CONDITION

Pneumonia in children - community acquired

Community-acquired pneumonia is a lung infection that develops in a child outside a hospital or healthcare setting.

WHAT IT IS
Infection of the air sacs within the lungs

BODY SYSTEM
Lungs and breathing

MAIN SYMPTOMS
Cough, fever, fast breathing, difficult breathing

WHAT CAUSES IT
Viral or bacterial infection

HOW IT IS DIAGNOSED
Clinical assessment; chest X-ray when needed

MAIN TREATMENT
Supportive care and antibiotics for suspected bacterial infection

CAN IT BE CURED?
Yes - most cases clear with appropriate care

IS IT AN EMERGENCY?
Sometimes - severe breathing difficulty makes it urgent

LONG-TERM OUTLOOK
Most children recover fully; cough may last several weeks

Overview

Community-acquired pneumonia is an infection in one or both lungs. "Community-acquired" means it began outside a hospital or similar healthcare setting. It does not describe where the child caught the infection.

Pneumonia inflames the tiny air sacs in the lungs. These sacs may fill with fluid and inflammatory material, making breathing harder and reducing how easily oxygen moves into the blood.

Viruses and bacteria can both cause pneumonia in children. Viral pneumonia is common, especially in younger children. It is not always possible to identify the exact germ from symptoms alone.

The illness can range from mild to serious. Many children recover at home with fluids, rest and appropriate treatment. Some need hospital care for oxygen, fluids or closer monitoring. Babies, children with long-term health conditions and children who are struggling to breathe may become unwell more quickly.

Symptoms

Symptoms may begin gradually after a cold or develop more suddenly. A child does not need to have every symptom.

Common signs include:

A child working hard to breathe may pull in the skin between or beneath the ribs. Their nostrils may widen with each breath, and babies may make a short grunting sound while breathing out.

Young children do not always report chest pain. They may complain of stomach pain instead because inflammation near the bottom of a lung can irritate the diaphragm, the breathing muscle above the abdomen.

Babies may have less typical symptoms. They may feed poorly, seem unusually sleepy or irritable, or have pauses in breathing. Fever may be absent, particularly in very young babies.

A cough can continue after the fever and breathing difficulty have improved. This does not always mean the infection is still active.

- Cough, which may be dry or produce mucus
- Fever or chills
- Faster breathing than usual
- More effort needed to breathe
- Chest, side or upper abdominal pain
- Tiredness, irritability or reduced activity
- Poor appetite or difficulty feeding
- Vomiting, sometimes after coughing

Causes and risk factors

Pneumonia develops when a virus or bacterium infects the lower airways and lung tissue. It may follow an infection of the nose or throat.

Respiratory viruses that can cause pneumonia include influenza, respiratory syncytial virus and SARS-CoV-2. Several bacteria can also cause it. Streptococcus pneumoniae , often called pneumococcus, is an important bacterial cause.

Symptoms and a chest X-ray cannot always distinguish viral pneumonia from bacterial pneumonia. A child may also develop a bacterial infection during or after a viral illness.

Factors that may increase the chance of severe illness include:

Children can catch the viruses and bacteria linked to pneumonia through respiratory droplets and close contact. Pneumonia itself is not always passed directly from one person to another, but the germ causing it may be contagious.

- Being a young baby, particularly under 3 months
- Premature birth
- Long-term heart or lung disease
- A weakened immune system
- Conditions affecting swallowing, coughing or muscle strength
- Exposure to tobacco smoke or air pollution
- Missing vaccines that protect against respiratory infections

Diagnosis

A healthcare professional usually diagnoses community-acquired pneumonia from the child's symptoms and examination. They will consider how long the illness has lasted, whether the child is drinking, and whether symptoms are improving or worsening.

During the examination, they may:

A chest X-ray is not routinely needed for every child who is well enough to be treated at home. It may be used when the diagnosis is uncertain, the illness is severe, treatment is not working as expected, or a complication is suspected. X-rays can show changes in the lungs, but they cannot reliably identify the germ responsible.

Blood tests, blood cultures or samples from the airway are usually reserved for children who are seriously unwell or need hospital care. A nose or throat swab may detect a respiratory virus. Finding a virus does not always rule out a bacterial infection at the same time.

- Count the child's breathing rate
- Look for signs of increased breathing effort

- Listen to the lungs
- Measure oxygen levels with a finger or toe sensor
- Check temperature, heart rate and hydration

Treatment and management

Treatment is based on the child's age, symptoms, oxygen level, examination and risk of complications.

If bacterial pneumonia is suspected, a clinician may prescribe an antibiotic like amoxicillin or doxycycline . The choice and form of antibiotic depend on clinical findings, allergies, local resistance patterns and whether treatment is given at home or in hospital. Antibiotics do not treat viral pneumonia.

If an antibiotic is prescribed, give it exactly as directed and complete the advised course unless the prescriber tells you to stop. Seek advice if the child vomits doses, cannot take the medicine or develops a possible reaction.

Supportive care helps while the lungs recover:

Do not give aspirin to a child unless it has been specifically prescribed. Check with a pharmacist or clinician before using cough or cold products because many are unsuitable for young children. Honey may soothe a cough in children over 1 year, but it must not be given to babies under 12 months.

