

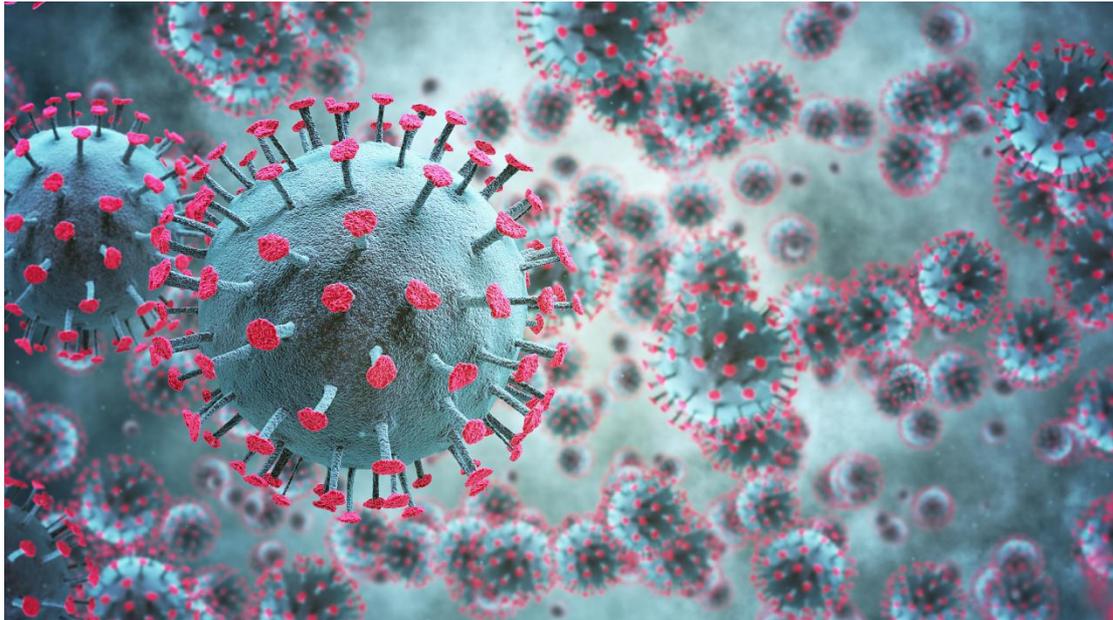
## Why Antigen Test is The Best Test Method until Now?

By Dr.Edsin Email: [emikeucw21@yandex.com](mailto:emikeucw21@yandex.com) COVID-19 bussiness Research media views



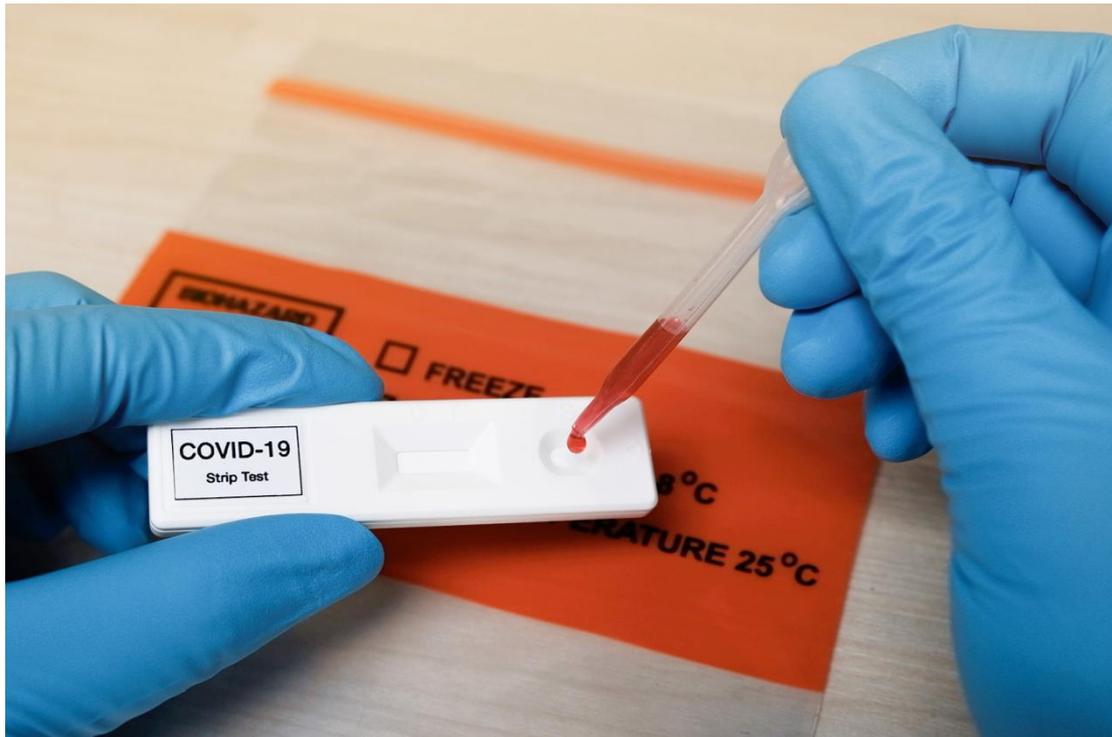
Since COVID-19 emerged in late 2019 and started to spread around the world, we' ve heard how important testing is, **not just for those who may be infected, but also for understanding where and how the virus is spreading.** This is important to plan effective public health responses and flatten the curve.

