An Initiative of the Florida Hospital Association
Hospital Improvement Innovation Network

FHA HIIN Infection Prevention Webinar Series:
Surgical Site Infection (SSI) Prevention for Total Joint Replacements

Feb. 19, 2020
Welcome & FHA Mission to Care HIIN Update

Upcoming HIIN Events and Opportunities

FHA HIIN Infection Prevention Webinar Series: “Prevention of Surgical Site Infections in Orthopedic Surgery”

- Linda R. Greene, RN, MPS, CIC, FAPIC, Manager of Infection Prevention, UR Highland Hospital, Rochester, NY

Q&A

Evaluation Survey & Continuing Nursing Education
HIIN Core Topics – Aim is 20% reduction

- Adverse Drug Events (ADE)
- Catheter-associated Urinary Tract Infections (CAUTI)
- Clostridium Difficile Infection (CDI)
- Central line-associated Blood Stream Infections (CLABSI)
- Hospital-onset MRSA Bacteremia
- Injuries from Falls and Immobility
- Pressure Ulcers (PrU)
- Sepsis – Post-Op
- Surgical Site Infections (SSI)
- Venous Thromboembolisms (VTE)
- Ventilator-Associated Events (VAE/IVAC/PVAP)
- Readmissions (12% reduction)
- Worker Safety
HAI Prevention: Resources, Trainings and Tools

- Mission to Care Website
- HRET HIIN Website

Hospital-Acquired Infections topics:

- Change Packages
- Top 10 Checklists
- Toolkits
- Resource Guides
- Event Archives
**Summary of Progress Meeting 20/12 Goal:**

<table>
<thead>
<tr>
<th>PTD Reduction</th>
<th>Most Recent Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>6: 46.2% 20% or greater (12% readmissions)</td>
<td>9: 65.2% 20% or greater (12% readmissions)</td>
</tr>
<tr>
<td>4: 36.8% 15% - 19% (9% - 11% readmissions)</td>
<td>2: 15.4% 15% - 19% (9% - 11% readmissions)</td>
</tr>
<tr>
<td>2: 15.4% 0% - 14% (0% - 8% readmissions)</td>
<td>1: 7.7% 0% - 14% (0% - 8% readmissions)</td>
</tr>
<tr>
<td>1: 7.7% Increase instead of reduction</td>
<td>1: 7.7% Increase instead of reduction</td>
</tr>
<tr>
<td>13 Total Measures</td>
<td>13 Total Measures</td>
</tr>
</tbody>
</table>

