How to Help Your Body Fight Infectious Respiratory Diseases

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Let's face it—being sick is the worst, and given the current climate, it has never been more nerve-wracking.

The COVID-19 pandemic has shined a spotlight on infectious respiratory diseases and made us all more aware of our health and the steps we can take to reduce our risk of infection.

While we cannot currently cure infectious respiratory diseases, we can educate ourselves about:

- How infectious respiratory diseases spread
- How infectious respiratory diseases affect our bodies
- The link between body composition and the immune system
- How you can improve your body composition to boost your immune system

Before we delve into the most common types of infectious respiratory diseases, we will first break down how your respiratory system works.

How does your respiratory system work?

Simply put, your respiratory system refers to the organs in your body that are involved in breathing—*inhaling oxygen and exhaling carbon dioxide*— such as your nose *(nasal cavity)*, throat *(pharynx)*, voice box *(larynx)*, windpipe *(trachea)*, and lungs.

Your respiratory system is critical because it delivers oxygen to all your organs to support life-sustaining functions. If the supply of oxygen is insufficient, the energy production necessary for organ function also becomes compromised, which may lead to poor overall

health.

Your respiratory system is divided into the upper and lower respiratory tracts:

- Your upper respiratory tract includes your nose, nasal cavity, mouth, throat, and voice box
- Your lower respiratory tract includes your windpipe, lungs, and all segments of the bronchial tree

When you breathe, hairs *(cilia)* in your nose and trachea prevent bacteria and foreign substances from entering your body.

Occasionally, pathogens will make it past the cilia and enter your body, thereby making you sick.

While you will likely experience a host of dreadful symptoms that make you feel physically terrible, thankfully, your immune system has a multi-tiered defense program that quietly goes to work on neutralizing the invading pathogens.

In the next section, we will cover the most common types of infectious respiratory diseases, how they spread, and how they affect your body.

Common infectious respiratory diseases

Respiratory diseases are types of diseases that affect your lungs and other parts of the respiratory system. They are classified by the cause and site of their onset. The respiratory diseases that you most often hear about are ***infectious respiratory diseases.***

There are many types of infectious respiratory diseases, but we will take a closer look at the most common illnesses that you may encounter:

The Common Cold

The common cold, also called *"upper respiratory tract inflammation"* because of its effect on your nose and throat, is the most common infectious respiratory disease—the average adult will catch 2–3 colds per year, according to the Center for Disease Control and Prevention (CDC).

A virus that causes a cold can enter your respiratory tract directly when you inhale droplets expelled from an infected person or by direct skin contact, like touching your face with a hand that came in contact with the virus.

With that said, regularly washing your hands and wearing a cloth face cover in public spaces may be effective preventative methods.

Cold symptoms vary but may include:

- Runny or stuffy nose
- Sneezing
- Coughing
- Headaches
- Body aches

Although the duration of colds differs, most people with healthy immune systems recover in 7–10 days. However, people with compromised immune systems, asthma, or COPD may be at risk of developing more serious illnesses like bronchitis or pneumonia.

Hundreds of viruses can cause colds—Human Rhinoviruses are common culprits—and they are constantly mutating, which is why a cure does not currently exist.

Although several medications or natural treatments have been shown to have some effect on alleviating cold symptoms, your body's immune response is the only way to effectively combat the illness.

The easiest way to quickly recover from a cold is to boost your immune system by **resting, eating a nutritionally rich diet, and drinking lots of water.**

Influenza

Influenza (flu) is a contagious respiratory illness caused by influenza viruses that infect your nose, throat, and, occasionally, lungs. It can cause mild to severe illness, and, in severe cases, may even lead to death

Like the common cold, the flu is spread primarily through tiny droplets expelled from an infected person when they sneeze, cough, or talk. Influenza also affects a large portion of the population—approximately 8% of the U.S. population gets the flu each season .

Unlike a cold, the onset of flu symptoms is sudden . You may experience some of the following symptoms:

- Fever or chills
- Cough
- Sore throat
- Runny or stuffy nose
- Muscle or body aches
- Headaches
- Fatigue (tiredness)
- Vomiting and diarrhea (more common in children)

Most people with healthy immune systems will recover from influenza in around 7 days, but the elderly, pregnant women, people of any age with certain chronic medical conditions (like asthma, diabetes, or heart disease), and children under the age of 5 are at higher risk of developing complications.

The flu also differs from the common cold in that the three major types of viruses that cause it rarely mutate, so vaccines can be more readily created. Flu vaccination is currently recommended for anyone older than six months in the U.S. and is effective in preventing the flu in 50 – 80% of the population.

Just like with colds, the primary treatment method for the flu is to support your immune system with plenty of rest, proper nutrition, and hydration.

Pneumonia

Pneumonia is an infection of the lungs that can cause mild to severe illness in people of all ages, and can at times be fatal. The air sacs in one or both of your lungs may fill with fluid or pus, causing coughing with phlegm or pus, fever, chills, and difficulty breathing.

