Sepsis is the result of a massive immune response to bacterial infection that gets into the blood. It often leads to organ failure or injury.

Sepsis is a medical emergency that becomes fatal or life-changing for many of the individuals who develop this “blood poisoning.” Sepsis occurs when chemicals released in the bloodstream to fight an infection trigger inflammation throughout the body. This can cause a cascade of changes that damage multiple organ systems, leading them to fail, sometimes even resulting in death.

Estimates for the number of people hospitalized in the United States for sepsis each year top [1 million](https://www.cdc.gov/nchs/data/databriefs/db62.pdf) and sepsis is in the top 10 of diseases leading to mortality in America.

**Fast facts on sepsis**

* Sepsis is a medical emergency
* The symptoms of sepsis can be tricky to spot and may be mistaken for other serious illnesses
* Getting urgent medical treatment is key to the chances of surviving sepsis

**What is sepsis?**

Share on PinterestSepsis is classed as a medical emergency.

Sepsis is a specific condition in itself, but it is commonly caused by bacterial infection in the blood, which is called septicemia. This explains why the terms sepsis and septicemia are often used together.

Septicemia [leads to sepsis](http://www.hopkinsmedicine.org/healthlibrary/conditions/nervous_system_disorders/septicemia_85,P00802/):

* Poisons are released by the bacteria involved in septicemia
* The immune system mounts a massive inflammatory response to these poisons – this is referred to as sepsis

The current definition of sepsis is based on relatively recent developments in the scientific understanding of the condition. The disease process is also [not fully understood](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4422540/), with treatment still proving highly challenging.

Sepsis is [defined as](https://www.ncbi.nlm.nih.gov/pubmed/26903338) “life-threatening organ dysfunction caused by a dysregulated host response to infection.” In lay terms, sepsis is a life-threatening condition that arises when the body’s response to an infection injures its own tissues and organs.

**Symptoms**

The most important step for patients or people around them suspecting sepsis is that they:

* Do not attempt to make a home diagnosis
* Instead, get medical help as soon as possible – the symptoms of sepsis from a bad infection are serious
* The symptoms can signal other conditions that would also need medical help

The signs and symptoms of sepsis following a bad infection are often subtle and can be mistaken for those of other serious conditions. However, sepsis typically involves the following main features in someone who has had a recent infection, and symptoms can come on quickly.

Get urgent medical help – go to the emergency department whenever sepsis is suspected. It [often produces](http://www.nhs.uk/Conditions/Blood-poisoning/Pages/Introduction.aspx):

* [Fever](https://www.medicalnewstoday.com/articles/168266.php) (high temperature, pyrexia), and there may be chills and shivering
* Fast heart rate/[pulse](https://www.medicalnewstoday.com/articles/258118.php) ([tachycardia](https://www.medicalnewstoday.com/articles/175241.php))
* Rapid rate of breathing (tachypnea)
* Unusual levels of sweating (diaphoresis)

It is particularly important to call for urgent medical help if sepsis has reached a late stage – severe sepsis or septic shock.

Call an ambulance whenever sepsis is suspected and there is:

* Dizziness or feelings of faintness
* Confusion or a drop in alertness, or any other unusual change in mental state, including a feeling of doom or a real fear of death
* Slurred speech
* [Diarrhea](https://www.medicalnewstoday.com/articles/158634.php), nausea, or vomiting
* Severe muscle pain and extreme general discomfort
* Difficulty breathing – shortness of breath
* Low urine output (not needing to urinate for a whole day, for example)
* Skin that is cold, clammy, and pale, or discolored or mottled
* Skin that is cool and pale at the extremities, signaling poor blood supply (poor perfusion)
* Loss of consciousness

Get medical help for anyone whether the skin feels unusually warm or cold; either can happen with sepsis. The elderly and very young are particularly vulnerable to sepsis after an infection and also more vulnerable to the worsening of any sepsis condition.

When calling for medical help, going to the emergency department, or speaking to doctors and nurses, it is important to mention any recent infection, surgical procedure, or if the patient has a compromised immune.

Such a medical history is more likely to mean there has been an infection, this alerts the doctors to the possibility of sepsis if they see the typical features.

**Requires a medical diagnosis**

Symptoms include fever, difficulty breathing, low blood pressure, fast heart rate and mental confusion.

**People may experience:**

Whole body: low blood pressure, chills, dizziness, fatigue, fever, flushing, low body temperature, or shivering

Cognitive: altered level of consciousness or mental confusion

Respiratory: fast breathing or shortness of breath

Also common: delirium, fast heart rate, insufficient urine production, organ dysfunction, skin discolouration, or sleepiness

**Causes**

Bacterial infections are the [most common cause of sepis](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3488423/). Any bodily infection can trigger the condition and the lungs, urinary tract, and abdominal area are particularly susceptible.

[Research](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3488423/) shows that fungal infection-induced sepsis is also on the rise.

