Agenda

• Welcome & FHA Mission to Care HIIN Overview
  – Cheryl Love, RN, BSN, BS-HCA, MBA, LHRM, CPHRM, Director of Quality and Patient Safety and Improvement Advisor, FHA

• Surgical Infection Prevention Series: Infection Prevention Strategies in the Post-operative Period
  – Linda R. Greene, RN, MPS, CIC, FAPIC, Manager of Infection Prevention, UR Highland Hospital, Rochester, NY

• Q&A

• Upcoming HIIN Events and Opportunities

• 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
- Surgical Site Infections (SSI)
- Venous Thromboembolisms (VTE)
- Ventilator-Associated Events (VAE/IVAC/PVAP)
- Readmissions (12% reduction)
- Worker Safety
SSI Resources, Trainings and Tools

- Mission to Care Website
- HRET HIIN Website
- SSI Change Package
- SSI Top 10 Checklist
- SSI-Colon Prevention Resource Guide
- SOAP UP Resources
- Watch Past Webinars
- HRET HIIN Resource Library
- SSI Podcast Series
- Case Review Templates, Guidelines and more...

Hospital-Acquired Infections (HAIs)

Surgical Site Infection (SSI)
Surgical site infections are infections that occur in the wound created by an invasive surgical procedure.

The HIIN is focused on reducing SSI from:
- Colon surgery
- Abdominal hysterectomies
- Knee replacement
- Hip replacement

Goal: By September 27, 2018, a 20 percent reduction in SSI

Resources to prevent SSI:
- SSI Change Package
- SSI Checklist
- Watch Past Virtual Trainings
- HRET HIIN Resource Library
- Success Stories
- SOAP UP
Designed to reduce multiple forms of harm with simple, easy-to-accomplish activities that cut across several topics to decrease harm.

Focused on four components:

• **SOAP UP**: Hardwire Hand Hygiene
• **GET UP**: Mobilize Patients
• **WAKE UP**: Prevent Over-sedation
• **SCRIPT UP**: Optimize Inpatient Medications
FHA Mission to Care Update:
SSI Colon Rates

Source: HRET Comprehensive Data System, June 20, 2019

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Source: HRET Comprehensive Data System, June 20, 2019
FHA Mission to Care Update:
SSI Hysterectomy Rates

Source: HRET Comprehensive Data System, June 20, 2019

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FHA Mission to Care Update:
SSI Knee Rates

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FHA Mission to Care Update: SSI Hip Rates

Source: HRET Comprehensive Data System, June 20, 2019

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### Infection Prevention and NHSN Virtual Series

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*Access Event Archives (Recordings | Slides) on the Mission to Care HIIN Website*
Surgical Infection Prevention (SIP) Webinar Series

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*Access Event Archives ([Recordings](#) | [Slides](#)) on the Mission to Care HIIN Website
Surgical Infection Prevention; The Post-operative Period

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

- Identify specific risks during the post-operative period
- Discuss recent literature linked to risk reduction
- Identify strategies to reduce risks
Polling Question 1

What is your background?

1. Infection Prevention
2. Quality or patient safety
3. Management
4. OR nurse
5. Other
Surgical Risks

Most Common Complications during surgery:

- Surgical site infection
- Postoperative sepsis
- Thromboembolic complications
- Cardiovascular
- Respiratory (pneumonia)
The Post-Operative period

Variables that affect risk of SSI:

- Glucose Control
- Drains, Tubes, etc.
- Cleanliness of the environment
- Patient education
The Role of Postoperative Factors in Surgical Site Infections: Time to Take Notice

Farrin A. Manian

Department of Medicine, Harvard Medical School, Massachusetts General Hospital, Boston

Surgical site infections (SSIs) continue to occur, in many instances despite high compliance with best practice measures primarily revolving around pre- and intraoperative periods. Postoperative factors have traditionally been considered to play a relatively minor role in the causation of SSIs. An increasing body of evidence, however, suggests that many SSIs occur as a result of pathogens gaining access to surgical wounds either hematogenously, through drains, or through slowly healing wounds due to systemic anticoagulation or other factors, particularly in the setting of high compliance with standard perioperative antibiotic prophylaxis. Evidence also supports frequent acquisition of methicillin-resistant *Staphylococcus aureus* (MRSA) during the postoperative period. These findings, coupled with lack of clear efficacy of various pre- and intraoperative interventions such as MRSA decolonization and use of vancomycin for prophylaxis against this organism, should force us to consider the important role that postoperative factors may play in the causation of SSIs in the current era.

