

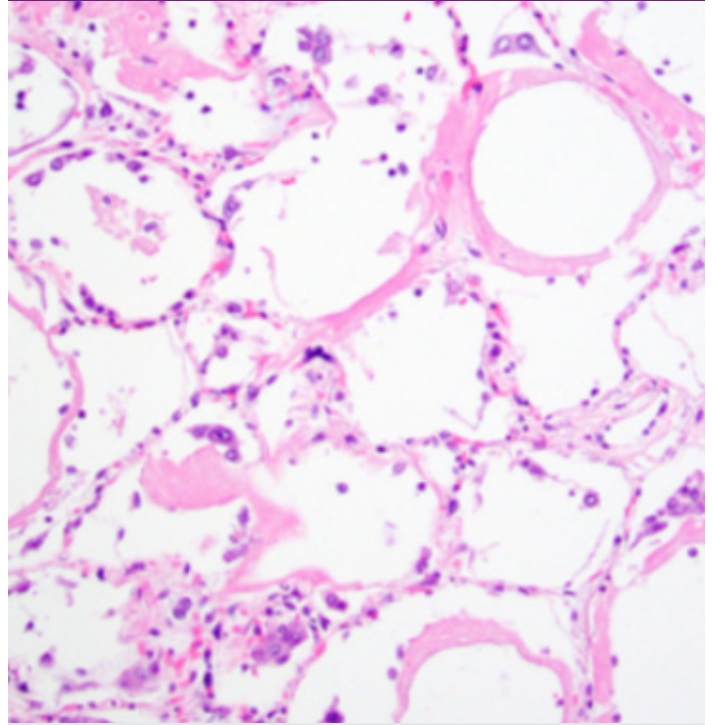
## WHAT IS COVID-19?

COVID-19 is a respiratory disease caused by a coronavirus (SARS-CoV-2). The coronavirus family is large and are common in both people and animals. There are only a small number of coronaviruses that can infect people and spread between people. SARS-CoV-2, the agent of COVID-19, emerged in the fall of 2019 and has caused a global pandemic.

SARS-CoV-2 causes a respiratory infection with mild to severe symptoms, including, but not limited to: difficulty breathing, fever, headache, cough, pneumonia, bronchitis. In severe cases, COVID-19 can lead to death.

COVID-19 is diagnosed with a nasal pharyngeal swab, which is a method to collect material for testing from the nasal secretions from the back of the nose and throat. In simple terms, it is a big and long swab inserted through your nose and it will feel like it is tickling your brain. The swab is then brought to the laboratory in special transport fluid where laboratory professionals and pathologists extract the sample from the swab and it is analyzed to see if SARS-CoV-2 is present.

There is currently no cure for COVID-19, though convalescent plasma (plasma from survivors who have created antibodies to SARS-CoV-2) is being used to treat severe cases. Currently, 3 vaccines have received Emergency Authorization by the FDA in the United States, namely those made by Pfizer, Moderna, and Johnson & Johnson.



## UNDER THE MICROSCOPE

Patients who succumb to COVID-19 may have acute lung injury which is indicated by the presence of pink, bland membranes (called, "hyaline membranes") that line the walls of their air sacs in their lungs (where oxygen exchange occurs). At autopsy, tissue sections of the lungs can show the pink hyaline membranes as seen in this patient. If patients survive the initial stages, they may progress to a more severe form of lung injury called diffuse alveolar damage. Alternatively, a secondary pneumonia may develop in the injured lung due to bacteria which can lead to death.

For more information and to get involved:  
[www.ascp.org/patients](http://www.ascp.org/patients)

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# COMMON SIGNS AND SYMPTOMS OF COVID-19

People with COVID-19 have a wide range of symptoms reported ranging from mild symptoms to severe illness. Symptoms may appear 2-14 days after exposure to the virus. At first, symptoms of an infection are caused by your immune system, not by the virus itself. A viral infection is like a battle in your body, and when you start developing symptoms, that means the immune system is losing a little bit of ground.

The period between infection and symptom onset is known as an incubation period. One of the factors that has made dealing with COVID-19 so difficult is that many infected people spread active and infectious part of the virus during the incubation period before developing symptoms or without developing symptoms at all. Symptoms include but are not limited to the following. To read more about COVID-19 symptoms visit [here](#).

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea



Patient Champion, Laurel

## COMMON COVID-19 FAQs

### **What is the rate of COVID-19 infection transmission from asymptomatic people?**

According to the CDC, asymptomatic cases are challenging to identify because individuals do not know they are infected unless they are tested over the course of their infection. However, an asymptomatic individual is just as likely to transmit infection as a symptomatic individual. For more information, visit the CDC's website [here](#).

