REFERENCE #	CITATION	EVIDENCE TYPE	SAMPLE SIZE/ POPULATION	INTERVENTION(S)	CONTROL/ COMPARISON	OUTCOME MEASURE(S)	CONCLUSION(S)	CONSENSUS SCORE
1	Guideline for medication safety. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:489–528.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for medication safety.	IVA
2	Guideline for design and maintenance of the surgical suite. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:87–118.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for design and maintenance of the surgical suite.	IVA
3	AORN Position Statement on Environmental Responsibility. AORN, Inc. 2020. Accessed October 7, 2023. https://www.aorn.org/guidelines-resources/clinical-resources/position-statements	Position Statement	n/a	n/a	n/a	n/a	AORN's position on environmental stewardship.	IVA
4	Guideline for Safe patient handling and movement. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:893–944	Guideline	n/a	n/a	n/a	n/a	Provides guidance for safe patient handling and mobility.	IVA
5	Guideline for team communication. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:1153–1184.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for team communication.	IVA
6	AORN Position Statement on Managing Distractions and Noise During Perioperative Patient Care. AORN, Inc. 2020. Accessed October 7, 2023. https://www.aorn.org/guidelines-resources/clinical-resources/position-statements	Position Statement	n/a	n/a	n/a	n/a	AORN's position on managing distractions and noise in the perioperative setting.	IVA
7	Guideline for transmission-based precautions. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:1185–1214.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for transmission-based precautions.	IVA

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8	Guideline for sharps safety. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:945–968.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for sharps safety.	IVA
9	Guideline for medical device and product evaluation. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:777–788.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for medical device and product evaluation.	IVA
10	Guideline for radiation safety. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:789–824.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for radiation safety.	IVA
11	Guideline for sterilization. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:1057–1086.	Guideline	n/a	n/a	n/a	n/a	Provides guidance on sterilization of instruments.	IVA
12	Guideline for processing flexible endoscopes. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:213–266.	Guideline	n/a	n/a	n/a	n/a	Provides guidance on processing of flexible endoscopes.	IVA
13	Guideline for manual chemical high-level disinfection. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:309–336.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for high-level disinfection.	IVA
14	Guideline for surgical smoke safety. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:1153–1184.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for surgical smoke safety.	IVA
15	Pelter MM, Stotts J, Spolini K, Nguyen J, Sin E, Hu X. Developing a clinical alarms management committee at an academic medical center. Biomed Inst Technol. 2017;51:21–29.	Organizational Experience	n/a	n/a	n/a	n/a	Describes organizational experience in establishing a committee to oversee the management of clinical alarms at a large academic medical center.	VA
16	Anthology: Alarm Management Solutions 2014-18. Association for the Advancement of Medical Instrumentation. 2020. Accessed October 7, 2023. https://aami.org/anthology-alarm-management-solutions	Consensus	n/a	n/a	n/a	n/a	Recommendations for medical device alarms.	IVA

REFERENCE #	CITATION	EVIDENCE TYPE	SAMPLE SIZE/ POPULATION	INTERVENTION(S)	CONTROL/ COMPARISON	OUTCOME MEASURE(S)	CONCLUSION(S)	CONSENSUS SCORE
17	AAMI Clinical Alarm Management Compendium. Association for the Advancement of Medical Instrumentation. 2015. Accessed October 7, 2023. https://www.aami.org/docs/default-source/foundation/alarms/alarm-compendium-2015.pdf?sfvrsn=2d2b53bd_2.	Consensus	n/a	n/a	n/a	n/a	Recommendations for medical device alarms.	IVA
18	Criscitelli T. Alarm management: promoting safety and establishing guidelines. AORN J. 2016;103(5):518–521.	Expert Opinion	n/a	n/a	n/a	n/a	Personnel in ambulatory surgery centers must understand alarm fatigue and develop an approach for their specific facility that can include standardizing policies, identifying patient populations, individualizing polices based on patient needs.	VB
19	A Siren Call to Act: Priority Issues from the Medical Device Alarms Summit. Association for the Advancement of Medical Instrumentation. 2011. Accessed October 7, 2023. https://www.aami.org/docs/default-source/foundation/alarms/2011-alarms-summit-publication.pdf?sfvrsn=5584c8e0_2	Consensus	n/a	n/a	n/a	n/a	Recommendations for medical device alarms.	IVB
20	Brown JC, Anglin-Regal P. Clinical alarm management: a team effort. Biomed Instrum Technol. 2008;42(2):142–144	Expert Opinion	n/a	n/a	n/a	n/a	Communicating changes to alarm settings prepares oncoming personnel to respond appropriately.	VA
21	Clark T. Impact of clinical alarms on patient safety: a report from the American College of Clinical Engineering Healthcare Technology Foundation. Journal of Clinical Engineering. 2007;32(1):22–33	Expert Opinion	n/a	n/a	n/a	n/a	The reported causes of injuries and near misses include disabled alarm systems (eg, blood bank refrigerators, code blue alarms, electrosurgical unit [ESU] alarms, ethylene oxide level alarms, fire alarms, water treatment alarms), distractions, and failure of personnel to hear or to act on clinical alarms.	VB

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22	Recommendations for Pre-Anesthesia Checkout Procedures. American Society of Anesthesiologists. 2008. Accessed October 7, 2023. https://www.asahq.org/For-Members/Popular-Publications/Standards-and-Guidelines/~/media/1875B7E316D24DF8AFE1EF332CDCD7D5.ashx	Guideline	n/a	n/a	n/a	n/a	Recommendations for pre-anesthesia checkout.	IVB
23	Bell J, Collins JW, Dalsey E, Sublet V. Slips, Trip, and Fall Prevention for Healthcare Workers. DHHS (NIOSH) Publication No. 2011-123. Centers for Disease Control and Prevention. 2010. Accessed October 7, 2023.	Consensus	n/a	n/a	n/a	n/a	NIOSH tools for preventing slips, trips, and falls in the health care setting.	IVB
24	Bell JL, Collins JW, Wolf L et al. Evaluation of a comprehensive slip, trip and fall prevention programme for hospital employees. Ergonomics. 2008;51(12):1906–1925.	Nonexperimental	16,900 hospital employees	Slip, trip, and fall prevention program	n/a	STF injury claims	STF injury claims at the study hospitals declined significantly after implementation of a comprehensive STF prevention program.	IIIB
25	Dressner MA. Occupational injuries and illnesses among registered nurses. Monthly Labor Review. 2018. 10.21916/mlr.2018.27	Expert Opinion	n/a	n/a	n/a	n/a	Report on occupational injuries among RNs, including statistics on slips, trips, and falls.	VA
26	Chang W, Leclercq S, Lockhart TE, Haslam R. State of science: occupational slips, trips and falls on the same level. Ergonomics. 2016;59(7):861–883.	Literature Review	n/a	n/a	n/a	n/a	Occupational slips, trips, and falls on the same level are a significant cause of occupational injury. Research has identified some of the causes of STFLs. Although initial research shows that efforts to prevent can be effective, additional research is needed to understand what interventions are most effective, how they should be implemented, and cost-benefit analysis. Recommend a systems approach to address this.	VA

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27	Vural F, Sutsunbuloglu E. Ergonomics: an important factor in the operating room. J Perioper Pract. 2016;26(7-8):174–178.	Literature Review	n/a	n/a	n/a	n/a	Summarizes risks in the physical environment found in the OR and recommendations to mitigate.	VB
28	Brogmus G, Leone W, Butler L, Hernandez E. Best practices in OR suite layout and equipment choices to reduce slips, trips, and falls. AORN J. 2007;86(3):384–388.	Expert Opinion	n/a	n/a	n/a	n/a	Best practice recommendations for preventing slips, trips, and falls in the OR.	VB
29	Yasak K, Vural F. Assessment of the environmental and physical ergonomic conditions of ORs in Turkey. AORN J. 2019;110(5):517–523.	Nonexperimental	58 operating rooms in Turkey	n/a	n/a	Noise and air quality; presence of equipment for lifting patients, equipment adjustable to staff needs, pressure reduction mats, stools for rest	Recommended that leaders perform environmental and ergonomic assessments to identify threats to employee health and safety. Larger descriptive studies should be done to determine environmental and physical ergonomic features and risks in the OR.	IIIB
30	Bailey CR, Radhakrishna S, Asanati K et al. Ergonomics in the anaesthetic workplace: guideline from the Association of Anaesthetists. Anaesthesia. 2021;76(12):1635–1647.	Consensus	n/a	n/a	n/a	n/a	Recommendations from the Association of Anaesthetists of Great Britain and Ireland on ergonomics in the anesthetic workplace.	IVB

