STATEMENT OF INTEREST

None declared.

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Noninvasive ventilation and the potential risk of transmission of infection

To the Editors:

In their exhaustive review on noninvasive ventilation (NIV) in acute respiratory failure, AMBROSINO and VAGHEGGINI [1] do not mention the potential risk of transmitting infections during its application.

Noninvasive positive-pressure ventilation (NPPV) is becoming increasingly used in patients with acute respiratory failure caused by a wide range of infectious aetiologies such as human-adapted avian influenza, aspergillosis and varicella [2–4], in order to avoid intubation or as a bridge to invasive mechanical ventilation. Substantial exposure to exhaled air occurs within a 0.5-m radius of patients receiving NPPV at usual pressures (expiratory positive airway pressure 45 cmH₂O (0.39 kPa); inspiratory positive airway pressure 1,215 cmH₂O (1.18 kPa)): higher ventilator pressures result in a wider distribution of exhaled air [5]. Indeed, in the recently proposed World Health Organization interim guidelines on prevention and control of acute respiratory diseases in healthcare, NIV has been included among those aerosol-generating procedures in which the risk of pathogen transmission is still “controversial/possible” but not documented [6].

Furthermore, reusable equipment used in delivering NPPV may be exposed to potentially infectious material during routine use through contact with the patient’s skin, mucous membranes, respiratory secretions and blood. If this reusable equipment is not properly disinfected between patients it can lead to a major nosocomial transmission of a wide range of respiratory pathogens.

Reusable masks and exhalation valves should be disassembled into their component parts before undergoing an automated process utilising a combined washer/disinfector/drier that uses heat at a moderate but effective temperature; *e.g.* the Health Technical memorandum HTM2030 cycle which peaks at 87°C for 1 min. Reusable tubing is difficult to decontaminate effectively using this method (because of the length and diameter of the lumen); however, it can be autoclaved at 134°C for 3.5 min. Headgear and chinstraps should be treated in a washing machine with a cycle that reaches either 65°C for 10 min or 71°C for 3 min. In most ventilators used for NIV there is no airflow from the patient back into the ventilator.

Hence, the risk of contamination of the ventilator is extremely low providing a bacterial filter is used and superficial cleaning of the ventilator between patients is satisfactory.

Healthcare workers should be aware of the potential risks of infection transmission during noninvasive positive-pressure ventilation, and should take stringent contact and droplet precaution.

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