Manian *CID* 2014:59 (Nov)
Considerations

- SSIs occur even when intraoperative evidence based practices are implemented consistently.
- Pathogens can access sites through the hematogenous route even when evidence based practices are implemented consistently.
- Interplay of pre-op, intraop and post-operative factors i.e. patients at risk or colonized with MDROs may be a risk in the post-operative period due to slower wound healing, use of drains and transfer to other healthcare facilities.
Selected Reports of Postoperative Factors Associated with SSIs

- Wound related- oozing, drains, hematoma, staples
- Anticoagulation
- Patient related – BSI, Resp
- Antibiotic prophylaxis > 24 hours post op (MDROS)
- Healthcare setting
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.
Leading SSI Pathogens

Gram Positive Bacteria
- MRSA
- MSSA
- Coag. Negative Staph
- Enterococci
- Streptococci Species

Gram Negative Bacteria
- Enterobacter
- Pseudomonas
- Ecoli
- Other Bacteria
- Anaerobic Bacteria
- Fungi

Phases of wound healing

Wound healing has classically been described to occur in three phases, regardless of the mechanism:

1. Inflammatory
2. Proliferative
3. Remodeling phases.
Inflammatory Phase

- The inflammatory phase is the body’s natural response to injury and takes place immediately after the wound is formed.

- The wounding triggers a localized release of inflammatory mediators that encourage vasodilation. Increased blood flow to the region then results in an influx of phagocytic leucocytes, such as neutrophils and macrophages, which play a key part in digesting bacteria.

- The inflammatory phase of wound healing is responsible for the classical signs of inflammation that occur in response to an injury: erythema, heat, edema, pain and decreased function.
Proliferative Phase

- The wound starts to rebuild itself in the proliferative phase.
- Granulation tissue, comprising collagen and extracellular matrix, fills the wound defect and angiogenesis also occurs.
- Eventually, complete epithelialization happens, with epithelial cells fully resurfacing the wound.
Remodeling

- The final stage of wound healing is remodeling, which occurs once the wound is closed.
- In this phase, the wound regains its tensile strength as the collagen fibers within the wound remodel and reorganize themselves.
- During this phase, the wound begins to return to its original state of blood supply.
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.
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.
Wound Drainage

- 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.
Seeding of Implants from remote sites can occur at any time
Etiology

Exogenous sources:

- Hands of care givers- (Included post-operative)
- Contaminated environment
- Dressing care
Reviewing what we know

- Most infections (but not all) are seeded at the time of surgery
- First 24-48 hours are vulnerable times
- Importance of patient and family education
Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, 2017

Sandra I. Berrios-Torres, MD; Craig A. Umscheid, MD, MSCE; Dale W. Bratzler, DO, MPH; Brian Leas, MA, MS; Erin C. Stone, MA; Rachel R. Kelz, MD, MSCE; Caroline E. Reinke, MD, MSHP; Sherry Morgan, RN, MLS, PhD; Joseph S. Solomkin, MD; John E. Mazuski, MD, PhD; E. Patchen Dellinger, MD; Kamal M. F. Itani, MD; Ellie F. Berbari, MD; John Segreti, MD; Javad Parviz, MD; Joan Blanchard, MSS, BSN, RN, CNOR, CIC; George Allen, PhD, CIC, CNOR; Jan A. J. W. Kluytmans, MD; Rodney Donlan, PhD; William P. Schecter, MD; for the Healthcare Infection Control Practices Advisory Committee

**Importance** The human and financial costs of treating surgical site infections (SSIs) are increasing. The number of surgical procedures performed in the United States continues to rise, and surgical patients are initially seen with increasingly complex comorbidities. It is estimated that approximately half of SSIs are deemed preventable using evidence-based strategies.
Where is SSI risk incurred?

SSI risk is incurred

- Through patient health factors
- Intra-operative period
- After surgery, during hospital recovery care
- After surgery, during recovery at home
- After surgery, during skilled nursing care
Post-operative Strategies

- Observe and review practices in the post anesthesia care unit, surgical intensive care unit, and/or surgical ward (quality of evidence: II).
  - a. Perform direct observation audits of hand hygiene practices among all personnel with direct patient contact.
  - b. Evaluate wound care practices.
  - d. Provide feedback and review infection control measures with staff in these postoperative care settings.

Anderson et.al *ICHE* 2014 Strategies for Prevention of SSI
ERAS
Are there gaps between policy and practice?
Process

Do you monitor hand hygiene in PACU?

1. Yes
2. No
## Tools

**Standard Precautions: Observation of Hand Hygiene**

**Provision of Supplies**

**PACU-1**

*Instructions:* Observe patient care areas or areas outside of patient rooms. For each category, record the observation. In the column on the right, sum (across) the total number of “Yes” and the total number of observations (“Yes” + “No”). Sum all categories (down) for overall performance.

<table>
<thead>
<tr>
<th>Standard Precautions: Observation Categories</th>
<th>Room 1</th>
<th>Room 2</th>
<th>Room 3</th>
<th>Room 4</th>
<th>Room 5</th>
<th>Summary of Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Are functioning sinks readily accessible in the patient care area?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2 Are all handwashing supplies, such as soap and paper towels, available?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>3 Is the sink area clean and dry?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4 Are any clean patient care supplies on the counter within a splash-zone of the sink?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>5 Are signs promoting hand hygiene displayed in the area?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>6 Are alcohol dispensers readily accessible?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>7 Are alcohol dispensers filled and working properly?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Total YES and TOTAL OBSERVED**
Bundles

PACU

1. Glucose Control
   - Maintain glucose per HighlandHospitalClinicalPracticeGuideline-Perioperative GlucoseControl Guidelines

2. Temperature
   - Maintain perioperative normothermia (≥ 35.5°C)
Bundles

Postoperative

1. Order sets
   ◦ Use standardized post-op physician order sets, when available.

2. Dressing and Wound Care
   ◦ Consult a wound ostomy nurse for complicated wound management, such as use of vacuum dressing.
   ◦ Use appropriate hand hygiene.

