IMPLEMENTING AN ENHANCED RECOVERY PATHWAY FOR CESAREAN DELIVERY: SUCCESSES AND PITFALLS

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NO DISCLOSURES

• I have no financial interest or other conflicts of interest in relation to this presentation

EDUCATIONAL OBJECTIVES

• Understand the background on the importance of developing an Enhanced Recovery Pathway (ERP) for cesarean delivery
• Understand how to create goals and identify stakeholders for the development of an ERP for cesarean delivery
• Understand the importance of data monitoring and quality improvement through monitoring of the data
• See examples of what we have accomplished at UAB
THE END

BACKGROUND – ERAS™

• Developed by a group of academic surgeons in Europe in 2001
• Focused on the quality, not speed of recovery
• Emphasized:
  • Multidisciplinary team approach
  • Multimodal approach to solving issues that delay recovery
  • Evidence-based approach to care protocols
  • Change in management using interactive and continuous audit


THE PATIENT’S JOURNEY
ERAS™ RESULTS

- Reduced length of stay
- Reduced complication rates
- Cost savings
- Long-term follow-up:
  - Reduced mortality rates
  - Improved patient compliance


SURGICAL SPECIALTIES USING ERP

- Colorectal
- Urology
- Breast
- Surgical oncology
- Gynecologic
  - Oncology
  - Benign
- Orthopedic

WHAT ABOUT CESAREAN DELIVERY?!?

- Most commonly performed surgery
- Healthy, opioid naïve patients
- Need to care for their newborn
ERP FOR CESAREAN DELIVERY (2018)

ERP AND THE OPIOID CRISIS

The US Opioid Crisis: A Role for Enhanced Recovery After Surgery

Alexander E. Stone, MD* Elizabeth C. Wick, MD† Christopher L. Wu, MD* and Michael C. Grant, MD*

We are in the midst of a prescription opioid crisis. The United States, which makes up 4% of the world's population, consumes 80% of the world's supply of opioids. Between 1999 and 2014, the number of drug-related emergency department visits in the United States has increased by more than 200%. The opioid epidemic has had a profound impact on all aspects of society, including healthcare, economics, and social systems. Enhanced recovery after surgery (ERAS) is a multidisciplinary, evidence-based approach to multimodal analgesia, which aims to reduce opioid use and improve postoperative outcomes.

Correlation Between 24-Hour Preoperative Opioid Use and Amount of Opioids Prescribed at Hospital Discharge

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Preoperative Opioid Use</th>
<th>Prescribed Opioids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstetrics</td>
<td>3.33 (1.16-1.70)</td>
<td>2.56 (1.16-1.70)</td>
</tr>
<tr>
<td>Gynecology</td>
<td>7.05 (2.62-1.30)</td>
<td>5.65 (2.62-1.30)</td>
</tr>
</tbody>
</table>

*P < 0.05 compared to other procedures.

Comparative effectiveness studies of ERAS have shown significant reductions in opioid use, improved postoperative outcomes, and decreased healthcare costs. These results underscore the importance of implementing ERAS protocols in the management of patients undergoing surgery.
OUR PROCESS

- Stakeholders:
  - Obstetrics
    - Residents and faculty
  - All services (MFM, staff, Primacare)
  - Anesthesia
    - Residents, fellows, and faculty
  - Nursing
    - Clinic (All clinics represented)
    - L&D (MEU and OR)
  - Postpartum
  - Pediatrics
  - Pharmacy
  - Hospital Informatics

- First meeting September 27, 2017
- Set goals and determined outcomes to be measured:
  - Length of stay*
  - Pain scores and opioid consumption
  - Patient satisfaction (questionnaire)
  - “Quantitative patient experience”
  - Readmission rates and unscheduled postpartum visits
- Identify target patient population
  - Elective, scheduled cases from all UAB clinics
  - Exclusions: any abnormal placentaion, diagnosis of preeclampsia, type C diabetes or greater, "opioid use disorder"

OUR PROCESS

- 4 formal meetings from inception to roll-out
- Many small group and electronic correspondences
- Patient identification → patient education → peripartum alert of ERP patient → preoperative phase → intraoperative phase → postoperative phase
THE KEY

• Education
  • All phases of patient care
  • Led by OB, anesthesia, and nursing leadership

