

FIRE RISK ASSESSMENT AND PREVENTION ALGORITHM

Is an alcohol-based skin antiseptic or other flammable solution being used preoperatively?

— YES →

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NO
↓

Is open oxygen or nitrous oxide being administered and/or is the operative site above the xiphoid process (eg, head, neck, chest) or in the oropharynx?

— YES →

↓
NO
↓

Is an electrosurgical unit, laser, or fiberoptic light being used?

— YES →

↓
NO
↓

Are any other ignition sources (eg, defibrillators, drills, saws, burrs) being used?

— YES →

↓
NO
↓

Team agrees to proceed with the planned procedure after implementing fire prevention interventions.

□ Implement interventions to reduce fire risks associated with identified flammable solutions or antiseptics. Examples can include

- Allowing skin antiseptic agents to dry completely
- Avoiding pooling and absorbing excess solution
- Removing saturated materials from the patient care vicinity

□ Implement interventions to reduce the risks associated with identified oxidizers. Examples can include

- Covering hair near the surgical site with water-soluble gel and using water-based ophthalmic lubricant in the eyes
- Configuring drapes to allow oxygen to flow freely and not accumulate under the drapes
- Using moistened radiopaque sponges near oxidizers and ignition sources
- Notifying the anesthesia professional before using an ignition source (eg, electrosurgical unit, laser, handheld cautery)
- **Anesthesia professional activities**
 - › Considering use of a laryngeal mask airway or cuffed endotracheal tube (eg, laser-resistant) if clinically appropriate
 - › Inflating the endotracheal tube cuff with tinted solutions
 - › Evacuating accumulated anesthetic gases/oxygen with suction before an ignition source is used
 - › Using the lowest oxygen concentration needed for adequate oxygenation
 - › Reducing or stopping oxygen/nitrous oxide for __ minute(s) before an ignition source is used
 - › Notifying the team of the presence of an oxygen-enriched environment
 - › Notifying the surgeon when an ignition source can be activated

□ Implement interventions to reduce fire risks associated with the use of identified devices. Examples can include

- Inspecting equipment/devices for defects before use
- Following device manufacturers' instructions for use and applicable professional guidelines
- Using non-conductive safety holsters or a protective cap as intended
- Using the lowest possible power settings
- Moistening radiopaque sponges/towels used near ignition sources
- Placing equipment (eg, laser, light source) in standby mode when it is not in active use
- Not activating ignition sources in the presence of flammable agents until the agents are dry and vapors have dissipated
- Connecting all cords/cables (eg, fiberoptic) before activating devices and keeping working ends away from potential fuel sources (eg, dry drapes, sponges)
- Verifying water/saline and a fire extinguisher are available
- **Surgeon activities**
 - › Ensuring the only person activating a device (eg, electrosurgical unit, laser) is the person using it
 - › Not using an ignition source to enter the bowel or trachea
 - › Waiting for the anesthesia professional's approval before activating ignition sources in the presence of an oxygen-enriched environment

□ Implement interventions to address fire risks associated with additional ignition sources. Examples can include

- Following device manufacturers' instructions for use
- Slowly dripping saline on a moving drill, burr, or saw blade
- Placing powered instruments on the Mayo stand or instrument table when they are not in use



Refer to the AORN Fire Safety Competency for additional fire prevention interventions.

Resources

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 Society of Anesthesiologists Task Force on Operating Room Fires. *Anesthesiology*. 2013;118(2):271-290.

Carmack D Jr, Hegeman E, Vizurraga D. Orthopaedic operating room fire risks: FDA database and literature review. *JBS Rev*. 2023;11(2).

Cognitive aids. Stanford Medicine. Accessed June 21, 2023. <https://med.stanford.edu/anesthesia/QualitySafetyandImprovement/projects-and-initiatives/cognitive-aids.html>

Cowles C, Lake C, Ehrenwerth J. Surgical fire prevention: a review. Anesthesia Patient Safety Foundation. Accessed June 21, 2023. <https://www.apsf.org/article/surgical-fire-prevention-a-review/#:~:text=The%20ASA%20practice%20advisory%20has%20offered%20several%20steps,the%20patient%20to%20safety%20and%20re-establish%20the%20airway>

Jones TS, Black IH, Robinson TN, Jones EL. Operating room fires. *Anesthesiology*. 2019;130(3):492-501.