

Evidence Review

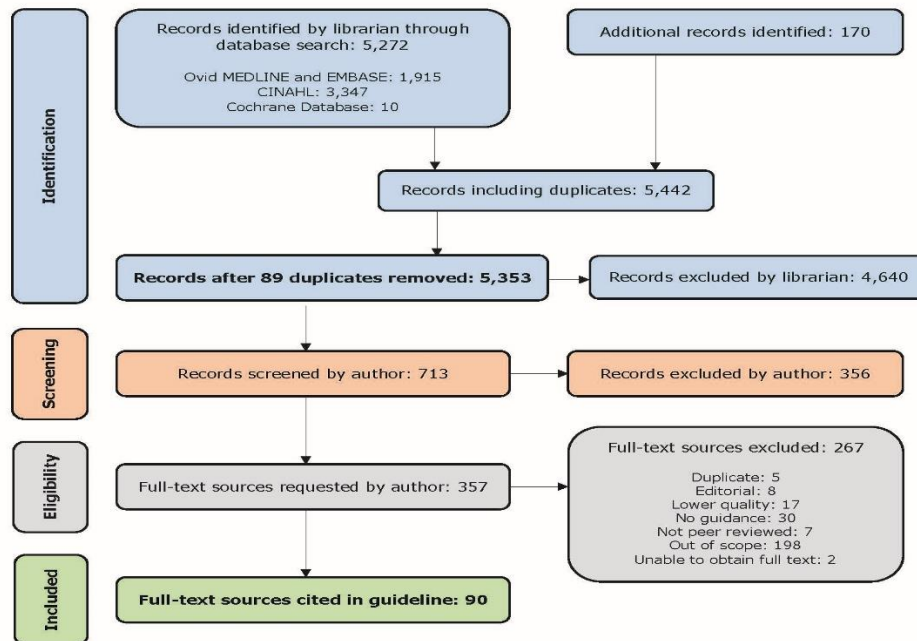
The Guideline for Laser Safety was approved by the AORN Guidelines Advisory Board and became effective as of July 29, 2020.

A medical librarian with a perioperative background conducted a systematic search of the databases Ovid MEDLINE®, Ovid Embase®, EBSCO CINAHL®, and the Cochrane Database of Systematic Reviews. The search was limited to literature published in English from **January 2009 through March 2019**. At the time of the initial search, weekly alerts were created on the topics included in that search. Results from these alerts were provided to the lead author until **May 2019**. The lead author requested additional articles that either did not fit the original search criteria or were discovered during the evidence appraisal process. The lead author and the medical librarian also identified relevant guidelines from government agencies, professional organizations, and standards-setting bodies. **Search terms** included *ablation techniques, access control, accident prevention, accidental activation, airway fires, airway laser, airway stents, anesthesia, awake patients, balloon dilation, bronchoscopy, burns, catheter ablation, CO2 laser, cosmetic techniques, diode laser, distribution of safety glasses, documentation, double lumen tube, durable medical equipment, electric power supplies, electric wiring, electrical equipment and supplies, endobronchial surgery, endoscopy, endotracheal tube, equipment and supplies (hospital), equipment contamination, equipment failure, equipment failure analysis, equipment safety, eye burns, eye injuries, eye protective devices, filtering criteria, fire extinguisher, fire management, fire safety, fires, goggles, intraoperative complications, laryngeal disease, laryngeal neoplasms, laser ablation, laser audit, laser calibration, laser debulking, laser documentation, laser fiber, laser hazard analysis, laser hazards, laser knife, laser malfunction, laser operator, laser photoablation, laser power setting, laser safety, laser safety audit, laser safety committee, laser safety education, laser safety officer, laser safety program, laser scalpel, laser surgery, laser therapy, laser treatment area, laser vaporization, laser-related burns, lasers, misdirection, nonablative laser treatment, nominal hazard zone, nurses, occupational exposure, occupational hazards, occupational injuries, occupational safety, ocular adnexa, ocular laser injuries, operative microscope, patient safety, perioperative nursing, personal protective equipment, postoperative complications, power sources and settings, preoperative care, protective clothing, pulsed laser, pulsed tissue ablation, rigid bronchoscopy, risk management, safety glasses, safety lenses, sedated patients, shared airway procedures, shared airway safety, surgical equipment, surgical fires, and veins*. Included were research and non-research literature in English, complete publications, and publications with dates within the time restriction when available. Historical studies also were included. Excluded were non-peer-reviewed publications and older evidence within the time restriction when more recent evidence was available. Editorials, news items, and other brief items were excluded. Low-quality evidence was excluded when higher-quality evidence was available, and literature outside the time restriction was excluded when literature within the time restriction was available (**Figure 1**).

Articles identified in the search were provided to the project team for evaluation. The team consisted of the lead author and one evidence appraiser. The lead author and the evidence appraiser reviewed and critically appraised each article using the AORN Research or Non-Research Evidence Appraisal Tools as appropriate. A second appraiser was consulted in the event of a disagreement between the lead author and the primary evidence appraiser. The literature was independently evaluated and appraised according to the strength and quality of the evidence. Each article was then assigned an appraisal score. The appraisal score is noted in brackets after each reference as applicable. Each recommendation rating is based on a synthesis of the collective evidence, a benefit-harm assessment, and consideration of resource use. The strength of the recommendation was determined using the AORN Evidence Rating Model and the

quality and consistency of the evidence supporting a recommendation. The recommendation strength rating is noted in brackets after each recommendation.

Figure 1: PRISMA 2009 Flow Diagram



Adapted from Moher D, Liberati A, Tetzlaff J, Atman DG; The PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA Statement. PLoS Med. 2009;6(6):e1000097.

Publication History

- Originally published November 1989, AORN Journal, as Recommended Practices: Laser Safety in the Practice Setting. Revised November 1993.
- Revised November 1997; published January 1998, AORN Journal, as Recommended Practices for Laser Safety in Practice Settings. Reformatted July 2000.
- Revised November 2003; published in Standards, Recommended Practices, and Guidelines, 2004 edition. Reprinted April 2004, AORN Journal.
- Revised October 2010 as Recommended Practices for Laser Safety in Perioperative Practice Settings for online publication in Perioperative Standards and Recommended Practices. Reformatted September 2012 for publication in Perioperative Standards and Recommended Practices, 2013 edition.
- Minor editing revisions made in November 2014 for publication as Guideline for Laser Safety in Guidelines for Perioperative Practice, 2015 edition.
- Revised and combined with the Guideline for Electrosurgery, as Guideline for Safe Use of Energy-Generating Devices, September 2016, for online publication in Guidelines for Perioperative Practice.
- Evidence ratings revised and minor editorial changes made to conform to the current AORN Evidence Rating model, September 2019, for online publication in Guidelines for Perioperative Practice.
- Revised July 2020 for publication in Guidelines for Perioperative Practice online.

Scheduled for review in 2024.