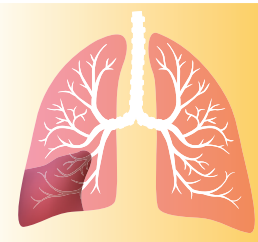


What is Pneumonia?

Pneumonia (nu-mo'ne-a) is inflammation of the air sacs in the lungs in response to an injury, like an infection. When the airways are also involved, it may be called bronchopneumonia. Pneumonia can be in one area of a lung or be in several areas ("double" or "multilobar" pneumonia). Many things can cause a pneumonia—though most often they are infectious.



What causes pneumonia?

Pneumonia is typically caused by a virus or bacteria you have been exposed to in the environment or is passed to you from another person. Infection can be passed between people from direct contact (usually the hands) or inhaling droplets in the air from coughing or sneezing. Viruses like SARS-CoV-2 (that causes COVID-19) and influenza viruses can cause severe pneumonia. Sometimes a person who has a viral infection, such as influenza virus, will also develop a secondary infection from bacteria such as *Staphylococcus aureus* or *Streptococcus pneumoniae* while they are sick. Pneumonia more rarely can be caused by a parasite or fungus. Aspiration pneumonia is caused by a foreign material, usually food or vomit getting into the lungs from the throat, which irritates the airways and lung tissue and increases chances of a bacterial infection.

Who gets pneumonia?

Pneumonia can happen at any age. However, it is more common in elderly people and young children. Some people are at higher risk of pneumonia because they have pre-existing lung diseases, poor nutrition, difficulty swallowing, other chronic health problems or problems with their immune system. People who smoke and people who are around tobacco smoke are at higher risk of developing pneumonia. People who have not had the yearly influenza vaccine or who have not been immunized for *Streptococcus pneumoniae* bacteria (Pneumovax 23[®] and/or Prevnar 13[®] pneumococcal vaccines) are also at higher risk for lung infections.

What are the signs and symptoms of pneumonia?

People with pneumonia often have a cough, fever or chills, difficulty breathing, low energy and poor appetite. Sometimes a person will have nausea, diarrhea, and/or chest pain. It is possible to have pneumonia without a cough or fever. Symptoms may come on quickly or may worsen slowly over time. Sometimes a person who has a viral upper respiratory infection (cold) will get a new fever and worsening that signals the start of the secondary bacterial infection.

How is pneumonia diagnosed?

Your healthcare provider will consider your symptoms and do

a physical exam. There can be reduced or abnormal sounds heard in the lung with pneumonia. Blood tests may be done to look at your white blood count and other tests that may be abnormal due to infection. Often a chest x-ray is done that can show the area or areas of pneumonia. Sometimes a more detailed computerized x-ray called a CT (often called "cat") scan is done. Cultures and tests may be done of sputum (also called phlegm or mucus) from the lungs that is coughed out to see if a bacteria or virus can be found. People who are sick enough to be in the hospital are more often tested for the most likely viruses and bacteria. If a person is not getting better, has severe infection, or is at high risk of an unusual infection, a sample of mucus may be taken from the lung through the airways using a procedure called flexible bronchoscopy.

Sometimes it can be hard to know what type of infection (for example what bacteria) is causing the pneumonia. This can be because the tests are not perfect, and/or you may have received some treatment before the tests were done. However, your healthcare provider will help you decide on a plan of treatment based on what is the most likely cause based from the information he or she has about you, what types of infection are being seen in your community, and what types of infection you might be at more risk for if you have a pre-existing health problem.

What is the recommended treatment for pneumonia?

Treatment of pneumonia depends on its likely cause and how ill the person is. The usual approach is to give antibiotics effective against the most likely bacteria causing the infection. If you develop pneumonia while in a hospital or another healthcare facility (such as a nursing home), you may need antibiotics that treat more resistant bacteria. If viruses, such as influenza (the flu) or COVID-19 are occurring in your area, you may be given an antiviral medication instead of or in addition to antibiotics. If your immune system is suppressed, your healthcare provider may choose to treat fungal infections as well. In certain cases, you may also be given a corticosteroid medicine.

