UR MEDICINE

Medicine of the Highest Order

Colorectal Project to Reduce Surgical Site Infections

The Journey of our Colorectal Bundle…

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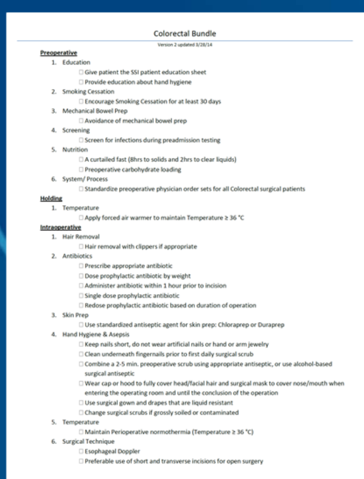
Introduction: UR Medicine: Strong Memorial Hospital is committed to Quality, Safety, and Service. Surgical Site Infections (SSI) contribute to increased readmissions, increased returns to the OR, and have greater lengths of stay. The Division of Colorectal Surgery lead a Colorectal Project to analyze contributing factors, outcomes, and develop a performance improvement plan to decrease Colorectal SSI.

Methods: A multidisciplinary team was created to evaluate published best practices to decrease SSI's for Colorectal surgery. These best practices were reviewed by the team to evaluate if already in place, to disregard, or to implement as a new practice.

The best practice items were grouped by the area of care: Preoperative, Intraoperative, and Postoperative. They were also organized by the focus for improvement: Education, Smoking cessation, Nutrition, etc.

The adopted practices and those in place formed the "Colorectal Bundle" that addressed 45 individual items across the continuum of care. After a period for implementation of the new best practice bundle items, a concurrent audit was started in July 2013.



Colorectal Bundle

Version 2 updated 3/28/14

Preoperative

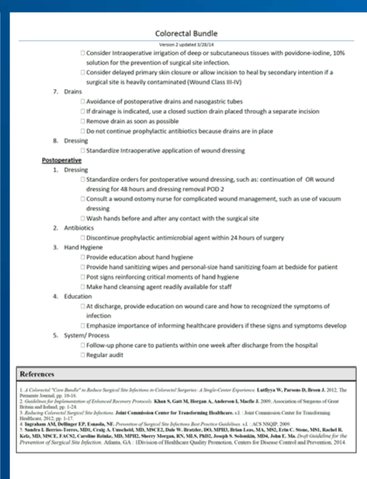
1. Education
   - ☐ Give patient the SSI patient education sheet
   - ☐ Provide education about hand hygiene
2. Smoking Cessation
   - ☐ Encourage Smoking Cessation for at least 30 days
3. Mechanical Bowel Prep
   - ☐ Avoidance of mechanical bowel prep
4. Screening
   - ☐ Screen for infections during preadmission testing
5. Nutrition
   - ☐ A curtailed fast (8hrs to solids and 2hrs to clear liquids)
   - ☐ Preoperative carbohydrate loading
6. System/ Process
   - ☐ Standardize preoperative physician order sets for all Colorectal surgical patients

Holding

1. Temperature
   - ☐ Apply forced air warmer to maintain Temperature ≥ 36 °C

Intraoperative

1. Hair Removal
   - ☐ Hair removal with clippers if appropriate
2. Antibiotics
   - ☐ Prescribe appropriate antibiotic
   - ☐ Dose prophylactic antibiotic by weight
   - ☐ Administer antibiotic within 1 hour prior to incision
   - ☐ Single dose prophylactic antibiotic
   - ☐ Redose prophylactic antibiotic based on duration of operation
3. Skin Prep
   - ☐ Use standardized antiseptic agent for skin prep: Chloraprep or Duraprep
4. Hand Hygiene & Asepsis
   - ☐ Keep nails short, do not wear artificial nails or hand or arm jewelry
   - ☐ Clean underneath fingernails prior to first daily surgical scrub
   - ☐ Combine a 2-5 min. preoperative scrub using appropriate antiseptic, or use alcohol-based surgical antiseptic
   - ☐ Wear cap or hood to fully cover head/facial hair and surgical mask to cover nose/mouth when entering the operating room and until the conclusion of the operation
   - ☐ Use surgical gown and drapes that are liquid resistant
   - ☐ Change surgical scrubs if grossly soiled or contaminated
5. Temperature
   - ☐ Maintain Perioperative normothermia (Temperature ≥ 36 °C)
6. Surgical Technique
   - ☐ Esophageal Doppler
   - ☐ Preferable use of short and transverse incisions for open surgery



