HEN 2.0 Surgical Site Infections (SSI) Webinar

November 19, 2015
11:00 AM- 12:30 PM CT
WELCOME AND INTRODUCTIONS

Angela Michalek, MS, PMP
Program Manager, HRET
11:00-11:05 AM
<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Description</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00-11:05 AM</td>
<td>Welcome and Introductions</td>
<td>Review the webinar agenda, objectives and platform.</td>
<td>Angela Michalek, MS, PMP Program Manager, HRET</td>
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<tr>
<td>11:05-11:10 AM</td>
<td>HEN Data Update</td>
<td>Provide a topic-specific data update and discuss the SSI outcome measures.</td>
<td>Rich Rodriguez, MPH Data Analyst, HRET</td>
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<tr>
<td>11:10-11:25 AM</td>
<td>B2F! Back to the Future</td>
<td>Look back to move forward – outline the basic must-haves to reduce the risk of SSI. Take a peek into the future – discuss emerging SSI prevention strategies.</td>
<td>Cheryl Ruble, MS, RN, CNS Improvement Advisor, Cynosure Health</td>
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<tr>
<td>11:25-11:40 AM</td>
<td>Hospital Story: Lea Regional Medical Center</td>
<td>Describe how Lea Regional Medical Center in Hobbs, New Mexico reliably improved processes to reduce SSIs.</td>
<td>Cheryl Dingman, RN Director of Quality Management, Lea Regional Medical Center</td>
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<tr>
<td>11:40 AM-12:00 PM</td>
<td>Improvement Science</td>
<td>Where are we now? A key to maintaining outcomes is drift mitigation. Explain how to assess for practice drift and engage staff in the process.</td>
<td>Jackie Conrad, RN, BSN, MBA, RCC™ Improvement Advisor, Cynosure Health</td>
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<tr>
<td>12:00-12:15 PM</td>
<td>Bring it Home</td>
<td>Identify action items and summarize the didactic content, hospital case study and improvement science.</td>
<td>Angela Michalek</td>
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<td>12:15-12:30 PM</td>
<td>Q&amp;A</td>
<td>All</td>
<td>All</td>
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Objectives for Today

• Adopt basic must-haves to reduce the risk of SSI.
• Examine emerging SSI prevention strategies.
• Describe how Lea Regional Medical Center in Hobbs, New Mexico reliably improved processes to reduce SSIs.
• Explain how to assess for practice drift and engage staff in the process.
Rich Rodriguez, MPH
Data Analyst, HRET
11:05-11:10 AM

HEN DATA UPDATE
### HEN 2.0 SSI Required Measures

<table>
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<tr>
<th>Topic</th>
<th>Data to be extracted</th>
<th>HEN 2 Measure(s) supported</th>
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| SSI : Colon Surgeries Abdominal Hysterectomies Total Knee Replacements Total Hip Replacements | • Procedures  
• SSIs  
• Observed & predicted infections (for those conferring rights to NHSN data) | • SSI SIRs (for those conferring rights to NHSN data)  
• SSI rates |
HEN 2.0 SSI Measure

• Confer rights to NHSN group:
  – SHA NHSN group

• Baseline period:
  • Calendar year 2012, OR
  • Next oldest calendar year, OR
  • Jul - Sept 2015
Cheryl Ruble, RN, MS, CNS
Improvement Advisor, Cynosure Health
11:10-11:25 AM

B2F!
BACK TO THE FUTURE
SSI Impact

U.S. Burden

• SSIs surpassed CAUTI!
  – now 20% of hospital-acquired infections (HAIs) and the most common
  – and the most costly HAI
• 77% of deaths among patients with SSI are directly attributable to SSI
• 7-11 additional postoperative hospital days

Morbidity

• Long-term disabilities

What do we know about skin?
Most Common Culprits

• Most SSIs result from colonization of the surgical site with the patient’s own flora
• *Staphylococcus aureus* is the most common organism that causes SSIs
• Pathogens vary by procedure
Prevention

- Surgical safety checklist
- Antimicrobial prophylaxis (timing and selection)
- Preadmission skin cleansing with chlorhexidine gluconate (CHG)
- Perioperative skin antisepsis with CHG
- Normothermia (cold = pain, blood loss, impaired immune response, prolonged recovery)
- Perioperative glucose control

Key resources:
One Too Many...

