

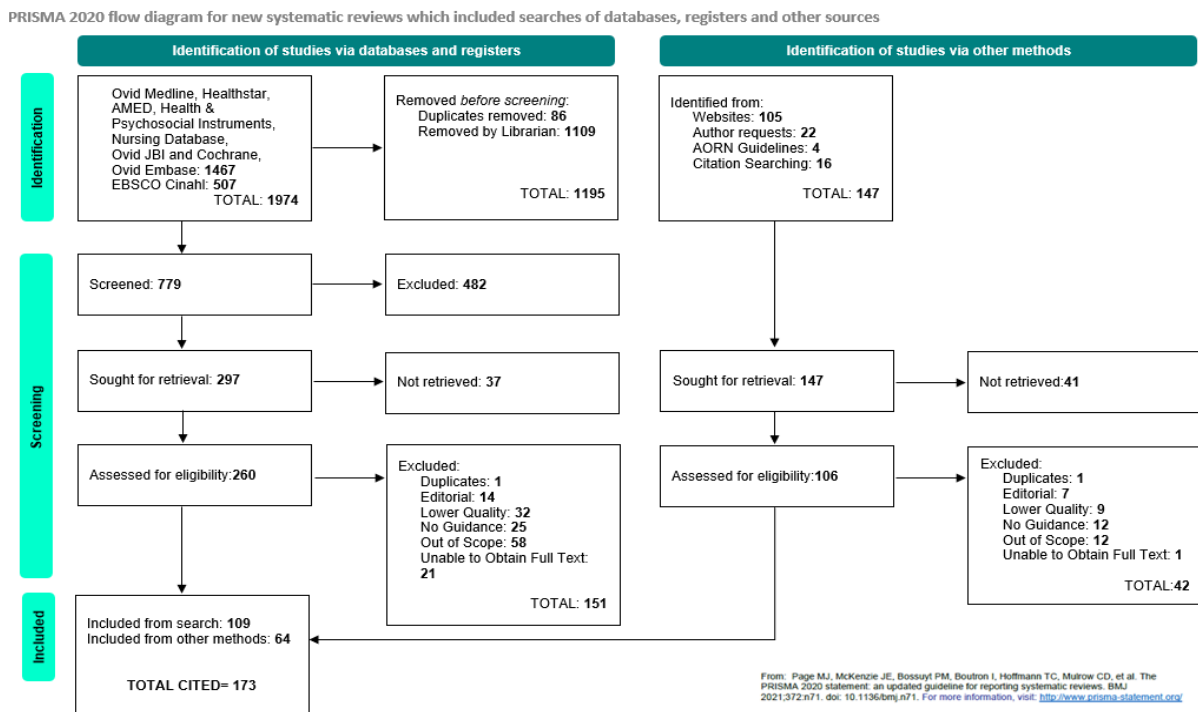
EVIDENCE REVIEW

The Guideline for Integration of Artificial Intelligence was approved by the AORN Guidelines Advisory Board and became effective May 21, 2026.

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 February 2020 through February 2025. 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 2025. 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.

Included were research and non-research literature in English, complete publications, and publications with dates within the time restriction when available. Historical studies were also 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. 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 third appraiser was consulted if there was 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. See the PRISMA 2020 flow diagram (**Figure 1**) below for more information about the systematic review and nature of included studies and resources.

Figure 1: PRISMA 2020 Flow Diagram



On February 18, 2025 a medical librarian with a perioperative background conducted searches for relevant publications on websites of organizations selected by the author (including government departments). Full details of these supplementary searches is included in the Supplementary Content on the aorn.org web site. These results were also screened by two screeners: the medical librarian, and then the lead author.

On February 20, 2025, a medical librarian with a perioperative background conducted a systematic search of 18 health science databases, the names and date coverage of which are given in Table 1. These results were screened by the medical librarian, and then the lead author.

