

Enhanced Recovery After Surgery

SHARED BASELINE PROTOCOL IMPLEMENTATION



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Carissa Cianci, MA, RN, CPHQ
Quality & Patient Safety Specialist
James Pappas, MD, MBA
Associate CMO Safety/Education

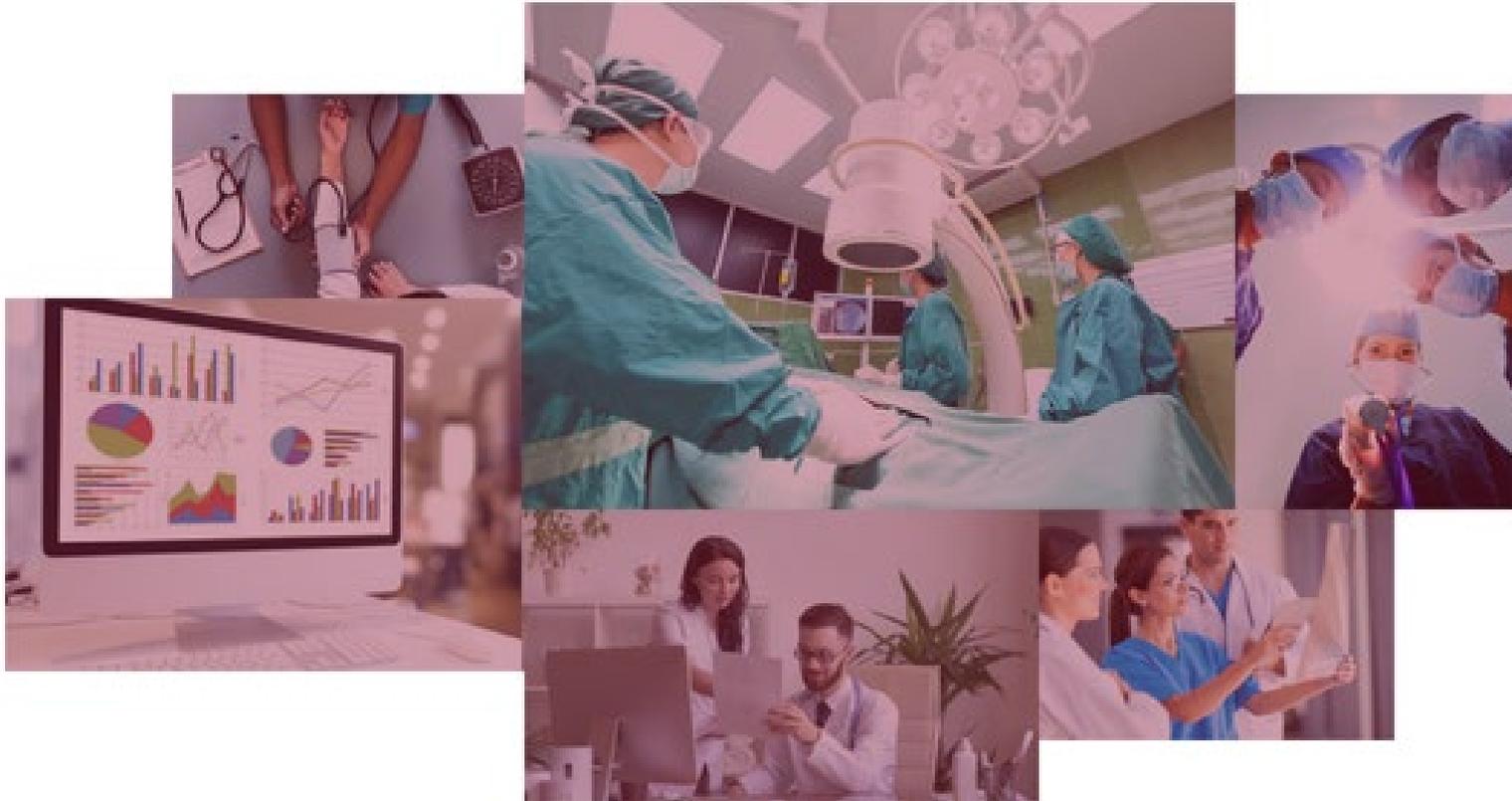
Objectives



By the end of this presentation, participants will be able to:

1. Outline the key elements of an Enhanced Recovery After Surgery program
2. Explain the benefits of integrated decision support





A General Overview of

ERAS



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History¹



- » The Enhanced Recovery After Surgery (ERAS) protocol was developed in 2001 by a group of academic surgeons in Europe
- » Emphasis is on the quality, not the speed, of recovery
- » It is a multimodal, multidisciplinary, evidence-based approach to the care of the surgical patient
- » Started with colorectal surgery, but has expanded and been shown to improve outcomes in most major surgical specialties



Why Colorectal ERAS?²



- » Contemporary colorectal surgery is often associated with:
 - ~ Long length of stay (8 days for open surgery and 5 days for laparoscopic surgery)
 - ~ High cost
 - ~ Rates of surgical site infection approaching 20%
- » During the hospital stay for elective colorectal surgery, the incidence of perioperative nausea and vomiting (PONV) may be as high as 80% in patients with certain risk factors
- » After discharge from colorectal surgery, readmission rates have been noted as high as 35.4%



Changes in Practice¹



- ↘ Minimize stress and improve the body's response to stress
- ↘ Minimize fluid shifts
- ⊗ Avoid traditional care elements that have been shown to be harmful



Targeted Outcomes³



- ↓ Decreased variability in practice
- ↓ Reduced morbidity
- ↓ Shorter length of stay
- ↑ Improved pain control with decreased opioid use
- ↑ Improved post-op nausea
- ↓ Reduced readmissions