Viruses, bacteria, and fungi can all cause pneumonia. You can contract pneumonia through the following ways:

- **Community-acquired**—developed in the community (not a hospital)
- **Healthcare-associated**—developed in a healthcare facility
- **Ventilator-acquired**—developed after being on a ventilator

Like a cold and influenza, you can be exposed to pathogens that cause pneumonia by inhaling the droplets expelled by an infected person when they sneeze, cough, or talk.

Pneumonia symptoms range from mild to severe and depend on factors such as the type of infectious pathogen, age, and overall health.

Some common symptoms of pneumonia include:

- Chest pain when breathing or coughing
- Confusion or changes in mental awareness (in adults age 65 and older)
- Cough (which may produce phlegm)
- Fatigue
- Fever, sweating, and chills
- Lower than normal body temperature (in adults older than age 65 and people with weak immune systems)
- Nausea, vomiting, or diarrhea
- Shortness of breath

The symptoms of pneumonia are similar to those of the common cold and flu but last longer. As is the case with a cold and influenza, infants and young children, the elderly, and people with chronic health problems or weakened immune systems are at greater risk of complications from pneumonia.

Treatment for pneumonia depends on the type of pneumonia you have, how sick you are feeling, your age, and whether you have other health conditions.

Most people can effectively manage their pneumonia symptoms at home by following these steps:

- Take aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs, such as ibuprofen or naproxen), or acetaminophen (DO NOT give aspirin to children) to control fever
- Drink plenty of fluids
- Coughing is one way your body tries to fight an infection—do not take cough medicines without first consulting your doctor
- Take warm, steamy baths and use a humidifier to help open the airways and ease breathing
- Avoid inhaling smoke to let the lungs heal
- Get lots of rest and avoid strenuous activity

There are several preventative measures you can take to reduce your risk of acquiring pneumonia, including:

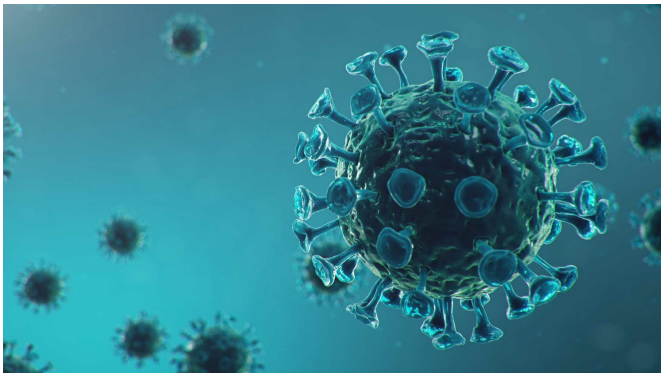
- **Get vaccinated**—talk to your doctor about the vaccines available to prevent some types of pneumonia and the flu (children also have different recommended vaccines depending on their age)
- **Practice good hygiene**—wash your hands regularly and use an alcohol-based hand sanitizer
- **Avoid smoke**—steer clear of areas where there is a lot of smoke, and if you are a smoker, consider quitting

- **Boost your immune system**—get plenty of rest, exercise regularly, and eat a healthy, balanced diet

Coronavirus

Coronaviruses are a large family of viruses commonly found in people and several species of animals. Examples of coronaviruses include MERS-CoV and SARS-CoV. A novel coronavirus is a new coronavirus that has not been previously identified. A current example of a novel coronavirus is SARS-CoV2, the one that causes COVID-19.

What is COVID-19?



COVID-19, short for "coronavirus disease 2019", is an infectious disease caused by the most recently discovered coronavirus. This novel coronavirus differs from the coronaviruses that commonly circulate among humans, which cause mild illnesses like the common cold.

In December 2019, the first case of the new coronavirus and COVID-19 infectious respiratory disease was discovered in Wuhan, China. COVID-19 is now a pandemic affecting virtually every continent in the world.

Like other infectious respiratory diseases, COVID-19 is highly contagious. You can contract COVID-19 from inhaling the small droplets expelled from the nose or mouth of infected people or by touching objects and surfaces (like doorknobs, handrails, and tables) that these droplets land on and then touching your eyes, mouth, or nose.

How long can COVID-19 survive in the air and on surfaces?

Two recent studies have been published addressing this subject.

The study published in the New England Journal of Medicine (NEJM) applied a standard amount of aerosolized SARS-CoV-2 (the virus that causes COVID-19) to various surfaces.

The study published in The Lancet placed a droplet containing a fixed amount of SARS-CoV-2 onto different surfaces.

In these studies, the surfaces containing the virus were incubated at room temperature (about 70 degrees Fahrenheit), and samples were collected at different time intervals to measure the amount of active coronavirus.

The results from both studies showed that SARS-CoV-2 can survive:

- In the air—up to 3 hours
- On cooper—up to 4 hours
- On cardboard—up to 24 hours
- On wood—up to 2 days
- On glass—up to 4 days
- On paper—up to 4 days
- On plastic—from 3–7 days
- On stainless steel—from 3–7 days
- On surgical masks—up to 7 days

According to Dr. Manisha Juthani, an infectious disease doctor and associate professor of medicine at Yale University, transmission through touching surfaces is much less likely than other forms of contact. Still, the data above illustrates the importance of regularly cleaning and disinfecting frequently-touched objects and surfaces at work and in your home.