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31	Guideline for environmental cleaning. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:181–212.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for environmental cleaning in the perioperative setting.	IVA
32	Surgical fires. ECRI. June 1 , 2016. Accessed October 7, 2023. https://www.ecri.org/components/HRC/Pages/SafSec13_1.aspx	Expert Opinion	n/a	n/a	n/a	n/a	Provides guidance ECRI for fire safety education and drills, strategies to reduce risks from fuels, ignition sources, and oxidizers, and how to respond if a fire does occur.	VB
33	Apfelbaum JL, Caplan RA, Barker SJ et al. Practice advisory for the prevention and management of operating room fires: an updated report by the American	Guideline	n/a	n/a	n/a	n/a	Provides guidance for the prevention and management of OR fires.	IVA
34	Tola DH, Jillson IA, Graling P. Surgical fire safety: an aambulatory surgical center quality improvement project. AORN J. 2018;107(3):335–344.	Organizational Experience	13 OR team members from ASC	n/a	n/a	Self-reported ability to apply fire prevention measures; adoption of fire risk assessment	Found that a fire safety educational intervention did not lead to significant gains in knowledge of surgical fires among ASC staff and some improvement in use of the fire risk assessment three months post-intervention. Based on staff feedback, the fire risk assessment was modified and policy updated to clarify participation in and timing of the fire risk assessment.	VB
35	Kaye AD, Kolinsky D, Urman RD. Management of a fire in the operating room. J Anesth. 2014;28(2):279–287.	Expert Opinion	n/a	n/a	n/a	n/a	Presented a fire prevention algorithm that included verification of availability and status of fire safety equipment.	VA
36	NFPA 99: Health Care Facilities Code. Quincy, MA: National Fire Protection Association (NFPA); 2012.	Consensus	n/a	n/a	n/a	n/a	Health care facilities code.	IVB
37	NFPA 101: Life Safety Code. Quincy, MA: National Fire Protection Association (NFPA); 2012.	Consensus	n/a	n/a	n/a	n/a	Life safety code.	IVB

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38	Stengel J. Perioperative fire prevention and mitigation. AORN J. 2021;114(6):623–632.	Expert Opinion	n/a	n/a	n/a	n/a	Recommends strategies for OR fire prevention and management; presents fire response algorithm and crisis checklist; discusses key takeaways for perioperative nurses, leaders, and educators.	VB
39	Stucky CH, Wolf JM. Fire in the operating room: surgical case report from a forced-air warming device equipment fire. J Perianesth Nurs. 2022;37(6):766–769.	Case Report	n/a	n/a	n/a	n/a	Describes an equipment fire involving a forced-air warming device that occurred during a shoulder arthroscopy and the surgical team's response to the event.	VA
40	Connor MA, Menke AM, Vrcek I, Shore JW. Operating room fires in periocular surgery. Int Ophthalmol. 2018;38(3):1085–1093.	Nonexperimental	168 oculoplastic surgeons; 7 OR fire claims	n/a	n/a	Surgical fire encounters and characteristics, training; fire claims: patient and legal outcomes	Review of medicolegal periocular surgical fires and survey of oculoplastic surgeons highlighted the need for knowledge and awareness of intraoperative fire risks and the importance of communication between perioperative team members to reduce the risk of OR fires.	IIIB
41	Mehta SP, Bhananker SM, Posner KL, Domino KB. Operating room fires: a closed claims analysis. Anesthesiology. 2013;118(5):1133–1139.	Nonexperimental	105 OR fire claims	n/a	n/a	n/a	The risk of OR fires can be reduced by following practice recommendadtions from ASA, APSF, and FDA. Including team communication, identification of risk factors, and careful use of ignition and oxidizer sources.	IIIB
42	Seifert PC, Peterson E, Graham K. Crisis management of fire in the OR. AORN J. 2015;101(2):250–263.	Expert Opinion	n/a	n/a	n/a	n/a	Fire prevention and management strategies.	VA
43	NFPA 99: Health Care Facilities Code. Quincy, MA: National Fire Protection Association (NFPA); 2021.	Consensus	n/a	n/a	n/a	n/a	Health care facilities code.	IVB

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44	Stewart MW, Bartley GB. Fires in the operating room: prepare and prevent. Ophthalmology. 2015;122(3):445–447.	Expert Opinion	n/a	n/a	n/a	n/a	Recommendations for fire prevention, training to include surgeons, and strategies to safely manage fire.	VB
45	NFPA 101: Life Safety Code. Quincy, MA: National Fire Protection Association; 2021.	Consensus	n/a	n/a	n/a	n/a	NFPA life safety code.	IVB
46	Alidina S, Goldhaber-Fiebert S, Hannenberg AA et al. Factors associated with the use of cognitive aids in operating room crises: a cross-sectional study of US hospitals and ambulatory surgical centers. Implement Sci. 2018;13(1):50.	Nonexperimental	368 respondents from US hospitals and ASCs that had implemented OR cognitive aids for crises	n/a	n/a	Regular use of cognitive aids during applicable clinical events	A supportive organizational culture and using a multi-step implementation process was associated with successful implementation of cognitive aids in the OR.	IIIB
47	Kelly FE, Bailey CR, Aldridge P et al. Fire safety and emergency evacuation guidelines for intensive care units and operating theatres: for use in the event	Guideline	n/a	n/a	n/a	n/a	Provides guidance on fire safety and emergency evacuation for intensive care units and operating theatres.	IVB
48	Coletto K, Tariman JD, Lee YM, Kapanke K. Perceived knowledge and attitudes of certified registered nurse anesthetists and student registered nurse anesthetists on fire risk assessment during time-out in the operating room. AANA J. 2018;86(2):99–108.	Nonexperimental	140 active members of Illinois Association of Nurse Anesthetists (CRNAs and SRNAs)	n/a	n/a	Perceived knowledge and attitudes toward fire risk assessment during OR time outs	Concluded that CRNAs and SRNAs had positive attitudes toward OR fire risk assessment during the time out, however, their perceived knowledge deficits on fire risk assessment pointed to a need for additional education, training, and careful planning to successfully integrate the fire risk assessment into existing time out protocol.	IIIB
49	Hepner DL, Arriaga AF, Cooper JB et al. Operating room crisis checklists and emergency manuals. Anesthesiology. 2017;127(2):384–392.	Literature Review	n/a	n/a	n/a	n/a	Describes the use of cognitive aids in managing OR emergencies.	VB
50	Jones TS, Black IH, Robinson TN, Jones EL. Operating room fires. Anesthesiology. 2019;130(3):492–501.	Literature Review	n/a	n/a	n/a	n/a	Reviews literature on the elements of the fire triad and discusses team training, surgical checklists, and strategies to manage OR fires.	VA

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51	Kezze I, Zoremba N, Rossaint R, Rieg A, Coburn M, Schälte G. Risks and prevention of surgical fires: a systematic review. Anaesthesist. 2018;67(6):426–447.	Systematic Review	n/a	n/a	n/a	n/a	Concluded that more robust reporting (ie, mandatory and standardized reporting of every fire) of OR fires is needed to determine the real extent of the problem. Recommends education, rehearsal, discussion of fire risk, and implementation of prevention strategies.	IIIA
52	Grauer JS, Kana LA, Alzouhayli SJ, Roy S, Cramer JD. Surgical fire in the United States: 2000–2020. Surgery. 2022;173(2):357–364.	Nonexperimental	565 reports of surgical fires resulting in harm to patients (531 reports) or surgical personnel (50 reports)	n/a	n/a	Contributing factors and characteristics of surgical fire events that resulted in patient and personnel harm; nature of harm/injury.	Identified common themes associated with surgical fires - they are most likely to occur near the anesthesia circuit, particularly in presence of open oxygen; be related to mishandling of flammable materials, particularly alcohol-based skin antiseptics when not completely dried; damaged equipment is a potential ignition source. Recommend emphasizing device maintenance and surveillance for damage, confirming alcohol-based skin prep is dry during the time out, more rigorous reporting of fire events, and education of surgeons and staff.	IIIB
53	Ventura Spagnolo E, Mondello C, Roccuzzo S et al. Fire in operating room: the adverse "never" event. Case report, mini-review and medico-legal considerations. Leg Med (Tokyo). 2021;51:101879.	Case Report	n/a	n/a	n/a	n/a	Describes case of a 65 year old woman who reported burns to the neck from an OR fire during thyroidectomy. Medico-legal analysis showed professional liability due to not waiting for skin prep solution to dry before activating ESU. Recommends implementing national and local reporting procedures and root cause analysis to manage risk and prevent OR fires.	VB
54	Carmack D Jr, Hegeman E, Vizurraga D. Orthopaedic operating room fire risks: FDA database and literature review. JBJS Rev. 2023;11(2). 10.2106/JBJS.RVW.22.00159.	Literature Review	n/a	n/a	n/a	n/a	Summarized fire data from the MAUDE database and fire safety literature. Proposed updates to the fire safety assessment and management algorithm.	VB