Continuity of Care

Referral from primary care

Pre-operative

Admission

Intra-operative

Post-operative

Follow-up

Getting the patient in best possible condition for surgery

- Optimize hemoglobin
- Manage pre-existing comorbidities (e.g. diabetes or hypertension)

- Health & risk assessment
- Quality patient information
- Informed decision making
- Manage patient expectations
- Optimize health condition
- Therapy advice
- Carbohydrate loading
- Optimize hydration
- Avoid mechanical bowel preparation
- Discharge planning; expected date of discharge

- Admit on day of surgery
- Optimize fluid status
- Avoid routine use of sedative pre-medication
- Carbohydrate loading
- No / reduced oral bowel preparation

Patient has best possible management during surgery

- Minimally invasive surgery, if possible
- Individualized goal-directed fluid therapy
- Avoid crystalloid overload
- Epidural management
- Use of regional/spinal and local anesthetic with sedation
- Prevent hypothermia

Patient experiences the best post-operative rehabilitation

- No routine use of wound drains
- No routine use of nasogastric tubes
- Active, planned mobilization within 24 hours
- Early oral hydration
- Early oral nutrition
- IV therapy stopped early
- Catheters removed early
- Non-opioid oral analgesia (e.g. paracetamol, NSAIDS)
- Avoid systemic opiate-based analgesia

- Discharge on planned day, or when criteria met
- Therapy support
- 24 hour telephone follow-up, if appropriate



Challenges¹



- » Continuity of care across the outpatient clinic, pre-op unit, operating room, PACU, floor
- » Health care professionals tend to overestimate their care, outcomes, and compliance
- » Sustaining improvement





Loma Linda University Medical Center's Implementation of an **ERAS SHARED BASELINE PROTOCOL**



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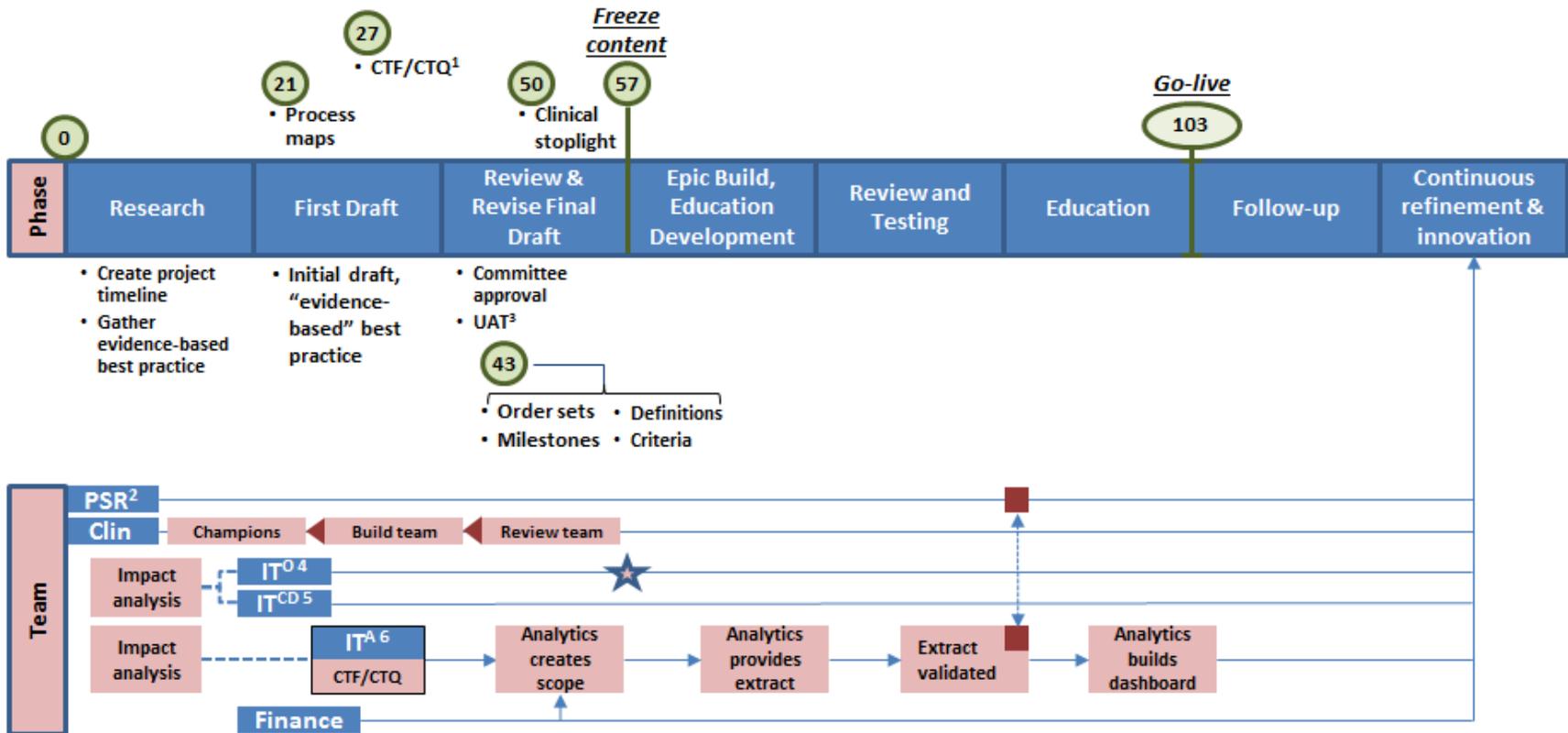
Overview



- » Surgeons were already using a process outlined on paper
- » Started process to automate decision support Jan 31, 2018
- » ERAS pathway live in EPIC Aug 6, 2018