Older people are more at risk of sepsis due to [aging and its effects on immunity](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3956061/). The likelihood of developing sepsis also increases following surgery.

**Risk factors**

Sepsis is possible in anyone with an infection that develops a complication, but the people most at risk of sepsis are the very young and the old, and anyone with these [risk factors](https://www.cdc.gov/sepsis/basic/qa.html):

* A weakened immune system
* Chronic illness, including [diabetes](https://www.medicalnewstoday.com/info/diabetes/), kidney or liver disease, [AIDS](https://www.medicalnewstoday.com/articles/17131.php), and [cancer](https://www.medicalnewstoday.com/info/cancer-oncology/)
* A severe wound, including severe burns

Vulnerability to sepsis is becoming [more widespread](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3488423/). This is thought to be for a number of reasons:

* More opportunities for infections to become complicated – more people are having invasive procedures and organ transplants, and more are taking immunosuppressive drugs and chemotherapies
* Rising [antibiotic](https://www.medicalnewstoday.com/articles/10278.php) resistance – microbes are becoming immune to drugs that would otherwise control infections

**Treatment**

Antibiotics alone may be sufficient in the early stages of the condition, but doctors need to provide treatment promptly. For sepsis that is discovered in its later stages, doctors may provide hospital treatment to a person in an intensive care unit. This may include:

* administering intravenous fluids
* using vasopressors
* using central lines
* initiating kidney dialysis
* administering other means of organ support as necessary

In severe sepsis cases, surgery may be required. This often involves removing any tissue that the infection has damaged.

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**Newborns**

Sepsis [can occur in neonatal](http://www.merckmanuals.com/home/children-s-health-issues/general-problems-in-newborns/sepsis-in-the-newborn) infants, or newborns. The infant will appear listless and unwell.

The risk is higher in infants:

* who are born preterm
* with a low birth rate
* with a low APGAR score
* if the mother experienced premature rupture of the membrane
* infection in the mother or the presence of group B streptococcus in the rectum or vagina

It is more likely to occur in males.

Early onset sepsis appears before the age of 3 days and late onset sepsis is when symptoms appear after 3 days of life.

The cause of sepsis in newborns can be viral, bacterial, or fungal. Viral causes include enterovirus, herpex virus simplex, or adenovirus. The most common bacterial causes are Escherichia coli (E. coli) and group B streptococcus (GBS), which can be passed on to the infant during delivery.

Risk factors affecting the chances of late-onset sepsis in newborns include medical treatment such as antibiotics, the use of catheter or a feeding tube, or time spent in the hospital.

Complications include encephalitis and meningitis. Treatment is available, but sepsis can be fatal in newborns, especially those born preterm.

**Seniors**

Older people have a [higher risk of sepsis](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3956061/) because of:

* other existing conditions, such as cancer, diabetes, and others
* time spent in the hospital, and especially in the intensive care unit (ICU)
* reduced immunity
* functional limitations, due, for example, to muscles loss and neurological changes
* the effects of aging

In older people, the early signs of sepsis may be harder to spot than in younger people, but as symptoms progress, the person’s condition can deteriorate rapidly. Sepsis is most likely to stem from a respiratory tract problem or a genitourinary infection.

Treatment is available, but severe sepsis is fatal in 50 to 60 percent of cases among seniors. Early treatment is more likely to be effective.

**Diagnosis**

Share on PinterestA doctor will observe a person’s symptoms in relation to their medical history.

The first step that doctors take in diagnosing sepsis is to observe the symptoms.

When doctors observe the typical signs and symptoms of sepsis, they will also consider the patient’s medical history and be alerted to possible sepsis if there has been a recent infection, a surgical or catheter procedure, or if the patient is particularly vulnerable to infection – because of compromised immunity, for example.

Physical examination of the patient for signs of sepsis will help confirm the diagnosis.

Blood tests may be carried out, including testing for the infectious agent behind the infection, which can also be tested from other bodily fluids such as sputum. In addition, imaging tests may be done to locate an infection. Tenderness or pain in certain areas physically examined by a doctor may signal the type of infection that has led to the sepsis.

**Prevention**

The CDC have issued three general approaches to reducing the risk of an infection leading to sepsis. The measures are particularly important for the very young, older people, and others who are vulnerable to complications of infection. The [CDC says](https://www.cdc.gov/sepsis/pdfs/sepsis-fact-sheet.pdf):

* If advised by your doctor, get vaccinated against potential infections, including the [flu](https://www.medicalnewstoday.com/articles/15107.php) and [pneumonia](https://www.medicalnewstoday.com/articles/151632.php)
* Keep any scrapes and wounds clean to prevent infection and follow good hygiene practices such as hand-washing
* If there is an infection, stay alert to possible sepsis symptoms – fever, chills, rapid heart rate and rapid breathing, rash, or confusion and disorientation – and get immediate medical attention as soon as they appear