ERAS protocol drives MMA use, decreased opioid use and decreased surgical complications

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Conflict of Interest Disclosure

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Learning Objectives

- Identify Key Elements of Enhanced Recovery After Surgery
- Identify benefits of Multimodal Analgesia (MMA) in a surgical population
- Discuss implementation strategies for MMA in your institution
Outline

- Intro: who are we at Kaiser Permanente Northern California (KPNC)
- Origins of Enhanced Recovery After Surgery (ERAS)
- KPNC & ERAS
- Pain Management in an ERAS Paradigm
- Measurement and Outcomes
- Next Steps

Kaiser Permanente Northern California

- 4 Million Members
- 21 Medical Centers
- >250,000 surgeries/year

Consider the last time you or a loved one had surgery...

How did you feel after the procedure? What were some of the major challenges? What did you wish were different?

- I'm in pain!
- I'm delirious, I don't feel like myself...
- I'm too nauseous to eat!
- I'm starving!
- I'm too dizzy to get up!
- These meds are making me constipated
Origins of ERAS

ERAS started in the 1990's in a small hospital outside of Copenhagen.

The Problem: “Surgical Stress”

Surgery is catabolic and inflammatory
NPO, Opioids, and Bedrest make things worse...

- MUSCLE LOSS
- ↑ CATECHOLAMINES
- INSULIN RESISTANCE
- SYSTEMIC INFLAMMATION
- GLYCOGEN LOSS
- ↑ glucose
- DVT/PE
- ILEUS
- CONSTIPATION
- PNA
- SEDATION
- DELIRIUM
- ↑ MYOCARDIAL DEMAND
- NAUSEA
- VOMITING
- IMPAIRED HEALING
- ↑ INFECTION RISK

Surgical Stress Impairs Recovery and Causes Complications

What if we could minimize surgical stress?

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In 2014, KPNC implemented an ERAS program across 20 hospitals in Northern California. The program aimed to standardize surgical care with a focus on 4 core elements: pain management, mobility, nutrition, and patient engagement. The goals of the ERAS program included improving overall patient care and satisfaction, improving pain management, stopping the intestines from slowing down, decreasing the risk of hospital complications, and facilitating a faster recovery.
**ERAS Care Pathway**

- **PREOP**
  - Education
  - No unnecessary fasting
  - Carb drink

- **INTRAOP**
  - N/V prevention
  - Minimize tubes/drains

- **POSTOP**
  - Walk ASAP
  - Eat ASAP
  - D/c Foley

- Multimodal analgesia / opioids
- Optimize fluids

= = = =

Earlier recovery with ↓ discomfort and ↓ complications

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**ERAS is...**

- Multimodal analgesia is a safe and effective pain management regimen (American Society of Anesthesiologists Task Force on Acute Pain Management, 2012)
- Promoted for more than 20 years
- Decreases opioid consumption & opioid related side effects
- Endorsed by American Society of Anesthesiologists, American Society of PeriAnesthesia Nurses, The Joint Commission, and the National Center for Biotechnology Information
- Opioid monotherapy remains the mainstay treatment for postoperative pain management

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**Multimodal Analgesia for Perioperative Pain**

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New Persistent Postoperative Opioid Use

- More than 2 million individuals may transition to persistent opioid use following elective, ambulatory surgery each year.
  - New persistent opioid use were similar between minor and major surgical procedures, ranging from 5.9% to 6.5%.

- Canadian study of over 30,000 seniors minor surgery.
  - 7% prescribed opioids within 7 days
  - 10% continued them 1 year later

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American Society for Enhanced Recovery (ASER) and Perioperative Quality Initiative (POQI) colorectal surgery consensus statement

**Optimal Analgesia After Surgery**

**Encourage Postoperative DREAMS**
- Decreasing, Evaluating, Managing, and Stopping

**Fig. 1** The use of components of enhanced analgesia. This tool covers the main elements of patient analgesia. The complete elimination of pain may be the ultimate (E), as noted in the figure. Optimal analgesia after surgery is an approach to pain control that facilitates a patient's experience through optimized patient comfort and facilitates functional recovery while minimizing adverse drug effects.