Process for SBP Development



¹CTF= critical to quality; CTQ = critical to finance

²Includes pediatric patient safety for pediatric protocols

³For pediatric protocols

⁴Information technology, orders

⁵Information technology, clinical doc

⁶Information technology, analytics

= milestone, day reached



Getting Started



» Identify opportunity

~LOS

~Complications (SSI, ileus)

» Identify project champions

~Surgery

~Anesthesia

~Nursing



Considerations



- » Automated decision-support may require looking at the process from a different perspective
- » First time using the Pathway functionality in EPIC
- » Inclusion and exclusion criteria
- » What and how to measure



Pathway Initiation



BestPractice Advisories

Patient Safety (1)

⚠ ERAS Protocol: Patient meets criteria for colorectal surgery protocol to improve outcome. Please refer to the plan and expectations for more information.

[Open ERAS Pathway](#)

⚠ Acknowledge Reason

co-morbid conditions

multi-visceral operation

✓ Accept



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Pathway Management



Pathway Management

PATHWAY MANAGEMENT

Active Pathways

Order Sets

Orders

✔ Try the Widescreen View

There is a new, faster way for you to finish your visit documentation with fewer clicks

☰ Active Pathways ✎

No active Pathways.

☰ Order Sets ✎

Search for new Order Set

+ Add

Suggestions

☰ [Enhanced Recovery After Surgery \(Pathway\)](#) 🗄



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Pathway Orders



Open Pathway (not yet applied)

Enhanced Recovery After Surgery

Surgical Consult Orders

Step started: Today at 2137 Expected end: 07/07/18 at 2137
Orders will become active upon signing.

▼ Medications

▼ Nutrition

- food supplement, lactose-reduced (FOOD SUPPLEMENT CLEAR) Liqd
This product is available at: Meridian Pharmacy: 25875 Barton Road, Suite B-108 909-558-3766 Faculty Medical Office (FMO) Pharmacy 11370 Anderson Street
Print, Disp-3 Bottle, R-1
- nut.tx.comp. immune systm.reg 0.1 gram-1.12 kcal/mL Liqd
Take 1 Bottle by mouth 3 (three) times daily after meals and bedtime. This product is available only at: Meridian Pharmacy: 25875 Barton Road, Suite B-108 909-
Print, Disp-15 Box, R-0

▼ Laboratory

▶ Hematology/Chemistry

- CBC With Diff
P Routine, Lab Collect, Expected: 8/5/2018, Expires: 7/5/2019, Resulting Agency - LOMA LINDA UNIVERSITY MEDICAL CENTER CLINICAL LABORATORY
- Comprehensive Metabolic Panel
Routine, Lab Collect, Expected: 8/5/2018, Expires: 7/5/2019, Resulting Agency - LOMA LINDA UNIVERSITY MEDICAL CENTER CLINICAL LABORATORY

▶ Blood Bank

- Type And Screen
Expected: 8/5/2018, Expires: 7/5/2019, Resulting Agency - LOMA LINDA UNIVERSITY MEDICAL CENTER CLINICAL LABORATORY

▼ Radiology

▼ Xray

- XR Chest 2 Views
Expected: 8/5/2018, Expires: 7/5/2019, Routine, Ancillary Performed
Reason for exam: surgery

▶ Cardiac Studies

- ECG 12 Lead
Routine, Ancillary Performed, Expected: 8/5/2018, Expires: 7/5/2019
Reason for exam: surgery



Pathway Overview

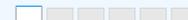


Pathway Review

[Document Outcomes](#)
[Manage Pathways](#)
[Mark as Reviewed](#)
[Complete Pathway](#)
[Discontinue Pathway](#)



Enhanced Recovery After Surgery



Surgical Consult Orders		PACE		Day of Surgery Orders		POD 0		POD 1		POD 2-3	
Current	Future	Future	Future	Future	Future	Future	Future	Future	Future	Future	Future
Today at 2137 2 Days	~07/07/18 2137 1 Day	~07/08/18 2137 6 Hours	~07/09/18 0337 1 Hour	~07/09/18 0437 1 Day	~07/10/18 0437 5 Days						

Group by: Order/Documentation Type Pathway View

[\[-\] Collapse All](#)

Medications

[Active](#)

- [food supplement, lactose-reduced \(FOOD SUPPLEMENT CLEAR\) Liqd](#) - This product is available at: Meridian Pharmacy: 25875 Barton Road, Suite B-108 909-558-3766 Faculty Medical Office (FMO) Pharmacy 11370 Anderson Street, Suite 1000 909-558-2804, Print
- [nut.bx.comp. immune systm.reg 0.1 gram-1.12 kcal/mL Liqd](#) - Take 1 Bottle by mouth 3 (three) times daily after meals and bedtime. This product is available only at: Meridian Pharmacy: 25875Barton Road,SuiteB-108 909-558-3766 FacultyMedicalOffice(FMO)Pharmacy 11370Anderson Street,Suite1000 909-558-2804, Starting Thu 7/5/2018, Until Tue 7/10/2018, Print

Blood Bank

[Active](#)

- [Type And Screen](#) - Future, Expected: 8/5/2018, Expires: 7/5/2019, Resulting Agency - LOMA LINDA UNIVERSITY MEDICAL CENTER CLINICAL LABORATORY (No result)

ECG

[Active](#)

- [ECG 12 Lead](#) - Routine, Ancillary Performed, Future, Expected: 8/5/2018, Expires: 7/5/2019 Reason for exam: surgery (No result)

Imaging

[Active](#)

- [XR Chest 2 Views](#) - Future, Expected: 8/5/2018, Expires: 7/5/2019, Routine, Ancillary Performed Reason for exam: surgery (No result)

