

Recommendations on the ventilation of Covid-19 patients on intensive care using anaesthesia ventilators

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These recommendations apply to all patients suspected of having Covid-19 or who have tested positive for it. They have been designed to apply to the whole of the pool of anaesthesia ventilators used, however the case may arise where some ventilators do not contain certain features.

1. Environment

- a. Anaesthesia ventilators should be used by professional medical caregivers with experience in working in anaesthesia and who have been trained to use these devices (nurse anaesthetists).
- b. Places of use: Post-op intensive care, post-op recovery room, surgery units.

2. System verification

- a. Before starting the device should at the very least be connected to both the oxygen and compressed air.
- b. A manual insufflator (for a bag valve mask) fitted with a filter should be placed in the immediate proximity of the anaesthetic machine.
- c. System tests should be run every 24 hours if possible, or at the very least every 72 hours. The patient should be disconnected and ventilated using the manual insufflator or transport ventilator during the test (which takes 5-10 minutes).
- d. Set all alarms as the patient may require (particularly for volume/minute and expiratory/inspiratory CO₂ + low FiO₂) and periodically check the alarm history/log in the anaesthetic machine, as some alarm messages may automatically disappear once the cause of the alarm has been dealt with.

3. Filters

- a. There is no proof mechanical filters are more effective than electrostatic filters with respect to use in SARS-CoV-2 cases. Based on these findings and the fact the virus is transmitted via droplets, recommending electrostatic filters seems more reasonable however.
- b. Filters should be placed between the breathing circuit and the tracheal tube and the breathing circuit Y-piece.
- c. Placement of an additional filter in the expiratory valve (more precisely between the patient circuit and the valve) is strongly recommended due to the risk of unit contamination whenever disconnecting the system and replacing the Y-piece filter on a daily basis.
- d. Filters should be replaced on a daily basis as well as a case-by-case basis where the filter has been humidified.

- e. Filters' filtration capacity should remain preserved as long as they stay dry. Ventilator water traps should therefore be checked regularly (every 2-4 hours).
- f. The second filter placed in the breathing circuit should be exchanged prior to replacing the Y-piece filter.

4. Soda lime canister

- a. Conduct all tests with a full soda lime canister in place.
- b. Ventilate the patient with a full soda lime canister in place.
- c. Use a fresh gas flow which is higher than the ventilation per minute rate (around 150%) to minimise soda lime consumption.
- d. Swap out the soda lime every 24 hours, or even more frequently whenever FiCO₂ is high.

5. Halogenated agent and nitrous oxide tanks

- a. Remove halogenated agent tanks from respirators.
- b. Deactivate the nitrous oxide feature.

6. DO NOTS

- a. DO NOT USE A HUMIDIFIER, NEBULISER OR AEROSOLS WITH ANAESTHETIC RESPIRATORS.
- b. DO NOT IMPLEMENT NON-INVASIVE VENTILATION.