Project JOINTS: Joining Organizations In Tackling SSIs

Kathy Duncan, RN
Faculty, Institute for Healthcare Improvement
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What is Project JOINTS?

- An initiative funded by the federal government to give participants support from IHI in the form of in-person and virtual coaching on how to test, implement and spread the enhanced SSI prevention Bundle comprised of three new Evidence-based Practices as well as the two applicable Surgical Care Improvement Project (SCIP) practices.
- Two cohorts of 5 states with a 6 month intervention period. (May 2011-October 2012)
Initial States Participation

Support & Contributions

- American Academy of Orthopaedic Surgeons (AAOS/Academy)
  - “The JOINTS project is a remarkable endeavor and the Academy looks forward to working with you to accomplish the goal of eliminating preventable SSIs.”

- AORN

- Hospitals already engaged in the “new” interventions.
Project JOINTS

- Offer implementation support to participants on the recommended interventions to reduce prevent hip and knee SSIs
- Build a network of facilities that are working together toward the same aim – literally Joining Organizations IN Tackling SSIs
- Test IHI’s ability to spread evidence-based practice
AAOS Annual Meeting 2013

Award of Excellence at the March American Academy of Orthopaedic Surgeons 2013 Meeting: “Reducing Surgical Site Infections in Total Joint Arthroplasty: It’s a War and not Just One Battle”. Drs Brian Hamlin and Tony DiGioia III.

SSI Prevention For Hip and Knee Arthroplasty

- New Practices:
  - Use of an alcohol-containing antiseptic agent for pre-op skin prep
  - Pre-op bathing or showering with chlorhexidine gluconate (CHG) soap for at least 3 days prior to surgery
  - *Staph aureus* screening and use of intranasal mupirocin and CHG bathing or showering to decolonize *staph aureus* carriers

- Applicable SCIP practices:
  - Appropriate use of prophylactic antibiotics
  - Appropriate hair removal
Use an alcohol-containing antiseptic agent for preoperative skin preparation

Adequate preoperative skin preparation to prevent entry of skin flora into the surgical incision is an important basic infection prevention practice.

Preoperative skin preparation of the operative site involves use of an antiseptic agent with long-acting antimicrobial activity, such as chlorhexidine and iodophors.

Two types of preoperative skin preparations that combine alcohol (which has an immediate and dramatic killing effect on skin bacteria) with long-acting antimicrobial agents appear to be more effective at preventing SSI than povidone-iodine (an iodophor) alone:
- CHG plus alcohol
- Iodophor plus alcohol

Use an alcohol-containing antiseptic agent for preoperative skin preparation

Behavioral Objective: Change the operating room skin prep for hip and knee arthroplasty to a long-acting antiseptic agent in combination with alcohol.

Assess your current process and potential barriers:
- Identify surgeons currently using an alcohol-based skin prep to champion the change in practice with their peers.
- Determine the high-volume surgeons and focus your efforts on working with them.
- Conduct brief interviews with representative surgeons to identify any misconceptions or key barriers to using an alcohol-based skin prep.
- Provide a brief summary of the scientific evidence supporting change to an alcohol-containing skin prep to influence change of habit/tradition.
Changes in Practice

- Ensure the alcohol-based skin prep is applied correctly:
  - Skin prep should be completely dry prior to draping.
  - Cleanse the incision area for 30 seconds and then paint the rest of the extremity.
  - Consider use of a tinted CHG-alcohol prep (orange or teal) for greater visibility.
  - Avoid pooling of the skin prep.

- Incorporate alcohol-based skin prep into the individual surgeons’ preference cards as agreement is reached regarding use of alcohol-based skin prep.

Ask Patients to bathe or shower with CHG soap for at least 3 days prior to surgery

- Studies show that repeated use of CHG soap for bathing or showering results in progressive reductions in bacterial counts on the skin.

- Patients may benefit from bathing or showering with CHG soap for at least 3 days before surgery in order to achieve the most benefit. It is unknown whether using CHG soap for longer time periods (e.g., five days) has additional benefit.

- No clear evidence that CHG bathing reduced the risk of SSI, although most studies used only 1-2 applications of CHG washes.
Ask patients to bathe or shower with chlorehexidine gluconate (CHG) for at least 3 days prior to surgery.

**Behavioral Objective:** Provide patients with chlorhexidine soap, and have them use the soap in bathing or showering for at least three days before surgery.

