GUIDELINE FOR MINIMALLY INVASIVE SURGERY

The following Guideline for Minimally Invasive Surgery was developed by the AORN Recommended Practices Committee and was approved by the AORN Board of Directors. It was presented as proposed recommendations for comments by members and others. The guideline is effective December 1, 2009. The recommendations in this guideline are intended to be achievable and represent 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 guideline can be implemented. AORN recognizes the various settings in which perioperative nurses practice; therefore, this guideline is adaptable to various practice settings. These practice settings include traditional operating rooms (ORs), ambulatory surgery centers, physicians' offices, cardiac catheterization laboratories, endoscopy suites, radiology departments, and all other areas where surgery and other invasive procedures may be performed.

Purpose

This document provides guidance to

- perioperative personnel to reduce risks to patients and the perioperative team during minimally invasive surgery (MIS) and computer-assisted technology procedures;
- perioperative registered nurses (RNs) to assist in managing distention media (eg, gas, fluid) and irrigation fluid; and
- health care administrators to identify considerations, including workplace safety and ergonomics, that need to be addressed when expanding services to accommodate new trends.

Flexible endoscopic gastrointestinal procedures are not addressed in this guideline. For information on the care and cleaning of instruments and related equipment, refer to the AORN "Recommended practices for care and cleaning of instruments and powered surgical equipment"[1] and "Recommended practices for cleaning and processing flexible endoscopes and endoscope accessories."[2] Implementing or expanding MIS and computer-assisted technologies often requires innovative problem solving, state-of-the-art equipment, new relationships between diverse teams, and additional learning requirements for all members of the perioperative team. MIS techniques have evolved from diagnostic techniques to complex operative procedures, primarily because of the documented patient benefits compared to the conventional surgical procedures. Robotic and interventional radiology techniques are examples of computer-assisted trends that continue to evolve and integrate with conventional surgical procedures. Emerging technologies may require construction of new or renovation of existing facilities and also may include audio-visual technology transmission to settings outside the traditional walls of the OR.

Recommendation I

A multidisciplinary planning team should be established to develop the design of new construction or renovation of existing ORs to accommodate MIS, interventional radiology, or other computer-assisted technology equipment. The design considerations should include safety; long-term expansion of services; and compliance with federal, state, and local building regulations.

MIS and computer-assisted procedures are frequently performed in a low-light environment and may involve complex equipment interfaces that include numerous cords, plugs, foot switches, and video equipment. Additional equipment for distention media; fluid management systems; radiologic surveillance; and therapeutic applications (eg, lasers, lithotripsy devices, ultrasound) may contribute to distractions or miscommunications that could compromise safety for both the patient and the perioperative team. An effective OR design accommodates ergonomically safe and efficient use of MIS equipment and supplies, while enabling the perioperative clinical team adequate space to work.[3] Trends for technological expansion in perioperative settings often include complex electronic systems, including web-based information systems and robotic fixtures.[3,4] The goals for technological expansion usually include streamlined communications; better resolution and visualization (eg, augmented reality system, three-dimensional images); increased potential for delineating types of tissue (eg, benign, malignant); and a real-time histological analysis of tissues within the operating field.[5] Progressive nanotechnologies (eg, micro-electrical machinery) and miniaturization of robotic components (eg, intracorporeal mobile devices) open the potential for application of surgical procedures in restricted spaces, including single-cell surgery.[4,5] As design trends and MIS technology evolve toward smaller and more remote equipment, it could result in a reduction in the size of the traditional OR in the future.[6] However, in spite of rapid developments toward miniaturization for diagnostics, expansion to allow for oversized equipment is still a common consideration when planning construction or renovation in perioperative settings. Health care facilities may have a variety of reasons other than financial return for expanding to accommodate new technologies (eg, reputation in the community, growing demand from the public and surgeons to provide state-of-the-art minimally invasive techniques). A cost-benefit analysis for expansion to