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55	Ervine HS. Conducting a successful fire drill in the OR. AORN J. 2021;114(4):287–289.	Expert Opinion	n/a	n/a	n/a	n/a	Describes key components for implementing a fire drill in the OR.	VB
56	State Operations Manual Appendix A: Survey Protocol, Regulations and Interpretive Guidelines for Hospitals. Rev. 216, 7-21-23.. Centers for Medicare & Medicaid Services. Accessed October 7, 2023. https://www.cms.gov/regulations-and-guidance/guidance/manuals/downloads/som107ap_a_hospitals.pdf	Regulatory	n/a	n/a	n/a	n/a	CMS conditions of participation for hospitals.	n/a
57	Anonymous State Operations Manual Appendix L: Guidance for Surveyors: Ambulatory Surgical Centers 6-17-22	Regulatory	n/a	n/a	n/a	n/a	CMS conditions of coverage for ambulatory centers.	n/a
58	State Operations Manual Appendix L: Guidance for Surveyors: Ambulatory Surgical Centers. Rev. 215, 7-21-23 ed. Centers for Medicare & Medicaid Services. Accessed October 7, 2023. https://www.cms.gov/regulations-and-guidance/guidance/manuals/downloads/som107ap_l_ambulatory.pdf	Regulatory	n/a	n/a	n/a	n/a	Fire safety requirements for certain health care facilities.	n/a
59	Maamari RN, Custer PL. Operating room fires in oculoplastic surgery. Ophthalmic Plast Reconstr Surg. 2018;34(2):114–122.	Nonexperimental	259 oculoplastic surgeons	n/a	n/a	Surgical fire encounters and characteristics, fire trends, management of burn injuries	Nearly 1/3 of survey participants experienced an OR fire in their career. Common features included monitored IV sedation, use of cautery device (eg, battery powered, monopolar), use of open oxygen delivery, and use of drapes that cover the face. Concluded that study findings support adoption of fire safety measures specific to oculoplastic surgery.	IIIB

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60	Cho OH, Lee D, Hwang KH. Patient safety awareness, knowledge and attitude about fire risk assessment during time-out among perioperative nurses in Korea. Nurs Open. 2022;9(2):1353–1361.	Nonexperimental	158 perioperative RNs from 22 hospitals in Korea	n/a	n/a	Patient safety awareness, knowledge and attitude about fire risk assessment during the time out	Shows that patient safety awareness among perioperative nurses in South Korea should be proactively addressed through education and multidisciplinary team simulation training on OR fire safety.	IIIB
61	Livingston EH. Improving preoperative timeouts for better surgical fire readiness. JAMA Surg. 2022;157(4):291–292.	Expert Opinion	n/a	n/a	n/a	n/a	Adding a fire risk assessment to the preoperative time out that includes the location of fire extinguishers, alarm pulls, gas valves, and circuit breakers will assist the perioperative team's ability to rapidly respond to and lessen the harm of an OR fire if it does occur.	VB
62	Prasad N, Tavaluc R, Harley E. Thermal injury to common operating room materials by fiber optic light sources and endoscopes. Am J Otolaryngol. 2019;40(5):631–635.	Quasi-experimental	Number of trials not reported	Type of contact, type of light source, heat source, light intensity, surface material	n/a	Time elapsed to presence of visible smoke, charring, or smell of burning; temperature	Fiber optic light cords present a risk for injury to patients. The study identified practices to reduce this risk, such as minimizing the light source intensity and using standby mode when not in use, always attaching the cord to the scope before turning on the light, placing scopes on the mayo stand when not using, providing safety training to personnel.	IIC
63	Cooper JB. The case of the inadvertently triggered laser: an historical example of simulation-enhanced adverse event investigation. Simul Healthc. 2021;16(3):185–189.	Case Report	n/a	n/a	n/a	n/a	Case report detailing the use of re-enactment/simulation to determine the most likely cause of a surgical fire during a laser gynecologic procedure that occurred 30 years prior.	VA

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64	US Department of Health and Human Services, Food and Drug Administration, Center for Drug Evaluation and Research. Guidance for Hospitals, Nursing Homes, and Other Health Care Facilities. US Food and Drug Administration. 2001. Accessed October 7, 2023. https://www.fda.gov/regulatory-information/search-fda-guidance-documents/guidance-hospitals-nursing-homes-and-other-health-care-facilities-fda-public-health-advisory	Expert Opinion	n/a	n/a	n/a	n/a	Public health advisory for connection errors in medical gas systems.	VA
65	Simonini A, Brogi E, Mazzei O et al. Airway fire during laser surgery of the vocal cords in children: a case report. Turk J Anaesthesiol Reanim. 2021;49(3):257–260.	Case Report	n/a	n/a	n/a	n/a	Report of endotracheal tube fire in an infant during treatment of laryngeal stenosis with CO2 laser. Purpose of reporting this case is to increase awareness of potential for fire and how to manage airway fires in pediatric patients.	VB
66	Surgical fire data. ECRI. February 8, 2017. Accessed October 9, 2023. https://www.ecri.org/search-results/member-preview/hdjournal/pages/surgical-fire-data	Expert Opinion	n/a	n/a	n/a	n/a	Summary of surgical fire data reported to ECRI.	VC
67	Jardaly A, Arguello A, Ponce BA, Leitch K, McGwin G, Gilbert SR. Catching fire: are operating room fires a concern in orthopedics? J Patient Saf. 2022;18(3):225–229.	Nonexperimental	172 orthopedic surgeons; 13 OR fires during orthopedic cases	n/a	n/a	OR fires observed, characteristics of hospital policies, perspective on OR fires	Surgeons should be aware of the oxidizers and ignition sources in the OR and cautiously use them in the presence of fuel sources (eg, gauze, bone cement). Staff and physician education can help prevent OR fires.	IIIC

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68	Raghavan K, Lagisetty KH, Butler KL, Cahalane MJ, Gupta A, Odom SR. Intraoperative fires during emergent colon surgery. Am Surg. 2015;81(2):E82–E83.	Case Report	n/a	n/a	n/a	n/a	Report of a fire occurring during incision into the peritoneum with an electrosurgical device. Recommend not using ESU device on distended colons, using saline to extinguish a gastrointestinal fire.	VB
69	Jones EL, Overbey DM, Chapman BC et al. Operating room fires and surgical skin preparation. J Am Coll Surg. 2017;225(1):160–165.	Nonexperimental	Porcine epidermis and dermis were used, each experiment were repeated 20 times	n/a	n/a	Fire	Nonalcohol based skin preps caused no fires on immediate testing or 3 minute delayed testing. All alcohol based preps created fires. Pooling of nonalcoholic skin preparations did not lead to fire. Pooling of alcohol based skin preps created more fires on immediate and delayed testing. Even when O2 is missing, fires can still occur. Alcohol based skin preps and pooling of alcohol based skin preps fuel surgical fires. The results indicate surgeons can decrease the risk of an OR fire by avoiding pooling of skin prep or use nonalcohol based skin preps.	IIIB
70	Culp WC Jr, Kimbrough BA, Luna S. Flammability of surgical drapes and materials in varying concentrations of oxygen. Anesthesiology. 2013;119(4):770–776.	Nonexperimental	5 fuel sources (laparotomy sponge, surgical and utility drapes, surgical gown, blue towel)	n/a	O2 concentration (21%, 50%, 100%)	time to ignition	Fuel sources ignite and burn more quickly in an oxygen-enriched environment.	IIIB
71	NFPA 30: Flammable and Combustible Liquids Code. Quincy, MA: National Fire Protection Association (NFPA); 2024.	Consensus	n/a	n/a	n/a	n/a	Code for flammable and combustible liquids.	IVB