- Patient and family perspective
  - Life changing
  - Debilitating
  - Morbidity
  - Mortality

- Most are preventable!
Taking a Peek into the Future

Emerging SSI prevention strategies
Key Notes About CHG
What Is So Great (or Not) About CHG?

• More than 20 years ago, we learned that bathing with CHG was more effective than povidone-iodine or antiseptic bar soap in reducing staphylococcal skin colonization

• Did not document reductions in SSI
CHG Tidbits

- Has been around for over 50 years
- Binds to the stratum corneum of the skin
- Is rapid, prolonged and persistent
- Targets the bacterial cell wall
- Is bactericidal, virucidal and fungicidal
- Is effective in the presence of protein – but less so
More Tidbits About CHG

• Not absorbable through intact adult skin
• Remains on the skin and sheds on the skin
• Reports of irritation are local and mild
  – Associated with misuse such as eye exposure, ingestion, enema and ear exposure
• It is everywhere (skin antiseptics, surgical scrubs, bathing cloths, oral rinses, IV catheters, topical dressings, implantable surgical mesh, etc.)
CHG Only Works If...

• Applied correctly

Skin must be DRY when applied and CHG must be allowed to dry
• Recommendation I: Surgical Attire

- Clean surgical attire
- Frequency of use
- Specifics for non-scrubbed personnel in restricted areas
- Visitors
- Fabric characteristics
- Donning and doffing
- Specifics for scrubbed personnel
“...scrub attire may be made of antimicrobial fabric...incorporating this technology into scrub attire may help protect patients from SSIs.”

Reviews also now under consideration at OSHA and ASTM.
Recommendation

• Clean surgical attire should be worn in the **semi-restricted and restricted areas** of the perioperative setting

• Attire has been laundered in a health care accredited laundry facility

• Tightly woven and stain resistant
Pathogens Can Live From Hours to Months

- **Gram-positive**
  - MRSA survived 20 days on cotton; 40 days on polyester (1)
  - VRE survived more than 80 days on both cotton and polyester (1)

- **Viruses**
  - Influenza A and B survived 12 hours on cloth, paper and tissue (2)

(1) Deeley et al. 2001
(2) Baker et al. 2001
Moderate Evidence

Two piece secured or fit close

Non-scrubbed personnel
Human Skin Data

• 11 studies demonstrate that the skin is a source of multiple organisms and more than 10 million particles are shed from skin every day (AORN)

• The act of walking releases 1,000 skin scales per minute (AORN)
Bacteria Dispersal

- Any organism present on the skin can be dispersed into the air (AORN)
- Bacterial transfer of organisms during surgery included skin scales carried on air currents and direct contact with the team member’s skin (AORN)
Cover Arms While Performing Skin Prep

• Contain skin squames shed from bare arms
  – When performing perioperative skin antisepsis
  – When packaging items in a sterile processing area

• Snapped, closed and buttoned

Moderate Evidence
Short Term Entry

- Brief period
- Law enforcement
- Parents
- Biomedical engineers
- Surveyors

Benefits Balanced with Harms
Shoes (Regulatory Requirement)

- Closed toes
- Closed backs
- Low heels
- Nonskid soles
- Designated shoes
- Meet OSHA and other health safety regulations
Surgical Mask (Regulatory)

- Protect the patient from microbial contamination by organisms carried by the provider’s mouth or nose
- Provide protection for the wearer from exposure to blood, body fluids or other potentially infectious materials
Mask Rules

- Don before performing or assisting with new procedure
- Prevents venting at the sides of the mask
- Replace when wet or soiled or taken down
- Duration? After 4 hours there is decrease in efficacy
- Do not wear hanging around neck
- Remove by handling mask ties

Benefits Balanced with Harms
ID Badges (Moderate Evidence)

• Wear ID badges secured on the scrub attire or long-sleeved jacket

• Clean with low-level disinfectant (e.g., 70% isopropyl alcohol)

• Lanyards should not be worn
Recommendation

Personnel entering the semi-restricted and restricted areas should cover the head, hair, ears, and facial hair.