Lab

[Active](#)

- [CBC With Diff](#) - Routine, Lab Collect, Future, Expected: 8/5/2018, Expires: 7/5/2019, Resulting Agency - LOMA LINDA UNIVERSITY MEDICAL CENTER CLINICAL LABORATORY (No result)
- [Comprehensive Metabolic Panel](#) - Routine, Lab Collect, Future, Expected: 8/5/2018, Expires: 7/5/2019, Resulting Agency - LOMA LINDA UNIVERSITY MEDICAL CENTER CLINICAL LABORATORY (No result)

[Unselected Items](#)

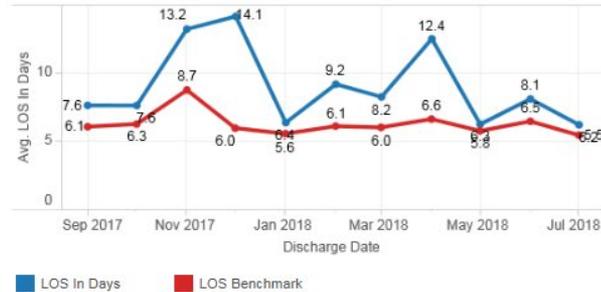
[Manage Pathways](#)



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Analytics

Length of Stay



8.7

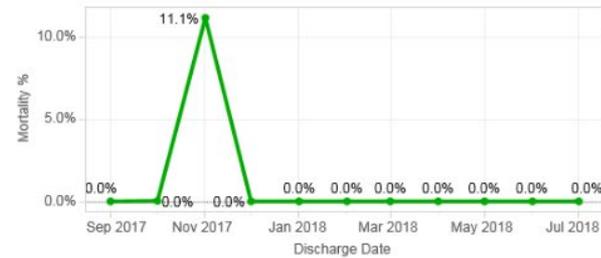
6.2

Readmissions



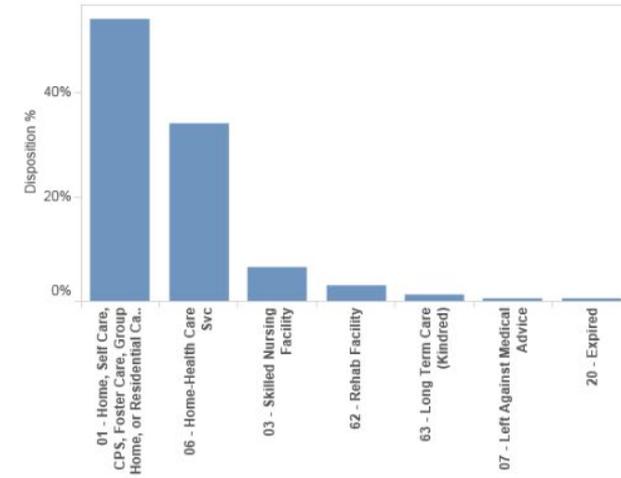
15.9%

Mortalities



0.6%

