Proposed AORN Position Statement on Fire Prevention

Preamble

AORN recognizes that fire is an inherent risk in ORs. Fire is an ever-present danger, posing a real hazard to patient and health care worker safety. In 2003, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) issued a sentinel event alert bulletin related to fires that occur during operative and invasive procedures. The bulletin raised the level of awareness of the dangers of surgical fires. The Joint Commission recommends that health care organizations prevent surgical fires by providing education and training for perioperative practitioners. The approach to developing policies and procedures to reduce fire risk should be multidisciplinary and involve all professionals who provide patient care. Facilities are encouraged to report surgical fires to JCAHO, ECRI, or the US Food and Drug Administration (FDA). Systematic reporting of fires can assist in educating care providers about how and why fires occur and help them prevent fires in the future.[1]

Fires involving surgical patients have been reported by hospitals; ambulatory surgery centers; some medical device manufacturers; and other experts, such as ECRI, for many years. Data from ECRI and the FDA estimate that about 100 surgical fires occur each year, resulting in approximately 20 patient injuries that are serious; two deaths per year have occurred. The overriding consideration with surgical fires is that they are 100% preventable; however, they still may occur.[1,2]

Position Statement

AORN believes that fires can be prevented in the perioperative area. The perioperative registered nurse is responsible for learning about fire prevention and taking steps to minimize the risk of surgical fires. AORN believes the perioperative registered nurse should actively participate in a health care facility's fire emergency planning and preparation activities, including fire drills and evacuation planning, policy development, and education in risk reduction strategies for preventing fires.

AORN believes the following risk reduction strategies should be considered when developing a fire safety plan.

- Promote and maintain a fire-safe perioperative environment by educating and training perioperative team members in fire risk reduction strategies upon orientation and at least annually. Activities and knowledge should include
  - participation in a fire drill;
  - use of fire-fighting equipment;
  - knowledge of rescuer methods;
  - knowledge of medical gas panel and location and operation;
  - knowledge of ventilation and electrical system locations and operation, including personnel authorized to shut them off and when;
  - initiation of a fire alarm or "'Code Red"'; and
  - specific procedures for contacting the local fire department.[2]
- Each perioperative team member is responsible for promoting a culture of fire safety. Preparation is the key to ensuring readiness in preventing fires in the OR.

- All perioperative departments should develop and implement a well-rehearsed and thought out fire evacuation plan. Evacuation plans help ensure that all staff members are familiar with the proper evacuation routes, fire exits, and equipment that may be used before or during an evacuation.
- Educate surgical team members about the components of the fire triangle.
  - Fuel sources must be managed in a way to prevent fires.
  - Ignition sources must be controlled so as not to come in contact with fuels.
  - Oxidizers must be contained or properly vented to prevent contact with fuels or ignition sources.

Keeping the elements of the fire triangle apart is critical.[3]

Contributing Factors

Fires occur when the three elements that support combustion (ie, an ignition source, a fuel source, an oxidizer) come together. These three elements are referred to as the "fire triangle." All three elements are present in abundance during operative and invasive procedures.[2] Operating rooms in hospitals, ambulatory surgery suites, physicians' offices, and endoscopy suites are some of the critical areas where fires may take place.

Almost everything in the perioperative arena can be a fuel source, especially when an accelerant such as oxygen is present. Items used to set up the sterile field and protect patients should be considered fuel sources (eg, linens, drapes, gowns, supplies, preps, gauzes, clothes). The patient's body hair and body gases also can be fuel sources.[4]

Ignition sources are anything that produces heat; the two most common sources are the electrosurgery unit and the laser. Other equipment that produces heat includes fiberoptic light cables and light source boxes; drills, saws, and burrs; hand-held electrocautery devices; and defibrillators.[2]

The primary oxidizers in the surgical environment are oxygen and nitrous oxide. Fires can occur when the oxygen level in the atmosphere rises above 21%. Ambient air contains 21% oxygen. Anything above 21% should be treated as an oxygen-enriched environment. Oxygen can leak into the air when patients are given mask or nasal oxygen.[5]

Notes

1. Joint Commission on Accreditation of Healthcare Organizations, "Preventing surgical fires," *Sentinel Event Alert* 29 (June 24, 2003). Also available at *http://www.jcaho .org/about+us/news+letters/sentinel+event+alert/print/sea_29.htm* (accessed 1 Dec 2004).
2. "'A clinician's guide to surgical fires. How they occur, how to prevent them, how to put them out,"' *Health Devices* 32 (January 2003) 5-24.
3. "Surgical fires," in *Operating Room Risk Management* (Plymouth Meeting, Pa: ECRI, November 2004) 1-17.
4. "The patient is on fire: A surgical fire primer," ECRI, *http://www.mdsr.ecri.org/asp /dynadoc.asp?id=113&nbr=409637&_seaech_txt=ambient+air* (accessed 1 Dec 2004).
5. C Smith, "'Surgical fires—Learn not to burn,"' *AORN Journal* 80 (July 2004) 25-26.