Moderate Evidence
Rationale

• Hair can be a source of bacterial organisms
• Nobel et al. showed that 10% of individuals have *S. aureus* present in their hair
• Dineen and Drusin found that SSIs were directly related to personnel carrying *S. aureus* in their hair
Staff hair containment does matter

* Blood agar cultures courtesy of Francis P. Mitrano, MS, RPh, Director of Pharmacy, Beth Israel Deaconess Medical Center, Boston, MA, November, 2005.
Beards and Ears

- Significantly more bacterial shedding by bearded men than by clean-shaven men or by women even when a mask was worn.
- Significantly more bacteria isolated from the ears than from the foreheads and eyebrows.
Head Cover Rules...On or Off?

- Personnel wearing scrub attire should not remove the surgical head covering when leaving the perioperative area.
- They should remove when they change into street clothes to leave the building.
- Reusable head coverings should be laundered in a health care accredited facility after each daily use and when contaminated.

Benefits Balanced with Harms
## SSI Top 10 Checklist

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<tr>
<th>TOP TEN EVIDENCE BASED INTERVENTIONS</th>
<th>IN PLACE</th>
<th>NOT DONE</th>
<th>WILL ADOPT</th>
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<td>Develop and follow standardized order sets for each surgical procedure to include antibiotic name, timing of administration, weight-based dose, re-dosing (for longer procedures), and discontinuation.</td>
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<td>Ensure pre-operative skin antiseptics (basic soap and water shower; chlorhexidine (CHG) showers).</td>
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<td>Develop standardized peri-operative skin antiseptic practices utilizing the most appropriate skin antiseptic for the type of surgery performed.</td>
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<td>Develop a standardized procedure to assure normothermia by warming ALL surgical patients.</td>
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<td>Develop and implement protocol to optimize glucose control in ALL surgical patients.</td>
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<td>Develop protocol to screen and/or decolonize selected patients with <em>Staphylococcus aureus</em></td>
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<td>Adhere to established guidelines (e.g., HICPAC, AORN) to assure basic aseptic technique (e.g., traffic control, attire) is adhered to uniformly.</td>
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<td>Establish a culture of safety that provides an environment of open and safe communication among the surgical team.</td>
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<td>Establish system where surgical site infection data is analyzed and shared.</td>
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<td>Develop a protocol to provide guidance on blood transfusion practices as a unit of packed red blood cells should be considered a transplant/immune modulator and has been linked to a higher risk of SSIs.</td>
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Our Journey Through HEN 1.0

Cheryl Dingman, RN
Director of Quality Management
11:25-11:40 AM

CASE STUDY: LEA REGIONAL MEDICAL CENTER IN HOBBBS, NM
About Us

- 201-bed hospital with an average daily census of 30-45 patients
- 20-30 surgeries per week
- OB-GYN, orthopedics, endoscopy, general surgery, podiatry
Tests and What We Learned

• Smaller hospital with patient safety focus – plus, one case can seriously impact rates
• Any SSI treated like a sentinel event
• Root cause analysis completed
• Inconsistency is your enemy – took a field trip away from the “gold standard” for antibiotics, which brought us to the door step of SSI
Lea Regional Medical Center
Surgical Site Infection Rate
HRET-HEN 1.0

Baseline

16.7%

12.5%

RCA Action Plan

▪ Anesthesia to administer antibiotics within 60 minutes of cut time
▪ Anesthesia to validate appropriate antibiotic; contact surgeon if change is needed
Barriers and How We Resolved

• Initial resistance – all about people, not process
• Change of focus
• Systems and processes, not people
• It’s all about what “I” did – or did not do
Measures – What and How

• Improvement measure – SSI rate
• Utilized CORE measures chart abstraction / reporting to monitor antibiotic choice, administration processes
• Ongoing monitoring for SSI with:
  – Microbiology reports (inpatient, outpatient and reference lab – hospital functions as a reference lab for area providers)
  – Emergency department admissions
  – Hospital readmissions
  – Physician reporting
• Reporting into surgery department, medical executive committee, quality council and board of directors
Advice for Others

• Get the basics down and hardwired to stand the test of time

• Get people engaged by focusing on the patient and providing patient-centered care – “it’s why we are here”

• Put some “I” back in team, recognizing what “I” do or don’t do can and does make a difference
Wrap Up and Next Steps

• In summary, using the gold standards created a safety net for our patients – validate that effective processes are in place, do not just assume

• That being said, it’s a whole new world out there and who knows where else our HEN 2.0 journey will take us

• Questions?

