Infection prevention

SSI prevention: How’s your practice?

Preventing surgical infections is what perioperative nursing is all about. From the moment they don a scrub suit and cap, they engage in well-practiced steps to protect patients from harmful microorganisms.

Surgical site infections (SSIs) are a well-known cause of suffering and death. An estimated 500,000 SSIs occur each year. Patients with an SSI have a risk of death 2 to 11 times higher than surgical patients without an infection. They spend about 7 to 10 more days in the hospital at costs of $3,000 to $29,000.

There’s growing scrutiny. The Joint Commission has National Patient Safety Goal 07.05.01 on preventing SSI. Hospitals’ data on prophylactic antibiotics and other measures are being reported publicly. Medicare no longer pays extra for the treatment of SSIs following some procedures, and 27 states have laws mandating public reporting of infection rates.

**Simple measures**

Still, infection prevention is such a daily habit that it can be taken for granted, and sometimes practice slips. It may be time to check up on how well OR teams are adhering to the fundamentals.

One approach is to set up simple measures for selected practices and sample the results, suggests Kathleen Kohut, RN, MS, CIC, CNOR, an independent infection prevention consultant based in Charlotte, North Carolina.

Then share results and involve the staff and physicians in ways to make improvements. Just knowing someone’s watching introduces the Hawthorne effect, she notes, where behavior improves simply because it is being observed.

**Foundation for SSI prevention**

Though aseptic practice should be ingrained, Kohut says she often sees breaches while touring ORs. She suggests 5 areas to check on:

- aseptic technique
- sterilization and disinfection
- antibiotic prophylaxis
- hair removal
- skin antisepsis.

Two of these areas—antibiotic prophylaxis and appropriate hair removal—are already measured as part of the Surgical Care Improvement Project (SCIP).

For the others, Kohut recommends starting simply and picking one behavior.

For example, you might check on whether hair is covered. To collect data, observe 10 to 15 cases and record in how many team members had their hair completely covered. Report the results as the percentage compliant with
hair coverage and then measure again periodically.

**Aseptic technique**

For aseptic practice, Kohut suggests 5 practices managers could measure:

- hand hygiene
- containing hair
- proper OR attire
- traffic patterns
- environmental cleanliness.

**Hand hygiene**

*Example of measure: How often circulating nurses perform hand hygiene after positioning the patient.*

CDC recommendations are to clean hands before direct contact with patients, after contact with inanimate objects, and after removing gloves, among other situations.

“The Joint Commission is looking for ORs to have an active hand hygiene program,” says Kohut, and it’s not limited to surgical hand antisepsis.

She says perioperative nurses ask her when they are expected to perform hand hygiene. As an example, she explains: “Once you put the patient on the OR table, tuck them in, and push the stretcher out of the OR, you need to perform hand hygiene because you are probably going to touch other things in the room, such as the phone or the computer. Then you would perform hand hygiene again before positioning the next patient. Once you have done the positioning, you would do hand hygiene again.”

To illustrate the risk of hand hygiene lapses, she points to a 1998 report in which an anesthesiologist’s hands were found to be the source of a rare outbreak of *Nocardia farcinica* sternotomy infections after open-heart surgery.

**Containing hair**

*Example of measure: In the sampled ORs, percentage of team members who had hair completely contained.*

In her consulting with ORs, Kohut says she often sees hair sticking out from under bouffant scrub caps. And she’s on a mission to ban skull caps. “The purpose of a hat is to contain hair on the head,” she says, which a skull cap doesn’t do.

The hair and scalp shed micro-organisms and have been associated with SSIs. A report in *Lancet* described 2 outbreaks attributed to OR staff who carried *Staphylococcus aureus* in their hair.

Regarding the popular cloth scrub caps, Kohut says many facilities ask employees who wear cloth caps either to wear a disposable bouffant cap over or underneath the cloth hat to reduce contamination.
Proper OR attire

- Example of measure: Percentage of OR personnel who have shirts tucked into their scrub suits on a given day.

Properly worn masks, clean scrub suits and jackets, and minimal jewelry are all ways to contain the shedding of bacteria.

“The number 1 source of wound contamination during a procedure is from people, either the patient or health care providers,” she says. The human body sheds 4,000 to 10,000 particles per minute, and some shed even more, which are carried by air currents to the sterile field, according to Berry & Kohn’s Operating Room Technique (Mosby, 2007).

Traffic patterns

- Example of measure: Percentage of ORs in which unscrubbed personnel maintain distance from the sterile field.

The purpose of limiting traffic in ORs is to minimize air currents that carry organisms to the sterile field.

“Observe in your ORs,” Kohut suggests. “Are personnel setting up the sterile field right next to a doorway? The sterile field should be a destination, not a thoroughfare.”

She refers to a 2001 report by Sherertz and colleagues that documented 5 outbreaks of Group A Streptococcus pyogenes associated with OR staff. Cultures showed clinicians who were colonized dispersed the organism into the air.

Traffic control creates a dilemma for teaching facilities because the right to learn needs to be balanced with safe patient care.

A creative solution—telesurgery that allows students to observe surgery from a classroom setting remote from the OR—was described in the July 2009 AORN Journal.

Environmental cleanliness

- Example of measure: The percentage of ORs terminally cleaned according to policy for a specified period.

AORN recommendations for cleaning are clear: ORs should be cleaned after each procedure and terminally cleaned daily.

But often there isn’t documentation of whether the cleaning was actually performed or feedback on how well it was done.

Kohut tells of one hospital that outsourced environmental cleaning for the OR—only to discover that terminal cleaning was being done only once a week.