Table 1: Databases searched and coverage

Database	Coverage
AORN Full Text Journals@Ovid	Full
Books@Ovid	February 17, 2025
JBIC EBP Database	Current to February 12, 2025
EBM Reviews: ACP Journal Club	1991 to January 2025
EBM Reviews: Cochrane Central Register of Controlled Trials	December 2024
EBM Reviews: Cochrane Database of Systematic Reviews	2005 to February 19, 2025
EBM Reviews: Cochrane Clinical Answers	February 2025
EBM Reviews: Cochrane Methodology Register	3rd Quarter 2012
EBM Reviews: Database of Abstracts of Reviews of Effects	1st Quarter 2016
EBM Reviews: Health Technology Assessment	4th Quarter 2016
EBM Reviews: NHS Economic Evaluation Database	1st Quarter 2016
AMED (Allied and Complementary Medicine)	1985 to February 2025
Embase	1974 to 2025 February 19
Health and Psychosocial Instruments	1985 to January 2025
Ovid Healthstar	1999 to December 2024
Ovid MEDLINE(R) ALL	1946 to February 19, 2025
Ovid Nursing Database	1946 to February Week 2 2025
CINAHL Complete via EBSCOhost	1937 to Current

Search strategy development process: A draft search strategy was developed using terms identified during a meeting with the lead author. Using the MeSH Subject Headings database, additional search terms were identified and added to the search strategy. The strategy was limited following the constraints in the eligibility criteria outlined by the lead author.

Editor’s note: MEDLINE is a registered trademark of the US National Library of Medicine’s Medical Literature Analysis and Retrieval System, Bethesda, MD. Embase is a registered trademark of Elsevier B.V., Amsterdam, The Netherlands. CINAHL, Cumulative Index to Nursing and Allied Health Literature, is a registered trademark of EBSCO Industries, Birmingham, AL.

Search Strategies

Ovid (Medline, Cochrane, and Embase)

1	("operating suites" or surgicenters or (operating and theat\$) or ("ambulatory surgery" and (center or facility))).ti,ab,kw. or "operating rooms".de,sh,hw.	66523
2	("artificial intelligence" or "Medical informatics" or "augmented reality").de,sh,hw. or ("augmented intelligence" or "software as medical device").ti,ab,kw. or ((artificial or Mixed or extended) and reality).ti,ab,kw. or ((Clinical or health) and informatics).ti,ab,kw.	295793
3	1 and 2	382
4	1 or 2	361934

5	(Algorithm or Automation or Robotics or Optimization or "Utilization review" or "implementation science").de,sh,hw. or Utilization.ti,ab,kw.	1744422
6	((((protected or sensitive) and patient data) or ((Protected or Personal) and health and (information or records))).ti,ab,kw. or "Health records, personal".de,sh,hw.	81697
7	ethic\$.de,sh,hw,ti,ab. or ("informed consent" or "patient safety").de,sh,hw.	1268617
8	((((surgical or clinical) and "decision support") or (workflow and (augment\$ or supplement\$ or misalignment))).ti,ab,kw. or ("Decision Support Systems, Clinical" or "decision making" or workflow).de,sh,hw.	950004
9	"Computer security".de,sh,hw. or (Cybersecurity or "cyber security" or "Compromising of Data" or "Computer Hackers" or "information protection" or "security compliance").ti,ab,kw. or (data and (encryption or protection or security)).ti,ab,kw.	315018
10	((((machine or deep) and learning) or ((Machine or predictive) and learning and (algorithms or models)) or ("Transfer machine learning" or "neural networks, computer" or "natural language processing")).de,sh,hw. or ("Neural Networks" adj3 (computational or models)).ti,ab,kw. or ("machine learning in health care" or "predictive analytics" or "model drift" or "secret cyborg phenomenon" or "information asymmetry" or "data transparency" or "diagnostic pathway" or "outcome prediction" or "Transfer learning").ti,ab,kw.	483764
11	"risk assessment".de,sh,hw. or (risk and (analysis or stratification)).ti,ab,kw.	4445480
12	(Bias or "Delivery of health care" or "Systemic racism").de,sh,hw. or (("AI" or automation or algorithm) and bias).ti,ab,kw. or ((Institutional or Institutionalized or Structural or Systematic) and Racism).ti,ab,kw.	479547
13	("AI in surgery" or "AI in perioperative care").ti,ab,kw.	84
14	4 and 5	45749
15	4 and 6	2797
16	4 and 7	18423
17	4 and 8	25665
18	4 and 9	7070
19	4 and 10	60027
20	2 and 11	15713
21	2 and 12	10663
22	4 and 13	67
23	3 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22	139657
24	limit 23 to cochrane library	59643
25	limit 24 to "core clinical journals (aim: discontinued in 2020)"	4472
26	limit 25 to ebm trends	4471
27	limit 26 to embase records	4025
28	limit 27 to english language	4000
29	limit 28 to full systematic reviews	4000
30	limit 29 to human	3719
31	limit 30 to medline records	3164
32	limit 31 to yr="2020 -Current"	1765