### **If I have already been diagnosed with COVID-19, what are the long-term effects on my health?**

The CDC is actively working to learn more about the range of long-term health effects associated with COVID-19. As the pandemic continues, there is research showing that many organs besides the lungs are affected by COVID-19 and some patients can have symptoms that can last for weeks or even months after recovery. Commonly reported long-term symptoms include: fatigue, shortness of breath, cough, joint pain, chest pain, brain fog, depression, muscle pain, headache, heart palpitations, and intermittent fever. For more information, visit the CDC's website [here](#).

### **If I have already been diagnosed with COVID, can I become re-infected?**

Cases of reinfection with COVID-19 have been reported but remain rare. In general, reinfection means a person got sick with COVID-19 once, recovered, and then later became infected again. Based on what we know from other viruses that are similar to COVID-19, some reinfections are expected. For more information, visit the CDC's website [here](#).

# COVID-19 TESTING GUIDE

Laboratory tests are distinguished by their ability to detect a positive case (sensitivity) and their ability to determine a negative case (specificity). In other words, sensitive and specific tests are more likely to provide accurate results.

**Molecular COVID Test:** This test diagnoses COVID-19 based on detection of the virus's genetic material in a sample from the patient's nose or throat. When using molecular tests, laboratory professionals amplify the viral RNA (aka copy it millions of times) until a detectable concentration is reached. If the target viral RNA is present in a molecular test sample, it will be amplified and the result is positive. If no target viral RNA is present, the result is negative.

**COVID Antigen Test:** This test detects specific proteins on the surface of the virus. Because nothing needs to be amplified, these tests produce quicker results, but antigen tests have a higher chance of missing an active infection and are more sensitive when performed in the earlier course of the disease. If an antigen test shows a negative result indicating that you do not have an active coronavirus infection, your health care provider may order a molecular test to confirm the result.

**COVID Antibody Test:** This test provides quick results, but should not be used to diagnose an active infection. These tests detect infections after the immune system has successfully responded to the infection. Antibody tests only detect antibodies the immune system develops in response to the virus, not the virus itself. It can take days to several weeks to develop enough antibodies to be detected by a test.

	MOLECULAR	ANTIGEN	ANTIBODY
<b>ALSO KNOWN AS</b>	Diagnostic test Polymerase Chain Reaction (PCR) Nucleic acid amplification test (NAAT) LAMP test Viral test	Diagnostic test Rapid test	Serological test Serology blood test Serology test
<b>SAMPLE TAKEN</b>	Swab of nasopharynx (the part of the throat behind the nose), nose, throat; or saliva	Swab of nasopharynx (the part of the throat behind the nose), nose, throat; or saliva	Blood
<b>WHAT IT TESTS FOR</b>	Presence of virus' genetic material (RNA)	Presence of one or more proteins that are part of the virus	Antibodies produced in response to an infection
<b>WHY YOU WOULD GET THIS TEST</b>	To accurately diagnose or rule out active coronavirus infection	To rapidly diagnose active coronavirus infection, with results generated as soon as two hours	To see if you have previously been infected with coronavirus
<b>ACCURACY OF RESULTS</b>	Known as the "gold standard" test because of its high levels of accuracy. May be recommended to confirm a negative or a positive Antigen test result.	Positive results are generally accurate.	Antibody tests may be negative in the early phases of infection. The sensitivity and specificity of these tests can vary. These tests should not be used to diagnose a current coronavirus infection.

# COVID-19: MYTH VS FACT

## MYTH

COVID-19 is the same as the seasonal flu.

## FACT

Both COVID-19 and the seasonal flu are contagious respiratory diseases caused by viruses and people infected with COVID-19 and the flu may share common symptoms. However, both viruses have differences. Symptoms of COVID-19 generally appear 2-14 days after exposure. Flu symptoms usually appear about 1-4 days after exposure. A symptom of COVID-19 that does not usually occur with the flu is loss of taste or smell.

## MYTH

Vaccines against pneumonia and receiving the flu shot will provide protection from a COVID-19 infection.

## FACT

Vaccines against pneumonia and the flu will not protect you from being infected with COVID-19 because these viruses are designed to prevent different diseases.

## MYTH

Swallowing or injecting cleaning disinfectants will provide protection from getting COVID-19.

## FACT

When applied to surfaces, disinfectants can help kill germs such as the COVID-19 virus. However, don't use disinfectants on your body, inject them into your body or swallow them as these are toxic and harmful if ingested. If these disinfectants are ingested, you should contact poison control immediately.

## MYTH

If I'm currently taking an antibiotic, this may prevent or treat COVID-19.

## FACT

Antibiotics treat only bacteria, not viruses. COVID-19 is caused by a virus, therefore, antibiotics should not be used for prevention or treatment.

## MYTH

Only the elderly or those with underlying health conditions will get seriously ill and require hospitalization for COVID-19.

