CONDITION

# Community-acquired pneumonia in adults

Learn about community-acquired pneumonia in adults, including symptoms, causes, diagnosis, treatment, warning signs, recovery, and follow-up care.

**WHAT IT IS**
Lung infection acquired outside healthcare facilities

**BODY SYSTEM**
Lungs and breathing

**MAIN SYMPTOMS**
Cough, fever, shortness of breath, chest pain

**WHAT CAUSES IT**
Bacterial, viral, or fungal infection

**HOW IT IS DIAGNOSED**
Chest X-ray, sometimes lung ultrasound or CT

**MAIN TREATMENT**
Antibiotics, antivirals, and supportive care

**CAN IT BE CURED?**
Yes, most adults recover with treatment

**IS IT AN EMERGENCY?**
Sometimes, with severe trouble breathing

**LONG-TERM OUTLOOK**
Most adults recover but fatigue may persist

## Overview

Community-acquired pneumonia, or CAP, is an infection of the lungs that develops outside a hospital or long-term care facility. It can be caused by bacteria, viruses, or, less often, fungi.

Pneumonia inflames the tiny air sacs in the lungs. These sacs may fill with fluid or pus, making it harder for oxygen to move into the blood. Illness can range from mild enough to treat at home to severe enough to require hospital care.

CAP matters because symptoms can worsen quickly in some people. Older adults, people with long-term health conditions, and those with weakened immune systems have a greater risk of serious illness. Prompt medical assessment can help determine the likely cause, check oxygen levels, and guide treatment.

CAP is different from hospital-acquired pneumonia, which begins during a hospital stay and may involve different germs. It is also different from bronchitis, which mainly affects the larger breathing tubes rather than the lung's air sacs.

## Symptoms

Symptoms may begin suddenly or develop over several days. They can vary with the cause of the infection, a person's age, and their overall health.

Common symptoms include:

Mucus may be clear, yellow, green, brown, or blood-streaked. Its color alone cannot show whether pneumonia is bacterial or whether antibiotics like amoxicillin or doxycycline are needed.

Older adults may have less typical symptoms. They may develop new confusion, unusual sleepiness, weakness, poor appetite, or a decline in daily function. Fever may be mild or absent. People with weakened immune systems can also have subtle symptoms despite a significant infection.

Seek emergency help for severe trouble breathing, blue or gray lips or face, new severe confusion, difficulty waking, fainting, or severe or persistent chest pressure. These can be signs that the lungs or circulation are not working well.

Contact a healthcare professional promptly for worsening breathlessness, coughing up more than a small streak of blood, inability to keep fluids down, or an oxygen reading below the target your clinician has given you.

- Cough, with or without mucus
- Fever, chills, or sweating
- Shortness of breath
- Chest pain that worsens with a deep breath or cough
- Fatigue or weakness
- Faster breathing or heartbeat
- Reduced appetite
- Headache or muscle aches

## Causes and risk factors

Bacteria are an important cause of CAP. Streptococcus pneumoniae , also called pneumococcus, is one possible cause. Other bacteria include Haemophilus influenzae , Mycoplasma pneumoniae , Chlamydia pneumoniae , and Legionella species.

Respiratory viruses can also cause pneumonia. These include influenza, respiratory syncytial virus (RSV), and SARS-CoV-2, the virus that causes COVID-19. A bacterial infection may sometimes develop during or after a viral illness.

The germs that cause pneumonia may spread through respiratory droplets or secretions. However, exposure to a germ does not mean that everyone will develop pneumonia. A person's immune response, lung health, and other medical conditions affect the risk.

Factors linked with a higher risk of CAP or more serious illness include:

Fungal pneumonia is uncommon in people with healthy immune systems. It is more likely after certain environmental exposures or in people whose immune defenses are reduced.

Vaccination can lower the risk from some causes of pneumonia, but it cannot prevent every case. Influenza, COVID-19, pneumococcal, and RSV vaccines may be appropriate depending on a person's age, health, and vaccination history.

- Older age
- Cigarette smoking
- Chronic lung disease, such as COPD or bronchiectasis
- Heart disease
- Diabetes
- Chronic kidney or liver disease
- Heavy alcohol use
- Difficulty swallowing or an increased risk of inhaling food, liquid, or vomit
- A weakened immune system due to illness or immune-suppressing treatment
- Recent respiratory infection
- Poor mobility or frailty

## Diagnosis

A clinician will ask when symptoms began, how they have changed, and whether there are risk factors for severe illness. They may also ask about recent travel, sick contacts, swallowing problems, medication allergies, recent antibiotic use, and underlying medical conditions.

The examination usually includes listening to the lungs and checking temperature, breathing rate, heart rate, blood pressure, and oxygen level. A pulse oximeter is a small device placed on a finger to estimate how much oxygen the blood is carrying.