33	limit 32 to humans	1765
34	remove duplicates from 33	1467

EBSCOhost (CINAHL)

S1	MH "Operating Rooms" OR ("operating suites" or surgicenters) OR (operating and theat*) OR ("ambulatory surgery" and (center or facility))	16,912
S2	(MH "Augmented Reality" OR MH "Artificial Intelligence" OR MH "Medical Informatics") OR ("augmented intelligence" or "software as medical device") OR ((artificial or Mixed or extended) and reality) OR ((Clinical or health) and informatics)	57,837
S3	S2 AND S1	108
S4	S1 OR S2	74,642
S5	(MH "Implementation Science" OR MH "Utilization Review" OR MH "Algorithms" OR MH "Robotics" OR MH "Automation") OR Optimization OR Utilization	397,771
S6	MH "Medical Records, Personal" OR ((protected or sensitive) and patient data) OR ((Protected or Personal) and health and (information or records))	21,148
S7	(MH "Ethics, Organizational" OR MH "Ethics" OR MH "Ethics, Nursing" OR MH "Ethics, Medical" OR MH "Ethical Dilemmas" OR MH "Decision Making, Ethical" OR MH "Bioethics") OR (MH "Patient Safety" OR MH "Consent") OR ethics	193,674
S8	(MH "Decision Support Systems, Clinical" OR MH "Decision Making, Clinical" OR MH "Decision Making" OR MH "Workflow") OR ((surgical or clinical) and "decision support") OR (workflow and (augment* or supplement* or misalignment))	125,995
S9	MH "Data Security" OR (Cybersecurity or "cyber security" or "Compromising of Data" or "Computer Hackers" or "information protection" or "security compliance") OR (data and (encryption or protection or security))	56,615
S10	(MH "Machine Learning" OR MH "Deep Learning") OR (MH "Machine Learning Algorithms" OR MH "Prediction Algorithms" OR MH "Prediction Models" OR MH "Machine Learning") OR (MH "Neural Networks (Computer)" OR MH "Natural Language Processing") OR (Neural Networks" N3 (computational or models)) OR ("machine learning in health care" or "predictive analytics" or "model drift" or "secret cyborg phenomenon" or "information asymmetry" or "data transparency" or "diagnostic pathway" or "outcome prediction" or "Transfer learning")	36,374
S11	MH "Risk Assessment" OR (risk and (analysis or stratification))	596,891
S12	(MH "Health Care Delivery" OR MH "Systemic Racism" OR MH "Racism") OR (("AI" or automation or algorithm) and bias) OR (Institutional or Institutionalized or Structural or Systematic) and Racism)	286,806
S13	"AI in surgery" or "AI in perioperative care"	6
S14	S4 AND S5	13,637
S15	S4 AND S6	1,472
S16	S4 AND S7	4,956
S17	S4 AND S8	5,927
S18	S4 AND S9	2,521
S19	S4 AND S10	8,227
S20	S2 AND S11	2,818
S21	S2 AND S12	2,639

S22	S4 AND S13	4
S23	S3 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22	30,296
S24	S3 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22	507
Limits: English language, Peer reviewed, Exclude MEDLINE records, Human, Past 5 years.		

Web Searches// All searches conducted in 2025.

