CONDITION

# Sepsis

Sepsis is life-threatening organ damage caused by the body's extreme response to an infection.

**WHAT IT IS**
Life-threatening organ dysfunction caused by the body's response to infection

**BODY SYSTEM**
Whole body, especially circulation and vital organs

**MAIN SYMPTOMS**
Confusion, breathing difficulty, fever or chills, clammy skin

**WHAT CAUSES IT**
Dysregulated immune response to an infection

**HOW IT IS DIAGNOSED**
Clinical assessment, blood tests, cultures, and imaging

**MAIN TREATMENT**
Urgent antibiotics, supportive care, and infection source control

**CAN IT BE CURED?**
Sometimes - rapid treatment can reverse organ dysfunction

**IS IT AN EMERGENCY?**
Yes - suspected sepsis needs immediate hospital treatment

**LONG-TERM OUTLOOK**
Many recover; some have lasting physical or cognitive problems

## Overview

Sepsis is a medical emergency caused by the body's harmful response to an infection. Instead of controlling the infection in a measured way, the immune response becomes poorly regulated. This can damage tissues and interfere with the function of organs such as the lungs, kidneys, heart, or brain.

Sepsis is a condition rather than a specific infection. It can develop from many kinds of infection, including pneumonia, urinary tract infections, abdominal infections, and infections of the skin or bloodstream.

"Septicemia" is an older term that is sometimes used for sepsis. It has also been used to mean an infection in the bloodstream, so the terms are not always exact matches. Bacteria in the blood are called bacteremia. A person can have bacteremia without sepsis, and sepsis can

occur even when blood cultures do not find bacteria.

Sepsis matters because organ damage can worsen quickly. Early recognition and hospital treatment improve the chance of recovery. Severe circulatory failure caused by sepsis is called septic shock . In septic shock, blood pressure remains dangerously low despite initial treatment, and organs may not receive enough blood and oxygen.

## Symptoms

There is no single symptom that always means sepsis. Symptoms may look like those of the original infection, combined with signs that the body or organs are not working normally.

Possible symptoms include:

Not everyone with sepsis has a fever. Older adults, newborns, and people with weakened immune systems may have a normal or low temperature.

Babies and young children may feed poorly, become unusually sleepy or irritable, breathe rapidly, have fewer wet nappies, or look pale or mottled. A weak cry, difficulty waking, or a blue or grey colour around the lips also needs immediate attention.

These symptoms can have other causes. Their presence does not diagnose sepsis, but serious or rapidly worsening symptoms need urgent assessment.

- New confusion, unusual sleepiness, or difficulty waking
- Fast, difficult, or unusually shallow breathing
- Fever, chills, or feeling very cold
- Clammy, sweaty, pale, blotchy, or discoloured skin
- A very fast heartbeat or weak pulse
- Severe pain or a sense that something is seriously wrong
- Passing much less urine than usual
- Dizziness, fainting, or marked weakness
- Nausea, vomiting, or diarrhoea

## Causes and risk factors

Sepsis begins with an infection. Bacteria are a common cause, but viruses, fungi, and parasites can also trigger it. The infection may start almost anywhere in the body.

Common starting points include:

Anyone with an infection can develop sepsis. The risk is higher in newborns, older adults, pregnant or recently pregnant people, and people with long-term medical conditions. Conditions affecting the lungs, heart, kidneys, liver, or immune system can reduce the body's ability to cope with infection.

Risk may also be higher after major surgery, a serious injury, or a long hospital stay. Cancer treatment, organ transplantation, medicines that suppress the immune system, and removal or poor function of the spleen can increase vulnerability to serious infection.

Having a risk factor does not mean that sepsis will occur. Sepsis can also affect people who were previously healthy.

- Lungs, such as pneumonia
- Urinary system, including kidney infections
- Abdomen, such as bowel or gallbladder infections
- Skin, wounds, or soft tissues
- Brain and surrounding tissues, such as meningitis
- Medical devices, including urinary or intravenous catheters

## Diagnosis

There is no single test that confirms or rules out every case of sepsis. Clinicians diagnose it by looking for a suspected or confirmed infection together with signs that one or more organs are not functioning normally.

Assessment usually includes temperature, heart rate, breathing rate, blood pressure, oxygen level, alertness, skin appearance, and urine output. The speed at which symptoms developed is also important.

Blood tests can show signs of infection, inflammation, clotting problems, or changes in kidney and liver function. A lactate test measures a substance that may rise when tissues are under stress or are not receiving enough oxygenated blood. A raised lactate can support concern about severe illness, but it does not diagnose sepsis by itself.

Blood cultures and samples of urine, sputum, wound fluid, or other material may identify the organism causing the infection. Cultures can be negative even when sepsis is present, especially if antibiotics like amoxicillin or doxycycline were started before samples were taken.

Imaging such as a chest X-ray, ultrasound, or CT scan may help locate pneumonia, an abscess,

a blocked urinary tract, or another source of infection. Treatment should not be delayed when sepsis is strongly suspected simply to wait for every test result.

## Treatment and management

Sepsis is treated in hospital. Care often begins in an emergency department and may continue in an intensive care unit if breathing, circulation, or other organ functions need close support.

Antibiotics are usually given promptly when a bacterial infection is suspected. The initial treatment often covers several likely bacteria. It may be changed once test results identify the cause or make another diagnosis more likely. Antiviral or antifungal treatment may be used when appropriate.

Fluids given into a vein can support circulation and blood pressure. If blood pressure remains too low, medicines called vasopressors may be used to tighten blood vessels and maintain blood flow to vital organs.

Other treatment is based on which organs are affected. This may include oxygen, mechanical support for breathing, kidney dialysis, blood products, or medicines to manage blood sugar and prevent complications during critical illness.