**Measure Rates**

<table>
<thead>
<tr>
<th>Project</th>
<th>Measure</th>
<th>Baseline</th>
<th>Project-to-Date: October 2016 to Present</th>
<th>Most Recent 3 Months</th>
<th>Hospital Target</th>
<th>Top 25th Percentile Project to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAUTI</td>
<td>CAUTI - all except NICUs</td>
<td>0.975 1,650 2,116,316 0.803</td>
<td>106 146,977 0.721</td>
<td>0.780 0.30</td>
<td>0.780 0.30</td>
<td></td>
</tr>
<tr>
<td>CAUTI</td>
<td>CAUTI - ICUs except NICUs</td>
<td>1.050 794 974,307 0.815</td>
<td>59 68,141 0.866</td>
<td>0.872 0.32</td>
<td>0.872 0.32</td>
<td></td>
</tr>
<tr>
<td>C.difficile</td>
<td>C. diff Rate Facility-wide all except NICUs (per 10,000)</td>
<td>7.456 5,375 15,087,896 8.894</td>
<td>323 2,162,313 2.779</td>
<td>5,964 1.95</td>
<td>5,964 1.95</td>
<td></td>
</tr>
<tr>
<td>CLABSI</td>
<td>CLABSI - All</td>
<td>0.924 1,119 2,254,410 0.629</td>
<td>94 167,485 0.561</td>
<td>0.759 0.26</td>
<td>0.759 0.26</td>
<td></td>
</tr>
<tr>
<td>CLABSI</td>
<td>CLABSI - ICUs</td>
<td>0.856 529 833,109 0.633</td>
<td>24 60,504 0.397</td>
<td>0.685 0.23</td>
<td>0.685 0.23</td>
<td></td>
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<tr>
<td>MRSA</td>
<td>Hospital-acquired MRSA bacteremia events</td>
<td>0.070 1,030 15,923,830 0.085</td>
<td>75 1,225,555 0.063</td>
<td>0.056 0.02</td>
<td>0.056 0.02</td>
<td></td>
</tr>
<tr>
<td>SSI</td>
<td>SSI rate, colon surgeries*</td>
<td>4.034 1,248 37,165 3.355</td>
<td>65 2,500 2.416</td>
<td>3.227 1.47</td>
<td>3.227 1.47</td>
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<tr>
<td>SSI</td>
<td>SSI rate, abdominal hysterectomy*</td>
<td>1.309 543 30,429 1.127</td>
<td>28 2,908 1.074</td>
<td>1.094 0.00</td>
<td>1.094 0.00</td>
<td></td>
</tr>
<tr>
<td>SSI</td>
<td>SSI rate, knee surgeries*</td>
<td>0.752 362 61,972 0.584</td>
<td>20 4,834 0.414</td>
<td>0.601 0.15</td>
<td>0.601 0.15</td>
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<tr>
<td>SSI</td>
<td>SSI rate, hip surgeries*</td>
<td>1.421 438 46,026 0.932</td>
<td>21 4,001 0.525</td>
<td>1.137 0.23</td>
<td>1.137 0.23</td>
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<tr>
<td>VAE</td>
<td>Ventilator-associated condition rate</td>
<td>6.600 2,866 538,441 5.545</td>
<td>254 47,930 5.299</td>
<td>5.280 0.40</td>
<td>5.280 0.40</td>
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<tr>
<td>VAE</td>
<td>Infection-related ventilator-associated condition rate</td>
<td>2.212 966 533,715 1.810</td>
<td>78 48,043 1.624</td>
<td>1.770 0.00</td>
<td>1.770 0.00</td>
<td></td>
</tr>
<tr>
<td>VAE</td>
<td>Possible ventilator associated pneumonia</td>
<td>0.754 263 372,758 0.759</td>
<td>22 28,837 0.765</td>
<td>0.693 0.00</td>
<td>0.693 0.00</td>
<td></td>
</tr>
</tbody>
</table>
### FHA Results to Date

<table>
<thead>
<tr>
<th>Harm Measure</th>
<th>Baseline Rate per 1000</th>
<th>Target Rate</th>
<th>Project To Date Rate per 1000 Discharge</th>
<th>Harms Prevented</th>
<th>Costs Avoided</th>
<th>Lives Saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAUTI Rate - All Settings</td>
<td>0.74</td>
<td>0.59</td>
<td>0.57</td>
<td>489</td>
<td>$6,751,475</td>
<td>48.9</td>
</tr>
<tr>
<td>CLABSI Rate - All Settings</td>
<td>0.70</td>
<td>0.56</td>
<td>0.47</td>
<td>632</td>
<td>$30,386,776</td>
<td>113.7</td>
</tr>
<tr>
<td>MRSA Rate</td>
<td>0.35</td>
<td>0.31</td>
<td>0.34</td>
<td>30</td>
<td>$506,922</td>
<td>8.1</td>
</tr>
<tr>
<td>SSI Rate, Colon</td>
<td>0.43</td>
<td>0.34</td>
<td>0.42</td>
<td>17</td>
<td>$466,831</td>
<td>0.50</td>
</tr>
<tr>
<td>SSI Rate, Abd</td>
<td>0.12</td>
<td>0.10</td>
<td>0.12</td>
<td>8</td>
<td>$214,282</td>
<td>0.23</td>
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<tr>
<td>SSI Rate, Knee</td>
<td>0.16</td>
<td>0.12</td>
<td>0.13</td>
<td>80</td>
<td>$2,270,885</td>
<td>2.4</td>
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<tr>
<td>SSI Rate, Hip</td>
<td>0.20</td>
<td>0.16</td>
<td>0.15</td>
<td>122</td>
<td>$3,452,090</td>
<td>3.7</td>
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<tr>
<td>Clostridiodides difficile rate</td>
<td>3.56</td>
<td>2.85</td>
<td>1.97</td>
<td>4,473</td>
<td>$77,203,129</td>
<td>286.3</td>
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<tr>
<td>VAC</td>
<td>1.25</td>
<td>1.00</td>
<td>1.03</td>
<td>615</td>
<td>$29,040,492</td>
<td>239.8</td>
</tr>
</tbody>
</table>