“Frequently, nurses complain that cleaning wasn’t done right, but they don’t monitor that and provide feedback to the environmental services department,” she says.

She suggested having a tool that lists specific cleaning activities and collecting data on whether the activities are performed as specified.

Sterilization

- Example of measure: Percentage of instances of flash sterilization in which the sterilized item is transported to the sterile field in a closed container validated for flash sterilization.
Flash sterilization has been a favorite topic for surveyors. The Joint Commission said in a 2009 update that it is taking a broader view and will look at all aspects of the sterilization process.

AORN and the Association for the Advancement of Medical Instrumentation recommend that flash sterilization be kept to a minimum and used in a controlled manner, which includes thorough cleaning, sterilization in a closed container or tray validated for flash sterilization, and transportation of the sterilized items to the sterile field in a way that prevents contamination.

**Skin antisepsis**

- **Examples of measures:**
  - OR personnel apply the skin prep product according to manufacturer’s instructions.
  - Aseptic technique is observed during prep application.
  - Safety precautions are followed.

The purpose of the skin prep is to make the skin as free as possible from micro-organisms, dirt, and skin oil to help protect the wound from contamination. The AORN recommended practices outline attributes of the preop skin antiseptic:

- significantly reduces micro-organisms on intact skin
- contains a nonirritating antimicrobial preparation
- is broad spectrum
- is fast acting
- has a persistent effect.

“There is no such thing as one size fits all,” Kohut says. Selection also needs to consider patient characteristics: allergy, body size, and skin integrity.

“Just because skin-prep products are a stick with a sponge doesn’t mean they are all the same,” Kohut says. “You have to educate the staff and monitor to make sure they are doing the prep correctly.”

Chlorhexidine and alcohol (ChloraPrep), for example, is applied with a back-and-forth motion, while iodine povacrylex and alcohol (DuraPrep) is painted on without going back over areas already prepared. There is also the traditional 2-step scrub and paint method.

Examples of process measures for the skin prep are whether the staff is applying the selected product according to the manufacturer’s directions and following safety precautions such as allowing skin preps with alcohol to dry for the indicated time, which is a fire prevention measure.

**New skin-prep studies**

Two new studies have been published on skin prep and SSIs. In January 2010, Darouiche et al, reported on a prospective, randomized 6-hospital study comparing chlorhexidine gluconate (CHG)-alcohol (ChloraPrep) with povidone-iodine found the CHG formulation to be superior in preventing SSIs. Another study by Swenson et al, reported in October 2009, sequentially compared Betadine scrub-and-paint, ChloraPrep, and DuraPrep and found the lowest infection rate with DuraPrep. The study was conducted in a single medical center and was not randomized.

“Clearly, more research is needed in this area,” says Kohut.
SCIP measures

Hospitals have been improving on SCIP measures, including antibiotic administration and appropriate hair removal. Compliance with on-time antibiotics stood at 91.6% in 2008, and hair-removal compliance was at 96.3%.

That’s still not good enough, Kohut asserts. She says she’s leaning toward advocating that a root-cause analysis be done every time a preop antibiotic is missed. She compares missing an antibiotic to medication errors on a patient unit, which are subject to root-cause analysis.

“Of course, you are going to miss one once in a while,” she notes. “But if you’re at 95% compliance, that’s 5 patients out of a hundred who aren’t benefiting from something that is known to help prevent surgical site infections.”

—Pat Patterson

References


National Patient Safety Goal on SSI prevention

This is a summary of the Joint Commission’s National Patient Safety Goal 07.05.01, which requires organizations to implement evidence-based practices for preventing surgical site infection.

For the complete language, see the Hospital Accreditation Standards.

Elements of performance

1. Educate staff and licensed independent practitioners involved in surgical procedures about SSI and the importance of prevention.
2. Educate patients who are having surgery, and families as needed, about SSI prevention.
3. Implement policies and procedures aimed at reducing the risk of SSI that are aligned with regulatory requirements and evidence-based guidelines.
4. As part of the effort to reduce SSIs:
   • Conduct periodic risk assessments for SSI.
   • Select SSI measures using best practices or evidence-based guidelines.
   • Monitor compliance with best practices or evidence-based guidelines.
   • Evaluate the effectiveness of prevention efforts.
5. Measure SSI rates.
6. Provide process and outcome measure results to key stakeholders.
7. Administer prophylactic antimicrobial agents according to evidence-based best practices.
8. When hair removal is necessary, use clippers or depilatories.

What process measures does Joint Commission expect?

The Joint Commission’s National Patient Safety Goal 07.05.01 under EP 6 requires organizations to “provide process and outcome measure results” to “key stakeholders.”

A suggested outcome measure is surgical site infection rates (SSI).

But what kinds of process measures are expected?

OR Manager posed this question to the Joint Commission. Here is a summary of the response.

Response

The Joint Commission does not mandate the specific process or outcome measures. It does provide an example of a performance measure: surgical infection rates.

The Joint Commission then refers to the Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals (2008), which provides evidence-based strategies for 6 types of health care-associated infections.

The Compendium identifies both process and outcome measures for surgical site infections, which the Joint Commission says “would be appropriate to use for meeting the requirement.”

Process measures

Examples of process measures in the Compendium are:
• compliance with antibiotic prophylaxis guidelines
• compliance with hair removal guidelines
• compliance with perioperative glucose control guidelines.

The Compendium was developed by 5 partner organizations. In addition to the Joint Commission, these include the American Hospital Association, Association for Professionals in Infection Control and Epidemiology, the Infectious Diseases Society of America, and the Society for Healthcare Epidemiology of America.

Reference