


**Spine Enhanced Recovery Program:
From Clinic to Discharge**

Spine Consensus Conference 2018


Presenters

- Ben Mueller MD, Spine Surgeon
- John Mrachek MD, Anesthesiologist
- Megan Oldenburg CNS, Spine
- Lynda Sirek RN, Spine Coordinator
- Mischa Adams RN, ERP Coordinator
- Katie Signore RN, Spine Nurse Clinician



Objectives

- Understand the elements of Enhanced Recovery and how they are used in each phase of care: Preop, intra-op, and postop
- Describe the process of implementation in a surgical population
- Understand data as it relates to outcomes and process measures



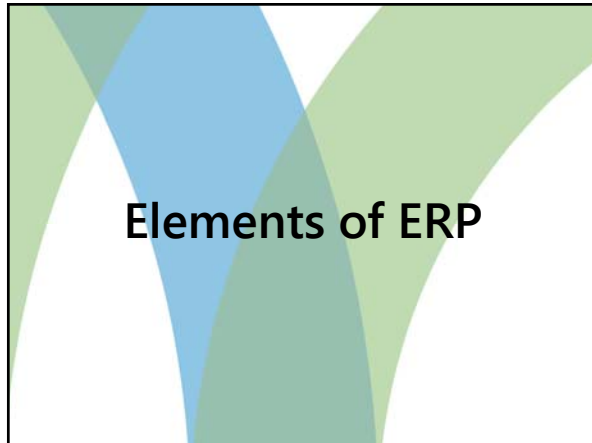
Slide 2

SL1 Introduction of each presenter and their individual role in implementation
Sirek, Lynda, 9/26/2018

Conflict of Interest

- All faculty noted have disclosed that they DO NOT have any real or apparent conflicts with any commercial interest as it relates to presenting their content in this activity/course.

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What is ERP?

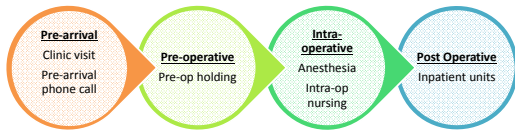
- Enhanced Recovery Program
 - A multi-modal approach aimed at accelerating post-operative recovery and reducing morbidity
 - Patient centered, bundle approach to surgical care
 - Also called Enhanced Recovery After Surgery (ERAS) or Fast Track after surgery
- Used in Europe starting (~2005)

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- Utilize recommendations from Both ERAS and Surgical Site Infection (SSI) Reduction
 - Colorectal Population:
 - 2008: New Ulm Medical Center
 - 2009: Owatonna Hospital
 - 2013: AATP Project
 - 2015: United and Abbott
 - 2017: Mercy
- Formal system program 2017
 - Integration into Spine: June 2018





Pre- Arrival



- Clinic directed patient education
 - Opioid Sparing pain control
- Skin prep at home (shower, bedclothes, sheets)
- CHG Wipes at home
- Reinforce education during prearrival phone call
- Maintain Hydration (clear liquids until 2h prior to schedule OR time)
- Carb Rich Beverage (Hydration/carb loading)



Pre-Operative

- Maintain Normothermia
- Goal Directed Fluid Therapy Guideline
- CHG Wipes
- Diabetes Monitoring
 - Blood glucose management in known Diabetes patients
- Hair clipping outside of OR
- Multi-modal pain management
- Antibiotic prophylaxis (IV) before incision

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Intra-operative

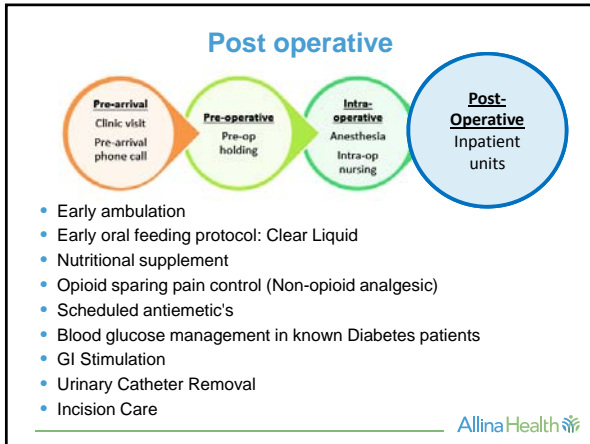
- Goal Directed Fluid Therapy (not Spine)
- CHG Skin Prep
- Prophylactic antiemetic's
- Maintain Normothermia
- Opioid sparing pain management
- Wound Protector
- Clean Closure procedure