Source: HRET Improvement Calculator, effective date February 7, 2020
SSI – Knee Surgeries

Rate per 100

Source: HRET Improvement Calculator, effective date February 7, 2020
SSI – Hip Surgeries

Rate per 100

Source: HRET Improvement Calculator, effective date February 7, 2020
Infection Prevention Virtual Series

**Surgical Infection Prevention Webinar Series:**

- Webinar #1: Pre-operative Strategies for Prevention of SSI
- Webinar #2: Intra-operative Strategies for Prevention of SSI
- Webinar #3: Post-operative Strategies for Prevention of SSI

**2020 IP Webinar Series**

- Waterborne Illness in Hospitals - Prevention, Identification and Management (Jan. 24)
- SSI Prevention for Total Joint Replacements (Feb. 19)
- Why Infection Prevention is Important for Patient Safety (Mar. 10) Click to register

<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHSN: SSI Surveillance Identification and Analysis</td>
<td></td>
</tr>
<tr>
<td>SSI-Colon: How to Assess Root Cause and Prevention Strategies</td>
<td></td>
</tr>
<tr>
<td>NHSN: VAE Surveillance Identification and Analysis</td>
<td></td>
</tr>
<tr>
<td>VAE: How to Assess Root Cause and Prevention Strategies</td>
<td></td>
</tr>
<tr>
<td>NHSN: MRSA Bacteremia Surveillance Identification and Analysis</td>
<td></td>
</tr>
<tr>
<td>MRSA Bacteremia : How to Assess Root Cause and Prevention Strategies</td>
<td></td>
</tr>
<tr>
<td>Implementation of Best Practices for VAE Prevention</td>
<td></td>
</tr>
<tr>
<td>Implementation of Strategies for the Prevention of IVAC/PVAP</td>
<td></td>
</tr>
<tr>
<td>Decreasing Surgical Site Infections in Abdominal Hysterectomy Patients</td>
<td></td>
</tr>
<tr>
<td>Strategies to Prevent Hospital-onset MRSA Bloodstream Infections</td>
<td></td>
</tr>
<tr>
<td>Decreasing Surgical Site Infections in Colon Surgery Patients</td>
<td></td>
</tr>
</tbody>
</table>

*Access Event Archives ([Recordings](#) | [Slides](#)) on the Mission to Care HIIN Website*
In Pursuit of Partnership: Engaging Patients and Families in Hospital Quality and Safety

- **PFE Subject Matter Expert**: Tara Bristol Rouse, MA, CPHQ, CPXP, BCPA
  PFE Project Consultant for the AHA Center for Health Innovation

- **Knowledge, Tools and Resources** to help in effectively and meaningfully engage patients and families in your work to reduce harm and build a culture of safety

- **Coaching & Support** will provide an opportunity for hospitals to address localized questions

- **Virtual Events & Office Hours (10:30 – 11:30 am ET):**
  - Jan. 24 [Virtual Event 1: The Role of Patients and Families in Promoting Hospital Quality and Safety](#)
  - Feb. 7 [Office Hours 1](#)
  - Feb. 14 [Virtual Event 2: Selecting, Orienting and Engaging Patient and Family Partners](#)
  - Feb. 28 [Office Hours 2](#)
  - Mar. 6 [Virtual Event 3: Training and Supporting Providers for Successful PFE](#)
  - Mar. 20 [Office Hours 3](#)
  - Mar. 27 [Virtual Event 4: Sustaining Meaningful Partnerships](#)
The Workforce Resilience Webinar Series is a 12-month series will be led by well-known health care workforce resilience expert Bryan Sexton, PhD, Associate Professor and Director of the Duke Center for Healthcare Safety & Quality at Duke University Health System. The program will provide evidence-based burnout solutions, including skills and tools, to enhance caregiver resilience. The program is offered FREE of charge to FHA members thanks to the generous sponsorship of the Memorial Healthcare System.

Information and registration are available at www.fha.org/education. For questions or assistance, contact the FHA Education Department at education@FHA.org.
Patient Safety Awareness Week: March 8-14, 2020

Plan Your Week! Download a print-ready poster, table tent and stickers, as well as graphics to use on social media.

