

# Safe use of Hamilton Medical ventilators on patients with highly infectious diseases

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This article gives you an overview of possible measures to ensure protection against internal contamination of the ventilators as well as the protection of patients and clinical staff.

## We recommend implementing the following steps to avoid contamination:

- Follow the **instructions for use** of the ventilator and consider the **WHO guidelines**.<sup>1,2</sup>
- Use an **inspiratory bacteria filter** to ensure non-contamination of the internal ventilator gas path.
- Protect the **expiratory valve outlet** with a bacterial filter or connect to a scavenging system, which is directly connected to the hospital suctioning system. The Hamilton Medical scavenging system comes preassembled and ready for installation.
- For **active humidification**, as with a HAMILTON-H900 humidifier, use a bacterial filter on the inspiratory and expiratory port, or alternatively use the Hamilton Medical scavenging system.
- For **passive humidification**, use a bacteria HME/HMEF filter between the proximal flow sensor and the patient to protect the airway against contamination. Be aware of changes in anatomical dead space and airway resistance.
- Contamination of the **flow sensor tube connectors** is avoided due to permanent rinse flow through the flow sensor tubing towards the patient.
- Use the **Stand-by function** prior to disconnecting the ventilator from the patient to avoid mucus dispersion from the circuit.
- Use **single-use consumables**, such as breathing circuits, flow sensors, airway adapters, expiratory valves, and filters, to minimize the risk of cross contamination when the ventilator is cleaned and set up for a new patient.
- Disinfect the outer surfaces of the ventilators during ventilation or after treatment of a patient with a registered hospital **disinfectant**. Consult the hygiene specialist in your facility regarding the appropriate disinfectant and follow the instructions for use of the manufacturer especially regarding contact time.
- For **suctioning**, use a closed inline suction system only.
- Reduce the need for **user interaction with the ventilator** by using Hamilton Medical's INTELLiVENT-ASV mode for intubated patients. INTELLiVENT-ASV continuously adapts the ventilation to the patient condition and requires fewer interactions by clinicians.<sup>3,4</sup>
- All turbine-driven Hamilton Medical ventilators (HAMILTON-C6/C3/C1/T1/MR1) are equipped with high-grade **HEPA filters** to keep the interior airway free of contamination. There is no need to change the HEPA filters more frequently than indicated in your regular maintenance plan.

Make sure that **all clinical staff involved in the handling of the ventilator** are informed about the above-mentioned measures.

1 Infection prevention and control of epidemic- and pandemic-prone acute respiratory infections in health care. World Health Organization.

[https://apps.who.int/iris/bitstream/handle/10665/112656/9789241507134\\_eng.pdf?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/112656/9789241507134_eng.pdf?sequence=1&isAllowed=y)

2 Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected Interim guidance

[https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-\(ncov\)-infection-is-suspected-20200125](https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125)

3 Beijers AJR, Intensive Care Med. 2014 May;40(5):752-3.

4 Arnal, J.M., Minerva Anestesiol, 2018. 84(1): p. 58-67.