**Assess your current process and potential barriers:**
- Assess where most preoperative assessments take place
- Assess current preoperative communication between the hospital OR department and the offices of orthopaedic surgeons inside and outside the hospital.
- Tailor the implementation process to your setting
- Develop a process flow diagram to define all components of the process

**Key Concepts to Consider**
- Patients must understand why CHG bathing is important
- Patients need to understand How to do CHG bathing
- Access to CHG for pre-op bathing
- How will we know if CHG baths were completed?
Lessons Learned

- Pre-Op class
  - Weekly, same time, same place
  - Discuss processes
  - Multidisciplinary
  - Education materials
  - (Screening for MSSA and MRSA)

- Education Material
  - What product to use, provide if possible
  - How to use CHG

- Measure: How many patients completed the 3 baths prior to surgery
  - How many patients completed the 3 baths prior to surgery
  - Checklists
  - Admit process/holding area
Screen patients for Staphylococcus aureus (SA) carriage and decolonize carriers with 5 days of intranasal mupirocin and at least 3 days of CHG prior to surgery

- Patients who carry SA in their nares or on their skin are more likely to develop SA SSIs. This is true for methicillin-resistant as well as methicillin-sensitive

- The combination of intranasal mupirocin and CHG bathing or showering eliminates SA, at least temporarily, from the nares and skin, the natural reservoirs where SA is most often carried

- Results of several studies, including studies in orthopedic surgery, suggest that preoperative intranasal mupirocin reduces the risk of SSI for SA carriers.
Screen patients and Decolonize SA carriers w/5 days intranasal mupirocin & 3 days CHG

**Behavioral Objective:** Screen all patients for *Staphylococcus aureus* prior to surgery, allowing enough time for those who screen positive to be decolonized with five days of intranasal mupirocin.

**Assess your current process and potential barriers:**
- Assess where most preoperative assessments take place
- Tailor the intervention to the setting in which preoperative assessment is done
- Work with Lab to assure screening includes both MRSA and MSSA
- Develop a process to assure info on screening and decolonization is available at the time of surgery
- Develop a process flow diagram to define components of the process

**Key Concepts to Consider**
- Assess your current process and potential barriers
- Tailor the intervention to the setting in which the preoperative assessment is done
- Work with your laboratory
  - to ensure screening includes MSSA and MRSA and notification process
  - Understand culture/PCR process, possibilities and barriers
  - (PDSA) follow one class – thru notification process
Key Concepts to Consider

- Develop a process to ensure information on screening and decolonization is available prior to the time of surgery
  - (PDSA) follow one class – thru notification process
  - Test processes to provide mupirocin prescription
  - How do you assess compliance?
- Develop a process flow diagram
  - Define components (from your tests)

For Example: Screening Costs, Adapted process

- COST FOR RAPID MRSA AND MSSA IS $50.33 WITH A TAT OF 75 MINUTES
- COST OF RAPID MRSA ONLY IS $40.24 WITH SAME TAT
- COST OF ROUTINE MRSA AND MSSA CULTURE IS $7.77 WITH A TAT OF 24-48 HOURS
Lessons Learned

- Incorporate screening for SA and prescribing mupirocin into surgeons' preoperative assessment orders
- Build on established preop assessment processes that require patient follow-up/treatment before surgery, such as positive urinalysis/urine culture requiring antibiotic treatment
- If PCR testing is available, assess the feasibility of providing screening results and prescription if needed, at the preop visit
- Create a flag system to be used during surgery for patients testing positive for MRSA to ensure Vancomycin is used preop

PRE-OPERATIVE INSTRUCTIONS FOR PATIENTS TO ERADICATE STAPHYLOCOCCUS AUREUS COLONIZATION

WHY ARE WE CONCERNED ABOUT STAPH ALÆRbüSS BACTERIA?

- Staphylococci are a bacteria that frequently reside on the skin and in the nasal passages. Post-operative infections are commonly caused by this bacteria, and are especially serious when caused by a type of Staph called Methicillin Resistant (MRSA).
- In an effort to reduce your risk of a post-operative infection, you will be screened for the MRSA bacteria.
- In addition, whether you are positive or negative for MRSA, you will be asked to follow the protocol outlined below that will help decrease the concentration of Staphylococci that is present on your body, and will help reduce the risk of post-operative infection.

HOW IS THE STAPH ALÆRbüSS SCREENING DONE?

- Your nose (opening of nostril) will be thoroughly swabbed with a Q-tip type swab. This will be done at the time your surgery is scheduled. We will notify you if you test positive for Staph aureus.

WHAT IS THE PROTOCOL FOR STAPH DECOLONIZATION THAT PATIENTS UNDERGOING joint REPLACEMENT SURGERY WHO TEST POSITIVE NEED TO FOLLOW?

- This involves using an anti-Staph antibiotic ointment called Ecolimen in your nose twice daily, starting 5 days prior to the day of your surgery. Apply a pea-sized amount of ointment to the interior of each nostril and massage gently for one minute. A prescription for this ointment will be called to your pharmacy.
- Shower daily with Hibiclens starting 5 days before your surgery.
- The night before and the morning of your surgery shower with Hibiclens. After each of these showers gently wash your hip or knee for 10 minutes with the sponge side of your scrubber, then rinse all soap off.