2/18: Saw mention of resource during literature search. 2] Navigated to press release for resource using google.com. 3] Navigated to primary source information using title of resource from press release. 4] Saved for author screening.

2/24: Used google.com to navigate to Coalition for Health AI. 2] From top navigation menu, chose "Responsible AI Guide and Checklists" from "Our Work." 3] Saved for author screening. [x2]

2/25: Used google.com to navigate to Coalition for Health AI. 2] From top navigation menu, chose "Responsible AI Guide and Checklists" from "Our Work." 3] Saved for author screening. [x4]

2/25: Used google.com to navigate to Coalition for Health AI. 2] From top navigation menu, chose "Blueprint for Trustworthy AI" from "Our Work." 3] Saved for author screening.

2/25: Used google.com to navigate to the Alliance for Artificial Intelligence in Healthcare (AAIH). 2] From top navigation bar, chose "Resources", and then "Publications." 3] Browsed results; saved for author screening. [x5]

2/26: Used google.com to navigate to Focus Group on Artificial Intelligence for Health (FG-AI4H). 2] Browsed text with links for relevant resources. 3] Saved for author screening. [x2]

2/26: Used google.com to navigate to Global Initiative on AI for Health (GI-AI4H). 2] Scrolled through page. 3] Under "Strategy and Guidance" heading, browsed documents; saved relevant for author review. [x5]

2/26: Used google.com to navigate to Global Initiative on AI for Health (GI-AI4H). 2] Scrolled through page. 3] Under "Publications and press releases" heading, browsed documents; saved relevant for author review. [x2]

2/26: Used google.com to navigate to Global Initiative on AI for Health (GI-AI4H). 2] Scrolled through page. 3] Under "References" heading, browsed documents; saved relevant for author review. [x2]

2/26: Used google.com to navigate to Hippocratic AI. 2] From top navigation bar, chose "LLM." 3] Scrolled to bottom of page; navigated to "Our Safety-focused LLM is patented." 4] Saved for author review.

2/26: Used google.com to navigate to Hippocratic AI. 2] From top navigation bar, chose "Research." 3] Browsed results; saved for author screening. [x7]

2/26: Used google.com to navigate to Health AI Partnership (HAIP). 2] From top navigation bar, chose "publications" drop-down menu, and then from there, "research." 3] Browsed results; saved relevant for author screening. [x8]

2/26: Used google.com to navigate to Health AI Partnership (HAIP). 2] From top navigation bar, chose "publications" drop-down menu, and then from there, "HAIP publications." 3] Browsed results; saved relevant for author screening.

2/26: Used google.com to navigate to Health AI Partnership (HAIP). 2] From top navigation bar, chose "publications" drop-down menu, and then from there, "HAIP publications." 3] Browsed results; saved relevant for author screening.

2/27: Used google.com to navigate to the AMA. 2] Browsed A-Z topics and navigation links, but did not see an AI "section." Typed "artificial intelligence" in to search bar. 3] Narrowed search to "PDFs (Embedded)." 4] Browsed results, saved for author screening. [x2]

2/27: Used google.com to navigate to the AMA. 2] Browsed A-Z topics and navigation links, but did not see an AI "section." Typed "artificial intelligence" in to search bar. 3] Narrowed search to "PDFs (Embedded)." 4] Browsed results; clicked link for "Augmented intelligence in medicine," expecting a blog post or article, and it brought me to an augmented intelligence AMA web site. 5] Saved for author review.

2/27: Used google.com to navigate to the AMA. 2] Browsed A-Z topics and navigation links, but did not see an AI "section." Typed "artificial intelligence" in to search bar. 3] Narrowed search to "PDFs (Embedded)." 4] Browsed results; clicked link for "Augmented intelligence in medicine," expecting a blog post or article, and it brought me to an augmented intelligence AMA web site. 5] Scrolled page ; saved resource for author review.

2/27: Used google.com to navigate to the AMA. 2] Browsed A-Z topics and navigation links, but did not see an AI "section." Typed "artificial intelligence" in to search bar. 3] Narrowed search to "PDFs (Embedded)." 4] Browsed results; clicked link for "Augmented intelligence in medicine," expecting a blog post or article, and it brought me to an augmented intelligence AMA web site. 5] Clicked on "Trustworthy AI in Health Care" from left list of links. 6] Saved for author review.

