April 2016: Each hospital within the collaborative is given the assignment of developing a QI project.
- October 2016: EPIC
Timeline
• April 2016
• Each hospital within collaborative given the assignment of developing a QI project
• October 2016
• EPIC
• November 2016
• Order set build
• Grand rounds with general surgery staff
Michigan Bundle

- Use of appropriate parenteral antibiotics (Cefazolin & Metronidazol)
- Oral non absorbable antibiotics with bowel prep
- Normothermia during surgery
- Normoglycemia (POD 1 ≤ 140 mg/dl)
- Use of laparoscopic approach to surgery
- Short duration of surgery(< 100 minutes)

What are we adding?

- Gown and glove change prior to closing
- Use of wound protector
- Sterile closing tray
What is our goal?

• Determine how collectible these data points are
  • EPIC

• Determine how compliant we are and how we can improve compliance

• Show that improved compliance leads to lower SSI rates

• If possible, determine which of the data points are most important

• Distribute data to collaborative to help lower SSI rates statewide
Colon Bundle: PAT

- Confirm Patient education pamphlet (Preparing for Colon Surgery) provided to patient in surgeon’s office:
  - [Yes] [No]

- Patient instructed not to shave before surgery:
  - [Yes] [No]

- Confirm prescription and instructions given to patient for mechanical bowel prep in surgeon’s office:
  - [Yes] [No]

- Confirm prescription and instructions given to patient for oral antibiotic prep in surgeon’s office:
  - [Yes] [No]

- 2% Chlorohexidine wipes and instructions given to patient to use at home prior to surgery:
  - [Yes] [No]
Colon Bundle: Preop

Hair removed with clippers:
2% Chlorhexidine Wipes Used At Home Per Patient
2% Chlorhexidine Wipes Used On Patient in Preop:
Nares swabbed with betadine swab:
Patient's temperature taken and maintained at 96.8F or greater than or equal to 36C:
Actively warm patient with Bair Hugger:
Warmed IV fluid used:
Check blood glucose: (100mg/dL - 140 mg/dL)
Did the patient drink 2 carbohydrate drinks the night before surgery?
Did the patient drink 1 carbohydrate drink the morning of surgery to be finished 2 hours before surgery time?
## Colon Bundle: Intraop

<table>
<thead>
<tr>
<th>Surgical Approach</th>
<th>Open</th>
<th>Laparoscopic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound protector available and used:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>2% Chlorhexidine used to prep skin - Must allow 3 minutes to dry before incision:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Closure mayo set up with colon closure instruments, drapes, gowns, gloves, towels, bovie, suction and light handles:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Basin available for dirty instruments:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Surgeon announces “Time to Close”:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>All dirty instruments are removed from sterile field:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Sterile gloves and gowns changed by all team members:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Surgeon confirms wound classification:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Saline irrigation after fascia is closed:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Dressing applied:</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
## Colon Bundle: Postop

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature checked on arrival: 96.8°F or greater than or equal to 36°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actively warm patient with Bair Hugger or warm blankets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose checked on arrival (refer to trauma sliding scale) Target: 100mg/dL-140mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Titrate O₂ to maintain SaO₂ greater than or equal to 95%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gum given and chewed by patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once patient is awake enough to protect airway, were sips of high calorie liquids (juice, ginger ale, etc) consumed?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Timeline

- January – March 2017: Awaiting EPIC order set approval
- April 2017: Implementation of OR data points
- Meeting with OR/PACU/Anesthesia
- Meeting with nurse management, educators
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• January – March 2017
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• May 2017
  • Go live date for order set 05/16/2017

• May 2018
  • Go live date for ERAS order set 05/16/2018
Phase II – ERAS Era
New data points to study

• LOS
• Return to bowel function
• Postop pain scores
• Narcotic use
ERAS Order Set Additions

• Preop
  • Carb loading shake
  • Multimodal PO pain regimen given by anesthesia
  • Option for TAP block by anesthesia vs Exparel on operative field
  • Patient education handbook

• Intraop
  • Fluid management using EV1000 ClearSight
  • Lidocaine drip
ERAS Order Set Additions

• Postop
  • No NG tubes
  • All colectomies to go same unit post-op
  • Chewing gum, hard candy, sips and chips starting in PACU
  • IV fluids, Foley discontinued by 8 AM POD1
  • CLD POD0 with rapid advancement as tolerated
  • PT/OT to see within first 24 hrs postop
  • Nursing staff/techs getting patient OOB and ambulating POD0
• Multimodal pain regimen
ERAS Compliance

- Anesthesia has program in place to track compliance with use of order sets by surgical team
- Anesthesia tracking their own compliance with use of ClearSight on all cases
- Nurse manager on postop floor tracking compliance with ambulation
- Signs in patient rooms encouraging ambulation
Lessons Learned

• EPIC has been both a blessing and a curse
• Ability to accurately collect data is crucial
• Administrative support is absolutely necessary for success
• Hawthorne Effect is fleeting
• Accurate documentation continues to be a problem
Resident Involvement in State Quality Collaborative

• Best voluntelling experience I have ever had
• Like it or not, this is the world we live in, and learning how to navigate it early is extremely helpful
• Residents are able to alleviate workload from Surgeon Leads and Abstractors
• Connections inside and outside of the hospital
Thank you!

Questions?