WHAT OTHER MEASURES WILL HELP TO PREVENT INFECTION?

- Even before the 5 days leading up to your surgery, personal hygiene is extremely important. Make sure you take daily showers with antibacterial soap, such as Dial. Make sure you wear clean clothes daily, have clean sheets and towels and wash your hands frequently.

HOW IMPORTANT IS THIS?

- Staph infections can be very serious, especially those that are the Methicillin Resistant strain. Studies here
IHI JOINTS SSI Reduction Project 2012 - 2013

SSI Bundle Elements

MSSH using appropriate prep since 2004

Data submitted

Received Exemplar Status

June 2012

Accreditation

Skin antisepsis

MSSH Ortho using CHG prep w/Chlorhex 2012

MSSH Ortho increasing CHG prep ip500mLs

prep June 2012

CHG

Preparation

MSSH Lab performing QI

for MSSA & MSSA

MSSH developing process for &

Revalidation of 4 patients w/25

days Mupirocin

MEGA & MSSA

Testing & Decolonization

MSSH & MSSA implementing process for MSSA & MSSA testing

MSSH Lab developing testing mechanism to perform for MSSA & MSSA

MSSH Lab performing QI for

MSSA & MSSA

Submitted HIE data for

Element II

December 2013

Fiscal Year (FY)

Fiscal Year (FY)

Fiscal Year (FY)

Fiscal Year (FY)

Fiscal Year (FY)

Fiscal Year (FY)
### Screening results - Canton Potsdam

- **2011 Volume = 110**
  - Known MRSA: 2 = 2%
  - MRSA: 3 = 3%
  - MSSA: 16 = 15%
  - Total MRSA & MSSA: 21 = 21%
  - Captured with nasal screen: 19%

- **2013 Volume = 22**
  - Known MRSA: 2 = 10%
  - MSSA: 4 = 18%
  - Total MSSA & MRSA: 6 = 28%
  - Captured with nasal screen: 18%

### Mercy St Joseph's - JOINT PROGRAM

**Infection Rates**
- Goal was to decrease by 50%

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Hip</th>
<th>Total Knee</th>
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<tbody>
<tr>
<td>2010</td>
<td>3.64</td>
<td>4.26</td>
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<tr>
<td>2011</td>
<td>2.19</td>
<td>2.04</td>
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UT Medical Center

Implemented all recommendations of Project JOINTS in Spring/Summer 2011.

Holy Family Memorial-Manitowoc, WI

- Total Joint Patient August 2012 – March 2013
- 156 Patients
- 8/156 – 5.1% - Positive for MRSA
- 34/156 – 21.7% - Positive for SA

- ZERO Hip Infections!
- 0.46 Knee Infection Rate!
Ministry Saint Michael’s

Consistently lower infection rate than national average
No infections since March 2012.
Integration of independent practice group
Recognized as IHI exemplar hospital for all 3 elements

Impact to patients

- Improved patient experience
- Reduced patient recovery time
- Reduced patient charges

Patient Satisfaction

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<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013 (to date)</th>
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<tr>
<td>Score</td>
<td>65%</td>
<td>87%</td>
<td>94%</td>
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Length of Stay

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<th>FY 2012</th>
<th>FY 2013 (to date)</th>
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<tr>
<td>Days</td>
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<td>2.5</td>
<td>1.9</td>
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Patients going directly home

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<th>Year</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013 (to date)</th>
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<tbody>
<tr>
<td>Patients going directly home</td>
<td>71%</td>
<td>79%</td>
<td>88%</td>
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Patient Affordability

Resources – www.ihi.org/projectjoints

Prevent Surgical Site Infection for Hip and Knee Arthroplasty

Among surgical procedures, arthroplasty (hip and knees) surgeries are low-cost, high-volume surgeries targeted for surgical site infection prevention. Infections following this surgery severely impact the patient, those caring for the patient, Treatment often requires additional surgery and hospitalization, prolonged systemic antibiotic therapy, and impaired mobility during treatment. Patients generally require intensive rehabilitation in a skilled nursing facility or at home, where the burden of care, as well as considerable out-of-pocket expenses, falls upon family members.

Key Changes for Improvement

- Use an alcohol-containing antiseptic agent for preparative skin preparation
- Instill povidone-iodine in bath or shower with chlorhexidine gluconate (CHG) soap for at least three days before surgery
- Screen patients for diphtheria tetanus acellular (DTaP) and decontaminate skin carriers with five levels of patient education and training
- This HI HoR Guide contains detailed information on key changes to prevent surgical site infection for hip and knee arthroplasty and measures to guide improvement.
Exemplar Hospitals

Surgery Data Tracker
Resources for you

- Call series
- How-to Guide
- Business case
- Patient instruction sheets and checklists
- Protocols for staff
- Evidence 1-pager
- Over 30 exemplars
- Listserv

Questions?