

The new tests on the block: South Africa adds a new COVID test to its tool kit

Increasing the amount of testing for COVID-19 is the best way to see how widespread the outbreak is. South Africa recently approved its third kind of coronavirus test — an antigen test. But how does it work and what sets it apart from the others on offer?

In October, the [South African Health Products Regulatory Authority](#) approved two rapid antigen tests.

These tests can give a result in as little as 15 minutes.

An antigen test costs around R160.

South Africa started to roll out the tests in October.

**[\[National health department statement, 8 October 2020\]](#)**

These are the third type of COVID-19 tests that have been approved for use in South Africa.

**What are the two other tests - and how are they different?**

1. The gold standard for detecting the new coronavirus in an infected person is a [PCR test](#).

A PCR test detects the genes of SARS-CoV-2, the virus that causes COVID-19.

PCR tests can still detect the presence of the virus even if a person is not infectious anymore.

But swab samples taken from someone's nose or throat need to be sent to a lab and it can take several days to see results.

2. An [antibody test](#) uses blood to detect our body's response to the virus — in the form of antibodies.

Antibodies are made up of special proteins. The proteins can take a few days to develop and do not necessarily indicate that someone is infected at the time of taking the test.

Antibody tests are therefore better suited for surveillance purposes than to find out if someone is infected.

They can tell us what proportion of people in a community have had COVID-19.

## How do antigen tests work?

First, a nasal swab is collected by a health worker. This is the same sample used for PCR testing.

The swab is then placed into a buffer solution and a few drops of this solution are placed onto a rapid antigen test stick.

Antigen tests detect the [presence of proteins from the coronavirus](#) — this is different from the genetic material a PCR test detects.

These proteins — the antigen — are what stimulate the body to create antibodies.

Antigen tests work best to detect SARS-CoV-2 in people who are highly infectious — such patients have a lot of virus in their bodies.

If someone doesn't have a large amount of the virus in their body, the test could show a negative result.

For this reason, these tests are most reliable during the first week of infection.

## How reliable are antigen tests?

The accuracy of tests is measured in two ways.

How sensitive they are, in other words how often the test generates a positive result for people who have contracted SARS-CoV-2.

How specific they are, or the test's ability to correctly generate a negative result for people not infected with SARS-CoV-2.

Two antigen tests have been approved for use in South Africa.

1. [Abbott's rapid antigen test](#) (approved for emergency use)
  - Sensitivity of 91.4% [range: 85.5%-95.5%].
  - Specificity of 99.8% [range: 98.8%-100%].
2. [SD BioSensor's rapid antigen test](#)
  - Sensitivity: 76.6% [range: 62.8-86.4%]
  - Specificity of 99.3% [range: 98.6-99.6%]

The results of these two tests mean that if you test negative, it doesn't necessarily mean you're not infected.

It's more likely that the test will be positive in the case of people who had moderate or severe symptoms.

This means that if you test positive, you have most likely contracted SARS-CoV-2.

### **Why do we need a new kind of test?**

While PCR tests are great at telling us if someone has COVID-19, they're also very expensive.

PCR tests require highly trained people and equipment to analyse results. They also take a long time to produce results.

Rapid antigen tests are much cheaper and easier to use — and they produce results within 30 minutes.

This makes them an important screening tool to quickly identify someone who could potentially spread the disease.

But unlike antibody tests, they can't be used for surveillance to get a sense of what proportion of a population had COVID-19 later down the line.

Each test serves a different purpose and each option serves its purpose when it comes to containing the spread of COVID-19.