Improving Safety and Reliability for Surgical Procedures Session 2

Thursday, December 5, 2013
These presenters have nothing to disclose

IHI Expedition

Expedition Coordinator

Chris Chue, Project Coordinator at the Institute for Healthcare Improvement. Chris has worked on organizing any care transition related activities through the STate Action on Avoidable Rehospitalizations (STAAR) Initiative. He has also supported several webinars such as the Primary Care Coach Program: Wave 3, IHI’s Expedition on Reducing Readmissions, and many others. In addition, he is an avid Boston Celtics fan, go Celtics!
WebEx Quick Reference

- Welcome to today’s session!
- Please use Chat to “All Participants” for questions
- For technology issues only, please Chat to “Host”
- WebEx Technical Support: 866-569-3239
- Dial-in Info: Communicate / Join Teleconference (in menu)

When Chatting…

Please send your message to
All Participants
Let’s Practice Using “Chat”

Please take a moment to chat in your organization name and the number of people on the call with you.

Ex. “Institute for Healthcare Improvement – 2”

Expedition Director

Kathy D. Duncan, RN, Faculty, Institute for Healthcare Improvement (IHI), oversees multiple areas of content and is the clinical lead for IHI’s National Learning Network. Ms. Duncan also directs content development and provides spread expertise for IHI’s Project JOINTS as well as additional content direction for the Hospital Portfolio, directs a number of virtual learning webinar series, and manages IHI’s work in rural settings. Previously, she co-led the 5 Million Lives Campaign National Field Team and was faculty for the Improving Outcomes for High Risk and Critically Ill Patients Innovation Community. In addition to her leadership on the field team during the Campaign, Ms. Duncan was the content lead for several interventions in IHI’s 100,000 Lives and 5 Million Lives Campaigns. She also serves as a member of the Scientific Advisory Board for the American Heart Association’s Get with the Guidelines Resuscitation, NQF’s Coordination of Care Advisory Panel and NDNQI’s Pressure Ulcer Advisory Committee. Prior to joining IHI, Ms. Duncan led initiatives to decrease ICU mortality and morbidity as the Director of Critical Care for a large community hospital.
Today’s Agenda

- Assignment #1
- Strong for Surgery Program
- Q&A – SAVE all questions for the end

Homework from Session #1

- Shadow a patient
  - View the care experience through the patient’s eyes
    - Pick one segment of care
Expedition Objectives

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

- Identify specific opportunities to improve safety and reliability during the patient’s surgical experience
- Improve reliability of key processes identified during each step of the surgical suite
- Identify and test strategies to decrease risk of surgical site infection
- Describe strategies to identify failures during the surgical process

Expedition Schedule

<table>
<thead>
<tr>
<th>Session</th>
<th>Date/Time</th>
<th>Lead Faculty: Summary</th>
</tr>
</thead>
</table>
| Session 3: Innovative Strategies for Hip and Knee Surgery | Thursday, 12/19 @ 1:00 – 2:00 PM ET | Deborah Yokoe, MD, MPH  
*Brigham and Women’s Hospital*  
Pre-Op screening/decolonization process  
Pre-Op process for CHG bathing |
| Session 4: Pre-Operative Processes Post-Admission | Thursday, 1/9 @ 1:00 – 2:00 PM ET | Gerald Healy, MD  
*Harvard University Medical School*  
Sheila Barnett, MD  
*Beth Israel Deaconess Medical Center*  
Standardize patient experience immediate pre-op  
BIDMC team discusses their best practices |
| Session 5: Perioperative Processes | Thursday, 1/23 @ 1:00 – 2:00 PM ET | William Berry, MD  
*Harvard School of Public Health*  
Team work and communication  
Standardize immediate post-op process |
| Session 6: Post-Operative Processes | Thursday, 2/6 @ 1:00 – 2:00 PM ET | William Berry, MD  
*Harvard School of Public Health*  
Post-op procedures  
Standardizing the end of the surgical process |
Thomas K. Varghese Jr. MD, MS, FACS

Thomas K. Varghese Jr. MD, MS, FACS, is the Medical Director for Strong for Surgery. In addition that role, he is an Associate Professor of Surgery at University of Washington (UW), Medical Director of Thoracic Surgery at Harborview Medical Center, and Associate Program Director of the UW Cardiothoracic Surgery Residency. His clinical practice is focused on general thoracic surgery and thoracic trauma.