Discharge Dispositions



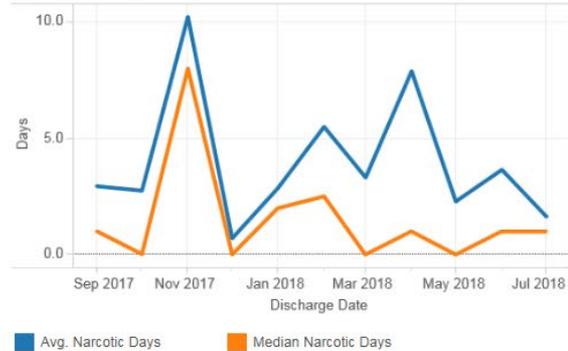
Complications



Analytics

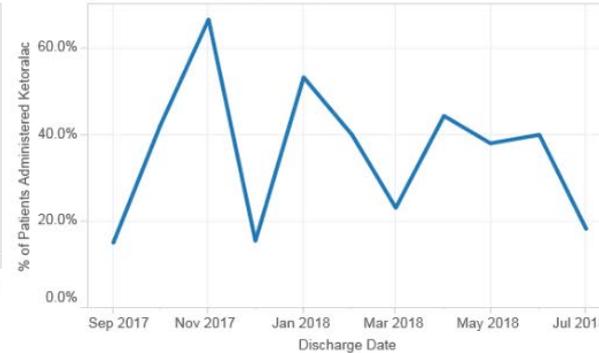
IV Narcotic Use

Days of Narcotic Use



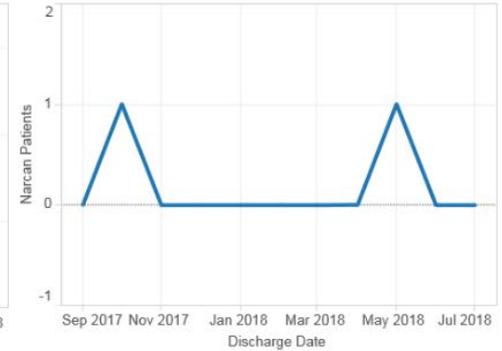
Ketorolac Administration

Percentage of patients with Ketorolac Administration



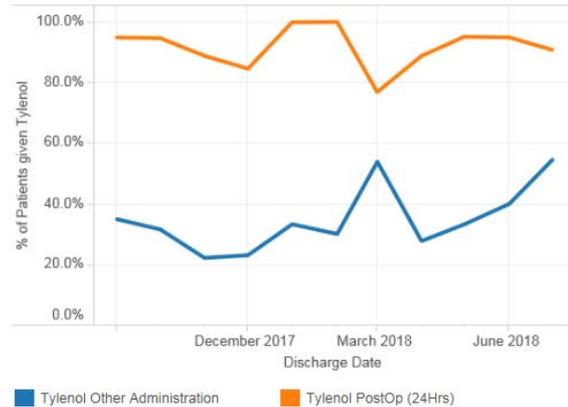
Narcan Administration

Patients with Narcan Administration



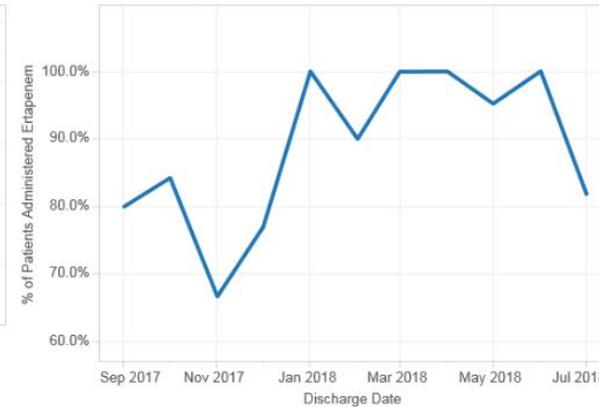
IV Tylenol Administration

Percentage of patients with Tylenol Administration



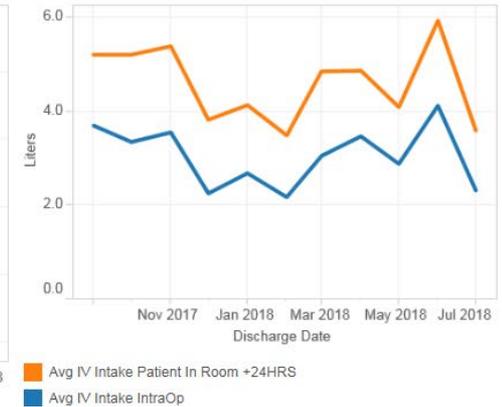
Ertapenem Administration

Percentage of patients with Ertapenem use



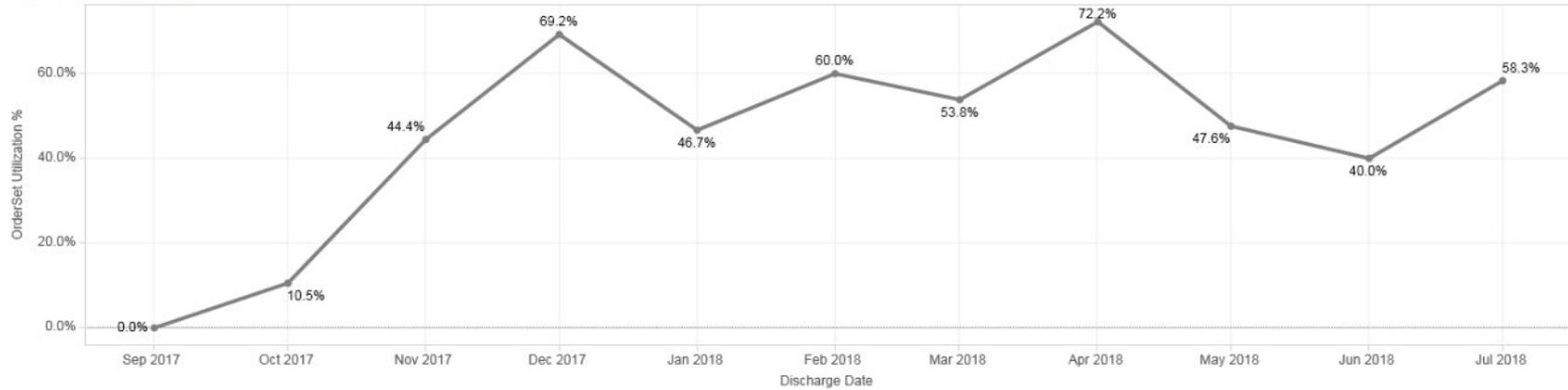
IV Fluid

Average IV Fluid per Patient

