The art of keeping sterile instruments sterile

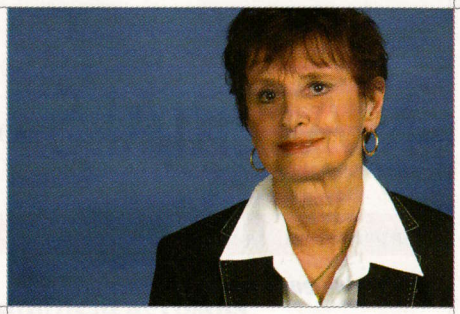

Photo by David R. Raymer

Health care associated infections continue to have a significant impact on morbidity and mortality. In addition to direct contact in the hospital where nosocomial transmission can occur through person-to-person contact, surgical patients are also at risk for surgical infections via inanimate objects such as reusable surgical instruments.

These devices require cleaning and sterilization before reuse. The sterility of reusable surgical instruments also must be maintained until the instruments are used. A combination of sterile processing and supply chain processes is required to achieve and maintain the sterility of reusable surgical instruments.

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Today's national demands for infection prevention and patient safety highlight the need for reviewing these processes. Effective policies and procedures should be in place and maintained, based upon regulatory requirements and current standards and recommended practices.

The Association for the Advancement of Medical Instrumentation (AAMI) Standards and Recommended Practices are nationally recognized and are an excellent resource. The current AAMI document ST46 2002, Steam Sterilization and Sterility Assurance, provides guidelines to help health care professionals develop procedures to achieve and maintain sterility of items sterilized in a health care facility. Be aware that AAMI ST46 has been under recent review/revision and is among the documents being incorporated in the new AAMI ST79 document, Comprehensive Guide to Steam Sterilization and Sterility Assurance in Health Care facilities, scheduled for release in 2006.

Ensuring that surgical instruments are sterile at the time of use begins with the efficacy of sterile processing. Proper cleaning and decontamination, inspection, assembly, packaging and sterilization are required. After sterilization is achieved, the focus should be on proper processes to maintain the sterility of the surgical instruments.

Several key factors affect the continued sterility of instrument packages until they are in the hands of the user, including:

Packaging material—A variety of packaging materials and types including wrap, containers and pouches, are available. Packaging products that are of high quality and validated to provide a reliable barrier to microbial penetration, protection against environmental contamination and contact contamination during handling should be selected for use. Material also should be durable enough to resist tears and punctures, as damage to a sterile instrument package can compromise the sterility of the contents.

Proper storage—Conditions and environmental controls should be in place to protect sterile instrument packages from contamination. Sterile instrument packages should be stored in an area where they will be protected from soil, moisture and insects. The sterile storage area should be located in a separate enclosed area with limited access. The storage area should be under positive pressure with appropriate air exchanges. The temperature should not exceed 75 F and relative humidity should not exceed 70 percent. The sterile packages should be stored at least eight-to-10 inches above the floor, 18 inches from the ceiling and two inches from outside walls.

Proper handling practices—Sterile instrument packages should be handled with care and handled only when absolutely necessary. Sterile packages should be rotated using the first in/first out principle to help minimize the number of times sterile packages are handled while stored. Barbara Gruendemann and Sandra Stonehocker Mangum, authors of *Infection Prevention in Surgical Settings*, state that a sterile package should be handled only three times: removing it from the sterilizer cart and placing it on a shelf; placing it in a case cart or on a supply cart; and when it is picked up and opened.

Proper transport—Packages should be covered or enclosed in case carts, covered supply carts, plastic bags or transport containers to provide protection to the contents from inadvertent contact with contaminated sources during transport.

Nationally, some 30 million patients undergo surgery annually. Ensuring that surgical instruments are sterile at the time of use is one measure to reduce patients' risk for surgical infection. MMHC

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