Oxygen is given if you are having trouble breathing with low oxygen levels. If you are in the hospital and there is a concern for a highly contagious disease, such as influenza,

SARS-CoV-2, or tuberculosis, you will be placed in isolation. The Centers for Disease Control has guidelines for the type of isolation needed for different infections that can spread easily between people. When you are in isolation, you will be limited in whether you can leave your room and your healthcare providers will take added precautions such as wearing masks and gloves in addition to good hand washing.

How serious is pneumonia?

If you've been diagnosed with pneumonia, you should take it seriously and take care of yourself. Most people with pneumonia recover with antibiotics and rest. However, about 1 in 5 adults with pneumonia need to be in the hospital, and people with severe infection may require intensive care unit (ICU) and life support measures. Severe pneumonia can lead to death, especially for the elderly, young children, or people with other medical problems. The overall death rate for pneumonia in hospitals in the United States is less than 5%. In other parts of the world, rates of pneumonia and deaths are much higher.

Pneumonia is often a short-term illness but sometimes it can last longer, or get worse before it gets better. Most of the time, however, people experience a full recovery. Usually no permanent scarring or damage to the lungs results if you do not have another lung or immune problem. However, there is always some risk of lung damage from a serious infection. Your healthcare provider can talk with you about what to expect for recovery and whether you will need any follow-up x-rays or lung function tests.

What can I do to get better faster?

- You should also take all doses of your medications, especially the antibiotics, even if you feel better a few days after starting the course.
- It is risky to skip doses not only because you may not recover as well but you may also make it easier for the bacteria to become resistant to the antibiotic if you do not take it consistently.
- Do not save antibiotics given for pneumonia to use in case you get another infection.
- If you smoke or vape, quit! Avoid being around smoke or vapors. For help in quitting go to www.thoracic.org/patients.
- Rest, but do not be in bed all the time. It is good to get up and move around.
- Drink plenty of fluids.

Call your healthcare provider if:

- Your cough is severe or getting worse.
- Your fever is not going away.
- You have trouble breathing.
- You have trouble taking your medications or concerned about possible side effects. Do not stop your medicine without contacting your healthcare provider.
- You do not feel better or still have a fever 3 days after starting antibiotics.

- Seek immediate medical help if you are having difficulty breathing, severe chest pain, develop a bluish color in your fingertips or lips, or start to cough up blood.

What can I do to avoid getting a pneumonia?

- Stop smoking and vaping. Avoid being around tobacco smoke.
- Get yearly influenza virus vaccine and updated *Streptococcus pneumoniae* (*pneumococcal*) vaccine. Basic protections including wearing masks, physical distancing and avoiding large crowds can reduce your risk and others from COVID-19 and other respiratory viruses.
- Wash hands at all times especially when meeting someone with a cold or lung infection.
- Lead a healthy lifestyle with good diet and exercise.

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Rx Action Steps

- ✓ Talk with your healthcare provider if you are sick and think you may have pneumonia.
- ✓ Get a yearly influenza vaccine to prevent pneumonia from the flu viruses.
- ✓ Check with your healthcare provider to see if you need a *Streptococcus pneumoniae* vaccine.
- ✓ Do not smoke and avoid regular tobacco smoke exposure.
- ✓ If you are prescribed medicine for an infection, take all doses as prescribed.

Healthcare Provider's Contact Number:

Resources:

American Thoracic Society

- www.thoracic.org/patients/
 - Bronchoscopy
 - COVID-19 vs Influenza/Other
 - E-Cigarettes/Vaping
 - Influenza
 - Pneumococcal Vaccine

U.S. Centers for Disease Control

- <http://www.cdc.gov/pneumonia/index.html>

World Pneumonia Day

- <http://worldpneumoniaday.org/>

American Lung Association

- <http://www.lung.org/lung-health-and-diseases/lung-disease-lookup/pneumonia/symptoms-causes-and-risk.html>

Medline Plus (National Library of Medicine/ National Institutes of Health)

- <http://www.nlm.nih.gov/medlineplus/pneumonia.html>

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