• Contact information:
cheryl.dingman@learegionalmedical.com
Jackie Conrad, RN, BSN, MBA
Improvement Advisor, Cynosure Health
11:40 AM-12:00 PM

IMPROVEMENT SCIENCE
Where Are You Now?

ANY MAP

THE BEARING IS 243 degrees FROM WHERE YOU ARE STANDING TO THAT HILLTOP

YOU ARE HERE
Where Do You Want to Be?
Where Is Your Greatest Opportunity?

• Polling question # 1:

Do you have SSI data stratified by provider and category?

A. Yes
B. No
Where Is Your Greatest Opportunity?

• Polling question # 2:

How have you used stratified SSI data to improve?

A. To assess care processes
B. To identify educational needs of staff
C. To identify which staff are not following policy
D. To review documentation for gaps in care
What Was Your “Aha” Moment?

- Please use the chat box to share your learnings from post SSI drill downs
Assessing for Practice Drift

- Target
- Observe
- Engage
Examples of Care Processes to Assess

• Is there a system to verify that the patient used CHG properly?
• Are staff using proper technique in perioperative CHG prep?
• Is there a system in place to monitor traffic control and surgical attire in the operating room and at large?
• Is hair removal performed with clippers outside the sterile environment?
Applying Science of Improvement

- Chat in examples of how you have applied the science of improvement to create reliable care processes?
Examples of Application

- Focused target: data and hypothesis
  http://www.apiweb.org/QP_whats-your-theory_201507.pdf

- Observe practice: sampling, shadowing
  http://www.ihi.org/communities/blogs/_layouts/ihi/community/blog/ItemView.aspx?List=7d1126ec-8f63-4a3b-9926-c44ea3036813&ID=172&Web=1e880535-d855-4727-a8c1-27ee672f115d

- Engaging front-line: dyad approach
  http://www.ihi.org/resources/Pages/Publications/IHIFrontlineDyadApproach.aspx
BRING IT HOME

Angela Michalek, MS, PMP
Program Manager, HRET
12:00-12:15 PM
Unit-Based Team Action Items

What are you going to do by next Tuesday?

- Choose a process to audit, i.e., antibiotic timing or proper surgical attire
- Find one nurse to help audit

What are you going to do in the next month?

- Use audit data to guide PDSA efforts
- Engage a physician leader and executive sponsor
Physician Leader Action Items

What are you going to do by next Tuesday?

- Lead efforts to stratify SSI data
- Work with a unit-based team to examine the current state of SSI prevention efforts

What are you going to do in the next month?

- Share stratified SSI data (outcome and process measures) with the providers and the leadership
- Work with a unit-based team to hardwire processes
Hospital Leaders Action Items

What are you going to do by next Tuesday?

☑ Support unit-based team in evaluating existing processes

What are you going to do in the next month?

☑ Ensure SSI data is regularly reported to providers and the leadership

☑ Recognize the small successes and help address any organizational barriers
PFE Leads Action Items

What are you going to do by next Tuesday?
- Develop a plan to involve patients and families in SSI improvement efforts

What are you going to do in the next month?
- Share SSI data and prevention efforts with patient and family advisors and elicit feedback, i.e., patient education on perioperative antimicrobial skin cleansing
Thank you!

More info on our website: [www.hret-hen.org](http://www.hret-hen.org)

Questions/Comments: [hen@aha.org](mailto:hen@aha.org)
Resources

- HRET-hen.org: Surgical Site Infection (SSI) | HRET-HEN
- Association of periOperative Registered Nurses: www.aorn.org
- Institute for Healthcare Improvement: www.ihi.org/about/Pages/ScienceofImprovement.aspx