

Interim Statement on Infection Prevention and Control for the Administration of Nebulized Medication to Patients with Suspected or Confirmed COVID-19

GUIDANCE AS OF MARCH 27, 2020

The Minnesota Department of Health (MDH) has received multiple queries from providers and facilities on whether to classify the administration of nebulized medication to patients as an aerosol-generating procedure (AGP) for the purposes of infection prevention. To date, there is limited data evaluating the risk of respiratory infection transmission from nebulizers. The World Health Organization (WHO) does not list nebulizer administration as an AGP in its interim guidance for infection prevention and control for novel coronavirus¹ but we have not yet received formal guidance from CDC. This statement is intended as a summary of the evidence so far on the use of nebulizers and their potential as an infection transmission risk.

Aerosol-Generating Procedures and COVID-19

- On March 10, 2020, CDC issued guidance on the use of personal protective equipment (PPE) and room placement for the care of COVID-19 patients when the supply of PPE is short².
- Based on this guidance, MDH issued recommendations acknowledging concerns regarding N-95 shortages that health care workers (HCW) use a facemask, eye protection, gown and gloves during the evaluation of, and care for, suspect or confirmed COVID-19 patients³.
- Use of an N-95 respirator or equivalent or PAPR should be reserved for patients undergoing AGPs or critically ill patients in the ICU.
- AGPs should be performed in airborne infection isolation rooms (AIIR), if available.
- MDH currently defines the following as AGPs (based on SHEA position statement on Influenza A H1N1)⁴:
 - Endotracheal intubation.
 - Bronchoscopy.
 - Open suctioning of airway secretions.
 - Sputum induction.

Nebulizers and Infection Transmission Risk

- A 2012 review article on aerosol-generating procedures concluded that there was no significant evidence of transmission risk related to nebulizers, utilizing evidence from the SARS outbreak⁵.
- A 2004 study performing PCR air sampling around a patient with SARS undergoing nebulizer treatment found no evidence of virus⁶.
- Current UK guidance on infection prevention for COVID-19 does not list nebulizers as a potential transmission risk, due to the fact that the aerosol generated by the device is derived from the medication fluid within the nebulizer chamber and not the patient⁷.

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Nebulizers and COVID-19

- No studies have been performed on the specific transmission risk for nebulizers during the treatment of patients with confirmed COVID-19.
- One study has demonstrated aerosol stability of SARS-CoV-2⁸, but whether this is applicable to clinical situations outside of laboratory conditions is unknown.
- Close-range aerosol transmission of SARS-CoV-2 remains a possibility.

Summary and Recommendations

- The available data suggest that while the risk of viral transmission from nebulizers is lower than with procedures such as intubation or bronchoscopy, transmission remains a possibility.
- MDH recommends the following to minimize risk to health care providers:
 - If patient can tolerate, switch to metered-dose inhalers with a dedicated spacer.
 - HCW should wear a facemask (as well as eye protection, gloves and a gown) during the procedure if a respirator is unavailable.
 - Close patient door when providing nebulizer treatment.
 - Upon set-up of nebulizer, have HCW maintain a safe distance (6 feet or greater), possibly outside the door.
 - Patients do not need to be transferred to a higher level of care solely for the purpose of providing nebulizer treatment.
- Providers are strongly encouraged to monitor MDH communications for additional updates on this issue.

References:

1. [WHO Interim Guidance: Infection prevention and control during health care for probable or confirmed cases of novel coronavirus \(nCoV\) infection \(PDF\)](https://www.who.int/csr/disease/coronavirus_infections/IPCnCoVguidance_06May13.pdf) (www.who.int/csr/disease/coronavirus_infections/IPCnCoVguidance_06May13.pdf).
2. [CDC: Interim Infection Prevention and Control Recommendations for Patients with Confirmed Coronavirus Disease 2019 \(COVID-19\) or Persons Under Investigation for COVID-19 in Healthcare Settings](https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html) (www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html).
3. [Minnesota Department of Health, Health Advisory: COVID-19 Infection Prevention and Control in Healthcare \(PDF\)](https://www.health.state.mn.us/communities/ep/han/2020/mar13ic.pdf) (www.health.state.mn.us/communities/ep/han/2020/mar13ic.pdf).
4. [SHEA Position Statement: Interim Guidance on Infection Control Precautions for Novel Swine-Origin Influenza H1N1 in Healthcare Facilities \(2009\) \(PDF\)](https://www.shea-online.org/images/guidelines/061209_H1N1_on_Letterhead.pdf) (www.shea-online.org/images/guidelines/061209_H1N1_on_Letterhead.pdf).
5. [Tran K et al. "Aerosol Generating Procedures and Risk of Transmission of Acute Respiratory Infections to Healthcare Workers: A Systematic Review." PLoS One 2012; 7\(4\):e35797](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3338532/) (www.ncbi.nlm.nih.gov/pmc/articles/PMC3338532/).
6. [Wan GH et al. "A large-volume nebulizer would not be an infectious source for severe acute respiratory syndrome." Infect Control Hosp Epidemiol. 2004 Dec;25\(12\):1113-5](https://www.ncbi.nlm.nih.gov/pubmed/15636302) (www.ncbi.nlm.nih.gov/pubmed/15636302).
7. [COVID-19: Guidance for infection prevention and control in healthcare settings \(PDF\)](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/874316/Infection_prevention_and_control_guidance_for_pandemic_coronavirus.pdf) (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/874316/Infection_prevention_and_control_guidance_for_pandemic_coronavirus.pdf).
8. [van Doremalen et al. "Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1." N Engl J Med 2020 March DOI:10.1056/NEJMc2004973](https://www.nejm.org/doi/full/10.1056/NEJMc2004973) (www.nejm.org/doi/full/10.1056/NEJMc2004973).