Controlling the source of infection is also important. For example, an abscess may need draining, infected tissue may need removal, or an infected catheter may need replacing. A blocked kidney or bile duct may require a procedure to restore drainage.

Treatment is adjusted as results become available and the person's condition changes. Monitoring may include repeated examinations, blood tests, urine measurements, and checks of oxygen levels and blood pressure.

## Complications

Sepsis can affect several organs at once. Possible complications include acute kidney injury, breathing failure, liver dysfunction, abnormal blood clotting, heart problems, or changes in consciousness.

Septic shock is one of the most serious complications. It involves persistent circulatory failure and carries a greater risk of death and long-term organ damage.

Reduced blood flow can occasionally damage fingers, toes, or larger areas of tissue. Immobility and critical illness can also contribute to muscle loss, weakness, pressure injuries, blood clots, and hospital-acquired infections.

Some people develop continuing problems after leaving hospital. These may include fatigue, muscle weakness, poor appetite, disturbed sleep, pain, breathlessness, difficulty concentrating, or memory problems. Anxiety, low mood, nightmares, and symptoms related to a frightening intensive care experience can also occur.

These effects are sometimes described as post-sepsis syndrome, although there is no single test or universally agreed definition for it.

## Prevention

Not every case of sepsis can be prevented. Infections do not always cause obvious early symptoms, and even an infection treated appropriately can occasionally progress.

Reducing the chance of infection can reduce the chance of sepsis. Helpful measures include:

People at increased risk may have specific infection plans. For example, someone without a functioning spleen may receive tailored vaccination and antibiotic advice. That plan should come from the healthcare team familiar with their medical history.

- Keeping recommended vaccinations up to date
- Washing hands and caring for wounds properly
- Following instructions for catheters, drains, or surgical wounds
- Seeking medical advice for infections that are worsening or not improving
- Taking prescribed antimicrobial medicines as directed rather than saving or sharing them
- Managing long-term conditions with appropriate routine care

## Living with it and what to expect

Sepsis is usually a sudden illness rather than a lifelong condition. Recovery depends on the infection, the organs affected, the person's health before sepsis, and how severe the illness became.

Some people recover quickly after the infection and organ problems settle. Others need weeks or months to rebuild strength and return to usual activities. Recovery after intensive care is often uneven: energy, sleep, appetite, mood, and concentration may improve at different rates.

Follow-up may include reviewing medicines, checking kidney or other organ function, treating pain, and arranging physiotherapy or rehabilitation. A gradual return to activity may be needed after significant muscle loss. Emotional support can also be part of recovery.

Many survivors return to work, education, caring responsibilities, and usual daily life. Some continue to have physical, cognitive, or emotional effects. A smaller number have permanent organ damage or need ongoing support, such as kidney treatment.

A previous episode does not mean sepsis will definitely happen again. However, some underlying health problems that contributed to the first episode may continue to raise the risk of infection. A new infection should be assessed promptly if symptoms are severe or worsening.

Routine follow-up is appropriate for continuing fatigue, weakness, sleep problems, low mood, memory difficulties, or concerns about returning to normal activities. New signs of severe infection are not routine recovery symptoms and need urgent assessment.

## When to get medical help

Call emergency services now if you or someone else may have an infection and has any of the following:

For a baby or young child, emergency signs also include being floppy or unresponsive, struggling to breathe, having a weak or unusual cry, or being difficult to wake.

Seek urgent same-day medical assessment for an infection with worsening symptoms, repeated vomiting, much less urine, increasing sleepiness, severe pain, or fever and chills in someone at high risk of serious infection. Do not wait for every typical symptom or for a rash to appear.

If these changes occur while you are already in a hospital or care facility, alert staff immediately.

After discharge, contact your usual healthcare service for non-emergency problems such as ongoing fatigue, reduced mobility, sleep disturbance, low mood, or difficulty managing daily tasks. Sudden deterioration should be treated as urgent rather than saved for a routine appointment.

- New confusion, collapse, or difficulty waking
- Severe difficulty breathing or very rapid breathing
- Blue, grey, very pale, blotchy, or markedly discoloured skin
- A seizure
- A rash that does not fade when pressed
- Severe weakness with fainting or signs of very low blood pressure

- Rapid worsening with a strong sense that something is seriously wrong

## Common questions

Is sepsis contagious?

Sepsis itself is not contagious. The infection that triggered it may be contagious, depending on the organism. For example, some respiratory or gastrointestinal infections can spread between people, while many urinary infections do not.

Can I have sepsis without a fever?

Yes. A person with sepsis may have a high, normal, or low temperature. This is particularly important in newborns, older adults, and people whose immune system is weakened. Confusion, breathing changes, clammy skin, or reduced urine may be more noticeable than fever.

Is sepsis the same as blood poisoning?

"Blood poisoning" is an informal and imprecise term. It is often used to mean sepsis or an infection in the bloodstream. Sepsis is specifically organ dysfunction caused by the body's response to infection, and the infection does not have to be found in the blood.

How quickly can sepsis develop?

It can develop over hours, but the timing is not predictable. Some infections worsen gradually, while others cause rapid decline. New confusion, breathing difficulty, collapse, or marked skin colour changes should not be watched at home.

Can you fully recover from sepsis?

Many people recover, but recovery cannot be guaranteed. Some have prolonged weakness, emotional distress, concentration problems, or lasting organ damage. Rehabilitation and follow-up can help identify and manage these effects.

Can sepsis come back?

A new episode is possible, especially if an underlying condition continues to increase the risk of infection. It is not inevitable. Prompt assessment of serious or worsening infection symptoms remains important after recovery.

## Sources

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