Medical Xpress

Simple oral hygiene could help reduce COVID-19 severity, says study

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COVID-19 could pass into people's lungs from saliva with the virus moving directly from mouth to bloodstream—particularly if individuals are suffering from gum disease, according to new research.

Evidence shows that blood vessels of the lungs, rather than airways, are

affected initially in COVID-19 lung disease with high concentrations of the virus in saliva and periodontitis associated with increased risk of death.

The researchers propose that dental plaque accumulation and periodontal inflammation further intensify the likelihood of the SARS-CoV-2 virus reaching the lungs and causing more severe cases of the infection.

Experts say this discovery could make effective oral healthcare a potentially lifesaving action—recommending that the public take simple, but effective, daily steps to maintain oral hygiene and reduce factors contributing to gum disease, such as the build-up of plaque.

An international team of researchers from the UK, South Africa and the United States today published their findings in the *Journal of Oral Medicine and Dental Research*. They note emerging evidence that specific ingredients of some cheap and widely available mouthwash products are highly effective at inactivating the SARS-CoV-2 virus.

Simple oral hygiene measures, including use of these specific mouthwash products, could help lower the risk of transmission of the virus from the mouth to the lungs in those with COVID-19, and help prevent severe instances of the infection.

Initial observations of lung CT scans from patients suffering from COVID-19 lung disease by Dr. Graham Lloyd-Jones, a radiologist, led to a collaboration between medical and dental researchers on the potential entry route into the bloodstream.

Co-author Iain Chapple, Professor of Periodontology at the University of Birmingham, commented, "This model may help us understand why some individuals develop COVID-19 lung disease and others do not. It could also change the way we manage the virus—exploring cheap or

even free treatments targeted at the mouth and, ultimately, saving lives.

"Gum disease makes the gums leakier, allowing microorganisms to enter into the blood. Simple measures—such as careful toothbrushing and interdental brushing to reduce plaque build-up, along with specific mouthwashes, or even saltwater rinsing to reduce gingival inflammation—could help decrease the virus's concentration in saliva and help mitigate the development of lung disease and reduce the risk of deterioration to severe COVID-19."

The research team included experts from Salisbury District Hospital, UK; the University of Birmingham, UK; and the Mouth-Body Research Institute, Los Angeles, California and Cape Town, South Africa.

Their new model is based on the mouth providing a breeding ground for the virus to thrive, with any breach in oral immune defenses making it easier for the virus to enter the bloodstream. Moving from blood vessels in the gums, the virus would pass through neck and chest veins—reaching the heart before being pumped into pulmonary arteries and small vessels in the lung base and periphery.

"Studies are urgently required to further investigate this new model, but in the meantime daily oral hygiene and plaque control will not only improve oral health and wellbeing, but could also be lifesaving in the context of the pandemic," added Professor Chapple.

More information: Graham Lloyd-Jones et al. The COVID-19 Pathway: A Proposed Oral-Vascular-Pulmonary Route of SARS-CoV-2 Infection and the Importance of Oral Healthcare Measures. *The Journal of Oral Medicine & Dental Research* (2021).