For MH-Susceptible Patients

Ready in Under 90 Seconds

The internal components of modern anesthesia machines capture and hold volatile anesthetics which are released when the machine is used for a new patient. Even trace amounts of vapor can be harmful for susceptible patients. Previously, flushing the anesthesia machine with high fresh gas flow for an extended time before a case was thought to help decrease the risk to susceptible patients. Now, in less than 90 seconds, Vapor-Clean activated charcoal filters reduce exposure to less than 5 ppm of desflurane, sevoflurane and isoflurane molecules from reaching the patient for an entire case lasting up to 12 hours.

- A peer-reviewed study shows that FDA-cleared Vapor-Clean filters lower anesthetic vapor to less than 5 ppm in less than 90 seconds².
- Vapor-Clean filters maintain trace anesthetic vapor levels below 5 ppm for an entire case (up to 12 hours).
- There is no need to flush the anesthesia machine for up to 104 minutes²³⁶ prior to delivering anesthesia to an MH-susceptible patient.
- Simply connect inspiratory and expiratory Vapor-Clean filters between the anesthesia machine and a new breathing circuit to deliver a vapor-free anesthetic.

For MH Crisis

Curtail Exposure to Volatile Agents Without Delaying Dantrolene

In the event of an MH crisis, physicians can quickly turn off the anesthetic gas, place the Vapor-Clean and curtail further exposure without delaying the administration of dantrolene, and without switching to manual ventilation.

Without the Vapor-Clean, the time needed to replace the anesthesia machine, or change the circle system and CO₂ absorbant can often delay the administration of dantrolene.

The Vapor-Clean allows for safe, uninterrupted mechanical ventilation during an MH crisis.

"The MHAUS hotline consultants/professional advisory council ... were all impressed that the device (called Vapor-Clean) did what the investigators said it would: rapidly reduce the concentration of anesthetic gases entering into the patient from the anesthesia machine to practically zero!"

- President’s Blog, July 2011, Henry Rosenberg M.D., President, Malignant Hyperthermia Association of U.S. (MHAUS)

For more information including brief online video demonstrations and purchasing information, visit www.dynasthetics.com or call 801-484-3820

Recognized by MHAUS
Rapid machine preparation for MH-susceptible patients & MH-crisis management
The plot below shows data from a published study2 showing the effect that flushing has in preparation time of a Draeger Apollo anesthesia machine with and without the Vapor-Clean filters. Note the rebound or late washout effect that occurs without the Vapor-Clean filters as soon as flushing is discontinued. This exposes patients to potentially unsafe levels of anesthetic vapor.

No Rebound Effect with the Vapor-Clean
Patients are not exposed to a rebound effect as the Vapor-Clean filters block vapors for the entire case2.

Published results
Traditional Flushing Takes Longer Than You Think

The table is a summary of published studies that show the extended periods of flushing needed without the Vapor-Clean filters before modern anesthesia delivery systems can be used for MH-susceptible patients3.

<table>
<thead>
<tr>
<th>Workstation Type</th>
<th>Anesthetic Agent</th>
<th>Published washout time (time to inspired agent less than 5 parts per million)</th>
<th>Time to inspired agent less than 1 minute*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohmeda Aestiva</td>
<td>Isoflurane</td>
<td>54 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
<tr>
<td>Ohmeda Aestiva</td>
<td>Sevoflurane</td>
<td>48 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
<tr>
<td>Ohmeda Aestiva</td>
<td>Desflurane</td>
<td>27 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
<tr>
<td>Draeger Apollo</td>
<td>Isoflurane</td>
<td>84 minutes2</td>
<td>Less than 1.5 minute2</td>
</tr>
<tr>
<td>Draeger Apollo</td>
<td>Sevoflurane</td>
<td>46 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
<tr>
<td>Draeger Apollo</td>
<td>Desflurane</td>
<td>53 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
<tr>
<td>Draeger Primus</td>
<td>Isoflurane</td>
<td>64 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
<tr>
<td>Ohmeda Aestiva</td>
<td>Sevoflurane</td>
<td>55 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
<tr>
<td>Draeger Fabius</td>
<td>Sevoflurane</td>
<td>104 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
<tr>
<td>GE Aestiva</td>
<td>Sevoflurane</td>
<td>61 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
<tr>
<td>Maquet Rio-i</td>
<td>Sevoflurane</td>
<td>48 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
<tr>
<td>GE Aisys</td>
<td>Sevoflurane</td>
<td>55 minutes2</td>
<td>Less than 1 minute2</td>
</tr>
</tbody>
</table>

4. Prischausen H, Crawford MM, Petroz GC; Preparation of the Drager Primus anesthesia workstation for malignant hyperthermia susceptible patients; Anesthesiology 2006; 103: A1276.
5. Shinkaruk KS, Nolan K, Crosson M; Preparation of the Datex-Ohmeda Aestiva anesthesia machine for malignant hyperthermia cases; Anesthesiology 2008; 109 A279

Study Data

- Compatible with all anesthesia machines
- Two-year minimum shelf life
- Reduces costly operating room delays due to “surprise” MH-susceptible patients
- Negligible additional breathing circuit resistance
- No need to remove CO₂ absorbant

“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.”

- Jeffrey M. Feldman M.D., M.S.E., New Device Simplifies Workstation Preparation for Malignant Hyperthermia-susceptible Patients, Anesthesiology August 2011 - Volume 115 - Issue 2 - p 434

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