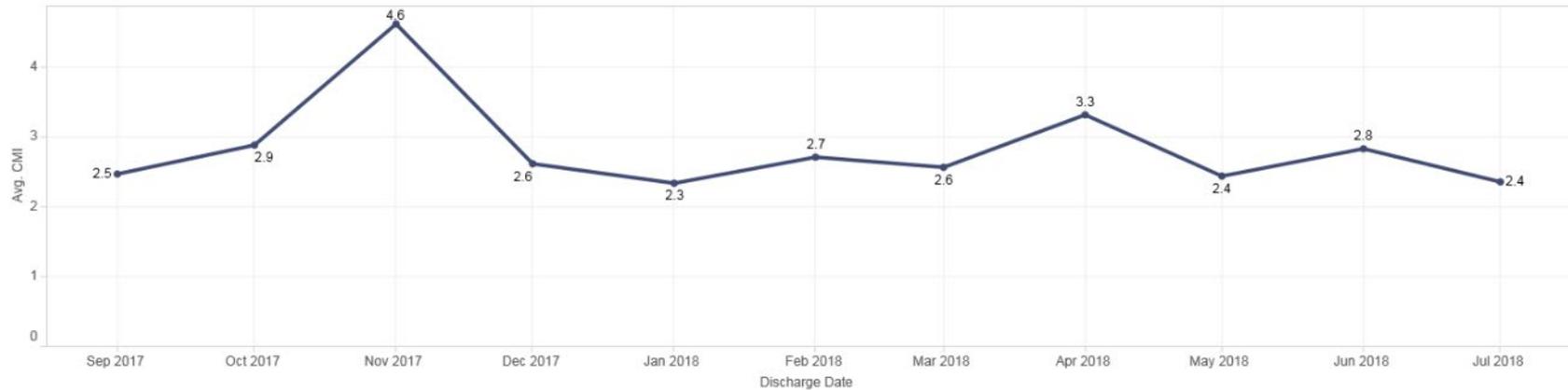


Analytics

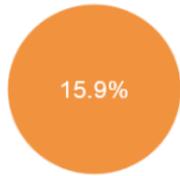
Order Set Utilization



CMI



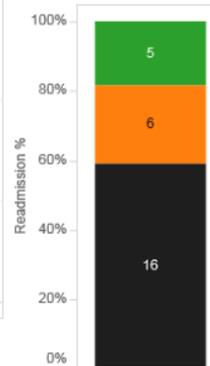
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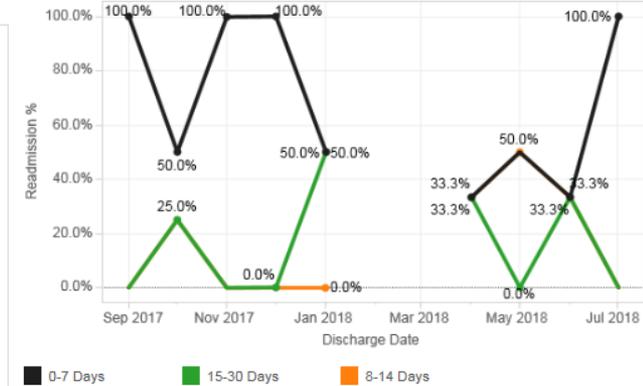
Readmissions



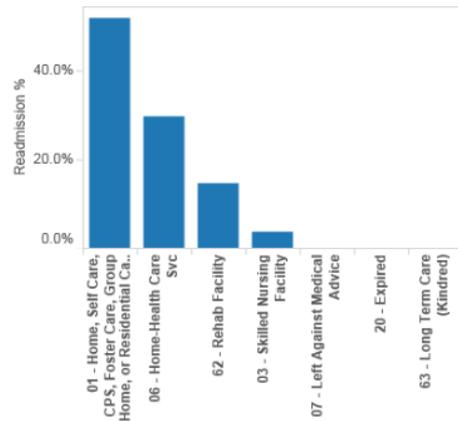
Readmissions by Days



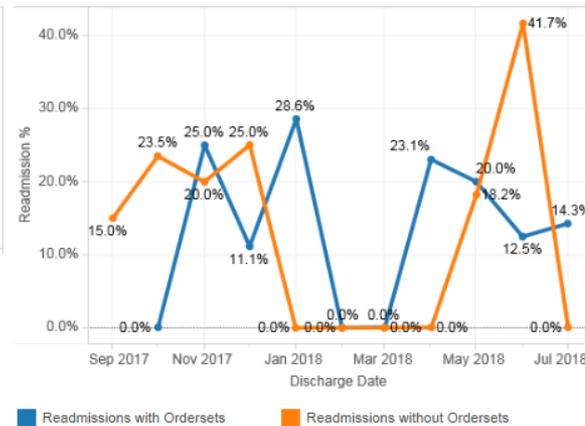
Readmission Trend



Readmissions by Discharge Disposition



Readmissions - Orderset vs Non-Orderset



Readmissions - Complications vs Non-Complications

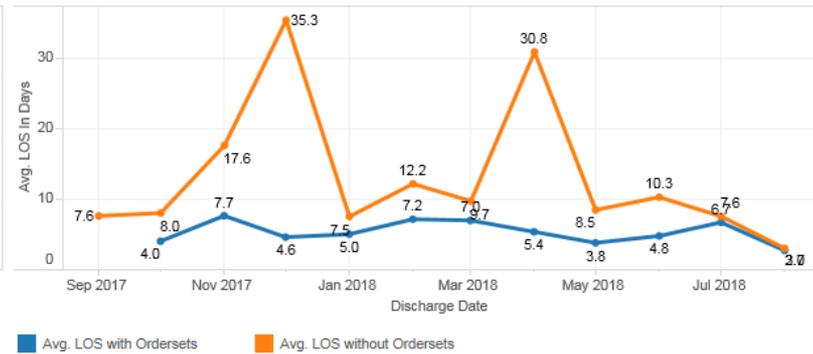


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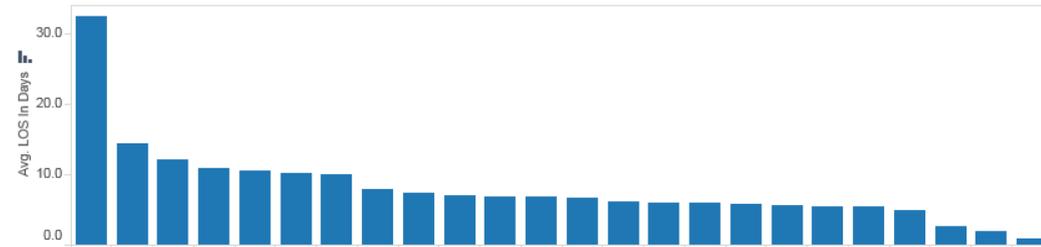
LOS - Complications vs Non-Complications