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72	Rasul L, Liaqat N, Imran R, Javed N, Hasan S. Surgical field fire involving a premature neonate. J Coll Physicians Surg Pak. 2020;30(7):760–761.	Case Report	n/a	n/a	n/a	n/a	Describes case of a fire on the surgical field during jejunal atresia surgery on a premature infant who later died as a result of their injuries. The authors reported that prep solution that soaked into cotton that the infant was wrapped in for the surgery ignited upon activation of the ESU. As a result of the incident, the facility stopped wrapping children in cotton during surgery.	VC
73	Ryan SP, Adams SB, Allen N, Lazarides AL, Wellman SS, Gage MJ. Intraoperative fire risk: evaluating the 3-minute wait after chlorhexidine-alcohol antiseptic scrub. J Orthop Trauma. 2021;35(1):e31–e33.	Nonexperimental	36 attempted ignitions of prepped pigs' feet	Alcohol-based skin prep	n/a	Ignition	No samples were found to be flammable at 60 or 90 seconds of dry time. Samples observed to be dry after 40.5 seconds on average and did not ignite. Concluded that the presence of pooled prep solution and solution that appeared wet after application were more significant fire risks than time elapsed after prep application; findings did not support the manufacturer's recommended 3-minute dry time. N= 6	IIIC
74	Guideline for preoperative patient skin antisepsis. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:619–676	Guideline	n/a	n/a	n/a	n/a	Provides guidance for patient skin antisepsis.	IVA
75	Tao JP, Hirabayashi KE, Kim BT, Zhu FA, Joseph JM, Nunery W. The efficacy of a midfacial seal drape in reducing oculofacial surgical field fire risk. Ophthalmic Plast Reconstr Surg. 2013;29(2):109–112.	Quasi-experimental	1 patient simulator	midface seal drape	n/a	oxygen concentration	A midface seal drape could reduce O2 concentration in the surgical field and reduce risk of fire.	IIB
76	Anesthetic Gases: Guidelines for Workplace Exposures. Occupational Safety and Health Administration. 2000. Accessed October 7, 2023. https://www.osha.gov/waste-anesthetic-gases/workplace-exposures-guidelines	Consensus	n/a	n/a	n/a	n/a	Recommendations for occupational exposure to waste anesthetic gases.	IVB

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77	Van Cleave AM, Jones JE, McGlothlin JD, Saxen MA, Sanders BJ, Vinson LA. The effect of intraoral suction on oxygen-enriched surgical environments: a mechanism for reducing the risk of surgical fires. Anesth Prog. 2014;61(4):155–161.	Nonexperimental	41 trials	n/a	n/a	time to combustion	Use of high volume intraoral suction could delay the onset of combustion in pediatric dental settings and reduce the severity of surgical fires.	IIIB
78	Kung TA, Kong SW, Aliu O, Azizi J, Kai S, Cederna PS. Effects of vacuum suctioning and strategic drape tenting on oxygen concentration in a simulated surgical field. J Clin Anesth. 2016;28:56–61	RCT	Simulation center at a university-affiliated hospital	Vacuum suctioning and strategic drape tenting	No suction or strategic tenting	Oxygen concentration around the nasal cannula continuously, time required for oxygen concentration to reach 21%	The results of RCT suggests that O2 levels around the patient's face may be reduced with the use of a vacuum suction device. Clear and consistent communication about O2 delivery between the surgical team and anesthesiologist is critical to decreasing the risk of O2 fires.	IB
79	Davis LB, Saxen MA, Jones JE, McGlothlin JD, Yepes JF, Sanders BJ. The effects of different levels of ambient oxygen in an oxygen-enriched surgical environment and production of surgical fires. Anesth Prog. 2018;65(1):3–8.	Quasi-experimental	108 trials in 16 chickens	60, 80, 100% oxygen concentration at 4 and 10 L/min flow rates	n/a	Latency time (ie, time to event) and number of events (eg, pop, flash, fire)	Concluded that the time to combustion was directly proportional to ambient oxygen concentration and flow rate. Further research needed to determine the minimum oxygen concentration and flow rate needed to support combustion of an intraoral fire in patients.	IIC
80	Culp WC Jr, Muse KW. Preventing operating room fires: impact of surgical drapes on oxygen contamination of the operative field. J Patient Saf. 2021;17(8):e1846–e1850.	Nonexperimental	30 trials per surgical drape at each measurement site	Draping	Standard disposable woven cotton OR towel, AAMI level 3 utility surgical drape, AAMI level 4 standard procedure drape, impermeable 1030 Steri-drape	Oxygen concentration at canister site, surgical site, and underdrape site	Concluded that in the absence of preventive draping techniques, significant underdrape oxygen pooling occurs regardless of surgical drape used and that surgical site oxygen contamination is reduced with the use of an impermeable adhesive drape.	IIIB
81	Do W, Kang D, Hong P, Kim H, Baik J, Lee D. Incidental operating room fire from a breathing circuit warmer system: a case report. BMC Anesthesiol. 2021;21(1):271.	Case Report	n/a	n/a	n/a	n/a	Describes management of airway fire related to breathing circuit warmer and suggests that electrical airway devices can harm patients in the event of a fire.	VB
82	Guideline for electrosurgical safety. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:119–144.	Guideline	n/a	n/a	n/a	n/a	Guidance for safe use of electrosurgical devices.	IVA

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83	Sokhal S, Sokhal N, Sharma P, Chouhan RS. Fire hazard in an anesthesia machine: a case report. A A Pract. 2022;16(7):e01603.	Case Report	n/a	n/a	n/a	n/a	Describes two reports of anesthesia machine fires and their management. Recommends developing anesthesia workstations with better safety standards.	VB
84	NFPA 10: Standard for Portable Fire Extinguishers. Quincy, MA: National Fire Protection Association (NFPA); 2022	Consensus	n/a	n/a	n/a	n/a	Standard for fire extinguishers.	IVB
85	Roy S, Yu KM, Knackstedt MI, Webb NH, Smith LP. Reducing fire and burn risk in the operating room-testing of a novel device. Surg Endosc. 2021;35(12):6969–6976	Quasi-experimental	64 trials	Cover device to protect end of fiberoptic light cord	No device to protect light cord	Temperature of distal end of light cord, thermal damage (ie, burn or fire) to drape or surgical towel	A protective light cord cover prevented thermal damage to drapes and surgical towels in room air and oxygen-enriched laboratory environment when used according to the manufacturer's instructions.	IIB
86	Kishiki T, Su B, Johnson B et al. Simulation training results in improvement of the management of operating room fires: a single-blinded randomized controlled trial. Am J Surg. 2019;218(2):237–242.	RCT	82 participants (surgeons, PAs, anesthesia professionals, STs, OR nurses)	Pre-classroom simulation	No pre-classroom simulation	Fire safety confidence, critical action assessment, time to completion, retention	Concluded that additional simulation training improves confidence and competency of the team in managing OR fires.	IB
87	Mai CL, Wongsirimeteekul P, Petrusa E et al. Prevention and management of operating room fire: an interprofessional operating room team simulation case. MedEdPORTAL. 2020;16:10871	Organizational Experience	86 participants completed simulation	n/a	n/a	n/a	Describes one organization's experience in planning, implementing, and evaluation a multidisciplinary team training intraoperative fire simulation scenario.	VA
88	Ensuring the safe use of high alcohol–based skin prep solutions. AORN J. 2019;109(2):241–243	Organizational Experience	n/a	n/a	n/a	n/a	Interview describing how one organization implemented a web-based education program for the safe use of alcohol-based skin antiseptic solutions (ie, fire prevention and safe application).	VB
89	Truong H, Qi D, Ryason A et al. Does your team know how to respond safely to an operating room fire? Outcomes of a virtual reality, AI-enhanced simulation training. Surg Endosc. 2022;36(5):3059–3067.	Nonexperimental	180 OR team members	n/a	n/a	Pre-training confidence, performing scores, first-time pass rate; rating of realism, post-training confidence, perceived benefits/improvements	Despite initial perception of confidence in managing an OR fire, providers are unprepared to handle OR fires. After repetitive practice using VR-based training and then with addition of AI assistance, most participants were able to demonstrate competency in completing tasks in the correct sequence.	IIIB

