Air samples from coronavirus patient rooms being analyzed

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While taking air measurements, Jakob Löndahl and his research colleagues wear the same protection as the staff caring for coronavirus patients – masks, face visors, gloves and protective aprons. Credit: Sara Thuresson

There are many questions concerning the coronavirus and infection prevention that need to be answered as soon as possible. One of the key questions is: Is the coronavirus floating around in the air we breathe? In a few weeks, air samples from coronavirus patient rooms will hopefully

have been analyzed and possibly provide some clues.

Measurements are currently carried out at the infectious diseases clinic at Skåne University Hospital in Lund to, as quickly as possible, find answers to the questions about COVID 19 and the survival of the virus in the air. The measurements are part of a research project at the Faculty of Engineering at Lund University, which concerns airborne infections.

Jakob Löndahl, associate professor in aerosol technology at Lund University, is responsible for the research project and lists some of the more urgent questions for which the research group is now seeking answers.

"If the coronavirus can be found in the air, when does the infection spread from patient to air? If so, how much of the virus do we breathe in? Is the amount sufficient for someone to become ill because of it? Can patients on a respirator spread the virus to the air? What kind of mask is required? And how can the air be cleaned?

"Coronavirus primarily spreads via contact and droplet transmission through sneezing and coughing. However, it is also assumed that, in certain situations, the virus can be transmitted via aerosols, small airborne particles, in the air," says Carl-Johan Fraenkel, specialist in infectious disease medicine at the Emergency and Infectious Diseases Unit at the Skåne University Hospital and one of the researchers in the project.

The collection of air samples at the infectious diseases clinic in Lund has been underway for a couple of weeks. The measurements are done with instruments specially built to collect biological substances from the air, and samples are taken both from corridors, public spaces and inside the patient rooms.

"The biggest challenge with the measurements in patient rooms is to minimize all types of infection risks. The patients being cared for at the infectious diseases clinic are often seriously ill and may need respiratory assistance with extra oxygen," says Jakob Löndahl.

When Jakob Löndahl and his research colleagues carry out the air measurements they wear the same protection as the staff caring for coronavirus patients—masks, face visors, gloves and protective aprons.

For several years, Jakob Löndahl, together with other researchers at Lund University, has studied the airborne spread of infection including a focus on the winter vomiting disease (norovirus). The research on COVID 19 has now been included in the other projects being carried out on the airborne spread of infection.

"Naturally, there is a focus on the coronavirus now since we are in acute need of more knowledge on the airborne spread of infection," says Jakob Löndahl.

"Our previous research shows that aerosols of the winter vomiting disease are most common following vomiting and that there seems to be possibilities for airborne infection. I think this time we might find traces of the virus, for example, when extra respiratory support is introduced," says Carl-Johan Fraenkel.

They have now collected the first air samples from the patient rooms, however, the results will take some time. First, a laboratory analysis awaits in which the samples will be concentrated so that the genetic material can be interpreted, and any virus identified. If everything goes to plan, there should be preliminary results in the coming weeks.

"Through this research project, we will hopefully soon know more about whether and how the coronavirus can spread through the air," concludes

Jakob Löndahl.

Provided by Lund University