Guideline Implementation: Surgical Smoke Safety

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Purpose/Goal

To provide the learner with knowledge specific to implementing AORN's "Guideline for surgical smoke safety."

Objectives

1. Identify hazards of surgical smoke exposure for the surgical team.
2. Identify hazards of surgical smoke exposure for patients.
3. Describe measures to protect against surgical smoke exposure.
4. Discuss policies and procedures related to smoke evacuation.

Accreditation

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Jennifer L. Fencl, DNP, RN, CNS, CNOR, has no declared affiliation that could be perceived as posing a potential conflict of interest in the publication of this article.

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ABSTRACT

Research conducted during the past four decades has demonstrated that surgical smoke generated from the use of energy-generating devices in surgery contains toxic and biohazardous substances that present risks to perioperative team members and patients. Despite the increase in information available, however, perioperative personnel continue to demonstrate a lack of knowledge of these hazards and lack of compliance with recommendations for evacuating smoke during surgical procedures. The new AORN "Guideline for surgical smoke safety" provides guidance on surgical smoke management. This article focuses on key points of the guideline to help perioperative personnel promote smoke-free work environments; evacuate surgical smoke; and develop education programs and competency verification tools, policies and procedures, and quality improvement initiatives related to controlling surgical smoke. Perioperative RNs should review the complete guideline for additional information and for guidance when writing and updating policies and procedures. *AORN J* 105 *(May 2017) 488-497.*
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Key words: *surgical smoke, surgical plume, smoke evacuation, respiratory protection.*

Surgical smoke is the visible and malodorous by-product released into the air as a result of the disruption and vaporization of tissue and cellular matter by the energy-generating devices commonly used in surgery (eg, electrosurgical units, lasers, ultrasonic devices, high-speed electrical devices).[1-4] Surgical smoke has been called by many different names, including surgical plume, diathermy plume, cautery smoke, air contaminants, and vapors.[1,2]

Whereas 40 years ago surgical smoke may have been considered a normal part of the OR environment, the current body of scientific knowledge and research clearly demonstrates that surgical smoke contains hazardous substances and that inhalation of smoke can lead to adverse health effects. Harmful elements and substances known to be contained in surgical smoke include gaseous toxic compounds (eg, hydrogen cyanide, benzene), viruses, carcinogenic and malignant particles, cellular debris, blood particles, and bacteria.[4-7] Acknowledgment of the hazards presented by surgical smoke has led occupational safety and professional organizations to recommend that health care facilities establish smoke-free environments for perioperative personnel and patients.[1,2,8]

It is important to recognize that exposure to surgical smoke can be harmful to anyone who is in the procedure room, including the patient.[4,6] For the surgical team, occupational exposure to surgical smoke has been linked to respiratory illnesses and issues, transmission of viruses (eg, human papillomavirus), and exposure to substances that are classified by the National Institute of Occupational Safety and Health as mutagenic and carcinogenic.[6,9-13] The Occupational Safety

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