LOS - Orderset vs Non-Orderset

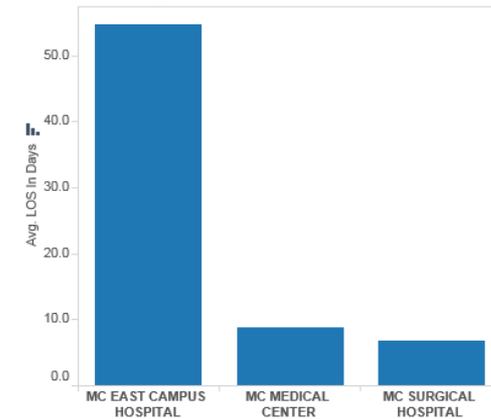


LOS by Surgeon



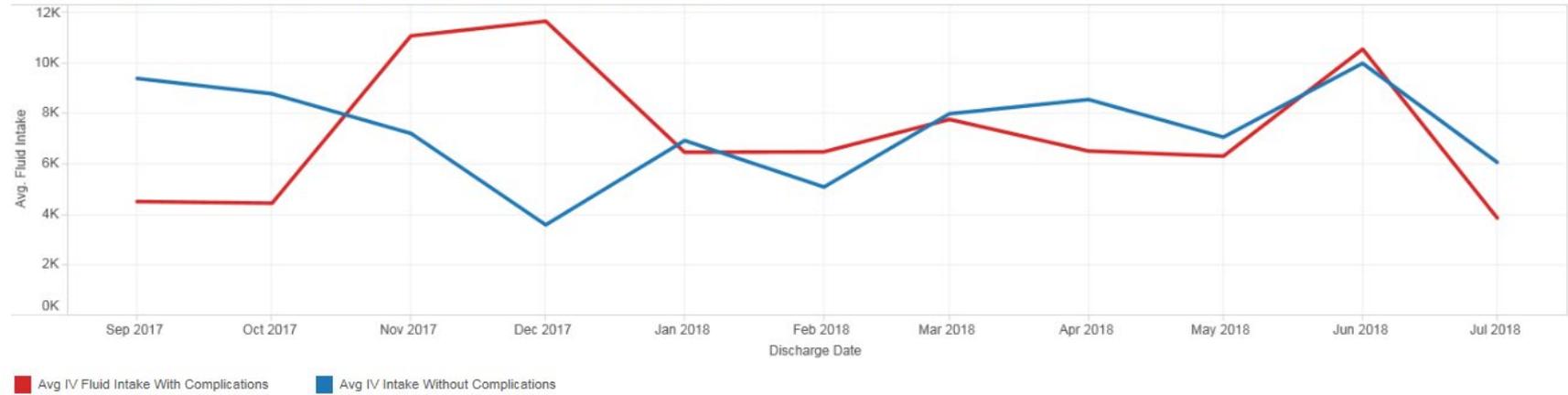
Surgeon performance listed by name

LOS by Discharge Location

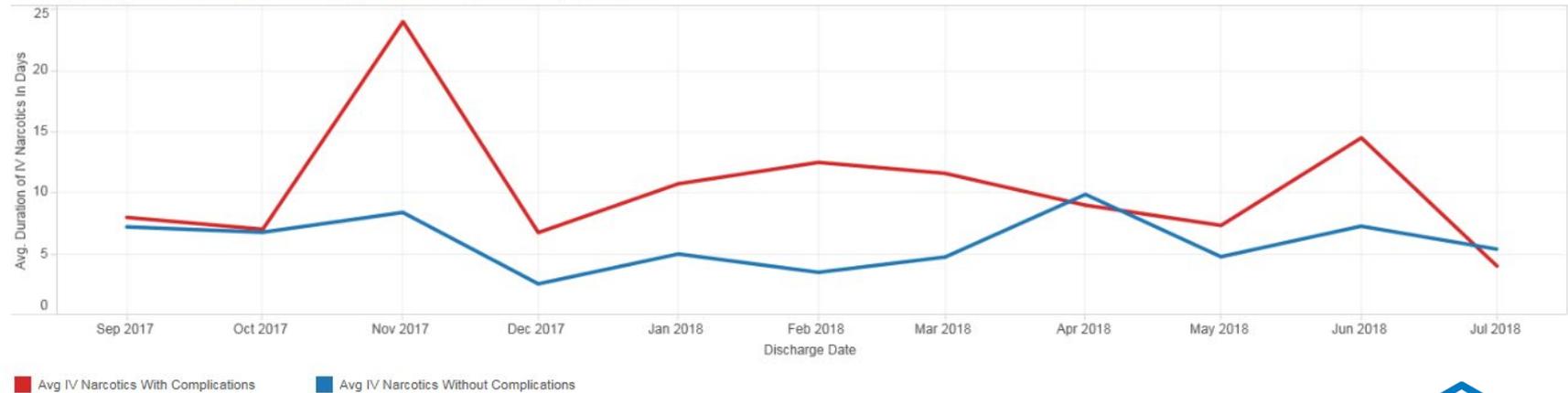


Analytics

Average Total IV Fluid In Room + 24HRS - Complications vs Non-Complications



Average Days of Narcotics Use - Complications vs Non-Complications



Next Steps



- » Cost Integration
- » Optimize ERAS pathway for complex colorectal surgeries
- » Expand ERAS pathways to include Gyn Onc, Ortho, Urology, and other surgical specialties