Hospital treatment may include oxygen, fluids through a vein or feeding tube, and antibiotics when bacterial infection is suspected. Children with severe breathing problems may need respiratory support.

Symptoms should start moving in the right direction after treatment begins. Arrange reassessment if fever or breathing difficulty is not improving within about 48 to 72 hours, or sooner if the child worsens.

- Offer frequent fluids or breastfeeds
- Allow rest while encouraging gentle movement as the child improves
- Use an age-appropriate fever or pain medicine if advised
- Keep the child away from tobacco smoke and vaping aerosols
- Check breathing, alertness and fluid intake regularly

Complications

Most children recover without complications. Complications are more likely when pneumonia is severe, when treatment is delayed, or when a child has an underlying health condition.

Possible complications include:

Fluid around the lung may cause continuing fever, chest pain or worsening breathing despite treatment. It may need hospital care and, in some cases, drainage through a small tube.

- Dehydration: not enough fluid in the body because of fever, vomiting or poor drinking
- Low oxygen levels: the inflamed lungs cannot transfer enough oxygen
- Pleural effusion: fluid collecting between the lung and chest wall
- Empyema: infected fluid or pus collecting around the lung
- Lung abscess: a pocket of infection within lung tissue
- Sepsis: a serious whole-body response to infection

Prevention

Not every case of community-acquired pneumonia can be prevented. Many different germs cause it, and vaccinated children can still develop pneumonia.

Routine childhood vaccines reduce the risk from several important infections, including pneumococcus, Haemophilus influenzae type b, whooping cough, measles and influenza. Keep vaccinations up to date according to the schedule where you live.

Other practical measures include regular handwashing, covering coughs and sneezes, and avoiding close contact with people who are unwell when possible. Do not share cups or utensils during respiratory illnesses.

A smoke-free home and car help protect children's lungs. This includes avoiding second-hand tobacco smoke and vaping aerosols.

If a child has a condition that weakens the immune system or increases the risk of aspiration-food, liquid or saliva entering the lungs-their healthcare team may recommend specific preventive care.

Living with it and what to expect

Many children can be cared for at home and recover fully. Fever and difficult breathing often

begin to settle within several days of effective treatment, although the exact pace differs between children.

Energy and appetite usually return gradually. A child may tire more easily for a while, particularly after a more severe infection. A cough can take up to several weeks to disappear because the airways remain irritated while the lungs heal.

Let the child return to nursery, school and normal activity when they no longer have a fever, are breathing comfortably and feel well enough to participate. Follow local rules for contagious infections such as influenza or COVID-19.

Routine repeat chest X-rays are generally not needed after an uncomplicated recovery. Follow-up may be recommended if symptoms persist, pneumonia returns in the same part of a lung, or the child has an underlying condition.

Repeated pneumonia is not the usual course. If episodes recur, clinicians may look for problems such as asthma, swallowing difficulties, inhaled foreign objects, immune conditions or structural differences in the lungs and airways.

When to get medical help

Arrange prompt medical assessment if you think a child may have pneumonia, especially if they have fast breathing, ongoing fever, chest pain, poor feeding or worsening symptoms after an initial improvement.

A baby under 3 months with a temperature of 38°C or higher needs urgent medical assessment. Very young babies can become unwell without obvious symptoms.

Seek urgent same-day help if the child:

Call emergency services if the child:

Do not wait for every emergency sign to appear. Skin colour changes can be harder to see on darker skin, so also check the lips, tongue, gums, palms and soles.

- Is breathing faster or working harder than usual
- Is drinking much less or passing much less urine
- Keeps vomiting or cannot take prescribed medicine
- Remains feverish or unwell after 48 to 72 hours of treatment
- Becomes more unwell after starting to recover
- Has a long-term condition or weakened immune system

- Has severe difficulty breathing or pauses in breathing
- Has blue, grey or unusually pale lips, tongue or skin
- Is very drowsy, difficult to wake, confused or floppy
- Cannot speak, cry, drink or feed because of breathlessness
- Has a seizure
- Develops a non-fading rash with severe illness

Common questions

Is pneumonia contagious in children?

The lung inflammation itself is not always directly contagious, but the virus or bacterium causing it may spread through coughs, sneezes and close contact. Good hand hygiene and avoiding shared cups can reduce spread.

How can I tell pneumonia from a cold?

Both can cause cough and fever. Pneumonia is more likely to cause fast or difficult breathing, chest or abdominal pain, marked tiredness, or symptoms that worsen rather than improve. An examination is often needed because symptoms overlap.

Does every child with pneumonia need antibiotics?

No. Antibiotics treat bacteria, not viruses. A clinician decides whether bacterial pneumonia is likely based on the child's age, symptoms, examination and illness severity. Sometimes the cause remains uncertain and treatment is based on the overall clinical picture.

How long does a child's cough last after pneumonia?

The cough often improves gradually and may continue for several weeks. Seek reassessment if it is worsening, breathing difficulty returns, fever comes back, or the child is not recovering as expected.

Can my child get pneumonia again?

Yes. Different infections can cause pneumonia at different times. Repeated episodes, especially in the same area of a lung, may need further assessment for an underlying cause.

Does pneumonia damage a child's lungs permanently?

Most children with uncomplicated pneumonia recover without lasting lung damage. Longer-term problems are more likely after severe disease, major complications or repeated pneumonia, but these outcomes are not typical.

Sources

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