



## **YOUR QUESTION**

Is there an increased risk of transmission of COVID-19 [to health service personnel] associated with the use of nebulizers? Do nebulizers aerosolize COVID-19 particles?

### **What is the best evidence currently?**

The evidence is somewhat equivocal, but tends to support the assertion that health workers are at increased risk when in the vicinity of COVID-19 patients undergoing nebulization. As part of its Health Workers Exposure Risk Assessment the WHO lists nebulizer treatment as an aerosol-generating procedure and later questions how often PPE was used when treating the COVID-19 patient. The recommendation from China is that interferon nebulization should be performed in negative pressure wards rather than general wards due to the possibility of aerosol transmission. The Respiratory Care Committee of the Chinese Thoracic Society state that for patients who need aerosol therapy, vibrating mesh nebulizer is recommended for ventilated patients with an additional filter to be placed at the expiratory port of ventilation during nebulization.

In a systematic review of aerosol-generating procedures which may pose a risk of transmission of acute respiratory infections to health workers, Tran et al listed nebulizer treatment as one of the treatments without significant risk. In their evaluation of droplet dispersion during non-invasive ventilation, oxygen therapy, nebulizer treatment and chest physiotherapy, Simonds et al. noted that the only device producing an aerosol was a nebulizer but that the output profile was consistent with nebulizer characteristics rather than dissemination of large droplets from patients. On the other hand, Chan-Yeung cited poor compliance with the use of PPE and exposure to high-risk procedures such as nebulization as factors in the transmission of SARS to health workers during the SARS outbreak, with HCWs eventually accounting for 20% of cases globally.

In a recent article, Newhouse cites the potential transmission of COVID-19 by nebulizer as a serious unappreciated risk and, in order to reduce the risk of transmission, states that Alberta Health Services have now requested to reconsider any plan or order for nebulizer therapy, and to proceed only under the following restrictions:

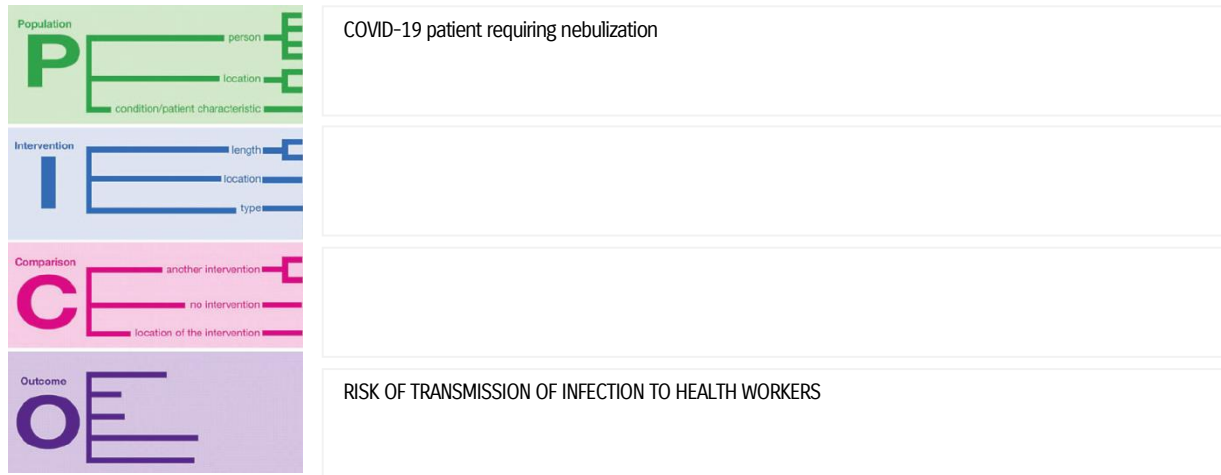
1. Severe, life-threatening respiratory disease
2. Patients who are uncooperative or are unable to follow the directions required for MDI with spacer
3. Patients with a history of poor response to MDI with spacer



## SOURCES<sup>1\*</sup>

Produced by the members of the National Health Library and Knowledge Service Evidence Team.<sup>†</sup> Current as at 24 March 2020. This rapid evidence review collates the best available evidence at the time of writing. Emerging literature or subsequent developments in respect of COVID-19 may require amendment to the information or sources listed in the document. Although all reasonable care has been taken in the compilation of content, the National Health Library and Knowledge Service Evidence Team makes no representations or warranties expressed or implied as to the accuracy or suitability of the information or sources listed in the document. This evidence summary is the property of the National Health Library and Knowledge Service and subsequent re-use or distribution in whole or in part should include acknowledgement of the service.

The following PICO(T) was used as a basis for the evidence summary:



The following search strategy was used:

ABBREVIATED] ((coronavirus OR COVID-19 OR (Wuhan ADJ3 virus) OR 2019-nCoV OR SARS-COV-2) AND (nebuliz\$ OR nebulis\$ OR "Aero Comfort" OR "Aero Mist" OR atomiz\$ OR atomis\$ OR eRapid OR nembuliz\$ OR nembulis\$))

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\* World Health Organization. [https://apps.who.int/iris/bitstream/handle/10665/331340/WHO-2019-nCov-HCW\\_risk\\_assessment-2020.1-eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/331340/WHO-2019-nCov-HCW_risk_assessment-2020.1-eng.pdf). [Accessed 24 March 2020]. Handbook of COVID-19 Prevention and Treatment. [https://www.alibabacloud.com/universal-service/pdf\\_reader?spm=a3c0i.14138300.8102420620.dreadnow.6df3647fanyPkm&cdnorigin=video-intl&pdf=Read%20Online-Handbook%20of%20COVID-19%20Prevention%20and%20Treatment.pdf](https://www.alibabacloud.com/universal-service/pdf_reader?spm=a3c0i.14138300.8102420620.dreadnow.6df3647fanyPkm&cdnorigin=video-intl&pdf=Read%20Online-Handbook%20of%20COVID-19%20Prevention%20and%20Treatment.pdf). [Accessed 24 March 2020]. Respiratory Care Committee of the Chinese Thoracic Society. <https://www.ncbi.nlm.nih.gov/pubmed/32077661>. [Accessed 24 March 2020]. Hui et al. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3747521/>. [Accessed 24 March 2020]. Tran et al. <https://www.ncbi.nlm.nih.gov/pubmed/22563403>. [Accessed 24 March 2020]. Simonds et al. <https://www.ncbi.nlm.nih.gov/pubmed/20923611>. [Accessed 24 March 2020]. Chan-Yeung et al. <https://www.ncbi.nlm.nih.gov/pubmed/15702757>. [Accessed 24 March 2020]. Newhouse. <https://www.cmaj.ca/content/re-transmission-corona-virus-nebulizer-serious-underappreciated-risk>. [Accessed 24 March 2020].