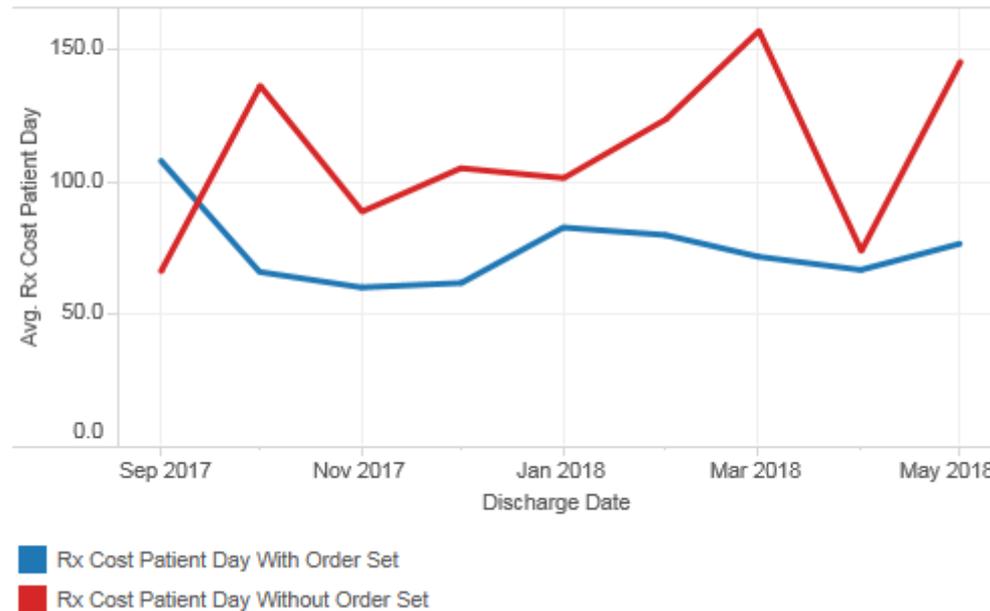


Direct Cost Integration Example



» Direct Cost and Utilization for Labs, Imaging and Pharmacy

Pharmacy Cost per patient day (observation and inpatient) - all services

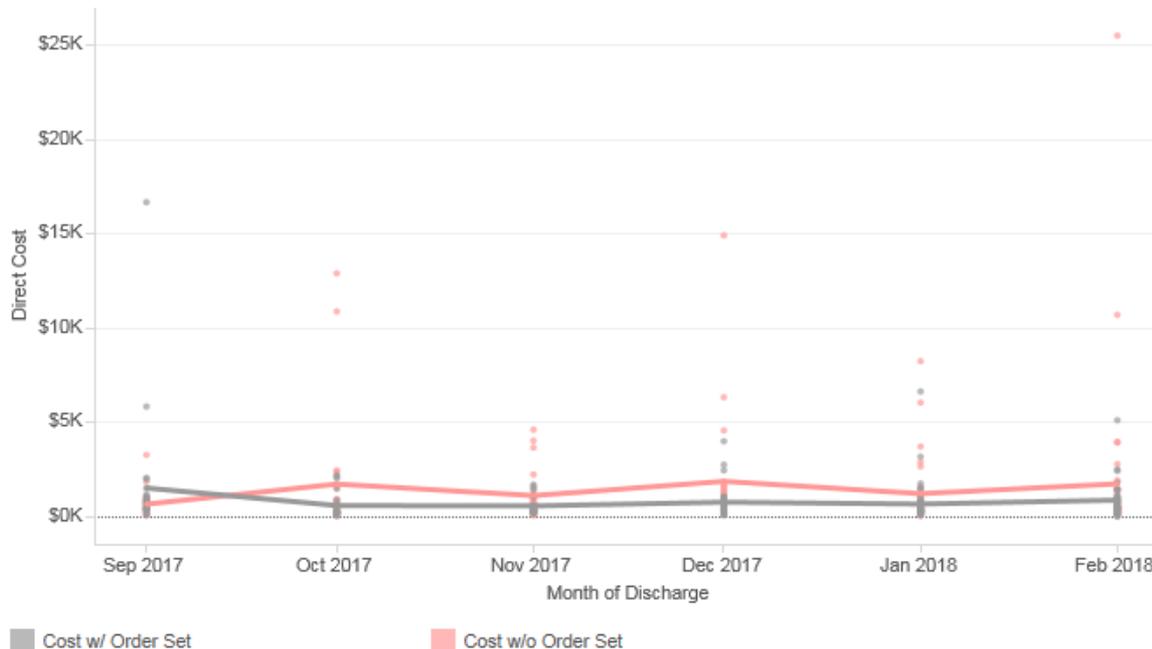


Direct Cost Integration Example



» Direct Cost and Utilization for Labs, Imaging and Pharmacy

Direct Costs - w/ & w/o Order Set



Other Shared Baseline Protocols



» In Production:

- ~ Heart Failure
- ~ Sickle Cell Anemia
- ~ Colorectal ERAS

» In Development

- ~ Acute Coronary Syndrome
- ~ Pediatric Asthma

» Coming Soon

- ~ Preeclampsia
- ~ Growth Velocity
- ~ Sepsis

Goal is 10-12 shared baseline protocols a year



Goals



- » **Improve patient care**
- » Decrease inappropriate variation
- » Make it easier for providers to give patients evidence-based care
- » Provide the data necessary to drive improvement



Questions?



cacianci@llu.edu



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References



1. Ljungqvist, O., Scott, M., & Fearon, K. (2017). Enhanced Recovery After Surgery: A review. *JAMA Surgery*, 152(3). <http://doi.org/10.1001/jamasurg.2016.4952>
2. Carmichael, J., Keller, D., Baldini, G., Bordeianou, L., Weiss, E., Lee, L., ... Steele, S. (2017). Clinical practice guidelines for Enhanced Recovery After Colon and Rectal Surgery from the American Society of Colon and Rectal Surgeons and Society of American Gastrointestinal and Endoscopic Surgeons. *Diseases of the Colon & Rectum*, 60(8). <http://doi.org/10.1097/DCR.0000000000000883>
3. Sarin, A., Litonius, E., Naidu, R., Spencer Yost, C., Varma, M., & Chen, L. (2016). Successful implementation of an Enhanced Recovery After Surgery program shortens length of stay and improves postoperative pain, and bowel and bladder function after colorectal surgery. *BMC Anesthesiology*, 2016(1). <http://doi.org/10.1186/s12871-016-0223-0>

