Recommended Practices for Sterilization in the Perioperative Practice Setting

The following recommended practices for sterilization were developed by the AORN Recommended Practices Committee and have been approved by the AORN Board of Directors. They were presented as proposed recommended practices for comments by members and others. They are effective January 1, 2008.

These recommended practices are intended as achievable recommendations representing what is believed to be an optimal level of practice. Policies and procedures will reflect variations in practice settings and/or clinical situations that determine the degree to which the recommended practices can be implemented.

AORN recognizes the various settings in which perioperative nurses practice. These recommended practices are intended as guidelines adaptable to various practice settings. These practice settings include traditional operating rooms, ambulatory surgery centers, physician's offices, cardiac catheterization laboratories, endoscopy suites, radiology departments, and all other areas where surgery may be performed.

References to nursing interventions (I) used in the Perioperative Nursing Data Set, second edition, (PNDS) are noted in parentheses when a recommended practice corresponds to a PNDS intervention.[1] The reader is referred to the PNDS for further explanation of nursing diagnoses, interventions, and outcomes.

Purpose

These recommended practices provide guidance for sterilizing items to be used in the surgical environment. The creation and maintenance of an aseptic environment has a direct influence on patient outcomes. A major responsibility of the perioperative registered nurse is to minimize patient risk for surgical site infection. One of the measures for preventing surgical site infections is to provide surgical items that are free of contamination at the time of use. This can be accomplished by subjecting them to cleaning and decontamination, followed by a sterilization process.[2] Steam, ethylene oxide (EO), low-temperature hydrogen peroxide gas plasma, peracetic acid, ozone, and dry heat are sterilization methods that are used in the health care environment. Sterilization provides the highest level of assurance that surgical items are free of viable microbes.

Recommendation I

Items to be sterilized should be cleaned, decontaminated, sterilized, and stored in a controlled environment and in accordance with AORN's "Recommended practices for cleaning and caring of instruments and powered equipment"[2] and the device manufacturer's written instructions.

Effective sterilization cannot take place without effective cleaning. The process of sterilization is negatively affected by the amount of bioburden and the number, type, and inherent resistance of microorganisms, including biofilms, on the items to be sterilized. Soils, oils, and other materials may shield microorganisms on items from contact with the sterilant or combine with, and inactivate, the sterilant.[3,4]

I.a. Functional workflow patterns should be established to create and maintain physical separation between the decontamination and sterilization areas. (PNDS: I81, I98)

Physical separation aids in environmental and microbial control. During manual cleaning of instruments, particulates, aerosolized matter, dust, and microbial counts are elevated. Physical separation and vented airflow to the outside minimizes contamination of processed items.

I.a.1. Attire, use of personal protective equipment (PPE), and limitations in personnel access and movement should be based on expected contamination levels (**Table 1**).

I.a.2. Functional workflow patterns should be established in the following order from potentially high contamination areas to clean areas:
- decontamination,
- preparation and packaging,
- sterilization processing,
- sterile storage, and
- clean distribution.

I.a.3. Traffic patterns should be established that define access restrictions, movement of personnel, and appropriate attire according to AORN's "Recommended practices for traffic patterns in the perioperative practice setting" to