SAVE THE DATE!
Free IHI Patient Safety Awareness Week Webcast

Principles for Improving Patient Safety Measurement
March 10
12 Noon – 1:00 p.m. ET
Sign up to be notified when registration opens.
Upcoming Virtual Events

- Feb. 28 (10:30-11:30 am ET) – PFE Office Hours 2
- Mar. 4 (12-1 pm ET) – FHA Monthly Quality Hot Topics
- Mar. 6 (10:30-11:30 am ET) – PFE Virtual Event 3: Training and Supporting Providers for Successful Patient and Family Engagement
- Mar. 10 (1-2 pm ET) – IP Webinar Series: Why Infection Prevention is Important for Patient Safety
- Mar. 17 (2-3 pm ET) – Readmissions Reboot Session 5
- Mar. 18 (2-3 pm ET) – Workforce Resilience Series Webinar 3 | Enhancing Resilience: The Science & Practice of Gratitude
- Mar. 20 (10:30-11:30 am ET) – PFE Office Hours 3
- Mar. 27 (10:30-11:30 am ET) – PFE Virtual Event 4: Sustaining Meaningful Partnerships

Check your HIIN Mission to Care Newsletter Weekly Email for more event details and registration
Prevention of Surgical Site Infections in Orthopedic Surgery

Linda R. Greene, RN, MPS,CIC,FAPIC
Manager, Infection Prevention
UR Highland Hospital
Rochester, NY
linda_greene@urmc.rochester.edu
Objectives

- Discuss the impact of surgical site infections (SSIs) in orthopedic surgery
- Explain the etiology of SSIs in Joint replacements
- Describe strategies to reduce SSIs
Polling Question

What is your background?

1. Infection Prevention
2. OR Nurse
3. Staff nurse
4. Management
5. Quality/Patient safety
Current Status

The number of total joint arthroplasties performed continues to increase each year.

Generally these procedures result in functional improvement for the patient and improvement in overall quality of life and pain relief.

In the United States, the most commonly performed arthroplasty is a total knee arthroplasty (TKA), followed by total hip arthroplasty (THA). More than 1 million of these combined are done annually in the United States.

A majority of arthroplasties currently performed are due to osteoarthritis complications.

However, these surgeries are not without risk of serious infectious complications.
Burden

- Annual cost of infected revisions to US hospitals increased from $320 million to $566 million in 2010

- Projected to exceed $1.62 billion by 2020.
Estimated Rate of Infection

- **Incidence.**
  - SSIs after primary Total Joint Arthroplasty (TJA) has been estimated to range from 0.2% to 2%.
  - Revision **arthroplasty** procedures have been associated with significantly higher infection rates.
  - Revision **total knee arthroplasty** (TKA) SSI rates up to 5%
Estimated Number of Infections

Etiology

- The pathogenesis of infection associated with a prosthetic joint involves interactions among the implant, the host’s immune system, and the involved microorganism or microorganisms.

- Prosthetic joints can become infected either by locally introduced contamination or hematogenous spread of microorganisms.
Local Contamination

Occurs as a result of contamination at the time of surgery

**Exogenous:**
- Hand carriage
- Environment
- Any contamination near the wound site

A very small inoculum can cause infection
Local Contamination

Endogenous

Patient’s own skin flora

Infection near an adjacent site
Hematogenous Seeding

- Hematogenous spread of microorganisms
- Event typically happens following the perioperative period
- Associated with primary bacteremia or infection at a distant site with secondary bacteremia, leading to microbial seeding of the prosthetic joint.
Seeding of Implants from remote sites can occur at any time.
Hand Contamination of Anesthesia Providers Is an Important Risk Factor for Intraoperative Bacterial Transmission

Loftus, Randy W. MD*; Muffy, Matthew K. MD*; Brown, Jeremiah R. PhD, MS*; Beach, Michael L. MD, PhD*; Koff, Matthew D. MD*; Corwin, Howard L. MD*; Surgenor, Stephen D. MD*; Kirkland, Kathryn B. MD*; Yeager, Mark P. MD*

doi: 10.1213/ANE.0b013e3181e7ce18
Patient Safety: Research Reports

Bacterial transmission to Anesthesia machine in 80% of cases
Where are the Pathogens?

Pathogen source for most SSIs is endogenous flora of the patient’s skin, mucous membranes or GI tract.

20% of the skin’s pathogens live beneath the epidermal layer in hair follicles and sebaceous glands.