Improving Outcomes through Pre-hospital Checklists

Thomas Varghese Jr. MD, MS, FACS
Funding

- Agency for Healthcare Research and Quality
- Life Sciences Discovery Fund
- Nestle HealthCare Nutrition
- UW Patient Safety Innovation Program
- UW Department of Surgery

Impact of Surgery

- Global
  - Between 187 million to 281 million OR cases/year
  - One operation for every 25 human beings

Lee PH, Gawande AA. JACS 2008; 207(3):S75
Impact of Surgery

• Global
  • Between 187 million to 281 million OR cases/year
  • One operation for every 25 human beings

• Number of operations that an average American has in their lifetime = 9

• In the US 50% of healthcare expenditures is related to surgery

The Problem

Every year there are 210,000 Preventable Deaths
• $30 billion per year
The Problem

Every year there are 210,000 Preventable Deaths
- $30 billion per year

1 in 4 colon resections readmitted within 90 days
- $300 million per year

Soft Tissue Surgical Site Infections
- $39,000 per episode
- $3 billion in direct costs

It takes an average of 17 years before new knowledge from randomized clinical trials is incorporated into widespread clinical practice!
Focus on Decision Making in Hospital

PATIENT

DOCTOR’S OFFICE

OPERATING ROOM
Focus on Decision Making in Clinic
What is Strong for Surgery?

- Evidence-based best practices designed to improve communications and reduce variation in care

- Targets four key areas to help optimize patient's health
  - Nutrition
  - Smoking Cessation
  - Glycemic Control
  - Medications

- Community of Practice
  - Implementation support including work groups, lessons learned and consultation with program staff

Why Blood Sugar?

- Link between high blood sugar levels and SSIs
  - Hyperglycemia - doubled risk of SSI
  - In some studies 47% of hyperglycemic episodes were in nondiabetics!

Lancet 2012; 2279-2290
2011 US Department of Health and Human Services
Why Blood Sugar?

- Link between high blood sugar levels and SSIs
  - Hyperglycemia - doubled risk of SSI
  - In some studies 47% of hyperglycemic episodes were in nondiabetics!
- 470 million people worldwide will have prediabetes by 2030
- 35% of US adults older than 20 yrs of age and 50% greater than 65 years had prediabetes in 2005-2008

Lancet 2012; 2279-2290
2011 US Department of Health and Human Services

Why Blood Sugar?

- > 65 years
  - 1 in 4 will have diabetes
  - 2 in 4 are prediabetic

2011 US Department of Health and Human Services
Why Medications?

• Some medications and herbal remedies increase risk of bleeding
  • Echinacea, Garlic, Ginkgo, Ginseng, Kava, Saw Palmetto, St. John’s Wort, Valerian ↑ risk
  • Aspirin can be safely continued

• Beta-blocker continuation associated with fewer cardiac events and mortality
Why Smoking?


### Post-Operative Outcomes by Pack-Years Smoked

Why Nutrition?

- Malnutrition is prevalent in surgical patients
- Best determinant of surgical outcome
- Modifiable with appropriate intervention
- Immunonutrition may improve recovery

SCOAP: Albumin & Complications
*Elective colon/rectal procedures 2011*

<table>
<thead>
<tr>
<th>Albumin Levels (g/dL)</th>
<th>Re-operation</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2.0</td>
<td>12.0%</td>
<td>15.0%</td>
</tr>
<tr>
<td>2.0-2.4</td>
<td>9.0%</td>
<td>12.0%</td>
</tr>
<tr>
<td>2.5-2.9</td>
<td>6.0%</td>
<td>9.0%</td>
</tr>
<tr>
<td>3.0-3.4</td>
<td>3.0%</td>
<td>6.0%</td>
</tr>
<tr>
<td>3.5-3.9</td>
<td>3.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>4.0+</td>
<td>1.0%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>
Arginine Supplements

Surgery and trauma patients are immune suppressed making them more susceptible to infection due to arginine deficiency.

Immune-modulating formulas contain arginine + omega-3 fatty acids + nucleotides, and are designed to meet needs of the surgery & trauma populations.


Literature Review

• Systematic Review
  • N=3,438
  • 35 studies focused on elective surgery
  • Procedure types
    • 25 GI: 18 upper; 2 lower; 5 mixed
    • 10 non-GI
  • 23 – used arginine-based supplements
    • Pre-Op Use: ↓ Infectious complications 43%

Literature Review

• Meta-analysis: 26 RCTs
• N = 2496
  • 1252 Immunonutrition vs 1244 Control (Isocaloric)

• ↓ infection rates by 46%
• ↓ length of stay ~ 2 days

Marimuthu K, et al.
Ann Surg 2012; 255:1060-1068
Smoking Cessation Checklist

**Risk Stratification**

Has the patient over smoked?
- Yes
- No

**If YES then:**
- Record patient’s smoking status (smoker or ex-smoker)
- Record the number of pack-years (packs per day x years smoking)

Does the patient currently smoke?
- Yes
- No

**If YES then:**
- Establish and document a plan to stop
  - Help patient choose a quit date and smoking cessation method
  - Encourage support from family and friends
  - Highlight stress reduction activities

Smoking cessation programs
- 1-800-quit-now
- www.smokefree.org
- Local Resources

Medication Checklist

**Bleeding Risks**

Is the patient on a prescribed anti-coagulant (e.g., Coumadin, Plavix, others)?
- Yes
- No

**If YES then:**
- Discuss with prescribing MD the safety of stopping medication 1 week prior to surgery

Is the patient taking over the counter medications that increase bleeding risk (e.g., NSAIDS)?
- Yes
- No

