Community-Acquired Pneumonia

A plain-English guide for you and your family

WHAT IS HAPPENING

Your lungs are made of millions of tiny grape-like sacs called alveoli. When you breathe in, oxygen crosses from those sacs into your blood, and carbon dioxide (the waste gas) crosses out. In pneumonia, a germ gets into some of those sacs and your immune system floods them with infection-fighting cells and liquid. The most common germ is a bacterium called Streptococcus pneumoniae (pneumococcus). Others include Haemophilus influenzae (a different bacterium), Mycoplasma pneumoniae (a very small bacterium that mostly hits younger adults), and viruses like flu, RSV, and COVID-19. That flood is good for killing the germ—but the flooded sacs cannot do their oxygen job anymore. That is why pneumonia makes you cough, breathe fast, feel weak, and sometimes need oxygen or antibiotics.

What you might feel

- Cough that brings up thick, green or yellow mucus
- Fever with shaking chills
- Shortness of breath and fast breathing
- Sharp chest pain that gets worse when you breathe in deeply or cough
- Extreme tiredness and weakness
- Confusion or changes in thinking (especially in older adults)
- Low oxygen level on pulse oximeter (SpO_2 below 92%)
- Low blood pressure and altered mental status together

Call the doctor right away if...

- Oxygen saturation below 90% on room air, or needing more and more oxygen — Give more oxygen right away. Consider moving to the ICU and using non-invasive breathing support like BiPAP.
- Signs of sepsis: blood pressure below 90 systolic, blood lactate above 2, confusion or very sleepy — Start the sepsis bundle within the first hour: IV fluids, blood cultures, and broad antibiotics immediately.

- Large pocket of fluid around the lung (pleural a fluid collection (effusion)) or pus in that space (empyema) — Insert a chest tube to drain the fluid. Send a sample to the lab to check for bacteria.
- Hole or cavity inside the lung on chest X-ray or CT — Broaden antibiotics to cover mouth bacteria and resistant bugs. Isolate the patient and test for TB. Call pulmonology.
- No improvement after 48 to 72 hours on the right antibiotics — Repeat chest imaging. Review culture results. Consider a CT scan and switch to broader antibiotics.

What the care team will do

- Assess respiratory status and oxygen saturation every 2–4 hours
- Give antibiotics on time — first dose within 4 hours of arrival
- Position: head of bed 30–45°, encourage incentive spirometry
- Encourage hydration, monitor for fluid overload
- Screen for sepsis at every reassessment
- Educate on vaccine follow-up (pneumococcus, flu, COVID)

Medicines you may be given — and why

Amoxicillin (± azithromycin)

Amoxicillin punches holes in the bacteria's outer wall so the germ bursts and dies. Azithromycin adds cover for sneaky bugs (like Mycoplasma and Chlamydia) that hide inside cells and don't have the same kind of wall.

Doxycycline

Doxycycline sneaks into bacteria and jams the ribosome (the germ's protein-making machine) so the bug can't build the proteins it needs to live. Works well against both typical bacteria and the atypical bugs that hide inside cells.

Ceftriaxone (± azithromycin)

Ceftriaxone breaks the bacteria's cell wall so the germ bursts. It's stronger than amoxicillin and covers more bacteria, so it's used when someone is sick enough to need IV antibiotics in the hospital. Azithromycin adds cover for atypical bugs.

Levofloxacin or Moxifloxacin

Levofloxacin and moxifloxacin twist and snap the bacteria's DNA so the germ can't copy itself or fix damage. They cover both common bacteria and atypical bugs in one pill, so they're used when someone can't take beta-lactams or needs single-drug coverage.

Oseltamivir (Tamiflu)

Oseltamivir traps brand-new flu virus copies inside the infected cell so they can't escape and spread to healthy cells. It shortens flu symptoms by about 1 day if started within 48 hours of getting sick, and it helps prevent severe pneumonia when flu is the cause or a partner infection.

Where this information comes from

- ATS/IDSA Community-Acquired Pneumonia Guideline 2019
- IDSA/ATS Hospital-Acquired and Ventilator-Associated Pneumonia Guideline 2016
- Cochrane systematic reviews on pneumonia treatment
- CDC pneumonia prevention and treatment resources

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