2/27: Used google.com to navigate to the AMA. 2] Browsed A-Z topics and navigation links, but did not see an AI "section." Typed "artificial intelligence" in to search bar. 3] Narrowed search to "PDFs (Embedded)." 4] Browsed results; clicked link for "Augmented intelligence in medicine," expecting a blog post or article, and it brought me to an augmented intelligence AMA web site. 5] Clicked on "Health care AI articles" from left list of links. 6] Browsed results, saved for author screening. [x7]

2/27: Used google.com to navigate to the AMA. 2] Browsed A-Z topics and navigation links, but did not see an AI "section." Typed "artificial intelligence" in to search bar. 3] Narrowed search to "PDFs (Embedded)." 4] Browsed results; clicked link for "The AMA is fighting to make technology work for physicians." 5] Was not an article or post, but scrolled page for relevant information. 6] Clicked "2 in 3 physicians are using health AI- up 78% from 2023." 7] Clicked link to survey referenced; saved for author screening.

2/27: Used google.com to navigate to the AMA. 2] Browsed A-Z topics and navigation links, but did not see an AI "section." Typed "artificial intelligence" in to search bar. 3] Narrowed search to "PDFs (Embedded)." 4] Browsed results; clicked link for "The AMA is fighting to make technology work for physicians." 5] Was not an article or post, but scrolled page for relevant information. 6] Clicked "2 in 3 physicians are using health AI- up 78% from 2023." 7] Clicked link to survey referenced. 8] On scrolling through survey report, noticed additional resources listed at the end; clicked on them, and saved for author screening. [x2]

2/28: Used google.com to navigate to National Institute for Standards and Technology (NIST). 2] From top navigation menu, chose "Publications." 3] Scrolled to "EXPLORE PUBLICATIONS BY TOPIC," and chose "Information Technology." 4] Added "intelligence" to search bar to further limit results. 5] Browsed results, saved for author screening. [x5]

2/28: Used google.com to navigate to National Institute for Standards and Technology (NIST). 2] From top navigation menu, chose "What we do," and then "Artificial Intelligence." 3] Clicked on "AI Risk Management Framework" from left navigation. 4] Browsed links, saved for author review. [x2]

2/28: Used google.com to navigate to National Institute for Standards and Technology (NIST). 2] From top navigation menu, chose "What we do," and then "Artificial Intelligence." 3] Clicked on "AI Resource Center" from left navigation. 4] Browsed links, saved for author review. [x2]

2/28: Used google.com to navigate to National Institute for Standards and Technology (NIST). 2] From top navigation menu, chose "What we do," and then "Artificial Intelligence." 3] Clicked on "AI Congressional Mandates & Executive Orders" from left navigation. 4] Browsed links, saved for author review. [x2]

2/28: Used google.com to navigate to the Association for the Advancement of Medical Instrumentation.(AAMI) web site. 2] Entered "artificial intelligence" in the search bar. 3] Browsed results, saved for author screening. [x2]

2/28: Used google.com to navigate to the US Food and Drug Administration (FDA) web site. 2] Looked for "artificial intelligence" in "Medical Devices"; did not see it, so I entered "artificial intelligence" in search box. 3] Chose link for "Artificial Intelligence at FDA: Publications." 4] Filtered document type by "Action Plan"; saved for author screening.

2/28: Used google.com to navigate to the US Food and Drug Administration (FDA) web site. 2] Looked for "artificial intelligence" in "Medical Devices"; did not see it, so I entered "artificial intelligence" in search box. 3] Chose link for "Artificial Intelligence at FDA: Publications." 4] Filtered document type by "Report"; saved for author screening.

2/28: Used google.com to navigate to the Centers for Medicare and Medicaid Services (CMS) 2] Looked for "artificial intelligence" in "Initiatives"; did not see it, so I entered "artificial intelligence" in search box. 3] Browsed results, saved for author screening.

