

Frequently Asked Questions

COVID-19 Rapid Antigen Tests vs. PCR Tests

What's the difference between a PCR test and a rapid antigen test?

PCR (polymerase chain reaction) tests amplify genetic material of the SARS-CoV-2 virus in a sample, to detect the presence of RNA and diagnose COVID-19. Because PCR amplifies the RNA, it is like a magnifying glass and can detect even very small levels of virus starting 1-2 days before someone becomes infectious and will continue to be positive for days or weeks after someone is infectious.	Rapid antigen tests directly detect the SARS-CoV-2 virus by binding a piece of the virus called an antigen. The antigen detected by most rapid antigen tests is called the nucleocapsid antigen. Antigens can be detected by rapid antigen tests when the virus is at a high level and is most likely to be infectious. The rapid antigen test is best to answer the question “Am I infectious?” or “Do I need to be isolated?”
You need to sign up for a PCR test and the results can take 1-3 days or more because the process is complex and requires the work at a remote laboratory	Rapid tests can be bought online or in drugstores and the results are usually available within 15 minutes and are executed by the user. Check your health insurance coverage for its reimbursement policies and be sure to sign up for your free tests at COVIDtests.gov .

THE BASICS: RAPID TESTS VS. PCR TESTS

PCR tests amplify traces of virus and are processed in a lab

- These are the tests that take hours or days to get results
- Because they can detect very low levels of infection, they can show a positive result before you feel sick and long after you've recovered
- **PCR tests tell you if you're COVID-positive**

Rapid antigen tests are the ones we're used to seeing in boxed kits and can be used at home, at school, or anywhere people are gathering (just don't use them in the cold)

- Rapid tests detect if you have enough virus in your body to be infectious, even if you don't have symptoms
- **Rapid tests tell you if you're COVID-contagious**
- Rapid tests are a critical public health tool!



Representative Marjorie Decker, 25th Middlesex District
House Chair, Joint Committee on Public Health

Are rapid tests less accurate compared to PCR?

- No, but they are testing different things. Rapid tests will tell you if you are “COVID-contagious” since they detect high virus loads and will only be positive when you are contagious, **whether or not you have symptoms**. A PCR test will tell you if you are “COVID-positive.” A positive test on a PCR means you have some virus RNA in you, but it does not necessarily mean that you are currently “COVID-contagious.”
- Any test can be negative when used too early after initial exposure. So if there is a question about a negative result, it is best to test again in 24-48 hours.

When should I use a rapid test vs. a PCR test?

- PCR tests identify whether you have any virus in your body. This can let you or your doctor know whether any symptoms you may have or have had in the recent weeks were due to COVID. These are less helpful for public health purposes because they often take one or more days to return results and because you can continue to test positive on a PCR test long after you’re no longer infectious due to the presence of RNA remnants.
- Rapid tests measure whether or not you’re contagious. This is useful for public health purposes because they let you know immediately if you are likely contagious and allow you to avoid spreading the virus to others without days of waiting time for test results.

Do some brands of rapid tests work better than others?

- No. The few brands of rapid antigen tests on the market all use the same technology and produce the same, reliable results. The results do not depend on whether or not you have symptoms, only on how much virus is in the sample.
- A rapid antigen test can on rare occasions turn positive when you are not infected. When this happens, it is called a “false positive.” Although false positive results on rapid antigen tests are rare, they can happen once in every 200-2000 tests performed. It may be important to confirm a positive result if you suspect it may be wrong. This can be done quickly by using a rapid test from a separate manufacturer. If the first test is positive and the second test negative, your first test may have been falsely positive. It is best to repeat the test 24 hours later if you suspect a false positive result.

Can rapid tests detect the Omicron variant?

- Yes, rapid antigen tests detect all currently known variants of COVID-19.

When should we test?

- Use rapid tests in order to make sure you won’t be spreading COVID-19 to others and others won’t be spreading it to you
 - Rapid antigen tests are effective when used immediately before a gathering with people outside of your household.
 - Take the test on the same day you plan to gather, and ask those visiting you to do the same. The test can take 3-5 minutes to prepare and up to 15 for the results.
 - **Follow the test instructions closely and do not use them in the cold (below 55 degrees Fahrenheit).**
 - If you feel any symptoms, you can use a rapid test. If it is positive, you have COVID-19. If your rapid test is negative and it is the first day of symptoms, you should wait 24-36 hours and test again.
- Use a PCR test if you need a medical diagnosis
 - PCR tests are best used when you’ve been exposed to COVID-19 or have symptoms and require a medical diagnosis with your doctor, regardless of whether you are infectious

- However, PCR test appointments can be difficult to find and results can take days.
- Keep in mind that PCR tests detect very low levels of virus, so will show positive results before and long after someone is contagious and they are not always the most appropriate test to answer the question “am I infectious?” or “do I need to isolate?”

WHY THE CONFUSION ABOUT WHICH IS THE BEST TEST?

Rapid tests and PCR tests measure different things with different objectives!

- PCR tests are a medical diagnostic tool -- is there any evidence of current or recently resolved viral infection in your body?
- Rapid tests are a public health tool -- can you spread the virus to other people?

The FDA approves medical diagnostic tools, not public health tools, which is why so few rapid tests have been authorized in the US and why there hasn't been a push to manufacture them.

The European Union's equivalent of the FDA approves public health tools.

- This is why rapid tests in other countries have been abundant, easily accessible, and cheap.

This article in Nature is a great place to learn more: t.ly/BB6c

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What should I do if I test positive?

- Contact your primary care doctor, if symptoms are present.
- Isolate! Do not go out, and attempt to keep your distance from uninfected members of your household. Wear a tight-fitting mask if near other household members.
- Alert those you've come in close contact with for the past few days.
- Monitor your symptoms.
- Take rapid tests to determine when you're no longer contagious before returning.
- Get fresh air and walks outside while wearing your mask. You don't need to be indoors all the time as long as you wear a mask and avoid close contact with others.

Marjorie
DECKER
STATE REPRESENTATIVE
HOUSE CHAIR, JOINT COMMITTEE
ON PUBLIC HEALTH