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Reduction of Waste Anesthetic Gases Attributable to Membrane Oxygenation During Cardiopulmonary Bypass.

Bradley Thompson, MS, CCP
Appleton Medical Center - Appleton, WI

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Purpose:

To quantitatively evaluate a convenient, commercially available waste anesthetic gas removal system for membrane oxygenation that does not impart excessive suction across the membrane oxygenator or allow for the accumulation of positive pressure in the system.

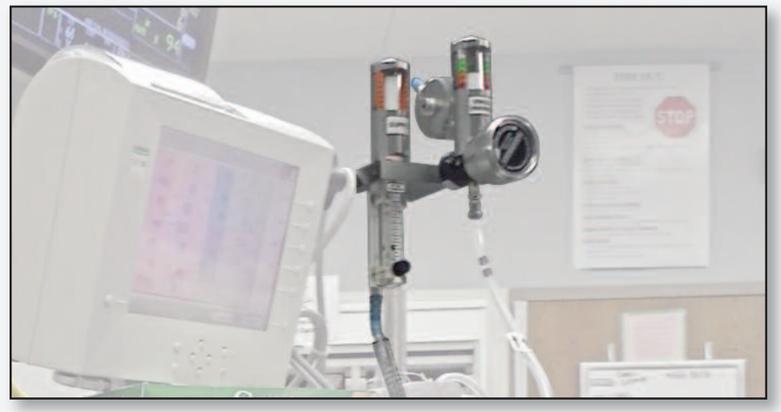
Materials & Methods:

During a routine badge test in the perfusion work area of the OR excess waste anesthetic was detected (Badge Test by Environmental Monitoring Technology). Desflurane (Suprane) was used as the anesthetic agent during cardiopulmonary bypass and background levels were 6ppm. NIOSH recognizes 2ppm as the weighted one hour exposure limit for halogenated anesthetic agents.

A dual purpose unit, which allows for vacuum assist and waste anesthetic gas removal was, installed (Boehringer Laboratories P/N 3930). This unit utilizes one suction source to allow for two specific interventions during cardiopulmonary bypass. An onboard scavenging function allows for scavenging of the waste port on the membrane oxygenator. Integral safety features ensure that suction applied to the membrane does not exceed 0.5cmH20 (0.44 mmHg), likewise a passive vent ensures positive pressure cannot build should the scavenger be turned off. Some facilities attempt to build scavenge systems but they routinely rely on low pressure suction (<100mmHg) which has the capability of creating a pressure differential across the membrane. Likewise inconsistent tubing application to the oxygenator can create the possibility of blocking the vent.

Results:

Subsequent badge test resulting in the perfusion work area indicated <0.42ppm residual anesthetic with the scavenger setup in place and operational.



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