Are Rapid COVID-19 Test Results Reliable?

Antigen tests are one type of rapid test that may help diagnose COVID-19. Some rapid tests can provide results in 15 minutes. But, they may not be as accurate as other types of tests, such as a PCR lab test.

COVID-19 is a respiratory disease that can cause severe illness, especially in people with preexisting health conditions like diabetes, obesity, or high blood pressure.

Two types of tests are commonly used to identify a current infection of SARS-CoV-2, the coronavirus that causes COVID-19.

The first type is a polymerase chain reaction (PCR) test, also called a diagnostic test or molecular test. A PCR test can help diagnose COVID-19 by detecting the genetic material of the coronavirus. PCR tests are considered the gold standard for diagnosis by the Centers for Disease Control and Prevention (CDC)

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The second type is an antigen test. These tests help diagnose COVID-19 by searching for certain molecules found on the surface of the SARS-CoV-2 virus.

Rapid tests are COVID-19 tests that can provide results in as little as 15 minutes

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and don’t require lab analysis. They usually take the form of antigen tests.

Although rapid tests can provide quick results, they aren’t as accurate as PCR tests analyzed in a lab. Keep reading to learn how accurate rapid tests are and when they’re used instead of PCR tests.

How accurate are rapid COVID-19 tests?

Rapid COVID-19 tests often provide results within minutes and don’t need to be analyzed in a laboratory by a specialist.

Most rapid tests are antigen tests, and sometimes the two terms are used interchangeably. However, the CDC

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stopped using the term “rapid” to describe antigen tests, because the FDA has also approved laboratory-based antigen tests.

Rapid tests, also called point-of-care tests, can be performed at:

- home with a home COVID-19 test
- a doctor’s office

- pharmacies
- school clinics
- long-term care facilities
- airports
- drive-through testing sites

During the test, you or a medical professional will insert a cotton swab into your nose, throat, or both to collect mucus and cells. Your sample is then usually applied to a strip that changes color if you test positive for COVID-19.

Although these tests provide quick results, they aren't as accurate as laboratory tests because they require more of the virus in your sample to report a positive result. Rapid tests come with a high risk of giving a false negative result.

A false negative means the test shows you don't have COVID-19 when you do actually have it.

How accurate are at-home tests

At-home tests aren't as accurate as gold standard PCR tests, but they still play a role in catching COVID-19 cases that otherwise would have gone undetected. Like other antigen COVID-19 tests, home COVID-19 tests have a higher chance of a false negative than a false positive — meaning it's more likely that the test will indicate you don't have COVID-19 when you do have it than report you do have it when you don't.

In an August 2021 study

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, researchers compared the validity of home antigen tests compared to PCR lab tests for detecting COVID-19 infection. Within days 0 to 12 of symptom onset, the home tests correctly identified 78.9 percent of people who did have the virus and correctly identified 97.1 percent of people who didn't have the virus.

When taken within 3 days of symptom onset, home tests correctly identified 96.2 of COVID-19 cases. The researchers found tests taken 3 days after symptoms appeared were almost as accurate as tests taken the day symptoms started.

Chances of a rapid test giving a false negative

A March 2021 review of studies examined the results of 64 test accuracy studies evaluating commercially produced rapid antigen or molecular tests.

The researchers found that the accuracy of the tests varied considerably. Here's a look at their findings.

Accuracy for people with COVID-19 symptoms

For people with symptoms of COVID-19, the tests correctly gave a positive result an average of 72 percent of the time. The 95 percent confidence intervals were 63.7 to 79 percent, meaning that the researchers were 95 percent confident that the average fell between these two values.

Accuracy for people without COVID-19 symptoms

The researchers found that people without COVID-19 symptoms correctly tested positive in 58.1 percent of rapid tests. The 95 percent confidence intervals were 40.2 to 74.1 percent.

Accuracy during the first week of symptoms versus the second

Rapid tests more accurately provided a positive COVID-19 result when administered during the first week of symptoms. The researchers found that rapid tests correctly identified COVID-19 in an average of 78.3 percent of cases during the first week.

In the second week, the average dropped to 51 percent.

Differences between brands

The researchers found a large range of accuracies between manufacturers of the tests.

