Effect of a ‘SMaRT’ Enhanced Recovery Pathway for elective laparoscopic colorectal surgery on process and outcomes in a large urban academic health care system

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Background

• Given the skyrocketing cost of healthcare and questions regarding quality, providers are compelled to optimize outcomes while controlling costs.
• Colorectal surgery accounts for 10% of operative procedures, and is responsible for 25% of all complications.
• Wide variability in perioperative processes of care can contribute to decreased quality and inferior patient outcomes.
• Enhanced Recovery Pathways (ERPs) standardize evidence-based best practices for perioperative care to accelerate healing and return patient to normal function following surgery.
• ERPs are underutilized despite being shown to decrease morbidity, length of stay and cost of care.

Aim

Decrease length of stay (LOS) for patients undergoing elective laparoscopic colorectal surgery by 30% and reduce surgical site infection (SSI) by 10% at Parkland Memorial Hospital and UT Southwestern University Hospital by December 2015.

Project Design

Process Standardization

Perioperative order sets were created in EPIC to include pain management strategy, goal-directed fluid therapy, and clearly defined post-operative goals (e.g. early diet resumption and Foley removal).

Implementation

• Parkland Memorial Hospital (PMH): September 2014
• UTSW University Hospital (UH): December 2014
• Inclusion criteria
  All patients who underwent elective laparoscopic colorectal surgery at PMH and UH over 24 months prior to ERP implementation and 12 months following implementation.
• Exclusion criteria
  Urgent or emergent indication
  Re-operative laparotomy

Impact Assessment

Systems-based Modular Reporting Tool (SMaRT) dashboard was created in EPIC to display process quality measures and basic outcomes data.

Quality Tools

Above. Cross-functional flowchart showing the steps to ERP development, implementation and evaluation. We structured our project using the Plan-Do-Study-Act (PDSA) model.

Above. Process map depicting how the major components of the ERP impact patient care beginning with the pre-operative clinic visit and extending through their hospital stay. Mapping these processes in greater detail helped us to identify barriers to implementation and compliance.

Below. Representation of the SMART dashboard created in EPIC for colorectal surgeons to view their process and outcomes data. Using the dashboard, clinicians are able to continuously assess process fidelity and ERP efficacy to determine what adjustments must be made to improve outcomes.

Preliminary Results

Primary outcome: LOS
PMH: 31.76% reduction (p=0.034)
UH: 22.34% reduction (p=0.099)
Pre-implementation
Post implementation

Secondary outcome: SSI rate
PMH: 15.22% reduction (p=0.430)
UH: 66.59% reduction (p=0.054)
Pre-implementation
Post implementation

Preliminary results suggest that implementation of the ERP resulted in a significant reduction in LOS in the patient cohort undergoing elective laparoscopic colorectal surgery at UH (p<0.05). Preliminary decreases in LOS at UH and SSI rate at both PMH and UH were not significant (p>0.05).
The goal to reduce LOS by 30% was met at PMH, and the goal to reduce SSI rate by 10% was met at both PMH and UH.

Next Steps

Continued data analysis
• For process quality measures (e.g. time to Foley removal, time to mobilization, time to resumption of diet, time to bowel movement)
• For outcome quality measures (e.g. complication rate, reoperations, readmissions, LOS)
• Compare ERP effects at PMH to its effects at UH Sustainability
  • Standardize ERP training in resident curriculum
  • Automate ERP activation in EPIC
  • Automate Dashboard in EPIC
  • ERP applications beyond colorectal surgery

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