Standardizing Surgical Skin Antisepsis Protocols

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TODAY’S PRESENTER

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WHAT WE’LL COVER TODAY

- The **importance of standardizing** a surgical skin antisepsis protocol
- **Strategies to develop and implement** a successful process
HEALTHCARE-ASSOCIATED INFECTIONS (HAIs) ARE A CONCERN

- U.S. Centers for Disease Control and Prevention (CDC) estimates approximately 1.7 million patients per year develop HAIs
  - Resulting in 271 deaths per day

- Centers for Medicare & Medicaid Services (CMS) have implemented quality and pay-for-performance initiatives to reduce HAIs and hospital readmissions

- One controllable factor is standardizing pre-surgical skin antisepsis protocols
MAKING THE CASE FOR A STANDARDIZED APPROACH

Quality Improvement: Eliminating variability in processes will result in less waste, fewer errors and better quality products.

- A patient-centered approach has many benefits:
  - Improved quality initiatives
  - Increased health care professional satisfaction
  - Streamlined implementation
CONSIDERATIONS FOR IMPLEMENTING A NEW PROTOCOL

• Establish a **culture of safety and continuous improvement** that involves a **collaborative effort** across clinical and financial departments

• Work with a **cross-functional team** such as nurses, infection preventionists and surgeons to help **increase accountability and ownership** for patient safety
How Do We Do It?

Ground in Science

Reinforce Compliance

Track Results

Improve quality of patient care and cost effectiveness in hospitals
GROUNDING THE PROTOCOL IN GUIDELINES

• Guidelines from leading organizations, as well as established best practices and clinical evidence, suggest that reducing bacteria prior to surgery can:
  – Help reduce the risk of HAIs
  – Improve patient care
  – Reduce costs

• Arming staff with key guidelines and best practices can help clarify the process for surgical antisepsis

• Let’s look at a few key guidelines:
  – National Quality Forum (NQF)
  – Association of periOperative Registered Nurses (AORN)
  – Association for Professionals in Infection Control and Epidemiology (APIC)
  – United States Centers for Disease Control and Prevention (CDC)
• Use chlorhexidine-based gluconate (CHG) 2% and isopropyl alcohol solution as skin antiseptic preparation in patients over two months of age and allow appropriate drying time per product organization guidelines.
AORN 2011 Skin Antiseptic Guidelines

- Skin preparation should:
  - Remove bioburden (i.e., soil and transient microorganisms) from the patient's skin
  - Decrease resident microorganism counts quickly while not irritating tissue
  - Prevent regrowth and rebound of microorganisms
The preoperative antiseptic agent should:
- Significantly reduce microorganisms on intact skin
- Contain a non-irritating antimicrobial preparation
- Be broad spectrum and fast acting
- Have a persistent effect

CHG exhibits excellent activity against gram-positive and good activity against gram-negative vegetative organisms and fungi

CHG is also known to have excellent persistent activity
• The skin at the site of the incision should be prepared with an antiseptic; preferred agents should provide rapid, persistent, broad-spectrum antimicrobial activity

• Several antiseptic agents are available for preoperative preparation of skin at the incision site. The most commonly used agents are:
  – Alcohol-containing products
  – Iodophors (e.g., povidone-iodine)
  – Chlorhexidine gluconate (CHG)
# Most Commonly Used Skin Prep Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Mechanism of Action</th>
<th>Rapidity of Action</th>
<th>Residual Activity</th>
<th>Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>Denature proteins</td>
<td>Most rapid</td>
<td>None</td>
<td>Drying, volatile</td>
</tr>
<tr>
<td>Iodophors</td>
<td>Oxidation/substitution by free iodine</td>
<td>Intermediate</td>
<td>Minimal</td>
<td>Absorption from skin with possible toxicity &amp; skin irritation</td>
</tr>
<tr>
<td>Chlorhexidine Gluconate (CHG)</td>
<td>Disrupt cell membrane</td>
<td>Intermediate</td>
<td>Excellent</td>
<td>Ototoxicity; keratitis</td>
</tr>
</tbody>
</table>
### Comparison of Available Products

<table>
<thead>
<tr>
<th>Antiseptic</th>
<th>Mechanism of Action</th>
<th>Antimicrobial Coverage</th>
<th>Rapidity</th>
<th>Persistence</th>
<th>Application</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aqueous-iodophor</td>
<td>Free iodine – protein, DNA damage</td>
<td>Gram +/-bacteria, fungi, virus</td>
<td>Immediate</td>
<td>2 hours</td>
<td>2-step scrub and paint</td>
<td>Betadine®</td>
</tr>
<tr>
<td>Alcohol-iodophor</td>
<td>Free iodine – protein, denatures protein, DNA damage</td>
<td>Gram +/-bacteria, fungi, virus</td>
<td>Rapid</td>
<td>48 hours</td>
<td>1-step paint, dry time minimum of 3 minutes on hairless surface</td>
<td>DuraPrep™ solution</td>
</tr>
<tr>
<td>Aqueous-chlorhexidine gluconate (CHG)</td>
<td>Disrupts membranes</td>
<td>Gram +/-bacteria, virus, fair for fungus</td>
<td>Immediate</td>
<td>6 hours</td>
<td>2-step scrub and dry, repeat</td>
<td>Hibiclens™</td>
</tr>
<tr>
<td>Alcohol-chlorhexidine gluconate (CHG)</td>
<td>Denatures proteins, disrupts membranes</td>
<td>Gram +/-bacteria, virus, fungus</td>
<td>Rapid</td>
<td>48 hours</td>
<td>1-step process, dry time minimum of 3 minutes on hairless surface</td>
<td>ChloraPrep®</td>
</tr>
</tbody>
</table>
GROUNDING THE PROTOCOL: MY EXPERIENCE

