Establishing a Culture of Safety:
USING A 7 S BUNDLE APPROACH FOR THE PREVENTION OF SSI

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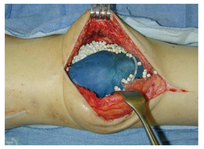
Purpose of Project:
To develop a systematic approach to preventing surgical site infections (SSIs) in the pre-operative, intraoperative and postoperative period.



Methodology: In 2012, a corporate team with the Value Analysis Director, Surgical Director and Infection Preventionist developed a bundled approach for the reduction of SSIs. The team collected research on prevention measures suggested by national organizations. A seven-step approach was designed and included:

1) Safe operating room
2) Screen for risk factors and MRSA/MSSA
3) Showers with chlorhexidine
4) Skin prep with alcohol based antiseptics
5) Sutures with an antimicrobial
6) Solution to irrigate with chlorhexidine
7) Skin adhesive or antimicrobial dressings to protect incision.

Results: Since implementation there has been a statistically significant reduction in SSIs documented by calculating standardized infection ratio (SIR) for total knee, colon, abdominal hysterectomy and coronary artery bypass graft surgery.

Perioperative Nursing Implications: A reduction in SSIs leads to higher patient quality and safety, lower costs, fewer readmissions and reduced isolation precautions during the surgical experience.

#1 SAFE OPERATING ROOM

- Traffic control, number of staff in room
- Air handling systems, filtration, grills
- SCIP: hair clipping, body warmers, oxygenation
- Surgical prophylaxis, foley catheter removal within 48 hrs
- Between case room turnover and daily terminal cleaning
- Surgical technique and handling of tissues, use of wound protector/retractor to prevent field contamination

- Instrument cleaning/sterilization process, biological indicators
- Storage of supplies, clean supply bins, carts, tables, stationary equipment

#2 SCREENING FOR MRSA AND MSSA

Patients who carry Staph aureus and MRSA in their nares or on their skin are more likely to develop Staph aureus SSIs.

- Short-term nasal mupirocin (4-7 days) is an effective method for Staph aureus eradication
- 90% success at one week
- 1% develop mupirocin resistance

#3 SHOWER PRE-OP

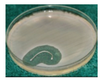
Studies show that repeated use of CHG soap enhances the ability of CHG to reduce bacterial counts on the skin before surgery. Patients should be instructed to cleanse the body the night before and morning of surgery with either CHG solution or CHG wash cloths.

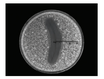
#4 SKIN PREP – DUAL COMBINED ANTISEPTICS

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:

- Chlorhexidine plus alcohol
- Iodophor plus alcohol

#5 SUTURES – ANTIMICROBIAL





Like all foreign bodies, sutures can be colonized by bacteria:

- Implants provide nidus for attachment of bacteria
- Bacterial colonization can lead to biofilm formation
- Biofilm formation increases the difficulty of treating an infection

On an implant, such as a suture, it takes only 100 staphylococci per gram of tissue for an SSI to develop.

#6 SOLUTION TO POLLUTION IS DILUTION

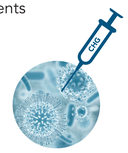
New CHG surgical irrigant - meets American College of Emergency Physicians (ACEP) guidelines for wound irrigation volume and pressure.

Proprietary SplatterGuard protects healthcare workers, patients and the environment from biohazard contamination.

Chlorhexidine Gluconate at a low concentration of 0.05% has demonstrated antimicrobial efficacy and persistence in laboratory testing.

The mechanical action effectively loosens and removes wound debris in compound fractures and tissues.

Safe for mucous membranes – approved by FDA.



CHG is applied directly to the surgical wound bed to cleanse and remove debris from the area.

#7 SKIN ADHESIVE OR ANTIMICROBIAL GAUZE DRESSINGS

Wounds are most vulnerable to infection in the **first 48-72 hours**.[1] Until the epithelial barrier is complete (usually within 48 hours), wounds are solely dependent on the wound closure device to maintain integrity.[1]

The extent of microbial protection depends on barrier integrity.[1]

Effective barriers must maintain their integrity for the first 48 hours.

Incisional adhesive provides a **strong microbial barrier** that prevents bacteria from entering the incision site.[2]

- **Seven days of wound healing strength in less than one minute of application**
- Shower immediately
- Outstanding cosmesis
- Reduced follow-up
- Less pain and anxiety

Antimicrobial dressings

Antimicrobial dressings are wound covers that deliver the effects of agents, such as silver and polyhexamethylene biguanide (PHMB), to maintain efficacy against common infectious bacteria. Indicated to help reduce the risk of infection in partial and full-thickness wounds, over percutaneous line sites and surgical incisions.

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