Any incision can carry some of the bacteria directly to the operative site.
<table>
<thead>
<tr>
<th>Presentation</th>
<th>Time Frame</th>
<th>Common Organism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Infection</td>
<td>&lt; 3 mo.</td>
<td>Aerobic gram-negative Bacilli, beta-hemolytic Streptococcus, Staph aureus</td>
</tr>
<tr>
<td>Delayed infection</td>
<td>3 mo. – 1 year</td>
<td>Coagulase-negative Staphylococcus, Propionibacterium acnes Enterococci</td>
</tr>
<tr>
<td>Late infection</td>
<td>1-2 years</td>
<td>Staphylococcus aureus coagulase-negative Staphylococcus, Viridans streptococcus, Enterococci</td>
</tr>
</tbody>
</table>
Role of Biofilm
Role of Biofilm

Biofilm

Bacteria adhere to surface of objects

Become sticky and more bacteria adhere

Forms dense matrix

Antibiotics can't penetrate it

White blood cells of the immune system can't reach it
Complications. Each prosthetic revision increases the chance of subsequent sepsis and generally increases bone loss. Prosthetic joint infections are both costly and disabling, usually requiring:

1. Debridement and retention – implant is left in place.

2. One stage exchange – removal and replacement (appropriate in select circumstances)

3. Two stage exchange – removal of implant, spacer and subsequent placement of new prosthesis implant removal without replacement

4. Suppressive antibiotic therapy
Osteomyelitis

A and B
Most common hematogenous seeding

C and D
Direct Fx.
And Joint Replace
Consensus Document

Proceedings of the International Consensus Meeting on Prosthetic Joint Infection 2018

Introduction: Proceedings of International Consensus on Orthopedic Infections
Javad Parvizi, Thorsten Gehrke, Michael A. Mont, John J. Callaghan
Vol. 34, Issue 2
Published online: October 18, 2018
Full-Text HTML | PDF | Supplemental Materials

https://www.arthroplastyjournal.org/prosthetic-joint-infection
Glucose Control

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5339317/
Skin Cleansing

Recommendation (Joint Consensus)

Repeat skin cleansing following placement of surgical drapes

May reduce bacterial colonization and the incidence of subsequent superficial SSIs.

Level of Evidence - Low
Basic Practices

- Maintain intra-operative temp > 35.5
- Use an alcohol containing skin prep unless contraindicated
- Use a surgical safety checklist
- Maintain post-operative blood glucose \( \leq 180 \) mg/dL.
  Non-cardiac procedures (Moderate)

Treating MRSA Colonization

What methods for MRSA/MSSA decolonization exist? What are the benefits and risks associated with the use of each?

Recommendation:

Methods of nasal decolonization include 2% of mupirocin ointment, 5% of povidone-iodine solution, alcohol-based products, and chlorhexidine-based products.

Each method has its own advantages and disadvantages related to proven effectiveness, potential for emergence of bacterial resistance, and patient compliance.

However, no consensus has been reached on the preferred method for decolonization for MRSA, with all products having a potential role.
Do you routinely screen preoperatively?

1. MRSA
2. MRSA and MSSA
3. Only high-risk patients
4. No screening
Surgical Technique

- Surgical technique involves
  - handling tissue
  - applying hemostasis
  - maintaining blood supply
  - using surgical instruments
  - approximating tissue
  - performing efficiently
Surgical Technique

- May have to look beyond the bundle
- Sterile fluids
- Soaking
- Wound closure technique
- Intraoperative management
Consensus Document

The number of individuals in the operating room (OR) and door openings (DO) during total joint arthroplasty (TJA) are correlated to the number of airborne particles in the OR.

- Elevated airborne particles in the OR can predispose to subsequent peri prosthetic joint infections (PJIs)
- Operating Room Traffic should:
  - Be kept to a minimum.
  - Level of Evidence: Moderate
  - Delegate Vote: Agree: 98%,
  - Strongest Consensus
Findings show relationship between door openings and OR pressure during joint arthroplasty


December 21, 2015

- Doors open average of 9.5 minutes per case
- Loss of positive pressure
- 77 of 191 cases had doors open long enough to defeat positive pressure
Enhancing air quality by reducing airborne contamination has been shown to be of great importance, especially in relation to implant surgery. Suggested levels be maintained at <10 CFU/m during implant surgery, and that clinical benefits can be expected by reducing it to 1 CFU/m. Very low levels of clinically relevant coagulase-negative staphyloccoci can initiate a device-related infection.
### Traffic Flow