Coris Bioconcept scored the poorest and correctly provided a positive COVID-19 result in only 34.1 percent of cases. SD Biosensor STANDARD Q had the highest score and correctly identified a positive COVID-19 result in 88.1 percent of people.

In another study

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published in April 2021, researchers compared the accuracy of four types of COVID-19 rapid antigen tests. The researchers found that all four tests correctly identified a positive COVID-19 case about half the time and correctly identified a negative COVID-19 case almost all the time.

Here's a summary of their findings:

Brand	Percent of positive COVID-19 cases correctly identified	Percent of negative COVID-19 cases correctly identified
Roche	49.4%	100%

Abbot	44.6%	100%
MEDsan	45.8%	97%
Siemens	54.9%	100%

In people who show symptoms of COVID-19, antigen testing is more reliable because there’s more virus to capture in the sample.

Chances of a rapid test giving a false positive

Rapid tests rarely give a false positive result. A false positive is when you test positive for COVID-19 when you don’t actually have it.

In the March 2021 review of studies mentioned earlier, the researcher found that rapid tests correctly gave a positive COVID-19 result in 99.6 percent of people.

If it’s less accurate, why is it used?

Despite the relatively high chance of getting a false negative result, rapid COVID-19 tests offer several benefits over PCR tests.

Rapid tests:

- can provide results within minutes instead of days
- are more portable and accessible than lab tests
- are less expensive than lab tests
- don’t require a specialist or lab

Many airports, arenas, theme parks, and other crowded areas provide rapid COVID-19 testing to screen for potential positive cases. Rapid tests won’t catch every COVID-19 case, but they can catch at least some cases that would have otherwise gone unnoticed.

What to do if you have a negative rapid test result but still have symptoms?

If your rapid test shows that you don’t have the coronavirus but you do have symptoms of COVID-19, it’s possible that you received a false

negative. It’s a good idea to confirm your negative result with a more accurate PCR test.

How accurate are other COVID-19 tests?

PCR tests are generally more accurate than rapid tests. CT scans are rarely used to diagnose COVID-19. Antibody tests can be used to diagnose past infection.

PCR test

PCR covid tests remain the gold standard for diagnosing COVID-19. A January 2021

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study found mucus PCR tests correctly diagnosed COVID-19 in 97.2 percent of cases.

Computed tomography (CT) scans

CT scans aren’t generally used to diagnose COVID-19, but they can potentially identify COVID-19 by identifying lung problems. However,

they’re less practical than other tests and have trouble ruling out other types of respiratory infections.

The same January 2021 study found that CT scans correctly identified a positive COVID-19 case 91.9 percent of the time but only correctly identified a negative COVID-19 case 25.1 percent of the time.

Antibody tests

Antibody tests look for proteins made by your immune system called antibodies that suggest past coronavirus infection. Specifically, they look for antibodies called IgM and IgG. Antibody tests can’t diagnosis current coronavirus infection.

The January 2021 study found that IgM and IgG antibody tests correctly identified the presence of these antibodies in 84.5 and 91.6 percent of cases, respectively.

What to do if you think you have COVID-19?

Most people with COVID-19 develop mild illness. If you think you have COVID-19, you should isolate yourself from others as soon as possible. The CDC

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continues to recommend a 5-day quarantine unless you're fully vaccinated against the coronavirus or had a positive COVID-19 result within the past 3 months.

Medical emergency

Call 911 or go to the nearest emergency room if you have symptoms like:

- breathing trouble
- new confusion
- an inability to stay awake or wake
- chest pain or pressure
- pale gray or blue nails, skin, or lips
- any other concerning symptoms

Emergency symptoms in People of Color

Discoloration of your nails, skin, or lips is a sign of oxygen deprivation. However, people with darker skin may not be able to recognize these symptoms as easily as people with light skin.

Was this helpful?

Takeaway

Research suggests rapid COVID-19 tests are most accurate when used in the first week after symptoms start.

The risk of getting a false negative result is relatively high with rapid tests. For people without symptoms, there's a higher chance of getting a false negative result compared to people with symptoms. On the other hand, rapid tests give a false positive less than 1 percent of the time.

A rapid COVID-19 test can be a useful preliminary test to see if you have the coronavirus that causes COVID-19. However, if you have symptoms and your rapid test comes back negative, it's a good idea to confirm your results with a PCR test.