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**Fig. 2** Proposed combination of a multimodal approach to pain management in all BMI for colorectal surgery. If only one plan should be considered, the multimodal approach to pain management or the use of either opioid-free anesthesia or minimally invasive surgery should be adopted in order to minimize pain control, but not opioid buildup, and avoid the side effects of all medications after colorectal surgery.
How we approached data analytics & reporting

- Comprehensive measurement strategy
- Intrinsically tied to clinical pathways

Implement Process Outcomes
Balancing

Core Reusable Representative

How we leveraged healthcare informatics to enable rapid PI

- Capitalize on rich EMR
- Fully administrative approach
- Support PI at all levels within organization

Northern California
Site 1 Site 2

Macro: at-a-glance performance across all measures, identify variation across all hospitals
Micro: weekly patient-level burst reports to local care improvement teams

Measuring MMA

<table>
<thead>
<tr>
<th>MMA Type</th>
<th>Pre-Op IV Tylenol + Ketorolac/Buprenorphine</th>
<th>Pre-Op IV Tylenol + Post-Op IV Lidocaine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal MMA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hip Fx MMA</td>
<td>Pre-Op IV Tylenol</td>
<td>Pre-Op FIB/FNB nerve block</td>
</tr>
</tbody>
</table>
Measuring Morphine Equivalents

- Average Morphine Equivalent mg
- Total milligrams of morphine equivalent narcotics given from admission through Post-Op day* 3

*day = 12+ hospital hours

Multimodal Analgesia Early Results
(Feb 13-Aug 15 Hip Fx, Colorectal, Total Hip, Total Knee)

85 pts/mo (compared to 12 pt/mo baseline)
64 pts/mo (compared to 2 pt/mo baseline)

Morphine Equivalents Early Results
(Feb 13-Aug 15 Hip Fx, Colorectal, Total Hip, Total Knee)

28% decrease
28% decrease
Current Morphine Equivalents

- Colorectal: MS equivalents 52.4mg to 30.6mg
- LOS 5.1 to 4.2
- Surgical complications 18.1% to 14.7%

- Hip Fracture: MS equivalents 38.9mg to 27mg
- LOS 3.6 to 3.2
- Surgical complications 30.8% to 24.9%

Current Multimodal Analgesia

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JAMA Publication: Enhanced Recovery After Surgery Program Implementation in 2 Surgical Populations in an Integrated Health Care Delivery System
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Keys to success
- Leadership support
- Team rounding
- Weekly Data
- Standardized Workflows
- Planning and Collaboration End-to-End

People are talking
Our patients are saying...
- My neighbor/friend was in the hospital for days. I was all ready to go home!
- This was a night and day difference from the last time I had surgery
- Let me know if you ever need me to be in a Kaiser commercial
- Every patient should be an ERAS patient!

Our nurses are saying...
- I was worried about having to get the patients up so early after surgery, but they were actually easier to mobilize! They were more alert, and their pain better managed
Why we do it

ERAS Video: Joanne Story – North Valley Kaiser Permanente


Enhanced Recovery After Surgery at KPNC

Destination

2014 2015 2016 2017 & Beyond
Enhanced Recovery Hospitals

Colorectal (n=3195)
Hip Fx (n=4401)
Total Knees (n=4811)
Total Hips (n=3073)
C-sections, URO, GYN ONC, Thoracic

Over 40,000 ERAS patients to date!

Next steps…

- Expanding into more surgical lines
- Metric Revision
  - Delta Pain scores by day
  - MS Equivalents by day
- Leveraging EMR
  - Ordersets
  - Nursing Documentation
Thank you
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- Regional Health Education
- KP HealthConnect
- Staff and patients on KPNC

Discussion

How might you implement or increase MMA use in your facility?

Questions