- There was a need to standardize patient skin prepping

- Prior to making changes in the process, protocols were inconsistent

- It was found that CHG combined with alcohol appeared to be most effective for skin asepsis

- This key finding was presented to colleagues and then implemented into their prepping regimen
GROUNDING THE PROTOCOL: MY TIPS

• Review the presentation that was used for surgeon leadership

• Conduct a literature search

• Develop presentation to be used at staff meeting

• Provide education to nurses, surgeons and even anesthesia providers
  – Include findings of the literature review
  – Identify which prepping products will be used moving forward

• Focus on the evidence that supports the agents that are most effective for the procedures that you and your hospital host
GROUNDING THE PROTOCOL: MY TIPS

• First step in the practice change
  – A CHG pre-operative bathing program
  – Add to electronic record
GROUNDING THE PROTOCOL: MY TIPS

• Review preference cards

• Example: resource nurses worked with surgeons to adjust surgeon preference cards and custom supply kits to reflect the appropriate prep supplies
  – Custom supply kits
  – Basic kits
  – Multi-dose solutions containers
GROUNDS THE PROTOCOL: MY TIPS

• Keep surgical team up to date on how the change is progressing
  – Weekly bulletin
  – E-mail staff
  – Scrub sink signs

• Stress to your nurses that the infection control department backs the change and that surgeons have agreed on the standardized products
THE IMPORTANCE OF REINFORCING COMPLIANCE

• Including surgeons, nurses and the infection prevention staff in the decision to standardize surgical skin antisepsis will help gain buy-in and increase adherence to the program

• It is important to ensure that these results are long-lasting, so compliance must be reinforced

• Remove non-protocol agents
**STRATEGIES**

- Consider including the surgical skin antisepsis protocol on posters or charts that are clearly visible and readily accessed.

- Strategies to monitor compliance have been made somewhat easier with the electronic medical record:
  - Numerous surgical specialty practices routinely report surgical site infection rates into national data bases.
  - Tracking prepping agents and site infections is possible.
**Reinforce Compliance: My Experience**

- Following the change in process, our team found that CHG/alcohol single-use products became our first choice due to its long-lasting properties.

- Once the non-compliant products were removed, staff was receptive to changes.

- Because we did not introduce new products, we only needed to reinforce best practices already in use.
REINFORCE COMPLIANCE: MY TIPS

• Create a poster that charts effectiveness evidence for each of the prepping agents, including those no longer used at your facility

• Hang copies at all scrub sinks, in clear view of surgeons and staff scrubbing in for procedures

• Take every opportunity to communicate with surgeons about their prepping practices and talk up the agents you’ve put in place!
MEASURING PERFORMANCE

• In order to understand the impact that a new standardized procedure is having, be sure to track the progress regularly.

• CMS requires 4 weeks of tracking for infections.
**REINFORCEMENT STRATEGIES**

- Consider implementing regular tracking and compliance audits to underscore importance and measure effectiveness.

- Reinforce the process and remind staff of the standardized protocol by reviewing the procedures each quarter.

- Consider tracking nurses or teams to identify areas of excellence or for improvement.
MEASURING PERFORMANCE: MY STORY

• Overall, the change at Stanford made strides toward achieving patient-centered goals

• Additionally, the space needed to store the prepping products was greatly reduced due to single-use products

• The manpower needed to stock the supplies was also reduced!

• Finally, the act of tracking process serves as a reinforcement to staff and as a reminder of the effectiveness of the protocol
MEASURING PERFORMANCE: MY TIPS

• Intermittently track your staff and surgeons behavior to execute a truly successful process improvement program

• Conduct infection control compliance audits for a variety of tasks that ensure frontline practice match what’s being reflected in medical records

• To reinforce and normalize prepping behaviors, add the preferred choice of agent to patients’ EMRs or paper records when cases are scheduled
  – Doing so alerts staff of the optimal options and ensures prepping practices remain standardized and effective

• Know that skin prep manufacturers are actively looking to change products to combat the issue of resistant organisms, so consistently review commercially available preps to ensure your efforts remain current!
IN ADDITIONAL CONSIDERATIONS

• Involving the patient in their care is an important element (e.g., provide patients with CHG as a part of pre-op bathing at home before surgery)
  – For maximum efficacy, ensure compliance by reinforcing the bathing process
  – Surgeons and nurses should educate patients in the pre-op clinic about the importance of adhering to a pre-op bathing process in the days leading up to surgery

• Working to reduce infection rates should not be reliant on one element; it should be a multi-pronged approach to excellence
CONCLUSION

• Standardizing the infection prevention protocol is a collaborative effort between all members of the staff

• A standardized approach that utilizes proven products, along with reinforced compliance and tracking, will result in less waste, fewer errors and better quality products for the patient and the institution

• SCIP measures
Q&A

If you have additional questions after the Q&A session, please contact: InfectionControl@ccapr.com

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