Back to Basics: Inhaled Anesthesia 0.9 CE

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Purpose/Goal

To provide the learner with knowledge of best practices related to inhaled anesthesia.

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.

Accreditation

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Lisa Spruce, DNP, RN, ACNS, ACNP, ANP, CNOR, CNS-CP, 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

The administration of inhalational anesthesia is a major component of providing care for patients undergoing operative or other invasive procedures. The perioperative nurse should understand the effects of anesthesia and actions of anesthetic agents (eg, unconsciousness, analgesia, anesthesia, muscle relaxation) and carefully assess the patient for contraindications to the anesthetic proposed, understand its effect on the patient, and understand how anesthesia affects the care provided. This Back to Basics article provides an overview of inhalational anesthesia and serves as a guide for nurses in the perioperative care of anesthetized patients. *AORN J 102 (October 2015) 390-393. © AORN, Inc, 2015. http://dx.doi.org/10.1016/j.aorn.2015.07.006*

Key words: *anesthesia, anesthesia gases, amnesia, analgesia, muscle relaxation.*

Patients are administered anesthesia gases to induce a state of unconsciousness, amnesia, analgesia, and muscle relaxation that allows the surgical team to perform the operative or other invasive procedure. The mechanism of action of anesthetic gases (eg, nitrous oxide, isoflurane, desflurane, sevoflurane) is unknown, but researchers hypothesize that the membrane receptors of nerve cells are the primary site of action.[1] Many patient factors play a role in successful anesthesia. Genetics, age, and individual disease pathology each contribute to the effects and outcomes of the anesthetic process. Each anesthetic gas has its own spectrum of molecular actions and thus produces specific, varying effects on different levels of neuronal activity.[1] These gases have a profound effect on many body systems and it is important for the perioperative nurse to understand the basics of inhaled anesthesia.

HOW-TO GUIDE

The cardiovascular system and the respiratory system are the major body systems affected by anesthetic gases.[1] All anesthetic gases reduce the patient's mean arterial pressure (MAP), which is derived from the patient's average systolic and diastolic blood pressure during one cardiac cycle (ie, one complete heartbeat, consisting of one contraction and relaxation of the heart).[1] Mean arterial pressure is believed to be a better indicator of tissue perfusion, cardiac output (ie, amount of blood pumped by the heart per minute), and cardiac index (ie, the amount of blood pumped by the heart per minute per meter square of body surface area).[1] To recognize potential safety issues, perioperative nurses must be aware of the effects of anesthesia and how their interventions can affect the patient.

Effects of Anesthetic Agents

Each inhalational anesthetic agent works differently. These agents primarily affect the respiratory and cardiac systems; for example, nitrous oxide activates the patient's sympathetic nervous system and increases systemic vascular resistance (SVR), which is the measurement of resistance or impedance of the systemic vascular bed to blood flow. Combined with other inhalation agents (eg, desflurane, sevoflurane), nitrous oxide increases SVR and helps support arterial blood pressure.[1]

Respiratory effects

Anesthetic gases have a dose-related effect on the respiratory system.[1] Tidal volume, the volume of air inspired or expired in a

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