

Osteomyelitis

Osteomyelitis is an infection of a bone. Symptoms include pain and tenderness over the affected area of bone, and feeling unwell. It is a serious infection which needs prompt treatment with antibiotic medication. Surgery may be needed if the infection becomes severe or persistent.

What is osteomyelitis?

Osteomyelitis is an infection of a bone. Many different types of germs (bacteria) can cause osteomyelitis. However, infection with a bacterium called *Staphylococcus aureus* is the most common cause. Rarely, osteomyelitis can be caused by a fungus.

Which bones can be affected by osteomyelitis?

The long bones of the leg (femur, tibia and fibula) are the most commonly affected. However, osteomyelitis can affect any bone in theory.

What are the symptoms of osteomyelitis?

Symptoms of acute osteomyelitis (infection that has developed recently) include:

- **Pain and tenderness** over an area of bone.
- **A lump** may develop over the bone, which is usually very painful.
- **Redness of overlying skin** may then develop.
- **Feeling generally unwell** with [high temperature \(fever\)](#) as the infection develops.

If osteomyelitis occurs following a break (fracture) to a bone then increasing redness, swelling and pain can occur around the fracture site. Pus may come out from a skin wound over the fracture.

What causes osteomyelitis?

If some germs (bacteria) settle on a small section of bone, they can multiply and cause osteomyelitis. Bacteria can get to a bone:

- **Via the bloodstream.** This is the most common cause in children. Bacteria can enter the blood from an infection in another part of the body and then travel to a bone. Even if you are healthy, bacteria can sometimes get into the blood from the nose or gut (bowel).
- **Following an injury.** Bacteria can spread to bone if you have a deep cut on the skin, particularly if you have a broken bone which can be seen through the cut skin.

Who is at risk of developing osteomyelitis?

Anyone can develop osteomyelitis at any age. However, you have an increased risk if you:

- Have recently broken (fractured) a bone.
- Have a bone prosthesis (an artificial hip, a screw in a bone following surgery, etc).
- Have recently had surgery to a bone.
- Have diabetes, particularly if a diabetic foot ulcer is also present. .
- Have a poor immune system. For example, if you are receiving chemotherapy or if you are seriously unwell with another illness.
- Inject street drugs which can be contaminated with germs (bacteria).
- Are dependent on alcohol.
- Have had a previous episode of osteomyelitis.
- Have certain types of blood disorders - for example, [sickle cell disease](#).
- Have reduced skin sensation. This can lead to damage and infection of the skin, which can spread to the blood or to the bone. For example, some people with diabetes have reduced sensation in their feet.

- Receive kidney dialysis.
- Take steroids regularly.

Are any tests needed for osteomyelitis?

Tests to confirm the osteomyelitis diagnosis

If there are typical symptoms coming from an infection of a leg bone then the diagnosis may be fairly clear. However, pain coming from deeper bones such as the spine or pelvis can be due to a number of causes.

An [MRI scan of the bone](#) will help to confirm the diagnosis. A plain X-ray is not so useful in the early stages of osteomyelitis, as an X-ray can be normal for up to a week or so after the infection starts.

Tests to find which germ (bacterium) is causing the infection

The blood often contains some bacteria from the bone infection. Samples of blood are sent to the laboratory to identify which type of bacterium is causing the infection. This is important, as it will help decide which is the best treatment some bacteria are resistant to certain antibiotic medicines).

If the [blood tests](#) do not show any bacteria, then [a small sample \(biopsy\)](#) of the affected bone is sent to the laboratory for testing.

If the infection from a bone tracks through to the skin, any discharging pus can be collected and also sent to the laboratory. Similarly, fluid drawn off from an infected joint can be analysed to identify the bacteria.

What is the treatment for osteomyelitis?

Antibiotic medicines

[An antibiotic is usually started as soon as possible.](#) The initial antibiotic chosen is one that is likely to kill the germs (bacteria) which commonly cause osteomyelitis. However, the antibiotic is sometimes changed to a different one when the results of the tests confirm which bacterium is causing the infection.

Osteomyelitis symptoms usually settle quite quickly after you start taking an antibiotic. The medication is usually taken for 4-6 weeks but, if the infection is severe, the course may last up to twelve weeks. This is to make sure all infection has gone from the bone.

To control pain you may be given painkillers and if you have infection in a long bone (such as an arm or leg) you may be fitted with a splint, which is a supportive device designed to restrict movement of a broken or injured body part to reduce pain and promote healing.

Surgery

An operation will usually be needed if:

- A ball of pus ([abscess](#)) develops. The pus in an abscess needs to be drained.
- The infection presses on other important structures. For example, an infection in the spine may press on the spinal cord.
- The infection has become persistent ([chronic](#)) and surrounding bone has been destroyed. Dead and infected bone may be removed to allow the infection to clear. Sometimes plastic surgery is needed at the same time to cover the skin wound, if present, to give the best chance of cure.

Rarely, surgical removal ([amputation](#)) of a foot or leg is needed if infection persists in a leg bone and does not clear with any other treatment.

Complications of osteomyelitis

Possible complications are listed below. As a rule, there is more risk of developing complications if osteomyelitis develops after a serious bone injury, or after surgery to a bone:

- If the infection is left untreated, a ball of pus ([abscess](#)) may develop in the bone and surrounding tissue. In time, this may burst on to the skin and leave a track ([sinus](#)) between the infected bone and the surface of the skin.
- [Blood infection \(sepsis\)](#) which can cause serious illness.
- If the infection follows a bone break ([fracture](#)) then there is a chance that the fracture will not heal ([non-union of fracture](#)).
- Compression of other structures next to the infection.
- Some bone infections are caused by a germ ([bacterium](#)) called [meticillin-resistant](#) which is difficult to treat with antibiotics.

- Persistent infection of the bone (chronic osteomyelitis) sometimes develops and can be difficult to clear.

Preventing osteomyelitis

Osteomyelitis may be prevented by:

- Keeping any cuts and skin wounds clean and dry.
 - Dressing of wounds to avoid infection.
 - Seeking medical attention for deep or open wounds – as specific cleaning techniques, dressings or antibiotics may be required, depending on the nature of the wound.
 - Avoidance of high alcohol intake.
 - Stopping smoking.
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What is the outlook (prognosis)?

If the osteomyelitis infection is treated promptly, there is a good chance of a complete cure. The best outcome occurs if treatment is started within 3–5 days of the beginning of infection (In the days before antibiotic medicines, osteomyelitis was a very serious illness which sometimes caused death or severe disability).

Once you have had one episode of osteomyelitis, the risk of a further episode is higher than average. Therefore, if you have previously had osteomyelitis, see a doctor quickly if symptoms develop again.

Further reading

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