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Study finds breathing and talking contribute to COVID-19 spread

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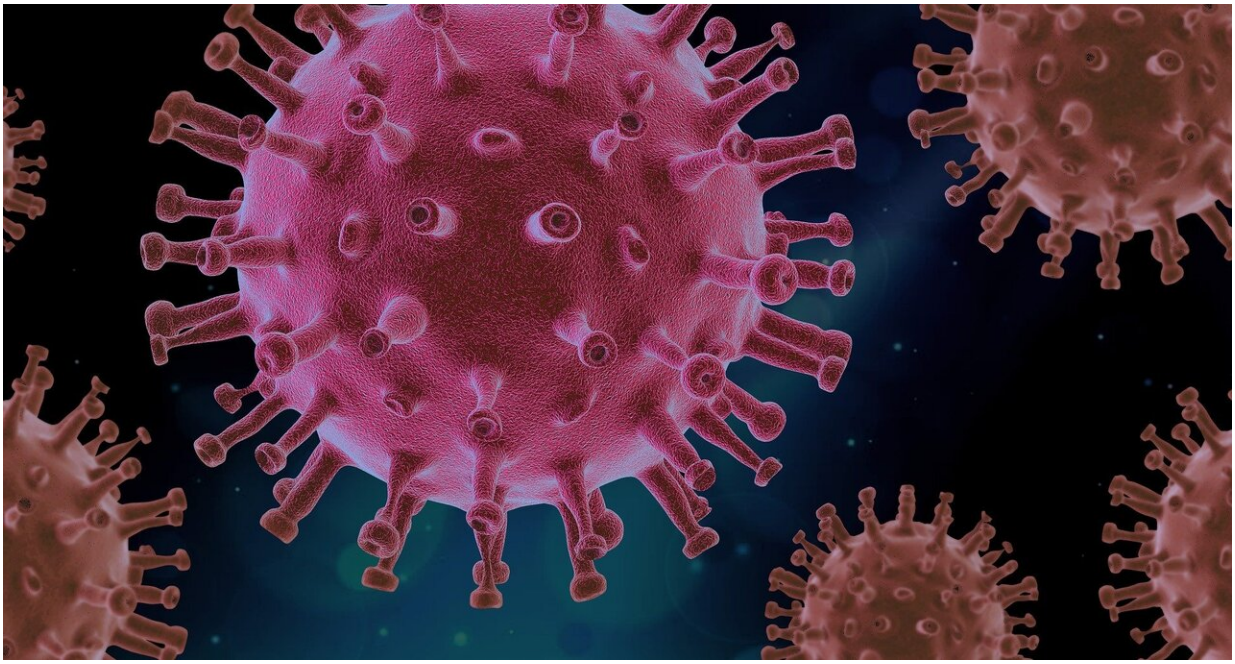

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Current knowledge about the role of aerosols in the transmission of SARS-CoV-2 warrants urgent attention. Current guidance and public health information has slowly shifted focus towards aerosols as a transmission pathway—predominantly associated with breathing and talking by asymptomatic individuals. Providing guidelines for sufficient inhalation protection will be important in curbing the spread of

COVID-19.

The study, "Consideration of the Aerosol Transmission for COVID-19 and Public Health," recently published in *Risk Analysis*, provides several lines of evidence for aerosol transmission, as well as recommendations for further research and public health communication.

To date, the primary transmission methods of concern have been near field transmission (coughing and sneezing) and hand-to-face transport from infected surfaces. More attention should be paid to the inhalation of aerosols, which are small particles that can remain airborne and are capable of short- and long-range transport.

On April 1, 2020, a letter produced by the National Academy of Sciences Committee on Emerging Infectious Diseases and 21st Century Health Threats concluded that even with limited research on SARS-CoV-2 specifically, "the results of available studies are consistent with aerosolization of virus from normal breathing."

Reports of asymptomatic individuals infecting others with COVID-19 reveals that activities such as normal breathing, talking, etc., produce small droplets that are capable of being transported, as healthy individuals are presumably not coughing or sneezing on a regular basis.

Since the aerosol particles produced by talking and breathing are so small, they linger in the air for relatively long periods of time before gravity pulls them to the ground. This allows them to be transported over greater distances. A 2006 study of SARS-CoV-1 found that particles with a diameter of 1-3 μm remained suspended in the air almost indefinitely, particles 10 μm in size took 17 minutes, and 20 μm took 4 minutes to fall to the floor. A recent laboratory study found that the virus can remain viable and infectious in aerosols for hours (it remained viable for the entire three-hour duration of the study) and on surfaces for up to

days.

The authors, Elizabeth L. Anderson, Paul Turnham, John R. Griffin and Chester C. Clarke, Exponent, Inc., propose the following recommendations to address aerosol transport of COVID-19:

- Collect data to explore the concentration, duration of survival and transport distances for SARS-CoV-2 in aerosol form under differing temperatures and humidity levels.
- Further explore airborne concentrations and the role of dose to various parts of the respiratory tract in the progression and severity of the disease.
- Investigate the potential for aerosol contamination of buildings, rooms and surfaces to provide a basis for decontamination protocols
- Explore and record data to determine the role human activities play in potentially generating aerosols capable of transmitting SARS-CoV-2 in both enclosed and open spaces
- Further explore appropriate measures to curb inhalation exposure to small aerosols (

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