

GUIDELINE FOR MINIMALLY INVASIVE SURGERY

The Guideline for Minimally Invasive Surgery has been approved by the AORN Guidelines Advisory Board. It was presented as a proposed guideline for comments by members and others. The guideline is effective December 15, 2016. The recommendations in the 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 many diverse settings in which perioperative nurses practice; therefore, this guideline is adaptable to all areas where operative or other invasive procedures may be performed.

Purpose

This document provides guidance for creating a safe environment of care for patients undergoing minimally invasive surgical procedures. The guideline addresses distention media used during endoscopic procedures, hybrid operating rooms (ORs), magnetic resonance imaging (MRI) hybrid ORs, navigation-guided procedures, and robotic-assisted surgery. The document provides guidance to

- perioperative personnel to reduce risks to patients and perioperative team members 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 organizations for incorporating advancements in technology with consideration for workplace safety and ergonomics.

Minimally invasive surgery is a technique used in most surgical specialties. This guideline was initially developed to provide guidance during the emergence of endoscopic procedures in the 1990s but has been expanded to include other emerging technologies. Computer science development has led to advances in computer software and hardware for medical devices that allow the surgeon to perform surgery through smaller incisions or no incisions by using digital images and data. Use of these new technologies requires multidisciplinary teams and departments to merge knowledge and skill mix in new environments to enhance patient outcomes. *Digital OR* is a new term used to describe the complex environment of endoscopic suites, hybrid ORs, and computer-assisted surgeries. The technological enhancements allow for improved efficiencies and management of surgical areas.

The following topics are outside the scope of this document:

- flexible endoscopic gastrointestinal procedures,

- care and cleaning of instruments and related equipment (See the AORN Guideline for Processing Flexible Endoscopes¹ and the AORN Guideline for Cleaning and Care of Surgical Instruments²),
- design of the physical environment (See the AORN Guideline for a Safe Environment of Care, Part 2³),
- surgical smoke safety (See the AORN Guideline for Surgical Smoke Safety⁴),
- fluid warming (See the AORN Guideline Prevention of Unplanned Patient Hypothermia⁵ and the AORN Guideline for a Safe Environment of Care, Part 1⁶),
- patient positioning (See the AORN Guideline for Patient Positioning⁷),
- energy-generating devices (See the AORN Guideline for Safe Use of Energy-Generating Devices⁸), and
- surgical technique (eg, trocar entry techniques).

Evidence Review

In January 2016, a medical librarian conducted systematic searches of the databases MEDLINE®, CINAHL®, and Scopus® and the Cochrane Database of Systematic Reviews, limiting the results to articles published in English after 2009. During the development of this guideline, the lead author requested supplementary searches for topics not included in the original search as well as articles and other sources that were discovered during the evidence appraisal process. The lead author and the medical librarian also identified relevant guidelines from government agencies and standards-setting bodies.

Search terms included the subject headings and keywords *minimally invasive surgical procedures, robotic surgical procedures, angioscopy, morcellation, interventional magnetic resonance imaging, interventional radiography, interventional ultrasonography, angioplasty, endoscopy, cholangiography, and hybrid operating room*, as well as headings and keywords identifying specific procedures. Patient monitoring and procedural complications were addressed by headings and keywords that included *nursing assessment, intraoperative and postoperative complications, intraoperative and physiologic monitoring, fluid monitoring, insufflation, extravasation, pneumoperitoneum, intraabdominal pressure, TUR syndrome, and compartment syndrome*. Occupational risks related to minimally invasive surgery were included in the search with terms such as *human engineering, occupational injuries, ergonomics, musculoskeletal injuries, and occupational accidents*.

Excluded were non-peer-reviewed publications and lower-level or lower-quality evidence when higher-level or higher-quality evidence was available.