Colorectal Bundle

Version 2 updated 3/28/14

- ☐ Consider Intraoperative irrigation of deep or subcutaneous tissues with povidone-iodine, 10% solution for the prevention of surgical site infection.
- ☐ Consider delayed primary skin closure or allow incision to heal by secondary intention if a surgical site is heavily contaminated (Wound Class III-IV)

7. Drains
   - ☐ Avoidance of postoperative drains and nasogastric tubes
   - ☐ If drainage is indicated, use a closed suction drain placed through a separate incision
   - ☐ Remove drain as soon as possible
   - ☐ Do not continue prophylactic antibiotics because drains are in place
8. Dressing
   - ☐ Standardize Intraoperative application of wound dressing

Postoperative

1. Dressing
   - ☐ Standardize orders for postoperative wound dressing, such as: continuation of OR wound dressing for 48 hours and dressing removal POD 2
   - ☐ Consult a wound ostomy nurse for complicated wound management, such as use of vacuum dressing
   - ☐ Wash hands before and after any contact with the surgical site
2. Antibiotics
   - ☐ Discontinue prophylactic antimicrobial agent within 24 hours of surgery
3. Hand Hygiene
   - ☐ Provide education about hand hygiene
   - ☐ Provide hand sanitizing wipes and personal-size hand sanitizing foam at bedside for patient
   - ☐ Post signs reinforcing critical moments of hand hygiene
   - ☐ Make hand cleansing agent readily available for staff
4. Education
   - ☐ At discharge, provide education on wound care and how to recognized the symptoms of infection
   - ☐ Emphasize importance of informing healthcare providers if these signs and symptoms develop
5. System/ Process
   - ☐ Follow-up phone care to patients within one week after discharge from the hospital
   - ☐ Regular audit

References

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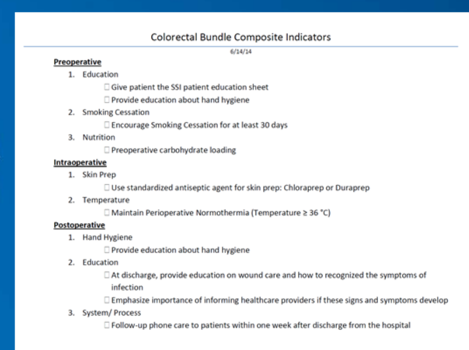
4. **Ingraham AM, Dellinger EP, Esnaola, NF.** *Prevention of Surgical Site Infections Best Practice Guidelines.* s.l. : ACS NSQIP, 2009.
5. **Sandra I. Berrios-Torres, MD1, Craig A. Umscheid, MD, MSCE2, Dale W. Bratzler, DO, MPH3, Brian Leas, MA, MS2, Erin C. Stone, MS1, Rachel R. Kelz, MD, MSCE, FACS2, Caroline Reinke, MD, MPH2, Sherry Morgan, RN, MLS, PhD2, Joseph S. Solomkin, MD4, John E. Ma.** *Draft Guideline for the Prevention of Surgical Site Infection.* Atlanta, GA : 1Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, 2014.

Results: Auditing of the bundle revealed items that had inconsistent practice. This lead to items to focus on for improvement, and to hardwiring these practices. After a period of monitoring, many items had nearly perfect compliance. We have developed a Composite Score for the Bundle to focus auditing and improvement on 10 items.

A Hospital wide SSI task force has used the Colorectal Bundle as a template for all divisions of surgery. Every Specialty and Division of Surgery are now creating specific bundles of best practices to decrease SSI's.



Colorectal Bundle Composite Indicators

6/14/14

Preoperative

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2. Smoking Cessation
   - ☐ Encourage Smoking Cessation for at least 30 days
3. Nutrition
   - ☐ Preoperative carbohydrate loading

Intraoperative

1. Skin Prep
   - ☐ Use standardized antiseptic agent for skin prep: Chloraprep or Duraprep
2. Temperature
   - ☐ Maintain Perioperative Normothermia (Temperature ≥ 36 °C)

Postoperative

1. Hand Hygiene
   - ☐ Provide education about hand hygiene
2. Education
   - ☐ At discharge, provide education on wound care and how to recognized the symptoms of infection
   - ☐ Emphasize importance of informing healthcare providers if these signs and symptoms develop
3. System/ Process
   - ☐ Follow-up phone care to patients within one week after discharge from the hospital

Conclusion:

- The multidisciplinary team was essential in creating and implementing the bundle of care.
- Studying the compliance of the bundle is necessary to know that you are doing what you have set out to do.
- Implementation of a best practice bundle to reduce SSI has been a valuable process to give every patient consistent quality care.