3. Antibiotics
   ◦ Discontinue prophylactic antimicrobial agent within 24 hours of surgery.

4. Glucose Control
   ◦ Initiate InpatientDiabetesManagement Protocol
   ◦ Maintain glucose for non-diabetics patients, who were eligible for the HighlandHospitalClinical Practice Guideline—Perioperative GlucoseControlGuidelines, at ≤ 180 mg/dl

5. Hand Hygiene
   ◦ Provide education about hand hygiene.
   ◦ Provide hand sanitizing agents to patient.
6. **Education**
   - At discharge, provide education on wound care and how to recognize the symptoms of infection.
   - Emphasize importance of informing healthcare providers if these signs and symptoms develop.

7. **Removal of items intentionally left in patient**
   - Remove all packing, drains, etc. prior to discharge whenever possible.
   - Include plan for removal of items intentionally left behind – before patient leaves hospital, schedule appointment with provider who will remove them.

8. **Post-op Follow Up**
   - Follow-up phone call to patients within three days after discharge from the hospital.
   - Follow-up appointment with provider as needed.

9. **System/Process**
   - Regularly audit compliance with measurable elements of SSI bundle and SSI Rates.
Post-op Environment

- Pathogen able to survive for prolonged periods of time on environmental surfaces (all pathogens)
- Ability to remain virulent after environmental exposure (all)
- Contamination of the hospital environment frequent (all)
- Ability to colonize patients (Acinetobacter, C difficile, MRSA, VRE)
- Ability to transiently colonize the hands of health care workers (all)
- Transmission via the contaminated hands of healthcare workers (all)
- Small inoculating dose (C difficile, norovirus)
- Relative resistance to disinfectants used on environmental surfaces
- (C difficile, norovirus)

Weber DJ, et al. AJIC 2010
Patient / Family Education

How well do we educate patients and families?

Hand hygiene

Wound care

Washing and Showering

Keeping a clean environment
Other Information

- Do patients know what to look for post-operatively?
- Does the patient have an advocate?
- Do we do follow up phone calls?
- Do we advise patients regarding clean sheets, clothing etc.
- Do we stress the importance of follow-up
Discharge Instructions

- Large Font
- Clear Print
- Ask Questions
- Repeat back
Examples

- Patient stories
- Items from home (back braces, etc.)
- Best practices for follow-up - navigators
- Pictures
What about LTC and Rehab?

Engaging Skilled Nursing

Challenges:

- Hospital manpower is for hospital facilities
- Hospital IP has no authority over SNF
- SNF has proprietary & confidentiality interests
Rehab and LTC

- Evaluate readmissions from other facilities
- Do these facilities know post-op protocols?

Is there an opportunity to provide education to these facilities?

Partnerships

Examples
Conclusions

- The Post-operative period presents risks and challenges
- Many of these challenges may be beyond our control
- Reduction of SSIs requires attention to all phases of surgery
Upcoming Virtual Events

Virtual Events:

• Adverse Drug Events
  Jul. 8 – HRET HIIN | Alternatives to Opioids Webinar #3
  Aug. 12 – HRET HIIN | Alternatives to Opioids Webinar #4

• Patient and Family Engagement
  Aug. 8 – FHA HIIN | What is Health Literacy, and Why is it Important?

Check the weekly MTC HIIN Upcoming Events for details and registration
CELEBRATION OF ACHIEVEMENT

Quality & Service Awards

Recognizing the best in Florida Health Care

Team and Individual Awards

Nominations extended to
July 8, 2019

Submit nominations
www.FHA.org/awards
Nominations extended to July 8, 2019
Submit nominations www.FHA.org/awards

Individual Awards
Caregiver of the Year
Trustee of the Year
Volunteer of the Year

Team Awards *
Best Florida Hospital Workplace
Community Benefit Achievement
Innovation of the Year in Patient Care
Leadership in Quality and Patient Safety

* 2 Recipients in each category – Hospitals Under 150 Beds; Over 150 Beds

Submit nominations www.FHA.org/awards
Eligibility for Nursing CEU requires submission of an evaluation survey for each participant requesting continuing education: https://www.surveymonkey.com/r/SIP-06-25-19

Share this link with all of your participants if viewing today’s webinar as a group (Survey closes after July 5, 2019)

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)
Contact Us

Cheryl D. Love, RN, BSN, BS-HCA, MBA, LHRM, CPHRM
Director, Quality and Patient Safety
Florida Hospital Association
cheryll@fha.org | 407-841-6230

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