GOALS

• Plan $$\rightarrow$$ Act $$\rightarrow$$ Study $$\rightarrow$$ Do
  • Identify patient population
  • Create goals/measurable outcomes
  • Create ERP for C/S
  • Educate
  • Roll out ERP for C/S
  • Track data
  • Modify plan based on the data

SPECIFIC CHANGES

• Clinic:
  • Patient identification and education

• Day before surgery:
  • Confirm ERP patient
  • Call patient to reinforce education

• Day of surgery:
  • Carbohydrate sports drinks 2 hours before surgery
  • Active patient warming
  • Standardized antibiotic infusion
  • Scheduled Tylenol
  • Document ERP patient
EXAMPLES

SPECIFIC CHANGES

• PACU
  • Truncal block if patient did not receive neuraxial morphine

• POD #0
  • Clear liquid diet upon arrival to the floor
  • Scheduled Tylenol throughout hospitalization
  • Scheduled Toradol for 1st 24 hours followed by scheduled ibuprofen throughout hospitalization
  • Foley catheter removed 8 hours after delivery
  • Ambulate in hallway once, in chair TID
  • Non-pharmacologic management for mild pain (score 1-3)
  • PRN morphine first 12 hours followed by PRN oxycodone

SPECIFIC CHANGES

• POD #1-3
  • Increase ambulation to QID in hallway

• Discharge
  • Reduced oxycodone prescription from 30 tablets to 20 tablets
    • 1,000 C/S X 10 tablets = A reduction in 10,000 tablets per year
BIGGEST CHALLENGES

- Education of all areas of patient care:
  - ERP vs. non-ERP patients
  - Same order sets
  - Same standard of care
- IT:
  - Icon firing issues
- Order sets:
  - Timing
  - Specific orders (i.e.: clear liquid diet)
- Change

CHANGES MADE (PASD)

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty identifying and educating appropriate patients in preoperative clinics</td>
<td>All patients receive education</td>
</tr>
<tr>
<td>High N/V rate with clear liquids</td>
<td>CLD adjusted for post-C/S patients</td>
</tr>
<tr>
<td>High Foley catheter reinsertion rate for patients on magnesium sulfate</td>
<td>Order re-written to exclude magnesium sulfate patients from +8 hour Foley catheter removal order</td>
</tr>
<tr>
<td>Excessive time for IV pain medication (24 hours) now that patients are tolerating oral intake</td>
<td>Reduced IV PRN pain medication to 12 hours. Oral PRN pain medication begins 12 hours after delivery</td>
</tr>
</tbody>
</table>
### RAW DATA – OUTCOMES

#### Average Post-Operative Pain Scores

![Graph showing average post-operative pain scores over months]

#### Number of patients opioid-free within 24hrs of discharge

![Graph showing number of patients opioid-free over months]

### DATA

<table>
<thead>
<tr>
<th>Enhanced Recovery</th>
<th>Historical</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 135)</td>
<td></td>
</tr>
<tr>
<td>Time to clear liquids (hours)</td>
<td>2.31 (0.62)</td>
<td>3.57 (1.76)</td>
</tr>
<tr>
<td>Time to solid food (hours)</td>
<td>8.82 (5.77)</td>
<td>12.46 (6.17)</td>
</tr>
<tr>
<td>Total oxycodone given postoperatively (mg)</td>
<td>1.82 (3.98)</td>
<td>1.49 (2.92)</td>
</tr>
<tr>
<td>Time to Foley catheter removal (hour)</td>
<td>11.29 (6.29)</td>
<td>21.15 (7.03)</td>
</tr>
<tr>
<td>Time to first recorded ambulation (hour)</td>
<td>5.76 (1.11)</td>
<td>32.70 (25.29)</td>
</tr>
</tbody>
</table>

* P-values from the Wilcoxon rank-sum test.
FUTURE GOALS

- Incorporate the ERP to involve all cesarean delivery patients
- Work to further reduce opioid prescribing at time of discharge
- Study outcomes in the newborn based off ERP implementation
- Increase preoperative education to include Rose’s Law
- Help to expand ERP for cesarean delivery to other hospitals

SUMMARY

- ERP have been proven effective and creation of an ERP should be considered for cesarean delivery
- Determine stakeholders, identify patient population, set goals
- Education and persistence is essential for the ERP to be successful
- Incorporate plan \(\rightarrow\) act \(\rightarrow\) study \(\rightarrow\) do; and understand that adjustments to the pathway will have to be made