#### Table 3.
Reasons for traffic flow

<table>
<thead>
<tr>
<th>Necessary door openings*</th>
<th>n</th>
<th>Semi-necessary door openings</th>
<th>n</th>
<th>Unnecessary door openings</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert consultations (eg, help needed from senior surgeons, expert nurses, or anesthesiologists)</td>
<td>40</td>
<td>Surgical team members entering after incision or leaving before closure</td>
<td>76</td>
<td>Logistic reasons planning next or other operation</td>
<td>30</td>
</tr>
<tr>
<td>Instruments or other material needed</td>
<td>137</td>
<td>Lunch and coffee breaks</td>
<td>108</td>
<td>Social visits</td>
<td>45</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No detectable reasons</td>
<td>93</td>
</tr>
<tr>
<td>Total</td>
<td>177</td>
<td></td>
<td>184</td>
<td></td>
<td>168</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>529</td>
</tr>
</tbody>
</table>

* The need assessed in relation to patient safety and ongoing procedure.
Strategies
Instrumentation

• Preparation for decontamination of instruments should begin at the point of use

• During the procedure, the scrub person should remove gross soil from instruments by wiping the surfaces with a sterile surgical sponge moistened with sterile water

Every case, Every patient, Every time?
Pre Cleaning of Instruments

- Issues with bioburden
- Must be cleaned or wiped down at point of use
- Instruments must be kept moist
- Hinged instruments kept open
Sudden increase in surgical site infection rate following 'clean' surgery.
- 15 orthopedic patients following metal insertion
- 5 ophthalmology patients who developed endophthalmitis

Findings:
- Lapses in sterilization
- Lack of pre-cleaning by OR staff

Conclusions:
- Collaboration
- Cooperation
- Standardization
Environmental and Instrument Cleaning

1. Review of terminal cleaning with EVS
2. Delineation of cleaning procedures
3. Pre-cleaning procedure - OR Staff
# Standards

## Operating Room and Sub-Sterile Room Cleaning Standards – Turnover and Terminal Cleaning/ OR Staff

<table>
<thead>
<tr>
<th>WHEN TO CLEAN</th>
<th>WHO CLEANS</th>
<th>TYPE OF CLEANER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bovie</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Neptines</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Microscopes</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Lasers</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Light sources</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>DaVinci</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Computer accessories</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>OR bed attachments</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Positioning devices</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Patient transfer devices</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Remote controls</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Patient table straps</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
</tbody>
</table>

## Operating Room Cleaning Standards – Turnover Cleaning/ OR Staff

<table>
<thead>
<tr>
<th>WHEN TO CLEAN</th>
<th>WHO CLEANS</th>
<th>TYPE OF CLEANER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back Tables</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Floor</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Foot pedals</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Kickbuckets and stands</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Linen hampers</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Mayo stands</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>OR lights</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>OR, patient table</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Ring stand</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Sitting stools</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Standing stools</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Suction stands/equipment</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
<tr>
<td>Trash stands</td>
<td>OR Staff</td>
<td>Hospital Approved Disinfectant</td>
</tr>
</tbody>
</table>
## Enhanced Monitoring Techniques

<table>
<thead>
<tr>
<th>Method</th>
<th>Ease of use</th>
<th>Identifies pathogens</th>
<th>Useful for individual teaching</th>
<th>Directly evaluates cleaning</th>
<th>Published use in programatic improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covert practice observation</td>
<td>Low</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>1 hospital</td>
</tr>
<tr>
<td>Swab cultures</td>
<td>High</td>
<td>Yes</td>
<td>Not studied</td>
<td>Potentially</td>
<td>1 hospital</td>
</tr>
<tr>
<td>Agar slide cultures</td>
<td>Good</td>
<td>Limited</td>
<td>Not studied</td>
<td>Potentially</td>
<td>1 hospital</td>
</tr>
<tr>
<td>Fluorescent gel</td>
<td>High</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>49 hospitals</td>
</tr>
<tr>
<td>ATP system</td>
<td>High</td>
<td>No</td>
<td>Yes</td>
<td>Potentially</td>
<td>2 hospitals</td>
</tr>
</tbody>
</table>