However, each Country or area does not have the same testing strategy to confront with the same enemy, which made the results were so differently. Three types of tests are available for disease detection: **PCR test, Antibody test and Antigen test, each has their own strengths.** But nowadays, comparing with PCR test and Antibody test, **Antigen tests are becoming more critical** in major cities. According to “The Washington Post”, White House announces deal to provide 150 million Antigen rapid coronavirus tests, which indicates the significance of Antigen tests to help the local public health.



**Antibody test, a test for past infection.**

Antibody tests identify people who have previously been infected with the coronavirus. They do not show whether a person is currently infected. This is primarily a good way to track the spread of the coronavirus through a population. Nevertheless, it is not accurate enough. Having an antibody test too early can lead to false negative results. That's because it takes a week or two after infection for your immune system to produce antibodies. The reported rate of false negatives is 20%. However, the range of false negatives is from 0% to 30% depending on the study and when in the course of infection the test is performed.



**PCR test, the “gold standard” of COVID-19 testing, but, like all tests, they’ re not perfect.**

PCR tests are used to directly detect the presence of an antigen, rather than the presence of the body’ s immune response, or antibodies. By detecting viral RNA, which will be present in the body before antibodies form or symptoms of the disease are present, the tests can tell whether or not someone has the virus very early on. The limitation of PCR test is the inconvenience. Running a PCR test and reading its results requires specific equipment and chemicals (known as reagents) that are in short supply.

In addition, time consuming is another lethal weakness. “ There will never be the ability on a nucleic acid test to do 300 million tests a day or to test everybody before they go to work or to school ” Deborah Birx, White House coronavirus response coordinator, said at a press conference last month. Birx and others have touted another option: antigen tests, which detect the presence of viral proteins in a biological sample, such as saliva or tissue swabbed from the nasal cavity. Antigen tests are typically cheap, return results in minutes, and, like the genetic tests, reveal an active infection.



### **What exactly is an antigen test, and how does it stand out from other 2 tests?**

To understand antigen testing, you have to know what an antigen is. “An antigen is a substance recognized by the body’s immune system, which can then respond by generating proteins called antibodies that specifically recognize that antigen,” Albert Shaw, MD, a Yale Medicine infectious disease doctor and professor of medicine at Yale School of Medicine, explains to *Health*.

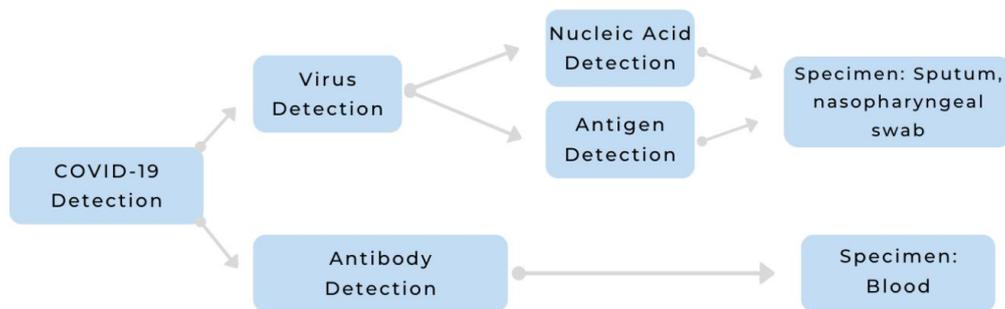
That means, “the point of an antigen test is to detect the presence of a protein—the nucleocapsid protein—which is part of the SARS-CoV-2 virus that is the cause of COVID-19,” says Dr. Shaw. In that sense, and per FDA's statement, an antigen test basically looks for those fragments of antigens within a person's body to see if they're infected with the virus.

