

What are nebulizers? And how could they help spread COVID-19?

10 February 2021, by Brian Oliver



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A nebuliser—a medical device that turns a liquid into a fine mist, typically to deliver inhaled medication—may have spread the coronavirus in Melbourne's hotel quarantine.

Victoria's Chief Health Officer Brett Sutton [said earlier today](#) this was the "working hypothesis" to explain why three people became infected at the airport's Holiday Inn hotel.

Breaking: Victorian health authorities believe the use of a medical nebuliser may be behind the spread of COVID-19 at Melbourne's Holiday Inn quarantine hotel where two workers and a guest contracted the virus. [#coronavirus](#) <https://t.co/uXYf6DkU7S>

— The Age (@theage) [February 10, 2021](#)

How could this have happened? And what are the implications for people who use nebulisers outside hotel quarantine, such as those with asthma?

What is a nebuliser?

A nebuliser creates a fine mist from a liquid, usually using compressed air or oxygen, or via ultrasonic vibration. A nebuliser is different to a vaporiser, which uses heat to produce a mist.

Nebulisers are often used to deliver life-saving drugs. Patients inhale them via a mask they put over their nose and mouth. Sometimes the mist alone is sufficient to provide a treatment. For example, nebulised saline [is used to treat](#) the lung condition cystic fibrosis. Sometimes people with asthma or [chronic obstructive pulmonary disease](#) are also treated with drugs via a nebuliser.

How could a nebuliser potentially spread COVID-19?

When we breathe in and out, the very small airways and the air sacs in our lungs open and close. This generates particles. These particles, along with water vapor, are what are commonly referred to as exhaled aerosols. Think back to breathing out on a cold day; the mist was aerosols from your lungs.

When we have a viral respiratory infection, the virus can be contained in the particles we exhale, and this is how aerosol transmission occurs. It is now widely accepted that SARS-CoV-2, the virus that causes COVID-19, can be spread via aerosols, as well as via larger droplets when we cough and sneeze.

Any activity that increases the amount of aerosols, for example singing or exercising, can increase the amount of aerosolised virus, thereby increasing the risk of transmission.

When people use a nebuliser, two things happen. The first is they often take in big breaths and exhale more forcefully than normal. This alone increases the amount of particles generated. The second is they breathe in a fine mist, not all of which is absorbed in the lung. This too is exhaled.

And when a nebuliser is used to loosen mucus in the lungs, this mucus could also be exhaled. This could be as particles or coughed out.

So whatever the mechanism, someone with COVID-19 who uses a nebuliser is at risk of inadvertently spreading the virus to others.

Don't we already know this?

We know that using a nebuliser in COVID-19 patients is not a good idea, especially as many drugs can be delivered in other ways.

For example, the Australian Commission on Safety and Quality in Health Care [states](#):

"Nebulisation is NOT recommended in patients with COVID-19 as it may contribute to the spread of the virus."

However, it acknowledges that in some circumstances using a nebuliser is unavoidable, for instance, in children.

Important to know .. in light of the latest infections in Melbourne.
<https://t.co/fBguNkJ4CH>

— Karen Percy (@PercyKaren) [February 10, 2021](#)

Was a nebuliser responsible for the spread at the Holiday Inn?

This question is very difficult to answer definitively without making actual measurements.

For example, some so-called [super spreaders](#) are highly contagious.

However, if a COVID-positive person was using a nebuliser, and the spread of the virus was limited to those in relatively [close proximity](#) to that person, it is highly likely the nebuliser would have contributed to the spread.

In Sutton's announcement earlier today, [he said](#) that in the case of transmission at the Holiday Inn, the theory that a nebuliser was the route of infection: "...makes sense in terms of the geography and it makes sense in terms of the exposure time."

So what does this mean for people using nebulisers?

People using a nebuliser for medical reasons should not be frightened by these developments. They should talk to their health-care provider about any concerns.

The bigger question relates to the use of nebulisers by people in hotel quarantine, which Western Australia says [it will now ban](#).

However, it is highly likely a person using a nebuliser in hotel quarantine needs it to provide life-saving medication. So it's not as simple as banning their use altogether. We're more likely to see more consideration around how they are used in our quarantine hotels. For example, they might be restricted to particular areas or only used when there is no other medical alternative.

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