Infection prevention in ambulatory surgery
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Ambulatory surgeries provide a safe, convenient, and efficient option to procedures performed in acute care hospitals. In 2008, there were 5,174 Medicare-approved ambulatory surgery centers (ASCs). In 2006, there were 53 million outpatient procedures performed. Since the Affordable Care Act directs the Centers for Medicare and Medicaid Services (CMS) to ensure superior healthcare while lowering costs, further increase in the volume of cases and the number of ASCs is likely. Because of advances in surgical technology and anesthesia care, the patients eligible to undergo ambulatory procedures may now have more comorbidities than previously encountered. The challenge to the nurse will be to continue to provide safe care. Two important aspects of safe care are prevention of surgical site infections (SSIs) and infections related to medication delivery.

Data related to ambulatory surgeries
There's no comprehensive source regarding the risk of infections for cases performed in ASCs. Therefore, it's difficult to determine a benchmark. The majority of procedures in ASCs are classified as class I or clean cases in which a low infection rate of less than 1% to 2% is expected.

The data on SSIs strictly from ambulatory surgeries are limited, but a few reports give insight into the extent of the issue. Hirsemann and colleagues describe a 9-year series covering 1,095 hernia or varicose vein repairs. The infection rates per 100 procedures were 0.5% and 1.5%, respectively. The use of spinal anesthesia was the only risk factor identified. A retrospective study of 902 patients who had ablation of the greater saphenous vein showed a rate of 8.2% with the risk increased for groin location, increased body mass index, and presence of diabetes. The authors reported a significant decrease in SSIs with the use of prophylactic antibiotics.

A study from Bykowski and colleagues did not find a benefit from prophylactic antibiotics among more than 8,000 patients who had hand surgery. The rate for patients who received antibiotics was 0.54% compared to 0.26% among those who did not. The authors found that SSIs were associated with smoking, diabetes, and longer procedures.

Oversight and regulation in ASCs
A comparison of knee arthroscopies, inguinal hernia, and vein stripping repairs performed in ASCs versus inpatient settings didn't reveal a statistical difference among SSI rates. However, there hasn't been routine scrutiny of practices at ASCs until recently. Internal controls, Department of Health regulations, and recommended practices from professional organizations such as the Ambulatory Surgery Center Association and the Association of periOperative Registered Nurses (AORN) exist, but the degree to which they're followed is uncertain.

CDC-trained surveyors conducted the largest review of care at ASCs in 2008. Sixty-eight ASCs in three states were included in this study. The following areas pertaining to infection prevention were assessed: hand hygiene, injection safety and medication handling, equipment reprocessing, environmental cleaning, and handling of blood glucose meters. More than half of the ASCs had at least one deficiency, and 17.6% were deficient in three of the five areas. Two common failures cited were related to reprocessing practices and misuse of single-dose medication vials.
The CMS requires ASCs to be certified by an approved agency. The survey targets the five sections listed above. A sample of the survey, exhibit 351, is available at the CMS website.8 Additional requirements from CMS include documentation of adherence to the timing of antibiotic prophylaxis. For maximal benefit, the antibiotic should be administered within 1 hour of the surgical incision. Implementation of this measure will require a concerted effort among several departments: pharmacy, nursing, anesthesia, and surgery. In July 2013, centers will have to document their use of a surgical safety checklist. Several organizations such as AORN and World Health Organization have samples of checklists that can be found at the Ambulatory Surgery Center Association’s website.9

According to the Association for Professionals in Infection Control and Epidemiology,11 states have introduced legislation to monitor the quality of care related to infection prevention.10 Some of the measures include certification of individuals responsible for reprocessing and sterilization of equipment, mandatory reporting of SSIs, and creation of a consumer website to access this information.

**Recommended practices**

Traditional aspects of surgical care remain the hallmarks for preventing SSIs, which include the following: air quality, maintenance of the sterile field, traffic control, surgical attire, handling and storage of clean, sterile, or soiled supplies, environmental cleaning, hand hygiene disinfection, sterilization of equipment, and skin preparation of the patient.

Appropriate air handling with adequate air exchanges, positive pressure gradients, and humidity may pose challenges. ASCs that are closed on weekends may have difficulty maintaining these systems. The humidity in the OR should be documented before the start of the first case (daily); this can be done either electronically or manually.

In the article by Schaefer and colleagues, failure to adhere to recommended practices for reprocessing equipment occurred in 28% of the practices.7 Violations included reuse of single-use items. Breaches may also occur in lapses with cleaning and packing of instruments as well as failure to perform chemical, mechanical, and biological monitoring of the sterilizers. Adequate initial and ongoing training of the staff that perform disinfection and sterilization is crucial.

The most recent AORN recommendations continue to prohibit home laundering of surgical attire because it may not reduce the antimicrobial burden of surgical attire.11 A new recommendation is that nonscrubbed personnel in the restricted or semi-restricted areas should wear a long-sleeve jacket. The purpose of this is to prevent shedding of skin squames into the OR environment and the sterile field.

Preoperative cleaning with an antiseptic (chlorhexidine gluconate) by the patient the night before and the morning of surgery has been shown to reduce SSI rates.12

**Injection safety**

Over the past decade, the CDC has investigated four large outbreaks at ambulatory care facilities in which patients were infected with hepatitis B or hepatitis C.13 It’s possible that isolated incidents of transmission go undetected. The outbreaks occurred at endoscopy, pain management, and oncology centers—none specifically at ASCs. Nonetheless, the possibility of transmission remains because administration of medication for local or general anesthesia, antibiotics, or pain relief is required at ASCs. The most common errors were reinsertion of a used needle into a multidose medication vial or use of a single needle on more than one patient.13

Safe injection practices include cleaning the top of the vial with alcohol, mixing medications as close to the time of the procedures as possible, adhering to medication expiration dates, not using single-dose vials for more than one patient, and not using bags of I.V. solutions for more than one patient.

**Surveillance**

The reporting of SSIs to a health department isn’t mandatory for ASCs. However, it’s useful to monitor outcomes in the patient population to address risks and improve care. The most common way to determine rate is to collect the number of infections divided by the number of procedures. Procedure-specific rates are preferred because the risk can vary by procedure. More advanced analysis can include the surgeon, room number, staff, administration of antibiotics, and patient comorbidities. Infections can also be discovered by sending a letter or making a phone call to the surgeon. For example, the nurse manager would generate a list of procedures by surgeon for each month and send a query letter asking if the patient developed an infection.
Moving forward
The risk of an SSI occurring after an ambulatory procedure appears to be low. However, the likelihood is that increasing volume and types of surgeries will be seen in these settings, thereby changing the risk factors for SSI. The perioperative nurse can be a powerful influence on achieving the standards that lead to low SSI rates and improved patient safety.

REFERENCES

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The author has disclosed that she has no financial relationships related to this article.

DOI:10.1097/01.ORN.0000429408.14274.1e