A chest X-ray may show an area of lung inflammation and help support the diagnosis. It can also identify problems such as fluid around the lung. Imaging is especially useful when the diagnosis is uncertain, symptoms are significant, or hospital treatment is being considered. In some situations, lung ultrasound or a CT scan may provide additional information.

Other tests depend on the severity of illness. They may include:

Microbiology tests cannot always identify the exact germ. Treatment may therefore begin based on the most likely causes while results are pending.

Clinicians may use a validated severity score to help decide whether home or hospital care is safer. These tools consider factors such as age, vital signs, medical conditions, and test results. They support, but do not replace, clinical judgment or a person's home circumstances.

- A nasal or throat sample for influenza, COVID-19, or other viruses
- Blood tests to look for infection, inflammation, dehydration, or organ stress
- A mucus sample to look for bacteria
- Blood cultures to check whether bacteria have entered the bloodstream

## Treatment and management

Treatment depends on the likely cause, severity, oxygen level, medical history, and ability to eat, drink, and take medicines safely.

Bacterial CAP is treated with antibiotics. The choice is based on factors such as other health conditions, medication allergies, recent antibiotic exposure, local resistance patterns, and whether treatment occurs at home or in a hospital. Antibiotics do not treat pneumonia caused only by a virus.

Take an antibiotic exactly as directed. Do not use leftover antibiotics or another person's medicine. Contact the prescribing clinician if doses are missed, side effects are difficult to manage, or symptoms worsen. Do not stop or extend treatment without medical advice.

Antiviral treatment may be considered for certain infections, including influenza or COVID-19. Whether it is appropriate can depend on the virus, timing of symptoms, risk of complications, and current treatment guidance.

People treated in a hospital may need oxygen, fluids, and antibiotics through a vein. Those with severe breathing failure may need support from a breathing machine. Once a person is

improving and can take medicine by mouth, the care team may change from intravenous to oral treatment.

Corticosteroids like prednisone or hydrocortisone reduce inflammation but are not a routine home treatment for every case of CAP. Hospital clinicians may consider them in selected severe cases or when another condition provides a reason to use them.

Supportive care at home may include:

Coughing helps clear mucus from the lungs. Before using an over-the-counter cough or cold medicine, ask a pharmacist or clinician whether it is appropriate, especially if you have other medical conditions or take several medicines.

Prevention remains important after recovery. A healthcare professional can review recommended vaccinations, support smoking cessation, and help manage conditions such as asthma, COPD, diabetes, or heart disease.

- Resting while continuing gentle movement as tolerated
- Drinking enough fluid unless a clinician has advised fluid restriction
- Using fever or pain medicine that is safe with current conditions and medicines
- Avoiding smoking and secondhand smoke
- Following instructions for any prescribed inhalers or oxygen

## Complications

Most adults recover without a major complication, but pneumonia can sometimes affect breathing or spread beyond the lungs.

Possible complications include:

The risk of complications is influenced by illness severity, age, immune function, and other health conditions. Early reassessment is important when symptoms do not follow the expected course.

- Low oxygen or respiratory failure: The lungs cannot move enough oxygen into the blood.
- Pleural effusion: Fluid collects in the space between the lung and chest wall.
- Empyema: Fluid around the lung becomes infected and may need drainage.
- Lung abscess: A pocket of pus develops within the lung.
- Sepsis: The body's response to infection causes dangerous organ dysfunction.

- Worsening of another condition: Pneumonia can place extra strain on the heart, lungs, kidneys, or blood sugar control.

## Follow up

Some improvement is usually expected after treatment begins, but recovery is not immediate. Fever and breathing may improve before the cough, reduced stamina, or fatigue. These symptoms can take longer to settle, particularly after a severe infection.

Arrange routine follow-up as instructed. A follow-up visit may review breathing, oxygen needs, medication effects, and return to normal activities. It can also address vaccination, smoking, swallowing concerns, or control of long-term conditions.

Contact the treating clinician if symptoms are not beginning to improve within the timeframe they provided, often within the first few days of treatment. Earlier review is appropriate if fever returns, breathlessness increases, chest pain worsens, fluids cannot be kept down, or new symptoms develop.

A repeat chest X-ray is not automatically needed after every case. It may be considered when symptoms persist, recovery is not as expected, the original imaging showed an unusual finding, or there are risk factors for an underlying lung problem.

Seek urgent assessment for marked worsening, new confusion, significant weakness, reduced urination, or an oxygen level below the plan set by your clinician. Call emergency services for severe breathing difficulty, blue or gray discoloration, collapse, difficulty waking, or severe chest pressure.

Return to work, exercise, and other activities gradually. Trying to resume a full schedule too quickly may increase fatigue. Ask a clinician for guidance if your work is physically demanding or if you still need oxygen.

## Sources

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