2/28: Used google.com to navigate to the National Institute for Occupational Safety and Health (NIOSH) 2] Looked for "artificial intelligence" in topics; did not see it; entered "artificial intelligence" in search box. 3] Chose first result, for NIOSH's Science Blog, and the "Artificial Intelligence" category. 4] Browsed results, saved for author screening. [x5]

3/4: Used google.com to navigate to DNV Healthcare. 2] Entered "artificial intelligence" in search bar. Limited results for Healthcare sector only. 3] Noticed press release for CareIndexing, saved for author screening.

3/4: Used google.com to navigate to DNV Healthcare. 2] Entered "artificial intelligence" in search bar. Limited results for Healthcare sector only. 3] Noticed result for ISO publication, saved for author screening.

3/4: Used google.com to navigate to DNV Healthcare. 2] Entered "artificial intelligence" in search bar. Limited results for Healthcare sector only. 3] Browsed results, saved for author screening. [x5]

3/4: Used google.com to navigate to the Joint Commission's web site. 2] Under "Our Priorities" dropdown menu, chose "Responsible Use of Health Data." 3] Saved for author screening.

3/4: Used google.com to navigate to the National Academy of Medicine. 2] Under the "Our Work" dropdown menu, chose "AI and Emerging Technology" under "Key Issues" heading. 3] Browsed results; saved for author review. [x3]

3/4: Used google.com to navigate to the National Academy of Medicine. 2] From "Resources" dropdown menu, chose "Publications." 3] Limited by "topic" to "Artificial intelligence." 4] Saved for author screening.

3/4: Used google.com to navigate to the American Nurses Association. 2] Chose the "Practice and Advocacy" dropdown menu, and then "Position Statements." 3] Browsed position statements; saved for author screening.

3/4: Used google.com to navigate to the American Society for Anesthesiologists. 2] Looked for content in dropdown menus, but seeing none, typed "artificial intelligence" in search bar. 3] Limited result to "Article" under "Type." 4] Saved for author screening.

3/4: Used google.com to navigate to the American Hospital Association. 2] Looked for content on AI in dropdown menus, but seeing none, typed "artificial intelligence" in search bar. 3] Limited by type to "Resources." 4] Browsed results, saved for author screening. [x3]

3/4: Used google.com to navigate to the World Health Organization. 2] Looked for content on AI in dropdown menus, but seeing none, typed "artificial intelligence" in search bar. 3] Browsed results; saved for author screening. [x4]

RESULTS

Studies that offer insights that can inform perioperative nursing practice about integration of artificial intelligence in the health care/perioperative practice setting were included in this review. Studies that appeared to meet the inclusion criteria were excluded if they were of lower quality, provided no guidance, were duplicates of already-included studies, full text was not available in English, the results were not applicable or generalizable to the perioperative practice setting, were the wrong setting, or wrong population. A synthesis of the study results informed for formation of practice recommendations and this synthesis is described briefly in the corresponding rationales that follow each practice recommendation. Additional information about each included study is found in the evidence table that corresponds to the published guideline.

Living Guideline and Ongoing Evidence Surveillance (LSR)

This guideline will be maintained as a living guideline through an ongoing Living Systematic Review (LSR) process. Evidence surveillance is continuous, with literature searches and evidence screening conducted on a monthly basis to capture new publications on the integration of artificial intelligence in perioperative practice. Any new evidence identified is systematically screened for relevance, reviewed, and critically appraised using AORN's evidence appraisal processes. The findings are evaluated for potential impact on the guideline's existing recommendations. If substantive new evidence emerges that indicates a need to modify current guidance, the guideline's recommendations, supporting rationales, or implementation considerations will be updated accordingly. All updates are developed and approved in alignment with AORN's established governance and approval processes, ensuring that the guideline remains current and evidence-based.

PUBLICATION HISTORY

- Published as the Guideline for Integration of Artificial Intelligence for publication in Guidelines for Perioperative Practice online (eGuidelines+) and will appear in the 2027 print edition.
- Maintained as a living guideline through an ongoing LSR (Living Systematic Review) evidence surveillance and update process.