**If YES then:**
- Consider stopping all over the counter medications that can increase risk of bleeding 2 weeks prior to surgery

**Beta-Blockers**

Is the patient taking a beta-blocker?
- Yes
- No

**If YES then:**
- Patient should take throughout perioperative period

**Aspirin**

Is the patient taking aspirin for cardiac protection?
- Yes
- No

**If YES then:**
- Patient should take throughout perioperative period

**Herbal Medication**

Is the patient taking herbal supplements containing ingredients that may increase perioperative risk (e.g., Echinacea, Garlic, Ginkgo, Ginseng, Kava, Saw Palmetto, St. John’s Wort, Valerian)?
- Yes
- No

**If YES then:**
- Consider stopping all herbal supplements that increase perioperative risk 2 weeks prior to surgery
Blood Sugar Control

All Patients
Does the patient have a prior diagnosis of diabetes?
☐ Yes ☐ No

Patient’s age > 45?
☐ Yes ☐ No

Patient’s BMI ≥ 30?
☐ Yes ☐ No

If YES to any of the questions:
☐ Check fasting blood sugar level on the morning of surgery prior to OR case
☐ If fasting glucose level > 200, then recommend use of insulin drip during OR case

Diabetic Patients
Degree of Blood Sugar Control
Hemoglobin A1c level > 7.0%?
☐ Yes ☐ No

OR
Has any fingerstick reading in the past 2 weeks been > 200?
☐ Yes ☐ No

If YES or UNKNOWN then:
☐ Referral for diabetes management

Diabetic Patients
Perioperative Management:
Will the patient be NPO after midnight?
☐ Yes ☐ No

Is the patient having bowel prep?
☐ Yes ☐ No

If YES, while NPO and during prep:
☐ Stop all diabetic medications except for pioglitazone (Actos)
☐ Reduce Lantus by 50%
☐ Check blood sugars frequently and use sliding scale as needed

Raising Awareness
Changing Practice
How to Implement:
Variety of Successful Models

• Office/Clinic level
  ➢ Checklists completed by RN or MA
  ➢ Checklists completed by surgery scheduler
  ➢ Checklists completed by provider

• Hospital level
  ➢ In person Pre-op clinic visit
  ➢ Virtual pre-op clinic
  ➢ Utilization of EMR systems

Key questions

• Will you start with a pilot clinic, or system-wide?
• Which checklist to implement first?
• Clinic level or hospital based?
• Specific specialty or all surgeries?
• Can the checklists be integrated into the EMR?
• What are the barriers and what additional resources will be needed?
Where to start

• Start with one!
  • One checklist...or portion of a checklist
  • One clinic/specialty
  • One surgeon

• Pick an area that:
  • Matters to your practice
  • Is not addressed by existing protocols
  • Has few barriers to implementation

Assignments for Session 2

• Blood Sugar Control checklist
  ▪ From the ‘All Patients’ questions at the top of the checklist.
Blood Sugar Control Checklist

**All Patients**

- Does the patient have a prior diagnosis of diabetes?
  - Yes  ☐  No ☐

- Patient's age > 45?
  - Yes  ☐  No ☐

- Patient's BMI ≥30?
  - Yes  ☐  No ☐

Assignments for Session 2

1. Are you currently answering these questions for every surgical patient in your clinic?
   - Yes/No
**Blood Sugar Control Checklist**

**All Patients**

Does the patient have a prior diagnosis of diabetes?
- Yes □  No □

Patient’s age > 45?
- Yes □  No □

Patient’s BMI ≥30?
- Yes □  No □

If **YES** to any of the questions:
- □ Check fasting blood sugar level on the morning of surgery prior to OR case
- □ If fasting blood glucose level > 200, then recommend use of insulin drip during OR case

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**Assignments for Session 2**

2. Are you currently checking fasting blood sugar levels for diabetics and prediabetics surgical patient on the day of surgery?
   - Yes/No

3. Does your current glycemic control protocol include intraoperative insulin drip for all patients >200 mg/dL?
   - Yes/No
Assignments for Session 2

- Identify one clinic and one surgeon to use the Blood Sugar Control Checklist ‘All Patient’ questions.
  - Screen and Identify 5 patients who are either prediabetic or diabetic seen during one day of clinic.
  - Follow through to check fasting blood sugar levels on the morning of surgery for indicated patients.

- What were the results?

For More Information

- Visit the website: http://www.strongforsurgery.org
  - Review the literature
  - Request the checklists
  - Request the implementation guide
- E-mail us: strongforsurgery@becertain.org
THANK YOU!

Questions?

Raise your hand

Use the Chat
Expedition Communications

- Listserv for session communications: surgeryexpedition@ls.ihi.org
- To add colleagues, email us at info@ihi.org
- Pose questions, share resources, discuss barriers or successes

Next Session

Thursday, December 19, 1:00 PM – 2:00 PM ET
Session 3 – Innovative Strategies for Hip and Knee Surgery

Deborah Yokoe, MD, MPH
Brigham and Women’s Hospital