Tools

ATP

Fluorescent Marker
<table>
<thead>
<tr>
<th>OR SUITES</th>
<th>OR 1</th>
<th>OR 2</th>
<th>OR 3</th>
<th>OR 4</th>
<th>OR 5</th>
<th>OR 6</th>
<th>OR 7</th>
<th>OR 8</th>
<th>OR 9</th>
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</thead>
<tbody>
<tr>
<td>ATP in the operating room suites - Passing score is 250</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>EVS Terminal Clean</td>
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<tr>
<td>ROOMS:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Bed Rails</td>
<td>68</td>
<td>73</td>
<td>27</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pt. Bed Strap</td>
<td>31</td>
<td>NA</td>
<td>348</td>
<td>17</td>
<td></td>
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<td></td>
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<tr>
<td>Pt. Bed Control</td>
<td>50</td>
<td>150</td>
<td>118</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>OR light handles</td>
<td>13</td>
<td>289</td>
<td>16</td>
<td>30</td>
<td>44</td>
<td>64</td>
<td>44</td>
<td>77</td>
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<tr>
<td>Door handles to core</td>
<td>139</td>
<td>3031</td>
<td>274</td>
<td>69</td>
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<tr>
<td>DATE:</td>
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</tr>
<tr>
<td>OR Staff Clean</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bovie</td>
<td>1358</td>
<td>1448</td>
<td>646</td>
<td>290</td>
<td>917</td>
<td>102,466</td>
<td>526</td>
<td>511</td>
<td>108</td>
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<tr>
<td>Light Source</td>
<td>121</td>
<td>NA</td>
<td>48</td>
<td>NA</td>
<td>310</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microscope Handles</td>
<td>911</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neptune</td>
<td>253</td>
<td>299</td>
<td>788</td>
<td>1028</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Computer Keyboard</td>
<td>1815</td>
<td>106</td>
<td>363</td>
<td>1192</td>
<td></td>
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</tbody>
</table>
Post-operative wound care

Principles

- Regardless of the mechanism of wound healing, the aims of post-operative wound care remain the same: to allow the wound to heal rapidly without complications, and with the best functional results.

- Wounds intended to be healed by primary healing should, in particular, have their wound edges well approximated.

- In the initial phases of healing, there is only minimal tensile strength in the wound as remodeling of the collagen fibers has not occurred.

- As such, additional support in the form of sutures, staples or tapes is required until full remodeling and epithelialization occurs.
Orthopedic consensus document identifies no increased risk in drains left in for 48 hours or less.

A prospective investigation was performed to determine when to remove a suction drain following total knee arthroplasty (TKA).

Forty-one TKAs were randomly allocated to closed suction drainage for either 24 or 48 hours.

The drain was removed and the tip was cut off and processed by a method giving quantitative cultures.

In the 48-hour group, 85% of the total volume was drained during the first 24 hours.

During the following 24-hour period, a mean volume of only 50 ml was drained. No organism was isolated from cultures of drain tips sampled at 24 hours.

48 hours, 25% of the drain tips yielded light growths of coagulase-negative staphylococci (four drain tips) and Staphylococcus aureus (one drain tip).

Clinical evaluations of wound healing were comparable in the two groups. **Conclusion: nothing is to be gained by continuing drainage beyond 24 hours. If drainage is maintained for longer periods, there is an increased risk of contamination by bacteria.**
Persistent wound drainage after total joint arthroplasty is defined as continued drainage from the surgical incision for greater than 72 hours, as this standard allows for earlier intervention and may thus limit adverse consequences.

Persistent drainage is an important sign that a surgical wound may become problematic.

Postoperative incisional drainage occurs in 1%-10% of patients undergoing primary total joint arthroplasty.

Procrastination of wound drainage and malnutrition affect the outcome of joint arthroplasty.
Patient / Family Education

How well do we educate patients and families?