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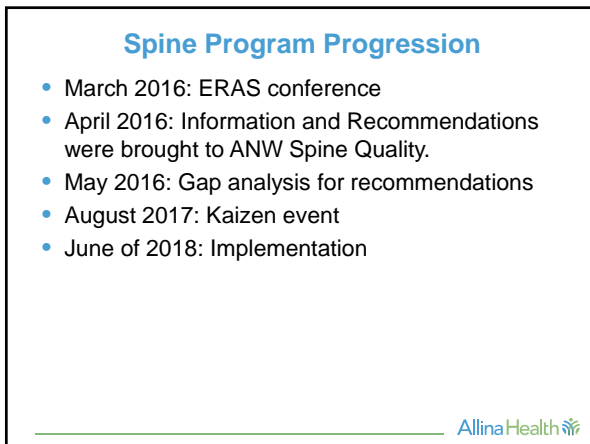
Goal Directed Fluid Therapy Guideline

- Dynamic assessment of fluid
- Respond to hypotension with Stroke Volume Index (SVI) guided fluid delivery
 - Not selected in spine population: risk for existential fluid loss is less

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Supporting change

- Evidence supports the implementation of key components of ERAS
- ERAS pathways in procedures such as colorectal surgery and hip and knee replacement surgery
 - strong evidence supports reduction in length of stay, decrease in morbidity, and cost savings.
- ERAS pathways in major spinal surgery may need to be adapted due to chronic pain state pre-operatively, and the complexity and variation in types of spinal procedures.

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Supporting change, cont.

- What evidence exists for spine surgery?
- Further research:
 - "...process and outcome, to be completed on firstly the introduction of ERAS pathways as a whole, and then on optimising individual components of the ERAS pathway."
 - Further understanding of which sub groups of procedures constitute major spinal surgery, and what procedures ERAS is most effective for in spine surgery patients.

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Population

- Patient selection
 - Elective patients only- arrived from home
 - Spine 3 level fusions or greater in any region, includes fusions with discectomies.
 - Higher infection rates and need for length of stay (LOS) reduction

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Monitoring Outcomes:

- Baseline data for Spine Goal setting
 - 2017 average LOS 3.82 days
 - Hospital associated SSI 2.97%



Implementation: Clinic

- Clinics
 - Staff are educated on specific need for Preop teaching
 - Skin prep
 - pain control
 - carb loading drink
 - what to expect post-op
 - Patient selection
 - Given demo kit



Demo kit

Glycemic Endothelial Drink

Nutritional Supplement

The glycemic endothelial drink (G.E.D.) is a nutritional supplement you will drink before and after your surgery. This drink will give you the nutrients and energy you need to heal faster and have a better surgery.

Preparing the G.E.D.

You will have one G.E.D. before your surgery.

- Mix the contents of 1 packet in 100 mL (3.3 ounces) of water.
- Shake it well. It is normal to see some small lumps.
- Drink it in 2 to 3 hours before your scheduled surgery time.
 - Example: If your surgery is scheduled for 7:30 a.m., drink the G.E.D. between 4:30 a.m. and 7:30 a.m.

Be sure to follow any instructions given to you by your surgeon.

Tip:

To help the drink taste better, you can refrigerate the prepared drink for about 1 hour before drinking it.

Enhanced Recovery

Enhanced recovery is a set of interventions and observations that reduce the pain and stress of surgery and help you get back to normal faster.

Before your surgery:

- Ask your doctor for a list of things you should do before your surgery.
- Tell your doctor about all the medicines you are taking, including over-the-counter medicines, vitamins, and herbal supplements.
- Do not eat or drink anything after midnight the night before your surgery.
- Stop smoking at least 4 weeks before your surgery.
- Stop drinking alcohol at least 2 weeks before your surgery.
- Stop taking aspirin, ibuprofen, and other blood thinners at least 7 days before your surgery.
- Stop taking any other medicines that your doctor has told you to stop.