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90	Dorozhkin D, Olasky J, Jones DB et al. OR fire virtual training simulator: design and face validity. Surg Endosc. 2017;31(9):3527–3533	Nonexperimental	49 SAGES conference attendees (students to attending surgeons)	n/a	n/a	Usefulness, validity, points of confusion, potential improvements, preferred method of training	Participants rated visuals and interactive environment as a better alternative to traditional training methods. Virtual reality environments may be an ideal training method.	IIIB
91	Qi D, Ryason A, Milef N et al. Virtual reality operating room with AI guidance: design and validation of a fire scenario. Surg Endosc. 2021;35(2):779–786	Nonexperimental	53 participants with varied clinical and FUSE training experience from the SAGES 2019 annual conference	n/a	n/a	Fire containment task performance score; face validation questionnaire	Established face validity of an artificial intelligence-guided virtual reality simulator for an OR fire scenario.	IIIC
92	Hargrove M, Aherne T. Possible fire hazard caused by mismatching electrical chargers with the incorrect device within the operating room. J Extra Corpor Technol. 2007;39(3):199–200	Case Report	n/a	n/a	n/a	n/a	Report of charging adaptors used for devices during cardiopulmonary bypass causing the devices to overheat and shutdown when incorrectly connected. Adaptors looked similar but had different voltage requirements.	VC
93	ECRI Institute continues to recommend maximum temperature setting of 130°F for blanket warming cabinets. ECRI. 2014. Accessed October 7, 2023. https://www.ecri.org/components/HRCAlerts/Pages/HRCAlerts021214_ECRI.aspx	Expert Opinion	n/a	n/a	n/a	n/a	ECRI recommends maximum blanket warmer temperature of 130 degrees.	VC
94	Warming cabinets. ECRI. 2020. Accessed October 7, 2023. https://www.ecri.org/components/HRC/Pages/SurgAn23.aspx#	Expert Opinion	n/a	n/a	n/a	n/a	Recommendations for warming cabinets.	VC

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95	Sutton LT, Baker FS, Faile NJ, Tavakoli A. A quasi-experimental study examining the safety profile and comfort provided by two different blanket temperatures. J Perianesth Nurs. 2012;27(3):181–192.	Quasi-experimental	156 patients at a 384-bed metropolitan medical center	n=76 patients who received 155 degree blankets	n=110 patients who received 110 degree blankets	skin and blanket temperatures, thermal comfort	Found that it is safe to cover patients with 155 degree blankets, and patients experienced a higher thermal comfort level. The limitations of this study are that participants were awake postoperative patients and that the study did not address the risk for potential thermal injuries ranging from minor skin irritation to partial- or full-thickness burns from the increased temperature setting when blankets are folded or rolled against the skin of semiconscious patients.	IIB
96	Kelly PA, Cooper SK, Krogh ML et al. Thermal comfort and safety of cotton blankets warmed at 130°F and 200°F. J Perianesth Nurs. 2013;28(6):337–346.	RCT	20 healthy volunteers at a large urban hospital	Blankets warmed in 130°F (54°C) cabinets	Blankets warmed in 200°F (93°C) cabinets	Skin temperature, skin damage	The researchers found no skin temperature approached levels that would cause epidermal damage. They recommended warming cotton blankets in cabinets set at 200° F (93° C) or less to improve thermal comfort without compromising patient safety.	IC
97	Kelly PA, Morse EC, Swanfeldt JV et al. Safety of rolled and folded cotton blankets warmed in 130 and 200°F cabinets. J Perianesth Nurs. 2017;32(6):600–608	RCT	20 healthy volunteers at a large urban hospital	Rolled and folded dry cotton blankets warmed in 130°F (54°C) cabinets	Rolled and folded dry cotton blankets warmed in 200°F (93°C) cabinets	Skin temperature, skin damage	Skin temperatures from blankets warmed to 200° F (93° C) were greater than those from blankets warmed to 130° F (54° C). There was no evidence of neck or back skin temperature elevated high enough or long enough to cause dermal injury.	IC
98	Huang S, Gateley D, Moss ALH. Accidental burn injury during knee arthroscopy. Arthroscopy. 2007;23(12):1363.e1–1363.e3.	Case Report	n/a	n/a	n/a	n/a	Report describing patient injury during a knee arthroscopy by overheated irrigation solutions.	VC
99	Efthimiou I, Chousianitis Z, Skrepetis K. Thermal bladder injury after inadvertent irrigation with overheated saline during a bipolar prostate resection. Urol J. 2016;13(3):2732–2734	Case Report	n/a	n/a	n/a	n/a	Described case of thermal bladder injury from overheated irrigation during prostate resection.	VC
100	Guideline for sterile technique. In: Guidelines for Perioperative Practice. Denver, CO: AORN, Inc; 2023:1015–1054.	Guideline	n/a	n/a	n/a	n/a	Provides guidance for sterile technique.	IVA

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101	Medical gas containers and closures; current good manufacturing practice requirements. Fed Regist. 2016;81(223):81685–81697 [PubMed: 27906532]	Regulatory	n/a	n/a	n/a	n/a	Requirements for medical gas containers.	n/a
102	Compressed gases. ECRI. 2016. Accessed October 7, 2023. https://www.ecri.org/components/HRC/Pages/Enviro17_1.aspx	Expert Opinion	n/a	n/a	n/a	n/a	Guidance from ECRI on the safe use, storage, and transport of compressed gas containers.	VB
103	21 CFR 201: Labeling Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-21/chapter-I/subchapter-C/part-201	Regulatory	n/a	n/a	n/a	n/a	Requirements for drug labels.	n/a
104	Waste Anesthetic Gases: Occupational Hazards in Hospitals. DHHS (NIOSH) Publication No. 2007-151. National Institute for Occupational Safety and Health. 2007. Accessed October 7, 2023. https://www.cdc.gov/niosh/docs/2007-151/default.html	Expert Opinion	n/a	n/a	n/a	n/a	Reports inconsistencies in the literature on the effects of waste anesthesia gases, confirms means of exposure, and provides guidance for reducing exposure.	VA
105	Criteria for a Recommended Standard: Occupational Exposure to Waste Anesthetic Gases and Vapors. NIOSH Publication No. 77-140. National Institute for Occupational Safety and Health. 1977. Accessed October 7, 2023. https://www.cdc.gov/niosh/docs/77-140/default.html	Consensus	n/a	n/a	n/a	n/a	Recommendations for occupational exposure to waste anesthetic gases.	IVB
106	Braz MG, Carvalho LIM, Chen CYO et al. High concentrations of waste anesthetic gases induce genetic damage and inflammation in physicians exposed for three years: a cross-sectional study. Indoor Air. 2020;30(3):512–520	Nonexperimental	63 physician residents	n/a	Exposure to WAGs (ie, desflurane, sevoflurane, nitrous oxide) vs. no exposure to WAGs	DNA damage, inflammatory markers, oxidative stress	Exposure to high levels of WAGs in ORs with inadequate scavenging was associated with DNA damage and inflammatory markers in physician residents.	IIIB

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107	Çakmak G, Eraydın D, Berkkan A, Yağar S, Burgaz S. Genetic damage of operating and recovery room personnel occupationally exposed to waste anaesthetic gases. Hum Exp Toxicol. 2019;38(1):3–10.	Nonexperimental	34 OR personnel, 12 recovery unit personnel, 21 non-OR hospital staff	n/a	Exposure to WAGs (ie, isoflurane, sevoflurane, nitrous oxide) vs. no exposure to WAGs	Presence of micronuclei in peripheral blood lymphocytes and buccal epithelial cells	Both OR and recovery unit personnel exposed to WAGs showed higher frequency of micronuclei in peripheral blood lymphocytes and buccal epithelial cells than control personnel, indicative of chromosomal instability.	IIIB
108	Emara AM, Alrasheedi KA, Aldubayan MA, Alhowail AH, Elgarabawy RM. Effect of inhaled waste anaesthetic gas on blood and liver parameters among hospital staff. Hum Exp Toxicol.	Nonexperimental	180 males	n/a	n/a	Sevoflurane metabolites, hematologic indexes, liver function	Exposure to inhalational anesthetics, particularly sevoflurane, leads to changes in liver markers and hematologic indexes.	IIIC
109	Keller M, Cattaneo A, Spinazzè A et al. Occupational exposure to halogenated anaesthetic gases in hospitals: a systematic review of methods and techniques to assess air concentration levels. Int J Environ Res Public Health. 2022;20(1):514.	Literature Review	n/a	n/a	n/a	n/a	Anesthesia administration behaviors also contribute to the presence of WAGs; scavenging systems are not the only solution to reducing WAGs in the OR. Education and training help minimize behavioral errors and improve awareness of personnel exposure. Combining environmental monitoring with biomonitoring may help in evaluating risks associated with exposure to WAGs.	VA
110	Magnavita N, Di Prinzio RR, Soave PM. Systemic sclerosis in an anaesthetist. Occup Med (Lond). 2020;70(6):442–444.	Case Report	n/a	n/a	n/a	n/a	Describes case of anesthetist who developed scleroderma after occupational exposure to volatile anesthetic gases in ORs with limited scavenging systems.	VB

