Back to Basics: Preventing Surgical Fires 1.0 CE

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Purpose/Goal

To provide the learner with knowledge of best practices related to preventing surgical fires.

Objectives

1. Discuss common areas of concern that relate to perioperative best practices.
2. Discuss best practices that could enhance safety in the perioperative area.
3. Describe implementation of evidence-based practice in relation to perioperative nursing care.

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Lisa Spruce, DNP, RN, CNS-CP, CNOR, ACNS, ACNP, FAAN, has no declared affiliation that could be perceived as posing a potential conflict of interest in the publication of this article.

The behavioral objectives for this program were created by Helen Starbuck Pashley, MA, BSN, CNOR, clinical editor, with consultation from Susan Bakewell, MS, RN-BC, director, Perioperative Education. Ms Starbuck Pashley and Ms Bakewell have no declared affiliations that could be perceived as posing potential conflicts of interest in the publication of this article.

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No sponsorship or commercial support was received for this article.

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http://dx.doi.org/10.1016/j.aorn.2016.07.002

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ABSTRACT

When fires occur in the OR, they are devastating and potentially fatal to both patients and health care workers. Fires can be prevented by understanding the fire triangle and methods of reducing fire risk, conducting fire risk assessments, and knowing how to respond if a fire occurs. This Back to Basics article addresses the basics of fire prevention and the steps that can be taken to prevent fires from occurring.
AORN J 104 *(September 2016) 218-222. © AORN, Inc, 2016. http://dx.doi.org/10.1016/j.aorn.2016.07.002*

Key words: *fire safety, patient safety, health care worker safety, fires, prevention.*

Operating room fires, although rare, can result in serious injury and are potentially fatal to both patients and health care providers. Accurate data about the number of surgical fires are unknown because of underreporting, and very few case studies exist in the literature. Using 2012 data from the Pennsylvania Patient Safety Authority, the ECRI Institute estimates that 200 to 240 fires occur nationally each year, making their occurrence comparable to that of other surgical never events.[1,2] This Back to Basics article focuses on the prevention of surgical fires.

To identify the incidence and causes of surgical fires, the Pennsylvania Patient Safety Authority analyzed its database for reports of surgical fires occurring between 2004 and 2011. The agency reviewed surgical fires that were the result of combustion from a combination of heat, oxygen (O_2), and fuel.[1] During that time frame, there were 70 events that met this criteria. The report cited three ignition sources (ie, electrosurgical units [ESUs], fiber-optic cords, lasers) and provided incidence percentages: 58% involved an ESU, 38% involved a fiber-optic light cord, and 3% were related to laser use.[1] The report highlighted the role of O_2 as an oxidizer.[1] The materials (ie, fuel) identified as the most commonly involved were surgical drapes, followed by bone cement, surgical towels, gowns and gloves, and accessory cables. Patient sources of combustion were hair and tissue in the incision site, gas from the bowel, and individual instances that occurred during procedures involving the lip, palate, and mouth and throat soft tissue.[1]

The Anesthesia Patient Safety Foundation published a case study of a surgical fire involving an obese adult surgical patient undergoing a femoral distal bypass graft under general endotracheal anesthesia.[3] The RN circulator transported the patient to the OR, and the anesthesia professional orally intubated the patient and administered sevoflurane and 30% O_2. The RN circulator initially prepped the patient's leg with a 74% alcohol—based skin antiseptic. Midway through the procedure, the surgeon reapplied the alcohol-based skin antiseptic to the patient's leg. When the surgeon activated the ESU electrode, the drapes under the patient's leg caught fire. The surgical team extinguished the flames immediately, but not before the patient sustained second-degree burns to the leg.[3]

The root cause analysis of this incident revealed that the alcohol-based antiseptic combined with the activation of the ESU electrode caused the fire. This fire occurred despite a closed anesthetic delivery system (ie, the O_2 is delivered through an endotracheal tube or laryngeal mask) and an O_2 source that was not near the surgical site. The team concluded that the prep solution had pooled in the patient's skin folds and reapplication of the antiseptic may have contributed to additional pooling of the solution. Additionally, the drapes may have been placed before the antiseptic from the initial

http://dx.doi.org/10.1016/j.aorn.2016.07.002