- Hand hygiene
- Wound care
- Washing and Showering
- Keeping a clean environment
- Remote infections - treat promptly
Timeline

2018Q3
Trend Increase Identified: Talks at CSQC

Nov. 18
Bundle Compliance Evaluated

April 19:
Kickoff ORTHO SSI Reduction Initiative

June 2019:
CHG Chin to Toe OR Consultants

Nov. ’18
Evaluation of Surgical Prophylaxis

March 2019:
Updated Surgical Prophylaxis Guidelines

May 19:
Standardized Skin Prep Process
Clipping outside OR (Knees)
OR Process Improvements
SPD Process Improvements
Daily Huddles
OR Observations

July 19
Oral CHG

Oct: Target:
• MRSA / MSSA Screening
• Continuous Air / Surface Disinfection
## Example Status Report

<table>
<thead>
<tr>
<th>4/5/2019 Start of Project</th>
<th>Not Started</th>
<th>In Progress</th>
<th>Finished</th>
<th>Goals:</th>
<th>Assignment for next meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opportunities for improvement listed by phases of care:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sterile Processing Dept.:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tracking of instrument tray</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Focus on process issues</td>
</tr>
<tr>
<td>Nurse Navigator Care:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunocompromised pa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Individualized care for this patient population.</td>
</tr>
<tr>
<td>Greater risk of infection.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Barb to look into this. Do we need to produce a Guideline?</td>
</tr>
<tr>
<td>care individualized?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pt optimization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-surgical Screening</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CHG education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Directions currently distributed not in compliance</td>
</tr>
<tr>
<td>Decolonization protocol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓ Current instructions and report back to committee</td>
</tr>
<tr>
<td>Allergy Testing for pt with PCN allergy-J. Ginnetti</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pts were to be sent to immunology for testing to verify allergy.</td>
</tr>
<tr>
<td>DOS Pre-op area:</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Vancomycin administration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓ Compliance with policy</td>
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<tr>
<td>CHG bath</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>All Ortho population have a CHG Bath in SDSU</td>
</tr>
<tr>
<td>Nasal Swabs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓ IP to obtain best product and recommend changes based EBP</td>
</tr>
<tr>
<td>Operating R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Traffic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reduce or eliminate OR traffic esp. with open wound</td>
</tr>
<tr>
<td>Skin Prep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Existing signs, are they working? Culture change?</td>
</tr>
<tr>
<td>Irrigations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td># of skin prep sticks Standardize technique</td>
</tr>
<tr>
<td>Intraop injections (bupiv, Epi, ketorolac)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Best practice-Check with Pharmacy</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Create Flow Chart</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Create Flow Chart</td>
</tr>
</tbody>
</table>


SSI Drill Down

Name: __________________  Med Record Nbr: ___________  DOB: ___________

Admit Date: ___________  Location: ___________  □ Male  □ Female

Date of Operation: ___________  Surgery Start: ___________  Surgery End: ___________  Or Room ___________

Surgeon Code: ___________  Service: ___________  Skin Prep:  □ CHG  □ Povidone Iodine  □ Chloraprep (CHG & Alcohol)  □ DuraPrep (Povidone & Alcohol)  □ Alcohol  □ Other ___________

Operation: ___________________________________________________________________________________________

ASA: ___________  Wound Class: ___________

Infection present at time of surgery?  □ Yes  □ No

Comments: ___________________________________________________________________________________________

Preop Nasal Povidone: □ Yes  □ No  □ Not documented

Hair removal: □ None  □ Clipped  □ Shaved in OR  □ Shaved before OR  □ Depilatory

Abx prophylaxis: □ Yes  □ No  □ Not documented

Abx: ___________________________________________________________________________________________

Abx Start  Abx Redose Time

_________________________________________________________________________________________

Abx Duration: □ Pre-op only  □ Pre and post-op ≤ 24h  □ More than 24h post-op

Minimum Temp: ___________  □ Not recorded  O, Sat Min: ___________

Glucose checked: □ Yes  □ No  □ Not documented  □ Indeterminant

Glucose Max (24h) ___________

Immediate Use or Flash Sterilization: □ Yes  □ No  □ Not documented  □ Indeterminant

BMI: ___________

Infection Details:  Surgical Wound Infection Type: □ SI  □ DI  □ OS

Onset: _______________  Symptoms: ____________________________________________________________________

Severity: _______________  _____________________________

Culture Date  Site  Organism  Resistance

_______________________________________________________________________________________________

Notes: ___________________________________________________________________________________________
Questions
Eligibility for Nursing CEU requires submission of an evaluation survey for each participant requesting continuing education: https://www.surveymonkey.com/r/IP02192020

- Share this link with others on your team if viewing today’s webinar as a group (Survey closes Feb. 29, 2020)
- Be sure to include your contact information and Florida nursing license number
- FHA will report 1.0 credit hour to CE Broker and a certificate will be sent via e-mail (Please allow at least 2 weeks after the survey closes)
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