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111	Deng HB, Li FX, Cai YH, Xu SY. Waste anesthetic gas exposure and strategies for solution. J Anesth. 2018;32(2):269–282.	Literature Review	n/a	n/a	n/a	n/a	Showed conflicting literature on the side effects of WAG exposure. Concentrations of WAGs varies by location, position, and procedure. Use of scavenging systems and local exhaust ventilation, double mask system for inhalation induction, and low flow by closed circuit anesthesia can help reduce WAG exposure. Ongoing monitoring, personnel training, modification of policy and procedure should also be considered.	VB
112	Anderson M, Goldman RH. Occupational reproductive hazards for female surgeons in the operating room: a review. JAMA Surg. 2020;155(3):243–249.	Literature Review	n/a	n/a	n/a	n/a	Established exposure limits for WAGs and MMA were not determined with reproductive toxicity in mind.	VB
113	Lawson CC, Rocheleau CM, Whelan EA et al. Occupational exposures among nurses and risk of spontaneous abortion. Am J Obstet Gynecol. 2017;206(4):327.e1–327.e8.	Nonexperimental	8461 nurses	n/a	n/a	spontaneous abortion	Exposure to antineoplastic drugs, sterilizing agents, and x-rays associated with increased risk for spontaneous abortion. Recommended that pregnant nurses reduce exposure during pregnancy and lactation.	IIIB
114	IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs. Vol 1 to 42. InternationalInternational Agency for Research on Cancer; 1987. Accessed October 9, 2023. https://publications.iarc.fr/139	Expert Opinion	n/a	n/a	n/a	n/a	The International Agency for Research on Cancer classifies volatile anesthetics as group 3, which is defined as not classifiable as to its carcinogenicity to humans.	VA
115	IARC Monographs on the Identification of Carcinogenic Hazards to Humans: Preamble. Lyon, France; International Agency for Research on Cancer; 2019.	Expert Opinion	n/a	n/a	n/a	n/a	The International Agency for Research on Cancer classifies volatile anesthetics as group 3, not classifiable as to its carcinogenicity to humans.	VA

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116	Teschke K, Abanto Z, Arbour L et al. Exposure to anesthetic gases and congenital anomalies in offspring of female registered nurses. Am J Ind Med. 2011;54(2):118–127	Nonexperimental	15,317 live births to 9,433 mothers exposed to waste anesthesia gases	n/a	n/a	Congenital anomalies	Found an association between maternal exposure to anesthetic gases and congenital anomalies in children. Results suggest the anomalies may correlate with the type of waste anesthesia gas to which the mother was exposed.	IIIB
117	Boiano JM, Steege AL. Precautionary practices for administering anesthetic gases: a survey of physician anesthesiologists, nurse anesthetists and anesthesiologist assistants. J Occup Environ Hyg. 2016;13(10):782–793	Nonexperimental	2987 anesthesia professionals	n/a	n/a	Anesthetic gas administration practices, adherence to precautionary practices and use of exposure controls	Management of waste anesthesia gases should include use of scavenging systems, education on the hazards, regular inspection of anesthesia equipment for gas leaks, regular air monitoring, prompt clean up of spills, and medical surveillance.	IIIA
118	Section VI. Chapter 1. Controls and prevention. In: OSHA Technical Manual (OTM). Occupational Safety and Health Administration. Accessed October 7, 2023. https://www.osha.gov/otm/section-6-health-care-facilities/chapter-1#conprev	Guideline	n/a	n/a	n/a	n/a	Provides technical information on workplace hazards and controls for OSHA inspectors.	IVA
119	Boonchai W, Sirikudta W, Iamtharachai P, Kasemsarn P. Latex glove-related symptoms among health care workers: a self-report questionnaire-based survey. Dermatitis. 2014;25(3):135–139.	Nonexperimental	4529 health care workers in Taiwan	n/a	n/a	symptoms related to latex gloves	Hospital housekeepers showed the highest prevalence of glove-related symptoms. Recommended use of powder-free latex gloves.	IIIB
120	Larese Filon F, Bochdanovits L, Capuzzo C, Cerchi R, Rui F. Ten years incidence of natural rubber latex sensitization and symptoms in a prospective cohort of health care workers using non-powdered latex gloves 2000-2009. Int Arch Occup Environ Health. 2014;87(5):463–469	Nonexperimental	1040 health care workers	n/a	n/a	reactions to latex	Introducing non-powdered latex gloves for all workers and using non-latex gloves if symptomatic can significantly reduce the incidence of glove-related symptoms.	IIIA
121	Liu QL, He XZ, Liang K et al. Prevalence and risk factors for latex glove allergy among female clinical nurses: a multi-center questionnaire study in China. Int J Occup Environ Health. 2013;19(1):29–34	Nonexperimental	8823 female nurses in China	n/a	n/a	prevalence and risk factors for latex allergy	Recommend using powder-free latex gloves or latex-free gloves.	IIIB

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122	Phaswana SM, Naidoo S. The prevalence of latex sensitization and allergy and associated risk factors among healthcare workers using hypoallergenic latex gloves at King Edward VIII Hospital, KwaZulu-Natal South Africa: a cross-sectional study. BMJ Open. 2013;3(12):e002900.	Nonexperimental	600 health care workers	n/a	n/a	latex sensitivity and allergy	Even in the presence of powder-free hypoallergenic glove use there is latex sensitization and latex allergy, which are an occupational hazard for health care workers. Recommend developing policy for implementation, education, and training.	IIIB
123	Supapvanich C, Povey AC, de Vocht D. Latex sensitization and risk factors in female nurses in Thai governmental hospitals. Int J Occup Med Environ Health. 2014;27(1):93–103.	Nonexperimental	363 nurses	n/a	n/a	latex sensitization	Respiratory exposure and dermal exposure contribute to latex sensitization. Recommend using non-latex gloves or replacing gloves with a lower protein alternative.	IIIB
124	Köse S, Mandiracioğlu A, Tatar B, Gül S, Erdem M. Prevalence of latex allergy among healthcare workers in Izmir (Turkey). Cent Eur J Public Health. 2014;22(4):262–265.	Nonexperimental	1115 health care workers	n/a	n/a	latex allergy	Rate of latex allergy was significantly higher among nurses. The most effective way to reduce allergic symptoms is to avoid latext exposure or use non-powdered latex gloves.	IIIA
125	Supapvanich C, Povey AC, de Vocht F. Respiratory and dermal symptoms in Thai nurses using latex products. Occup Med (Lond). 2013;63(6):425–428.	Nonexperimental	899 nurses from 3 Thai hospitals	n/a	n/a	dermal and respiratory symptoms associated with latex glove use	Reducing the use of latex gloves and/or replacing with non-latex gloves in OB and OR departments. Replace CHG detergent with alternatives could reduce new cases of dermal symptoms.	IIIA
126	Al-Niaimi F, Chiang YZ, Chiang YN, Williams J. Latex allergy: assessment of knowledge, appropriate use of gloves and prevention practice among hospital healthcare workers. Clin Exp Dermatol. 2013;38(1):77–80.	Nonexperimental	156 health care workers in a large teaching hospital in the UK	n/a	n/a	knowledge of latext allergy practices	Results highlight a lack of knowledge related to latex allergies and preventive practice among health care workers, potential safety issues to patients, and the need for further training.	IIIB
127	Latex Allergy Management: Guidelines. American Association of Nurse Anesthesiology. 2018. Accessed October 9, 2023. https://issuu.com/aanapublishing/docs/5_-_latex_allergy_management	Guideline	n/a	n/a	n/a	n/a	Recommendations from the American Association of Nurse Anesthesiologists on identification of latex allergy and its management to protect patients and health care workers.	IVB
128	Gentili A, Lima M, Ricci G et al. Perioperative treatment of latex-allergic children. J Patient Saf. 2007;3(3):166–172	Nonexperimental	7507 pediatric patients	n/a	n/a	reactions to latex	Latex-safe perioperative management improves safety against latex allergy phenomena.	IIIB