Day of your surgery:

- Do not eat or drink anything after midnight the night before your surgery.
- Do not take any other medicines that your doctor has told you to stop.

How to Cleanse Your Skin Before Surgery with Cleansing Cloths

Reduce the Risk of Infection by Using Cleansing Cloths

Warning:

- Do not use alcohol-based wipes on your face.
- Do not use alcohol-based wipes on your eyes.
- Do not use alcohol-based wipes on your hands.
- Do not use alcohol-based wipes on your feet.
- Do not use alcohol-based wipes on your legs.
- Do not use alcohol-based wipes on your arms.
- Do not use alcohol-based wipes on your neck.
- Do not use alcohol-based wipes on your chest.
- Do not use alcohol-based wipes on your back.
- Do not use alcohol-based wipes on your buttocks.
- Do not use alcohol-based wipes on your groin.
- Do not use alcohol-based wipes on your perineum.
- Do not use alcohol-based wipes on your genital area.
- Do not use alcohol-based wipes on your anus.
- Do not use alcohol-based wipes on your vagina.
- Do not use alcohol-based wipes on your breasts.
- Do not use alcohol-based wipes on your nipples.
- Do not use alcohol-based wipes on your areolas.
- Do not use alcohol-based wipes on your axilla.
- Do not use alcohol-based wipes on your armpits.
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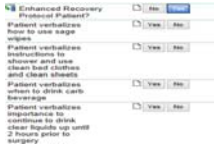
Activity

| Prepared Day 1 (Day of surgery) | Prepared Day 2 (Day after surgery) | Prepared Day 3 (Second day after surgery) | Prepared Day 4 (Third day after surgery) |
|--|--|--|--|
| • Wash your hands with soap and water for at least 20 seconds. | • Wash your hands with soap and water for at least 20 seconds. | • Wash your hands with soap and water for at least 20 seconds. | • Wash your hands with soap and water for at least 20 seconds. |
| • Use hand sanitizer if you are not near a sink. | • Use hand sanitizer if you are not near a sink. | • Use hand sanitizer if you are not near a sink. | • Use hand sanitizer if you are not near a sink. |
| • Avoid touching your face, eyes, nose, mouth, and hair. | • Avoid touching your face, eyes, nose, mouth, and hair. | • Avoid touching your face, eyes, nose, mouth, and hair. | • Avoid touching your face, eyes, nose, mouth, and hair. |
| • Avoid touching surfaces in the hospital. | • Avoid touching surfaces in the hospital. | • Avoid touching surfaces in the hospital. | • Avoid touching surfaces in the hospital. |
| • Avoid touching other people. | • Avoid touching other people. | • Avoid touching other people. | • Avoid touching other people. |

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EMR changes

- Standard order sets
 - Evidence based recommendations are pre-selected for both pre-op and post-op care
- Standard flowsheets and documentation
 - Ensuring consistent documentation of care to measure outcomes and compliance



Implementation: Pre-op

- Pre-arrival
 - Kit sent to patients
 - Reinforce Preop education
- Arrival to Preop holding
 - Additional skin prep
 - Continued Education
 - Non-spine surgery patients have baseline goal directed fluid therapy readings



Implementation: Post-op

- Arrival to post-op unit
 - Ambulation from cart to bed (if able)
 - Clear liquid diet and nutritional supplements
 - Multimodal pain control
- Staff education on needed documentation



