

The Potential Benefit of Testing Saliva versus Nasopharyngeal Swabs (NPS) for COVID-19

An analytic brief from the HNE Health Strategic COVID-19 Research Group

Problem

- NPS is uncomfortable and not acceptable to many people
- Parents are reluctant to subject their children to NPS
- COVID-19 control will require some people to have multiple tests during the winter cold season
- Saliva testing is more acceptable but may have lower sensitivity than NPS

Key Finding: Saliva testing is superior to NPS testing when taking into account willingness to have the test

In Part I of our study, we systematically searched for research in which people had both a NPS and a saliva test for COVID-19. The table summarises studies we found in relevant settings with appropriate saliva collection methods. Of 67 people who tested positive on the NPS, 57 (85%) also tested positive on the saliva test. In other words, the saliva test missed 15% of the people identified by the NPS as COVID-19 cases. (Note that saliva picks up some cases that NPS misses but we put that aside in this analysis.)

Study lead author and country	Number who were positive on NPS test	Number who were positive on saliva test	Sensitivity of saliva test	Population / Setting	Collection method
<i>Iwasaki et al, Tokyo, Japan</i>	9	8	89%	Outpatients suspected of having COVID-19, some with a diagnosis	"Self-collected saliva spit..."
<i>Pasomsub et al, Bangkok, Thailand</i>	19	16	84%	Outpatients presenting to an acute respiratory infection clinic in a university hospital	"Provide saliva without coughing"
<i>Williams et al, Melbourne, Australia</i>	39	33	85%	Outpatients; ambulatory patients in a busy screening clinic	"Pool saliva in mouth for 1-2 min; spit 1-2 ml"
Total	67	57	85%		

In Part II, we hypothesised that, overall, people will be more likely to have a COVID-19 test if they only have to spit into a container rather than have their noses and throats swabbed. There are no studies of this so we looked at how smaller and larger differences in the acceptability of the two procedures might affect the detection of COVID-19 cases in the population.

Assuming there are 5000 COVID-19 cases in a population of 1 million people, and that 90% of the population agree to the saliva test while 60% agree to the NPS, **1125 (23%) fewer cases would be missed with saliva testing**. We present a range of scenarios in Part II of the Scientific Appendix.

In summary, even if it has lower sensitivity than NPS, saliva testing will identify more COVID-19 cases if people are more willing to provide saliva than be swabbed.