

New Device Simplifies Workstation Preparation for Malignant Hyperthermia-susceptible Patients

To the Editor:

I read with interest the review article by Kim and Nemergut entitled "Preparation of Modern Anesthesia Workstations for Malignant Hyperthermia-susceptible Patients."¹ The authors are to be congratulated on this comprehensive review describing the challenges to preparing a modern anesthesia machine for use with malignant hyperthermia (MH)-susceptible patients. Indeed, their review of the literature suggests that a straightforward method of preparing the machine that can be applied to all workstations has not been determined. Further, the current information on the Malignant Hyperthermia Association of the United States website does not provide practical guidance to prepare all types of anesthesia machines.* For the anesthesia practitioner, reading the available literature does not provide a clear approach to be used in practice.

A new device promises to provide an easy method for preparing any anesthesia workstation for MH-susceptible patients in just a few minutes. The Vapor-Clean device (Dynasthetics Inc., Salt Lake City, UT) consists of charcoal filters designed to be placed between the anesthesia machine and the inspiratory and expiratory limbs of the breathing circuit. The rationale for this approach is sound and based on the well-known property of activated charcoal to absorb potent anesthetic vapors that can trigger MH. If a clean breathing circuit is used and the Vapor-Clean device is in place, anesthetic vapor contaminating the internal components of the anesthesia workstation is prevented from reaching the patient. Previous studies have documented the utility of activated charcoal for preparing the anesthesia machine but to date, a convenient device designed and approved by the Food and Drug Administration for this purpose has not existed.^{2,3} A study of the Vapor-Clean has demonstrated that the concentration of anesthetic agents (isoflurane, sevoflurane, and desflurane) in the breathing circuit can immediately be reduced to less than 5 ppm immediately upon placing the device in the circuit.⁴ The concentration of anesthetic vapor that protects the susceptible patient from an MH reaction has never been determined with certainty, but concentrations less than 5 ppm are generally considered acceptable, and the results documented in the abstract exceed that goal.

With the introduction of the Vapor-Clean device, a simple approach to rapidly preparing any anesthesia workstation

for the MH susceptible patient now exists. Additional studies will likely document the universal utility of this device for all workstations and anesthetic vapors, but given the simplicity of the device and the well-known properties of activated charcoal, I submit that there is sufficient evidence to adopt this device into clinical practice. The manufacturer provides a clear protocol for using the device that can be easily implemented by any practitioner. With the advent of the Vapor-Clean device, it would seem that the challenge of protecting MH susceptible patients from trace amounts of anesthetic vapor has been solved.

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(Accepted for publication April 29, 2011.)

Preparation of Modern Anesthesia Workstations for Malignant Hyperthermia-susceptible Patients: When Are They Really Clean?

To the Editor:

With great interest I read the review by Kim and Nemergut¹ about the practice of preparation of modern anesthesia workstations for patients susceptible to malignant hyperthermia (MH). Decontamination of anesthesia workstations is a cornerstone in prevention of MH in susceptible patients. Thus, the Malignant Hyperthermia Association of the United States[†] as well as several review articles^{2,3} have recommended the workstations be cleared before anesthesia by flushing the machine with 100% oxygen with a flow rate of at least 10 l/min for 20 min, replacement of the fresh gas outlet hose, the anesthetic circuit, and the carbon dioxide absorbent. Fur-

* <http://medical.mhaus.org/index.cfm/fuseaction/Content.Display/PagePK/MedicalFAQs.cfm>. How should the anesthesia machine be prepared before surgery for an MHS patient? Accessed January 27, 2011.

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† <http://www.mhaus.org>. Accessed February 28, 2011.