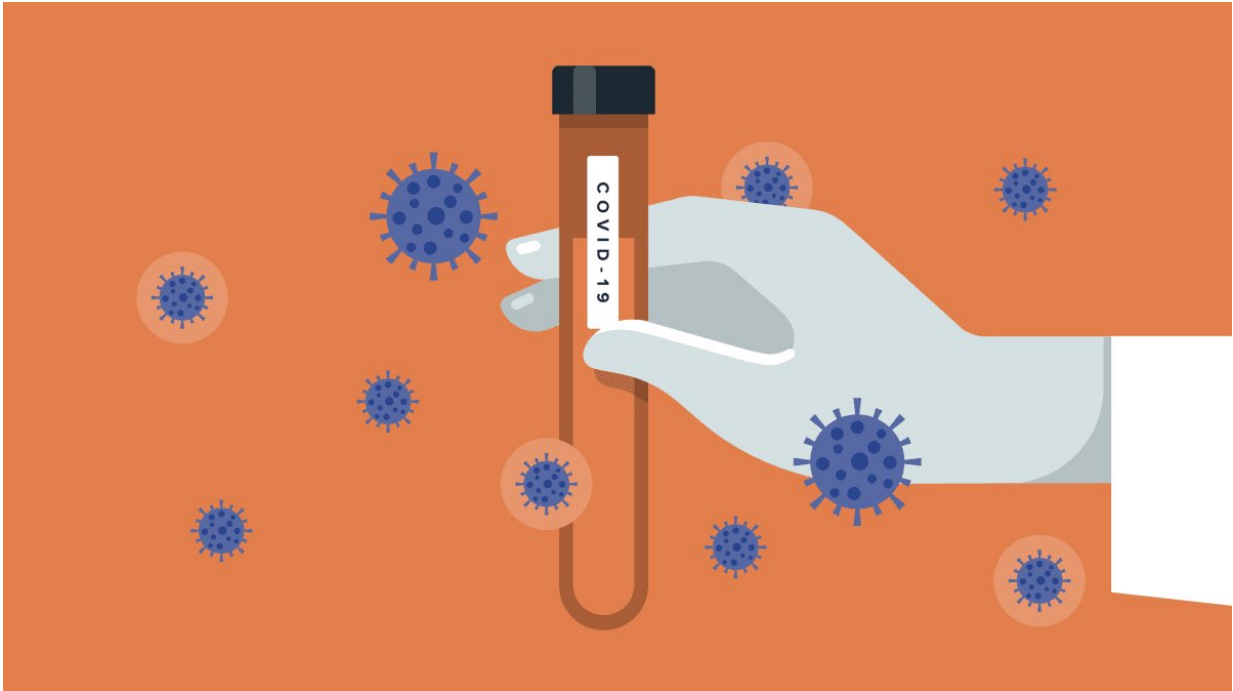


# Saliva test may predict severity of COVID-19

February 17 2021, by Kathy Katella

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A Yale study has shown that a saliva test for COVID-19 could be a predictor of who is more likely to develop severe disease from the infection. Credit: Yale University

New research suggests that saliva tests could help determine which COVID-19 patients should receive early treatment.

It's widely known that the COVID-19 nasopharyngeal [test](#) is invasive. (It involves having a swab inserted into your nose and twirled around for

several seconds.) But like it or not, it's currently the standard test for detecting SARS-CoV-2, the virus that causes COVID-19.

But there's another type of COVID-19 test that's a lot simpler—one that requires gathering just a little bit of saliva. But because researchers are still learning about the potential of saliva testing, the technique is being used only in select authorized laboratories.

Still, encouraging news about this method came in January, when Yale School of Medicine researchers released a study showing that high levels of the SARS-CoV-2 virus in a person's saliva could be a predictor of who will be more likely to develop severe disease, be hospitalized, or die from COVID-19. This information could help doctors determine which patients should be treated early with medicines such as monoclonal antibodies, which can decrease the viral load and work best in the early stages of the disease. (The study was published on a preprint server that still needs to undergo peer review.)

"We discovered that the saliva viral load is a much better correlate of disease outcome than the nasopharyngeal viral load," says Akiko Iwasaki, Ph.D., lead author of the study, and an immunologist at Yale School of Medicine.

The premise behind this testing is fairly straightforward. The standard test, called the nasopharyngeal (NP) swab, only looks as far as the nasal passages. But if the virus is found in the saliva, it means that it's more likely to have infiltrated the lungs, where COVID-19 causes the most serious damage, says Iwasaki. That's because cilia (hair-like projections) in the respiratory tract regularly move mucus up to the throat where it mixes with saliva, or it can move during a cough.

"The saliva viral load correlates not only with the disease severity, but also with the [immune response](#) to COVID-19, and older age, [male] sex,

and co-morbidities that have been found to put people at higher risk—essentially every parameter that we've examined," Iwasaki says.

## **Origins of the saliva test**

Last spring, a Yale School of Public Health research team developed SalivaDirect, a protocol, or process, that requires a certified laboratory and trained technicians to conduct its testing. It's not a kit, point-of-care, or at-home rapid test, and it also is not available commercially for purchase. It is, essentially, a set of instructions; it received an Emergency Use Authorization (EUA) in August from the Food and Drug Administration (FDA) and can only be performed in authorized laboratories.

SalivaDirect partnered with the National Basketball Association (NBA), and the National Basketball Players Association. The product was used to test asymptomatic people within the NBA, and its success attracted the attention of laboratories around the country. Iwasaki and her team collaborated with the Yale Public Health group to analyze the severity of COVID-19 disease in hospitalized patients.

## **Making the saliva test more available**

While SalivaDirect has received an EUA from the FDA, many places are still relying on NP swabs for testing. "But with more evidence, including ours, we're hoping that hospitals and clinics might begin to really promote the use of saliva for both diagnosis and prognosis," Iwasaki says. "Saliva has so many advantages. It is not only easier, less invasive, and less expensive than NP testing, but, as we've demonstrated, it may be a better measure of disease pathogenesis than the nasopharyngeal swabs."

Now Iwasaki is hoping other groups will conduct studies that will provide more data to back up her group's recent findings, so that saliva testing can gain FDA approval and become widely available. "As far as we can tell, this is a much better reflection of the [disease](#) process," she says. "Our hope is that many more studies will be carried out so that we will be able to use the [saliva viral load](#) early as both a diagnosis and as a predictive factor. These insights will be important for transforming COVID-19 patient care."

Provided by Yale University

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