Improving Surgical Wound Classification in the Operating Room
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What is NSQIP

National Surgical Quality Improvement Program

- Report risk adjusted surgical outcomes
- Provides benchmark for hospitals to compare surgical outcomes data
- Provides us an opportunity to assess and evaluate how well we are providing surgical care
- Identify area for improvement in care practices and systems
Importance of Wound Class

- SB 1058- A required part of the risk adjustment score for selected Colon, Orthopedic and Cardiac procedures with s/p deep & organ space surgical site infections.

- Evaluate surgical infection risk

- Accurate documentation

- NSQIP uses to risk adjusted outcomes
Wound Class & Risks

- **Class 1-** Clean wound has a 1% to 5% of developing SSI or deep tissue infection.

- **Class 2-** Clean/Contaminated has 4%-10% risk.

- **Class 3-** Contaminated has > 10% risk of getting infection even w/ prophylactic antibiotics.

- **Class 4-** Dirty cases increase to 27% risk of SSI.

Test your Wound Classification Knowledge

- Let’s take a quiz—see
- (Test questions taken from *The American College of Surgeons*)
A patient underwent a laparoscopic appendectomy. The preoperative CT scan reported the appendix contained a fecalith. There was no mention of infection, rupture, or inflammation in the operative report. What wound classification should be reported?

1. Clean
2. Clean/Contaminated
3. Contaminated
4. Dirty/Infected
B-wound class 2

There was no documentation of rupture, inflammation, or purulence, a wound class 2 would be assigned. Appy’s are always a wound 2 as a baseline.
Voice of the Customer

Staff’s Perspective

I am not sure of the correct wound class

I’ve never been trained

Why does it even matter?

We rarely do the debriefing—too much to do

We never talk about the wound class—never have
Wound Classification

1- Clean:
Uninfected wound, no inflammation, closed, and if necessary, w/ closed drainage. Non-penetrating (blunt) trauma.

2- Clean/ Contaminated:
Respiratory, alimentary, genital, or urinary tract ENTERING ORGANS w/o Major break in technique

3- Contaminated:
Open, acute wounds, breaks in technique or gross spillage, necrotic w/o drainage.
Key words:
ACUTE WOUND & INFLAMMATION, NONPURULENT

4- Dirty/ Infected:
Old traumatic wound w/ retained devitalized tissue, and existing infection wounds. Wet gangrene.
Key words:
PERFORATED, ABSCESS, RUPTURE, INFECTED, PURULENT, SUPPURATIVE
What are we trying to Improve?
Baseline Performance

SURGICAL WOUND CLASSIFICATION
KAISER SAN JOSE MEDICAL CENTER
2009

GOAL 90%
AVERAGE 69%
80/20 Rule

Pareto's Chart - Misclassified Wound Class
Modesto: May 2009 - June 2009

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Misclassified %</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Surgery</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>25</td>
<td>60</td>
</tr>
<tr>
<td>GYN</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>Urology</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>Vascular</td>
<td>5</td>
<td>95</td>
</tr>
<tr>
<td>HNS</td>
<td>5</td>
<td>100</td>
</tr>
</tbody>
</table>
General Surgery Wound Classification
Modesto

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Misclassified %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Lap. Chole</td>
<td>35</td>
</tr>
<tr>
<td>Acute Appendectomy</td>
<td>30</td>
</tr>
<tr>
<td>Hernias</td>
<td>25</td>
</tr>
<tr>
<td>Colon</td>
<td>15</td>
</tr>
</tbody>
</table>
Most Common Misused Class

2- Clean/Contaminated

- Specifically used when ENTERING ORGANS
- ENTERING & INVOLVING TRACTS only

**IS NOT:**
- A default wound class when there’s uncertainty
- A gray area between class 1 and class 3 wound
Appendectomy

No inflammation  |  Grossly inflamed, acute, no pus

Wound Class 2  |  Wound Class 3
Goal/ AIM Statement

To achieve 90% or higher in correct wound classification by (You pick your target date).
PI Strategy

- Pareto’s Rule (80/20)
- 3S: Simple + System = Sustainable
- Efficiency
  - Leverage technology
  - Lean Process: \( \text{people involved} \downarrow \text{steps} = \text{variations} \)
- Staff Motivation & Engagement
- Where can I start that will make the most impact in our performance?
Small Test of Change

Goal: To achieve 90% or higher in correct wound classification Jan. 2010.