Outcomes

COLO SSIs

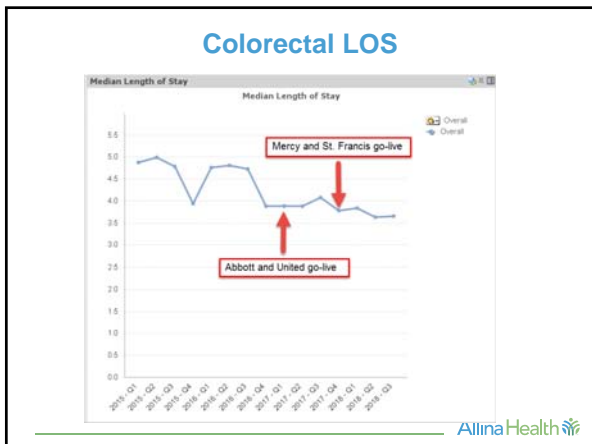
Includes: HRRs, ambulatory and CPE years of age

| HRR | # Procs | 12/2016 - 9/2017 | | 12/2015 - 11/2016 | | 2017 Goal | | 12/2017 - 7/2018 | | 12/2017 - 11/2017 | | 2018 Goal | | |
|------|---------|------------------|----------|-------------------|------------|-----------|----------|------------------|-------|-------------------|------|-----------|------|---------|
| | | # SSI | SSI Rate | SSI Rate | # Expected | Goal Rate | SSI Rate | SS Rate | # SSI | SSI Rate | # | Goal Rate | OS | OS 2018 |
| JPMH | 200 | 20 | 6.7% | 0.30 | 34.00 | 0.50 | 1.87% | 20 | 7 | 3.4% | 0.60 | 0.60 | 0.60 | 0.60 |
| SPC | 24 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A | 24 | 1 | 2.1% | 0.00 | 0.00 | 0.00 | N/A |
| SPC | 22 | 2 | 4.5% | 0.00 | 0.00 | 0.00 | N/A | 22 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A |
| QSA | 7 | 2 | 28.2% | 0.00 | 0.00 | 0.00 | N/A | 7 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A |
| SPC | 200 | 20 | 4.2% | 2.3% | 11.00 | 4.0% | 1.80% | 200 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A |
| SPC | 5 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A | 5 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A |
| QSA | 20 | 1 | 4.2% | 14.20 | 1.00 | 6.0% | N/A | 20 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A |
| SPC | 72 | 2 | 6.1% | 30.00 | 0.00 | 0.00 | N/A | 72 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A |
| SPC | 0 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A | 0 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A |
| SPC | 30 | 3 | 2.8% | 0.0% | 0.00 | 0.0% | 0.70% | 30 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A |
| QSA | 200 | 11 | 5.4% | 20.20 | 0.00 | 4.5% | 1.00% | 200 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A |
| QSA | 200 | 40 | 5.1% | 7.00 | 40.00 | 0.0% | 1.80% | 200 | 0 | 0.0% | 0.00 | 0.00 | 0.00 | N/A |

Legend: # SSI, SSI Rate, # Expected, Goal Rate, SSI Rate, SS Rate, # SSI, SSI Rate, #, Goal Rate, OS, OS 2018

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Slide 26

SL3 who would be able to speak to the Colorectal data?
Sirek, Lynda, 9/26/2018

Spine ERP LOS

| Spine ERP Length of Stay Reduction | | |
|------------------------------------|--------------|------------------|
| Avg LOS Baseline | Avg Goal LOS | 2018 YTD Avg LOS |
| 3.62 | 3.4 | 3.09 (9) |

***not statistically significant (n=9)



Moving forward

- Average length of stay
 - 9 patients actually had ERP
- Infection rates
 - There is always an opportunity for infection reduction
 - 30-day post-discharge window for data capturing
- Activity
 - As ERP is implemented, we will track early ambulation on post-op Day 0



Spine ERP in process. . .

- Multimodal pain management improvements
- SSI reduction with auto selection of chlorhexidine on admit to Pre-op
- Antibiotic dosing based on BMI
- Hospitalist consult with Diabetic patients
- Qlikview dashboard for data collection and analysis
 - (Surgical Outcomes)



Next steps:

- Measurement of cost of care
 - Monitor Average LOS improvements
- SSI infections (FUSN) for spinal fusions
 - Monitor SSI rates
- Re-evaluate population of focus:
 - Are 3+ level surgeries the appropriate population?
 - Pull data for additional surgical groups
- Patient Satisfaction scores (HCAHPS)
- Patient Optimization:
 - Nutritional status
 - Bone Density
 - Smoking Cessation



Q&A



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