

Evidence Review

The Guideline for Radiation Safety was approved by the AORN Guidelines Advisory Board and became effective as of April 15, 2021.

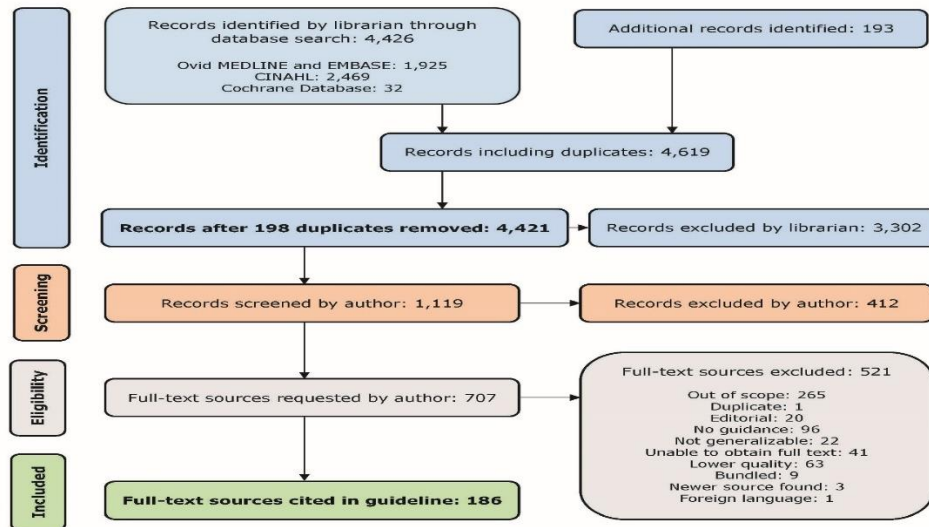
A medical librarian with a perioperative background conducted a systematic search of the databases Ovid MEDLINE®, Ovid Embase®, EBSCO CINAHL®, and the Cochrane Database of Systematic Reviews. The search was limited to literature published in English from **January 2014 through February 2020**. At the 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 **April 2020**. 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 *abdominal radiography, accidents (occupational), advanced imaging system, ambulatory care facility, ambulatory surgery, balloon dilatation, biplane fluoroscopy, brachytherapy, burns, catheterization, cat scan, catheterization (central venous), catheterization (peripheral), catheterization (peripheral central venous), catheterization (umbilical vessels), cleaning, conceptus, CT scan, disinfection, dose area products, dosimeter, dosimetry, equipment contamination, equipment failure, extremities, fertility, fetus, fixed advanced imaging system, fluoroscopy, glasses, goggles, gonads, hazardous waste (handling/storage/transport), heart catheterization, hybrid imaging equipment, intraoperative CT scan, intraoperative radiotherapy, interventional radiography, interventional radiology, invasive procedures, iodine radioisotopes, lead apron, lead garment, lead glasses, lead goggles, lead shield, leaded apron, leaded garment, leaded glasses, leaded goggles, leaded shield, monoplane fluoroscopy, occupational hazards, occupational accident, occupational diseases, occupational exposure, occupational health, occupational injuries, occupational radiation dose, ocular radiation injury, operating room, operating room personnel, operating suite, operating theater, operating theatre, outpatient surgery, patient injuries, patient safety, pregnancy, pregnancy outcomes, protective clothing, protective gloves, radiation, radiation burn, radiation exposure, radiation (ionizing), radiation injuries, radiation monitoring, radiation parameters, radiation protection, radiation safety officer, radiation safety precautions, radiation safety procedures, radioactive pollutants, radioactive tracers, radioactive waste (handling/storage/transport), radiography, radiography (abdominal), radiography (interventional), radioisotopes, radiometry, radiopharmaceuticals, radioprotection, radiosurgery, radiotherapy, radiotherapy (intraoperative), risk assessment, staff dose, and zygote.*

Included were research and non-research literature in English, complete publications, and publications with dates within the time restriction when available. 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 an 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. 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, Altman 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 October 1989, *AORN Journal*, as Recommended Practices: Radiological Safety in the Practice Setting.
- Published September 1993, *AORN Journal*, as Proposed Recommended Practices: Reducing Radiological Exposure in the Practice Setting.
- Revised and reformatted; published January 2001, *AORN Journal*, as Recommended Practices for Reducing Radiological Exposure in the Practice Setting.
- Revised November 2006; published in *Standards, Recommended Practices, and Guidelines, 2007 edition*, as Recommended Practices for Reducing Radiological Exposure in the Perioperative Practice Setting.
- Minor editing revisions made to omit PND codes; reformatted September 2012 for publication in *Perioperative Standards and Recommended Practices, 2013 edition*.
- Minor editing revisions made in November 2014 for publication in *Guidelines for Perioperative Practice, 2015 edition*, as Guideline for Reducing Radiological Exposure.
- Revised June 2015 for publication in *Guidelines for Perioperative Practice* online.
- Evidence ratings revised in *Guidelines for Perioperative Practice, 2018 edition*, to conform to the current AORN Evidence Rating Model.
- 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 April 2021 for online publication in *Guidelines for Perioperative Practice*.

Scheduled for review in 2026.