Change Concept:
Utilize NSQIP and CDC Wound Classification Guidelines

Cycle 1: July-Aug
Weeks 1-4: Tracking wound classification documentation from RN champion after education of guidelines. Audits were done from surgical logs by SCNR for compliance.

Cycle 2: Sept.- Oct.: spread education to all OR nurses of guidelines and encouraged RN to confirm w/ Surgeon of correct wound class during debriefing process. Physicians teaching.

Cycle 3: Nov.- Dec. Re-enforce education to General Surgeons in staff meeting and via email & meetings to all other subspecialty.

Cycle 4: Dec- Jan - concurrent audit and real time education Wound class decision tree implementation.
PDSA in 2010

Goal: To achieve 90% or higher in correct wound classification by January 2010.

Change Concept:
Utilize NSQIP and CDC Wound Classification Guidelines

Cycle 5: Update performance, data definition teaching/re-enforcing. Start Using crystal reports for audit. RN Champion does 100% auditing

Cycle 6: Update performance, data definition teaching/re-enforcing. Start Using crystal reports for audit. RN Champion does 100% auditing

Cycle 7:
- Education
- Spread improvement

Cycle 8: Spread improvement to Manteca

Sustainable Plan:
- Auditing
- Education
- Spread improvement

Celebrate!
Treat staff for lunch. Goal reached!
WOUND CLASSIFICATION
GENERAL AND VASCULAR SURGERY
SUSTAINABILITY PHASE 2010

PERCENTAGE CORRECT
50% 60% 70% 80% 90% 100%

- Wound class added to Debriefing
- Education to Gen/Vas Surgeons discussed with Staff
- OR/ASU Managers discussion in OR and ASU rooms
- Wound Class Posters/decision trees up in OR and ASU rooms
- Education to all OR Nurses
- Spread to all Surgical Services
- Education to Gen/Vas Surgeons
- Newsletter
- Wound Debriefing Audits
Process Change in the OR Efficiency in Process

Future State Map

Circulating RN
- Review Diagnosis on consent & HC record
- Assign wound class preliminary in HC
- HRST
- Performs OR duties
- Debrief
- Change wound class if needed
- Complete KPHC documentation

Surgeon
- Open surgery case in HC w/ diagnosis
- Complete Consent and H&P
- HRST
- Perform procedure
- Debrief
- Leave room

Wound Class validation
How will we reach our goal?

To achieve 90% or higher in correct wound classification by Jan. 2010 - Modesto OR.

Drivers

Communication

- Validation of wound class during debriefing.

Education

Previous Process
- Wound class is assigned based on:
  - Conversations during surgery.
  - Requested equipment.
  - Dx. On consent or HC surgery case/log info.
  - No communication between RN & surgeons.

New Process

Previous State
- Practice based on past experience & knowledge.
- Inconsistent knowledge of wound class definition.

Goal
- To utilize standardized wound class definition.
- To have continuous support and feedback to surgeons and OR staff.
Modesto Performance

IP- Wound Classification Performance (Modesto/Manteca)
group = Modesto

P Chart

+3 sigma

95.8

-3 sigma

90

Apr 5, 2011 13:37:14
IP - Wound Classification Performance (Modesto/Manteca)

group = Manteca
Tools Created

- Wound Class Poster
- Wound Class Decision Tree
- Wound Class added to Debriefing
- Wound Class Newsletter
- Wound Class Quiz and Educational ppt
- Wound Class/Debriefing Audit Tool
Wound Classification

1- **Clean**: Uninfected wound, no inflammation, closed, and if necessary, w/ closed drainage. Non-penetrating (blunt) trauma.