## FACT

People of all ages can contract COVID-19 and are being hospitalized. The risk of developing dangerous symptoms from COVID-19 may be increased in people who are older or in people with other serious health problems, such as lung conditions, weakened immune systems, severe obesity or diabetes.

## MYTH

If I'm exposed to someone with COVID-19 but I receive a negative test, I don't have to quarantine.

## FACT

The incubation period for COVID-19 can be as long as 14 days, meaning that if you get tested 4 days after exposure and the results are negative, it does not prevent you from developing symptoms later within the 14-day window of exposure.

## MYTH

Children don't need to get tested for COVID-19.

## FACT

While children may be less likely to have severe illness or symptoms due to COVID-19 they can still catch the disease and spread it to others, though not as efficiently as adults do. Testing children is still critical if they are exposed to or are exhibiting symptoms of the virus.

\*To learn more about testing for COVID-19, testing FAQs, and tests for current and past infection, visit the CDC's website by clicking [here](#).

# COVID-19 PREVENTION

Protect yourself and others from COVID-19 and help limit the spread by following the CDC recommended guidelines:

- Wear a mask over your nose and mouth that fits tightly to your face. In lab tests with dummies, exposure to potentially infectious aerosols decreased by about 95% when they both wore tightly fitted masks. Research has also shown that double masking by wearing a cloth mask over a surgical mask offers more protection against the coronavirus as does tying knots on the ear loops of surgical masks.

## ◇ TYPES OF MASKS

- » **N95 masks (without vent):** Most effective if metal part is fit tightly around nose and filter out 95% of hard-to-trap particles
  - » **KN95 masks:** Filters out 95% of hard-to-trap particles and has ear loops instead of head straps so may not fit as snug around face
  - » **Surgical masks:** Can trap 60-80% of particles in the lab but when worn in the real world, gaps around the edges make surgical masks less effective.
  - » **Cloth masks:** Two-layer cloth masks with a third layer of filter material is the best non-medical mask, but filtration rates vary depending on fabric
  - » **Face shields:** Should not be used as a substitute for masks and are not as effective at protecting you or other people around you from respiratory droplets because they have large gaps below and alongside the face.
- Strongly consider getting vaccinated against COVID-19 when it's your turn
  - Stay at least 6 feet away from others
  - Avoid crowds
  - Avoid poorly ventilated spaces
  - Regularly wash your hands and avoid touching your eyes, mouth, and nose
  - Disinfect surfaces that are touched frequently
  - Avoid travel, indoor dining, etc.



# COVID-19 VARIANTS

Viruses such as the SARS-CoV-2 virus that causes COVID-19, are constantly changing naturally over time and can lead to new variants that may have different characteristics than the initial virus that emerged at the beginning of the pandemic.

## **Newer variants are said to be more contagious – what makes it more contagious?**

Some mutations seem to affect the coronavirus's spike protein, which is what helps the virus attach to human cells in the nose, lungs, and other areas of the body causing COVID-19. Monitoring the changes to the spikes on the surface of the virus are being studied and helping scientists understand how and why this can make some variants more contagious.

## **Can newer variants be more deadly?**

Overall, there is not clear evidence that any of these variants are more likely to cause severe disease or death.

## **Will there be more new variants of the coronavirus?**

Yes. Mutations will continue to happen as long as the coronavirus spreads through the population. Sometimes new variants emerge and disappear and other times, they emerge and persist.

## **Will the COVID-19 vaccine protect me against the new variants?**

Scientists are working to learn more about how these variants may affect existing therapies, vaccines, and tests. The virus would need to accumulate significant mutations to avoid immunity induced by vaccines or by natural infection.

\*Information for this material was sourced from CDC website: <https://www.cdc.gov/coronavirus/2019-ncov/index.html>



# MEET POM

Pom started experiencing symptoms of COVID-19 at the end of March 2020, feeling fatigued, with a slight cough and a fever. When his laboratory test came back positive for coronavirus, neither he or his wife Lynnette imagined that he would get as sick as he did. His symptoms became severe and he went to the emergency room where he was immediately sedated and put on a ventilator to help him breathe. He was in the ICU for three weeks and was sedated for 25 days total, which was most of his COVID journey. Because Pom was intubated and was not conscious, his medical team relied on his daily laboratory tests to know how he was doing.

Pom experienced complications from COVID including three bouts of bacterial pneumonia, a deep vein thrombosis in his leg, acute kidney injury, and bleeding in his lungs and abdomen. Laboratory tests were his care team's guide to indicate how his treatments were working and also provided the good news of being negative for COVID when he recovered.

To learn more and to watch a video about Pom and Lynnette's journey, go to [www.ascp.org/patients](http://www.ascp.org/patients).



***"Do I feel that the lab saved my life? No question."***