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129	Risenga SM, Shivambu GP, Rakgole MP et al. Latex allergy and its clinical features among healthcare workers at Mankweng Hospital, Limpopo Province, South Africa. S Afr Med J. 2013;103(6):390–394.	Nonexperimental	158 health care workers	n/a	n/a	latex allergy	Recommend a latex-free protocol in high risk areas like the OR.	IIIC
130	Liberatore K. Latex: a lingering and lurking safety risk. Pa Patient Saf Advis. 2018;15(1).	Case Report	n/a	n/a	n/a	n/a	Recommendations to reduce risk of reactions related to latex allergy.	VB
131	Worth A, Sheikh A. Prevention of anaphylaxis in healthcare settings. Expert Rev Clin Immunol. 2013;9(9):855–869.	Literature Review	n/a	n/a	n/a	n/a	All patients are at risk for developing allergic responses to latex. Identifying risk is crucial to prevention.	VA
132	Bigat Z, Kayacan N, Ertugrul F, Karsli B. Latex allergy on anaesthesiologist and anaesthesia managements: are the health workers high risk patients? J Pak Med Assoc. 2014;64(4):453–456	Case Report	n/a	n/a	n/a	n/a	Report of patient who experienced latex hypersensitivity reaction during myomectomy procedure. Suggested strategies for caring for latex-sensitive patients and recommended establishing a latex-free environment to prevent anaphylaxis.	VB
133	29 CFR 1910.1030: Bloodborne pathogens. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1910/subpart-Z/section-1910.1030	Regulatory	n/a	n/a	n/a	n/a	Bloodborne pathogens standard to protect workers against health hazards related to bloodborne pathogens.	n/a
134	21 CFR 801.437: User labeling for devices that contain natural rubber. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-21/chapter-I/subchapter-H/part-801/subpart-H/section-801.437	Regulatory	n/a	n/a	n/a	n/a	Requirements for labeling devices that contain natural rubber latex.	n/a

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135	Méndez C, Martínez E, Lopez E et al. Analysis of environmental conditions in the operating room for latex-allergic patients' safety. J Perianesth Nurs. 2018;33(4):490–498.	Nonexperimental	12 ORs	n/a	n/a	Airborne particles	Concluded that implementation of a cleaning protocol followed by an activity-free interval of 32 minutes (included restricted traffic) led to airborne particle counts in the OR that were similar to those at the start of the day. This protocol would allow the OR to safely manage the surgery of patients with latex-allergy without having to schedule the procedure at the start of the day.	IIIC
136	Food and Drug Administration, HHS. Banned devices; powdered surgeon's gloves, powdered patient examination gloves, and absorbable powder for lubricating a surgeon's glove. Fed Regist. 81(243):91722–91731	Regulatory	n/a	n/a	n/a	n/a	Regulation banning powdered surgical gloves.	n/a
137	Tavakkol R, Hatami N, Hassanipour S, Malakoutikhah M. The prevalence of latex sensitivity among operating room personnel: a systematic review and meta-analysis. Int Arch Health Sci. 2021;8(3):133–137.	Systematic Review w/ Meta-Analysis	n/a	n/a	n/a	n/a	Found that latex sensitivity is prevalent among OR staff and use of powdered gloves was influential in sensitization.	IIIA
138	Recommendations for labeling medical products to inform users that the product or product container is not made with natural rubber latex. US Food and Drug Administration. 2014. Accessed October 9, 2023. https://www.fda.gov/regulatory-information/search-fda-guidance-documents/recommendations-labeling-medical-products-inform-users-product-or-product-container-not-made-natural#	Guideline	n/a	n/a	n/a	n/a	FDA recommendation for manufacturers to use, "not made with natural rubber latex" on product labels to indicate that natural rubber latex was not used in the manufacturing of certain products.	IVA
139	OSH Act of 1970. Occupational Safety and Health Administration. Accessed October 7, 2023. https://www.osha.gov/laws-regs/oshact/completeoshact	Regulatory	n/a	n/a	n/a	n/a	Occupational Safety and Health Act	n/a

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140	Title I—Provisions for Attainment and Maintenance of National Ambient Air Quality Standards. Pub. L. No. 101-549, § 304, 25 U.S.C. § 655 (1990)	Regulatory	n/a	n/a	n/a	n/a	Requires safety management of chemicals.	n/a
141	29 CFR 1910.1200 Hazard communication. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1910/subpart-Z/section-1910.1200.	Regulatory	n/a	n/a	n/a	n/a	Requirements for classifying chemical hazards and communicating information related to hazards and protective measures to workers.	n/a
142	29 CFR 1910.134 Respiratory protection. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1910/subpart-I/section-1910.134	Regulatory	n/a	n/a	n/a	n/a	Requirements for respiratory protection in the workplace.	n/a
143	29 CFR 1910.132 General requirements. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1910/subpart-I/section-1910.132	Regulatory	n/a	n/a	n/a	n/a	Requirements for personal protective equipment in the workplace.	n/a
144	29 CFR 1910.120 Hazardous waste operations and emergency response. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1910/subpart-H/section-1910.120	Regulatory	n/a	n/a	n/a	n/a	Requirements for handling hazardous waste in the workplace.	n/a
145	*Glutaraldehyde: TLV(R) Chemical Substances 8th Edition Documentation. Cincinnati, OH: American Conference of Governmental Industrial Hygienists (ACGIH); 2015.*	Consensus	n/a	n/a	n/a	n/a	Establishes the threshold limit value-ceiling of 0.05 ppm for occupational exposure to glutaraldehyde and describes supporting evidence.	IVA

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146	*Methyl Methacrylate.* 8th ed. American Conference of Governmental Industrial Hygienists (ACGIH)	Consensus	n/a	n/a	n/a	n/a	Establishes the threshold limit value-time-weighted average of 50 ppm and TLV-short-term exposure limit of 100 ppm for occupational exposure to methyl methacrylate and describes supporting evidence.	IVA
147	29 CFR 1910.1048 Formaldehyde. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1910/subpart-Z/section-1910.1048	Regulatory	n/a	n/a	n/a	n/a	Requirements for handling formaldehyde.	n/a
148	29 CFR 1910.1047 Ethylene oxide. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1910/subpart-Z/section-1910.1047	Regulatory	n/a	n/a	n/a	n/a	Requirements for handling ethylene oxide.	n/a
149	Berton F, Di Novi C. Occupational hazards of hospital personnel: assessment of a safe alternative to formaldehyde. J Occup Health. 2012;54(1):74–78	Nonexperimental	171 interviews, 156 observations	n/a	n/a	respiratory symptoms with exposure to formaldehyde	Using a vacuum-sealer device could improve health of personnel.	IIIB
150	Walters GI, Moore VC, McGrath EE, Burge PS, Henneberger PK. Agents and trends in health care workers' occupational asthma. Occup Med (Lond). 2013;63(7):513–516	Nonexperimental	182 reports of occupational asthma	n/a	n/a	number of notifications per year, causative agents, occupation	Cases of occupational asthma were associated with exposure to glutaraldehyde, latex, and cleaning products.	IIIB
151	Olsen F, Kotyra M, Houltz E, Ricksten SE. Bone cement implantation syndrome in cemented hemiarthroplasty for femoral neck fracture: incidence, risk factors, and effect on outcome. Br J Anaesth. 2014;113(5):800–806.	Nonexperimental	1016 cemented hemiarthroplasty patients	n/a	n/a	bone cement implantation syndrome	Bone cement implantation syndrome symptoms include hypoxia, hypotension, and loss of consciousness during application of bone cement. The researchers identified preoperative risk factors for development of severe BCIS.	IIIB
152	Casey ML, Hawley B, Edwards N, Cox-Ganser J, Cummings KJ. Health problems and disinfectant product exposure among staff at a large multispecialty hospital. Am J Infect Control. 2017;45(10):1133–1138	Nonexperimental	163 health care workers	n/a	n/a	effects of exposure	Exposure to disinfectants was associated with health effects. Identification of disinfection protocols that protect patients from hospital-acquired infections while maintaining worker safety is needed.	IIIB

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153	Surgical suite: hazardous chemicals. Occupational Safety and Health Administration. Accessed October 9, 2023. https://www.osha.gov/etools/hospitals/surgical-suite/hazardous-chemicals	Expert Opinion	n/a	n/a	n/a	n/a	Describes OSHA resources for hazardous chemicals in the workplace.	VB
154	Compton J, Clinger J, Lawler E, Otero J, O'Shaughnessy P. Masks for the reduction of methyl methacrylate vapor inhalation. Iowa Orthop J. 2020;40(1):191–193.	Quasi-experimental	1 surgical trainee	Activated carbon impregnated filtering face mask	No mask	MMA parts per million	Concluded that surgical personnel who want to reduce their exposure to MMA vapors can wear a a carbon impregnated face mask.	IIC
155	TLV/BEI Guidelines. ACGIH. Accessed October 9, 2023. https://www.acgih.org/science/tlv-bei-guidelines/	Guideline	n/a	n/a	n/a	n/a	Defines occupational exposure limits for chemicals.	IVB
156	40 CFR 262: Standards applicable to generators of hazardous waste. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-262	Regulatory	n/a	n/a	n/a	n/a	Chemical database.	n/a
157	NFPA 400: Hazardous Materials Code. Quincy, MA: National Fire Protection Association; 2022.	Consensus	n/a	n/a	n/a	n/a	Hazardous materials code.	IVB
158	Anonymous 40 CFR 262: Standards Applicable to Generators of Hazardous Waste 2021	Regulatory	n/a	n/a	n/a	n/a	Requirements of generators of hazardous waste.	n/a
159	Personal Protective Equipment. Occupational Safety and Health Administration. 2023. Accessed October 9, 2023. https://www.osha.gov/sites/default/files/publications/osha3151.pdf	Guideline	n/a	n/a	n/a	n/a	Provides guidance for implemention of OSHA standards.	IVA
160	Food and Drug Administration, HHS. Medical devices; reclassification of polymethylmethacrylate (PMMA) bone cement. Final rule. Fed Regist. 2002;67(137):46852–46855. [PubMed: 12125716]	Regulatory	n/a	n/a	n/a	n/a	Requirements for handling polymethyl methacrylate.	n/a