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   Key words: PERFORATED, ABSCESS, RUPTURE, INFECTED, PURULENT, SUPPURATIVE
Does the procedure involving the GI tract, Respiratory tract, Urinary tract, or Genital tract?

Yes
- Major breaks in sterile field?
- Acute, Non-purulent inflammation?
- Open wound?
- GI spillage?

No
- Pus/purulence?
- Abscess?
- Peritonitis?
- Perforated Viscera?
- Retained devitalized tissue? (active infection)

Yes
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- Abscess?
- Peritonitis?
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No

Document Class 2 - Clean/Contaminated

Document Class 3 - Contaminated

Document Class 4 - Dirty/Infected

Document Class 1 - Clean

• Document the highest wound class if there are multiple operating sites involved with multiple wound classes.

Things that do not change wound classification:
- Chronic inflammation
- Closed Drains
- Cyst drainage
- Colostomy

CVA NSQIP - Aline Van, SCNR
Circulator Following final count: “Is the team ready to debrief?”

**Surgeon**
- Verify Procedure, Diagnosis
- **Wound Class**
- Specimen(s) review (Path Sheet & Labels including history)
- Identify equipment issues

**Circulator**
- With the Surgeon review (Path Sheet & Labels including history)
- With the Scrub indicate final count correct (sharp, sponge & instrument)

**Scrub**
- With the RN Circulator indicate final count correct (sharp, sponge & instrument)

**Anesthesia**
- VTE prophylaxis

HRST SAFETY DEBRIEFING-

Return to Room Time
Anesthesia/RN

HRST Approved 2-8-10
Team Communication

We Can Do It!

Improving Surgical Wound Classification
May 4, 2010

Team Members: Efren Rosas MD, Hemant Keny, MD, Juddie Spafford, Diane Nelson, Michelle McGlendin, Diane Stemen, Nita Rowe, Lana Johnson, Peter Schooliey, Janda Carlsson, Lesley Jarvis, Elaine Barrett, and Christina Solis

Our goal is to improve correct surgical wound classification from 69% to 90% in the Main OR and ASU by July 30, 2010.

Below are our results for the last several weeks. As you can tell from the graph below, we met our goal of getting at least 90% correct in mid-March. What can we do differently to meet this goal every day?

- Discuss Wound Class as part of the Debriefing—we will be auditing this weekly
- Utilize the Wound Class Posters in every OR

Test your knowledge!
A patient had a previous repair of a flexor tendon one week before presentation. During an altercation, the wound was 'crushed' open and became covered in dirt and debris. The patient presented to the emergency department for evaluation and was taken to surgery the same day for washout and repair. There was no description of any necrotic or purulent tissue. The wound was left open after the surgery. What wound classification should be reported?

Answer: Assign a wound classification of 4 - Dirty/Infected because the wound was opened up before going to the OR, was exposed to a potentially substantial amount of microbes (e.g., dirt and debris), and part of the procedure was a washout.
Tracking Performance

- Leverage on electronic surgical reports
- Audit team communication
  - Was the Debriefing discussed?
  - Was wound class discussed as part of the debriefing?
Sustainability Process

- Annual Staff competency training
- Orientation process
- Concurrent daily audits and real-time education
- Continuous physician teaching and re-enforce validation during debriefing process.
PI Overview

- Collect baseline data & identify areas of improvement (start small).
- Recruit RN and Surgeon Champion
- Educate OR nurses and surgeons on CDC wound class definitions.
- Incorporate wound class validation as part of team debriefing process.
- Monitor data for improvement and evaluate PDSA cycles.
- Develop sustainability plan
San Jose Kaiser Team
Thank You
Modesto/Manteca Team!
REFERENCES