If you do happen to contract COVID-19, below are some of the frequently reported symptoms.

What are the symptoms of COVID-19?

COVID-19 symptoms range from mild to life-threatening and appear anywhere from 2–14 days after infection. Here are frequently reported symptoms of COVID-19:

- Cough
- Shortness of breath or difficulty breathing
- Fever
- Chills
- Muscle pain
- Sore throat
- New loss of taste or smell

On the other hand, many people do not experience any symptoms. A study published in April 2020 found that people were asymptomatic in almost 50% of cases. This is one of the reasons why COVID-19 has spread so rapidly across the globe.

If you suspect that you have come in contact with someone who has COVID-19 or are experiencing symptoms, contact your health provider immediately. Depending on the

details of your particular case, your doctor may order you to get tested for COVID-19.

The CDC has issued guidelines on COVID-19 testing priorities, with top priority given to hospitalized patients, healthcare facility workers, first responders, and residents in long-term care facilities with symptoms.

What are some treatments for COVID-19?

Currently, there are no drugs or other therapeutics approved by the U.S. Food and Drug Administration (FDA) to prevent or treat COVID-19. Current clinical management includes control measures and supportive care such as supplemental oxygen and mechanical ventilatory support when needed.

Although treatments do not currently exist, increasing scientific evidence indicates that a healthy body composition bolsters your immune system, which may help with recovery from infectious respiratory illnesses like COVID-19.

Body Composition: The Key to a Strong Immune System

A strong immune system is linked to healthy body composition, specifically a healthy balance of skeletal muscle mass (SMM) and body fat mass (BFM).

The relationship between your muscles and immune system

Increasing your muscle mass is a fantastic way to improve your body composition and boost your immune system.

Research shows that senior adults with higher skeletal muscle mass have a higher number of immune cells in the blood, which indicates that muscles are related to the immune system. When you work out your muscles, it releases myokines, hormone-like proteins that strengthen your immune system to help protect you against diseases.

Another study revealed that regular exercise of moderate intensity increases the release of T lymphocytes (also called *T cells*), demonstrating that this type of exercise can support and potentially improve immunity.

Regular exercise can also reduce your risk of developing chronic diseases such as type 2 diabetes, obesity, different types of cancer, and cardiovascular diseases. By reducing your risk of acquiring these diseases, you also lower your risk of experiencing complications from respiratory diseases like COVID-19.

Routine exercise helps maintain a healthy amount of body fat

Your body fat is divided into subcutaneous fat (under your skin) and visceral fat (in your abdominal cavity). Visceral fat helps protect your internal organs and acts as an energy reserve, but in excess, it can elevate your health risks.

One study showed that visceral fat, in contrast to subcutaneous fat, emits more inflammatory cytokines and thus impairs the functions of the immune system. Regular exercise and a balanced diet can reduce the amount of visceral fat you carry. A healthy amount of visceral fat reduces the risk of harmful inflammatory reactions and improves your overall immune system.

To sum it up, a healthy muscle and fat balance play a critical role in supporting a strong immune system.

Tying it together

- A healthy, balanced body composition helps strengthen your immune system
- Improve your body composition by exercising regularly and eating a well-balanced diet to maintain a healthy proportion of muscle and fat mass
- The more developed your muscle mass, the stronger your immune system and the lower your risk of diseases and other health conditions
- A healthy visceral fat level reduces your risk of metabolic diseases and other health issues

Other steps you can take to reduce your risk of infection

In addition to improving your body composition and immune system, the CDC provides simple steps you can take to avoid exposure to infectious respiratory illnesses:

- **Wash your hands frequently** with soap and water for at least 20 seconds, especially after you have been in a public place (see the CDC guide on when and how to wash your hands).

- If soap and water are not available, **use a hand sanitizer that contains at least 60% alcohol.** Cover all surfaces of your hands and rub them together until they feel dry.
- **Avoid touching your eyes, nose, and mouth** with unwashed hands.
- **Avoid close contact with people who are sick—**practice social distancing and keep at least six feet apart from others.
- **Cover your face and nose with a cloth face cover** when around other people.
- **Cover your coughs, sneezes, and yawns.**
- **Clean and disinfect frequently touched surfaces daily,** including countertops, desks, doorknobs, keyboards, and phones.

The bottom line: Stay strong, stay healthy

With all the grave news about the COVID-19 pandemic constantly looming, the thought of catching any kind of respiratory illness is frightening.

But don't panic!

While there is no vaccine available for COVID-19 yet, we **do** have an arsenal of actionable knowledge to help you improve your immune system.

Remember—you may not be able to avoid getting sick, but you can take steps to improve your body composition through exercise and diet to boost your immune system and help fight off infectious respiratory diseases.