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161	*29 CFR 1910.151 Medical services and first aid. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1910/subpart-K/section-1910.151*	Regulatory	n/a	n/a	n/a	n/a	Requirements of employers to provide medical services and first aid in the workplace.	n/a
162	*ANSI Z385.1-2014 (R2020). American National Standard for Emergency Eyewash and Shower Equipment. Washington, DC: American National Standards Institute; 2020*	Guideline	n/a	n/a	n/a	n/a	Recommended guidance for installation, performance, maintenance, and testing of emergency eyewash and shower equipment.	IVC
163	Swanson CS, Williams JM, He Q. Risks of exposure to microbial contamination in eyewash stations. Am J Infect Control. 2023;51(7):838–840.	Quasi-experimental	3 eyewash stations	Flushing for 5 or 10 minutes	Flush for 20 minutes "fresh water control"	Microbial contamination level	Daily flushing of eyewash stations for 10-20 minutes reduces risk of exposure to microbial contaminants.	IIC
164	Methyl methacrylate. In: IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Some Industrial Chemicals. Vol 60. Lyon, France: International Agency for Research on Cancer; 1994.	Expert Opinion	n/a	n/a	n/a	n/a	Methyl methacrylate carcinogenicity.	VA
165	Methyl methacrylate. Occupational Safety and Health Administration. Accessed October 9, 2023. https://www.osha.gov/chemicaldata/712	Regulatory	n/a	n/a	n/a	n/a	Requirements for handling methyl methacrylate.	n/a
166	Karnwal A, Lippmann M, Kakazu C. Bone cement implantation syndrome affecting operating room personnel. Br J Anaesth. 2015;115(3):478.	Expert Opinion	n/a	n/a	n/a	n/a	Bone cement is hazardous to patients and the perioperative team. Direct contact with skin can cause itching, burning, redness, swelling, and cracking of skin, dermatitis. MMA can penetrate clothing and surgical gloves. May cause birth defects in animals - staff or patients should avoid overexposure to MMA.	VB

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167	Ponce V, Muñoz-Bellido F, González A, Gracia M, Moreno A, Macías E. Occupational contact dermatitis to methacrylates in an orthopaedic operating room nurse. J Investig Allergol Clin Immunol. 2013;23(4):286	Case Report	n/a	n/a	n/a	n/a	Orthopedic OR nurse experienced erythema, edema, blistering, and cracking on fingers after exposure to methyl methacrylate.	VC
168	Jelecevic J, Maidanjuk S, Leithner A, Loewe K, Kuehn KD. Methyl methacrylate levels in orthopedic surgery: comparison of two conventional vacuum mixing systems. Ann Occup Hyg. 2014;58(4):493–500.	Nonexperimental	10 trials	n/a	2 vacuum mixing systems	MMA vapor concentration	No significant differences in overal MMA concentrations found between the two vacuum systems in the lab and OR. Concentrations did not reach short-term exposure limit of 100 ppm.	IIIB
169	Ungers LJ, Vendrely TG, Barnes CL. Control of methyl methacrylate during the preparation of orthopedic bone cements. J Occup Environ Hyg. 2007;4(4):272–280.	Nonexperimental	3 bone cement kits	n/a	preparation method	MMA vapor concentration	Using vacuum mixing systems reduced the measured MMA vapor concentrations compared to using an open bowl.	IIIB
170	Downes J, Rauk PN, Vanheest AE. Occupational hazards for pregnant or lactating women in the orthopaedic operating room. J Am Acad Orthop Surg. 2014;22(5):326–332	Literature Review	n/a	n/a	n/a	n/a	Studies suggest the risk of occupational exposure to MMA is lower with the use of a vacuum mixer and personal hood protectant system.	VA
171	Burston B, Yates P, Bannister G. Cement burn of the skin during hip replacement. Ann R Coll Surg Engl. 2007;89(2):151–152.	Case Report	n/a	n/a	n/a	n/a	Report of 63 year old female total hip arthroplaslty patient who experienced a skin burn from discarded bone cement.	VC
172	Best Practices for the Safe Use of Glutaraldehyde in Health Care. Washington, DC; Occupational Safety and Health Administration; 2006.	Expert Opinion	n/a	n/a	n/a	n/a	OSHA recommendations for safe use of glutaraldehyde.	VB
173	Smith DR, Wang RS. Glutaraldehyde exposure and its occupational impact in the health care environment. Environ Health Prev Med. 2006;11(1):3–10.	Expert Opinion	n/a	n/a	n/a	n/a	Personnel exposure to glutaraldehyde resulted in throat and lung irritation, difficulty breathing, dermatitis, nasal irritation, sneezing, wheezing, burning eyes, and conjunctivitis.	VB

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174	40 CFR 260: Hazardous waste management system: general. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-260	Regulatory	n/a	n/a	n/a	n/a	Requirements for handling solid waste.	n/a
175	Criteria for the definition of solid waste and solid and hazardous waste exclusions. Environmental Protection Agency. Accessed October 9, 2023. https://www.epa.gov/hw/criteria-definition-solid-waste-and-solid-and-hazardous-waste-exclusions	Regulatory	n/a	n/a	n/a	n/a	Describes types of hazardous waste and exclusions.	n/a
176	Defining hazardous waste: listed, characteristic and mixed radiological wastes. Environmental Protection Agency Accessed October 9, 2023. https://www.epa.gov/hw/defining-hazardous-waste-listed-characteristic-and-mixed-radiological-wastes	Regulatory	n/a	n/a	n/a	n/a	Definitions for hazardous waste.	n/a
177	Medical waste. Environmental Protection Agency. Accessed October 9, 2023. https://www.epa.gov/rcra/medical-waste	Regulatory	n/a	n/a	n/a	n/a	Defines medical waste and describes its regulation since expiration of the 1988 Medical Waste Tracking Act in 1991.	n/a
178	Janik-Karpinska E, Brancaleoni R, Niemcewicz M et al. Healthcare waste—a serious problem for global health. Healthcare (Basel). 2023;11(2):242.	Literature Review	n/a	n/a	n/a	n/a	Describes the literature on medical waste.	VA
179	40 CFR 261: Identification and listing of hazardous waste. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-261	Regulatory	n/a	n/a	n/a	n/a	Requirements for hazardous waste identification.	n/a

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180	40 CFR 273: Standards for universal waste management. universal waste management. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-273	Regulatory	n/a	n/a	n/a	n/a	Standards for management of universal waste.	n/a
181	21 CFR 803: Medical device reporting. Code of Federal Regulations. Accessed October 9, 2023. https://www.ecfr.gov/current/title-21/chapter-I/subchapter-H/part-803	Regulatory	n/a	n/a	n/a	n/a	Requirements for medical device reporting.	n/a
182	OSHA injury and illness recordkeeping and reporting requirements. Occupational Safety and Health Administration. Accessed October 9, 2023. https://www.osha.gov/recordkeeping/	Regulatory	n/a	n/a	n/a	n/a	Injury and illness recordkeeping and reporting requirements.	n/a
183	Top 10 Health Technology Hazards for 2023: Expert Insights from ECRI's Device Evaluation Program. Plymouth Meeting, PA: ECRI; 2023.	Expert Opinion	n/a	n/a	n/a	n/a	ECRI recommends removing barriers to reporting device-related issues to reduce the chance of recurrence.	VB
184	MAUDE: Manufacturer and User Facility Device Experience. Accessed October 9, 2023. https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfMAUDE/search.CFM	Regulatory	n/a	n/a	n/a	n/a	FDA MAUDE database.	n/a
185	Medical Device Reporting (MDR): How to report medical device problems. Accessed October 9, 2023. https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems	Regulatory	n/a	n/a	n/a	n/a	Requirements for medical device reporting.	n/a