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

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)

Recognized by MHAUS

Rapid machine preparation for MH-susceptible patients & MH-crisis management

VAPOR-CLEAN™

MH-Susceptible Patients: No More Guessing, No More Flushing

Dynasthetics

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Study Data

The plot below shows data from a published study\(^2\) 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 case\(^2\).

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 patients\(^2\).

<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 5 parts per million with Vapor-Clean filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohmeda Aestiva</td>
<td>Isoflurane</td>
<td>54 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
<tr>
<td>Ohmeda Aestiva</td>
<td>Sevoflurane</td>
<td>48 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
<tr>
<td>Ohmeda Aestiva</td>
<td>Desflurane</td>
<td>27 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
<tr>
<td>Draeger Apollo</td>
<td>Isoflurane</td>
<td>84 minutes(^2)</td>
<td>Less than 1.5 minute(^2)</td>
</tr>
<tr>
<td>Draeger Apollo</td>
<td>Sevoflurane</td>
<td>46 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
<tr>
<td>Draeger Apollo</td>
<td>Desflurane</td>
<td>53 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
<tr>
<td>Draeger Primus</td>
<td>Isoflurane</td>
<td>64 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
<tr>
<td>Ohmeda Aestiva</td>
<td>Sevoflurane</td>
<td>55 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
<tr>
<td>Draeger Fabius</td>
<td>Sevoflurane</td>
<td>104 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
<tr>
<td>GE Aisys</td>
<td>Sevoflurane</td>
<td>61 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
<tr>
<td>Maquet Sirius+</td>
<td>Sevoflurane</td>
<td>48 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
<tr>
<td>GE Aisys</td>
<td>Sevoflurane</td>
<td>55 minutes(^2)</td>
<td>Less than 1 minute(^2)</td>
</tr>
</tbody>
</table>

Published washout time

Time to inspired agent less than 5 parts per million with Vapor-Clean filters

1. Wappler F; Anesthesia for patients with a history of malignant hyperthermia; Current Opinion in Anaesthesiology, 2010; 23:417–422
4. Pirschhausen H, Crawford MM, Petruz GC; Preparation of the Drager Primus anesthetics workstation for malignant hyperthermia susceptible patients; Anaesthesiology 2006; 103: A1276.
5. Shinkaruk KS, Nolan K, Crosson M; Preparation of the Datex-Ohmeda Aestiva anesthetics machine for malignant hyperthermia cases; Anesthesiology 2008; 109 A279