According to the FDA, antigen tests are collected via nasal cavity swabs, “which are then placed into a special solution for virus detection,” says Dr. Shaw. The main advantage of antigen tests, per the FDA, is the speed at which they can provide results. In addition to quick results, antigen tests are also cheaper and easier to use, compared

to other tests available.



### Antigen test, the first option for better world.



Antigen tests, bring advantages to the table. Because they don't require the expensive equipment and chemicals needed to perform PCR, they can be more easily used as point-of-care tests in doctor's offices, urgent care centers, hospitals, and even at companies and schools. They also don't require trained specialists, making them cheaper to administer—although there are a few point-of-care PCR tests, most still involve sending a sample to a lab for manual processing.

And the fast results from an antigen test mean that people who test positive can be

isolated quickly, before they risk infecting others. Even if the tests have a 10% false negative rate, “people could easily be tested repeatedly, making it likely that anyone missed on the first round would be flagged on the second,” says Doug Bryant, Quidel’s president and CEO.

Another advantage is scalability. Once researchers settle on effective antibodies, the tests are easy to manufacture in bulk, and running them doesn’t require additional reagents as PCR tests do.



Three Tests Comparison in the following form:

### COVID-19 ANTIGEN RAPID TEST vs PCR TEST vs ANTIBODY(IgG/IgM) RAPID TEST

OVERVIEW	Antigen test is a new generation of detection method that combines the advantages of PCR and Antibody test. Antigen test is a detection method that detects saliva/sputum/other body fluids like PCR, with similar accuracy, detects whether a person is still infected, and does not require complex equipment like PCR. At the same time, Antigen test has the advantages of simple and effective detection.		
TYPE OF TEST	PCR TEST	ANTIGEN RAPID TEST	ANTIBODY (IgG/IgM) RAPID TEST
TEST METHOD	saliva/sputum/other body fluids.	saliva/sputum/other body fluids.	blood/serum test
ACCURACY	PCR could detect if the person is still contagious, so the detection is more accurate	Antigen and PCR have similar accuracy. Antigen test could also detect if the person is still contagious, so the detection is more accurate.	The biggest defect of Antibody test is that Antibody often cannot be tested when a person is infected at the beginning. Because Antibody has a lag phase.
TEST REQUIREMENT	PCR requires equipment and laboratory environment	Antigen test can test without device and no expensive lab needed.	Antibody test can test without device and no expensive lab needed.

References:

Coronavirus antigen tests: quick and cheap, but too often wrong?

Robert F. Service May. 22, 2020

<https://www.sciencemag.org/news/2020/05/coronavirus-antigen-tests-quick-and-cheap-too-often-wrong>

Antibody vs Antigen Testing for COVID-19, Anna MacDonald Jun 26, 2020

<https://www.technologynetworks.com/diagnostics/articles/antibody-vs-antigen-testing-for-covid-19-336486#:~:text=Accuracy%20can%20also%20be%20a,community%20and%20in%20remote%20regions.>

Which test is best for COVID-19?

Robert H. Shmerling, MD AUGUST 10, 2020

<https://www.health.harvard.edu/blog/which-test-is-best-for-covid-19-2020081020734>

What Is a Coronavirus Antigen Test—and How Is it Different Than Antibody Testing?

Leah Groth May 11, 2020

<https://www.health.com/condition/infectious-diseases/coronavirus/coronavirus-antigen-test>

Different paths to the same destination: screening for Covid-19

Chloe Kent 3 APRIL 2020

<https://www.medicaldevice-network.com/features/types-of-covid-19-test-antibody-pcr-antigen/>