TEST

# Bone x-ray

A bone x-ray uses a small amount of radiation to create pictures of bones and joints.

**WHAT IT MEASURES**
Bone shape, alignment, and visible structural changes

**SAMPLE**
None

**FASTING NEEDED?**
No

**HOW LONG IT TAKES**
Usually 5 to 15 minutes

**RESULTS IN**
Often same day; timing varies by imaging service

**USED FOR**
Diagnosis and monitoring

**MAIN LIMITATION**
Small or early fractures may not appear

## Overview

A bone x-ray, also called a bone radiograph, creates pictures of bones and nearby joints using a small amount of ionising radiation.

Dense structures such as bone usually appear white. Air appears dark, while fat, muscle, and other soft tissues appear in shades of grey.

The test can show fractures, dislocations, alignment problems, and changes in bone structure. It may also monitor healing after a fracture or operation. However, a normal x-ray does not always rule out a small, early, or hidden fracture.

## Why the test is ordered

A bone x-ray is often ordered after an injury to look for a fracture or dislocation. It may also be used to investigate:

X-rays may show indirect signs of cartilage loss, such as narrowing between bones, but cartilage itself does not usually appear clearly.

- Localised bone pain, swelling, or tenderness
- A visible change in the shape of a limb or joint
- Reduced movement after an injury
- Possible arthritis, bone infection, or unusual bone changes
- Healing after a fracture, operation, or joint treatment
- The position of screws, plates, or joint replacements

## Who should have the test

You may need a bone x-ray if your symptoms, injury, and examination suggest a bone or joint problem.

Not every minor injury requires imaging. For some ankle, knee, or wrist injuries, a healthcare professional may use established examination rules to decide whether an x-ray is likely to help.

Bone x-rays are not generally used to screen the whole body in people without symptoms. A bone density scan is a different test used to assess bone strength and osteoporosis-related fracture risk.

Children can have bone x-rays when medically needed. The imaging team adjusts the examination for the child's size and the body area being studied.

## How to prepare

Most bone x-rays require no special preparation. You can usually eat, drink, and take your regular medicines as normal.

Wear clothing that is easy to move or remove. You may need to take off jewellery, belts, watches, underwired bras, or clothing with metal fasteners if they overlap the area being examined.

Tell the radiographer before the test if you are or might be pregnant. Pregnancy does not automatically prevent an x-ray. The team will consider the body area, urgency, expected benefit, and ways to limit radiation exposure.

Also tell the team if pain, disability, or a recent operation makes movement difficult. They may support the injured area or adapt the position.

## What happens during the test

A radiographer performs the x-ray. You may be asked to change into a gown.

The body part is placed between the x-ray machine and an image detector. You may sit, stand, or lie on a table, depending on the area being examined.

Pictures are usually taken from at least two directions. You must keep still for a few seconds during each image and may occasionally be asked to hold your breath.

The x-ray itself is not painful, but positioning an injured limb can be uncomfortable. Tell the radiographer if a position is too painful.

The radiographer may check the images before you leave to ensure the required area is visible. This is not necessarily the final interpretation.

## Understanding your results

A radiologist, or another appropriately trained professional, usually reviews the images and prepares a report. It may describe:

"Acute" usually means recent or newly identified, while "chronic" describes a longer-standing change. "No acute bony abnormality" means no recent bone problem was seen, but it does not exclude every injury.

Bone x-rays do not have a universal numerical reference range. Results are interpreted using your age, symptoms, medical history, previous surgery, and the area examined.

- A fracture, its position, and whether bone pieces have moved
- Joint alignment or dislocation
- Fracture healing
- Arthritic changes, including joint-space narrowing or bone spurs
- Bone loss, thickening, unusual growth, or possible infection
- The position of implants or joint replacements

## What affects the results

Movement can blur an image, and positioning matters because some fractures are visible only from particular angles.

Clothing, jewellery, dressings, splints, casts, or other objects may obscure part of the bone.

Some casts can be x-rayed through but may reduce detail.

Small fractures whose ends remain aligned can be difficult to see. Stress fractures caused by repeated loading may not appear on an early x-ray.

Normal features can also resemble injuries. These include children's growth plates, accessory bones, blood-vessel channels, and old healed injuries. Previous images and multiple views can help distinguish them.

Body size, overlapping structures, operations, and metal implants may reduce image detail. Food, coffee, time of day, exercise, and blood transfusions do not usually affect a bone x-ray. Medicines do not change the image immediately, although long-term use of some medicines can affect bone structure.

## Accuracy and limitations

Bone x-rays are good at showing many fractures, dislocations, alignment problems, and established bone changes. Accuracy varies with the bone involved, the type and age of the injury, image quality, and views obtained.

An x-ray may miss a very small fracture, one hidden by another structure, or an early stress fracture. If symptoms strongly suggest an injury despite a normal result, repeat imaging or another scan may be needed.

Normal structures or old injuries can sometimes look like fractures. Comparing different views or earlier images can reduce this risk.

Computed tomography, or CT, provides more detailed images of complex bone anatomy. Magnetic resonance imaging, or MRI, is often better for hidden fractures, bone marrow, ligaments, tendons, and other soft tissues.

## Risks and complications

A bone x-ray exposes you to a small amount of ionising radiation. The amount depends on the body part, number of images, equipment, and your size.

There are no expected immediate effects from the radiation used for a standard diagnostic x-ray. The team aims to use the lowest exposure that produces an adequate image.

The test does not require needles, injections, or anaesthesia. You may have temporary discomfort if an injured area must be repositioned.

## What happens next

The clinician who requested the test will explain the report and any follow-up. Treatment may include rest, support, pain management, physiotherapy, repeat imaging, or specialist review.

A normal result may not end the assessment if pain, swelling, or difficulty using the limb continues. You may need another examination, a repeat x-ray, CT, or MRI.

Seek urgent medical assessment after an injury if pain or swelling is rapidly worsening, you cannot use the limb, or numbness develops.

Call emergency services or go to an emergency department if a limb is severely deformed, a wound exposes bone, bleeding will not stop, or the limb becomes pale, blue, cold, or suddenly loses feeling. Do not wait for a routine x-ray report.

## Common questions

Can I drink coffee before a bone x-ray?

Yes. Food and drinks, including coffee, do not usually affect the test.

Does the time of day matter?

No. Bone appearance does not normally change enough during the day to affect the result.

Can I exercise beforehand?

Usually, but avoid activity that worsens an injured or painful area.

Can I have an x-ray while pregnant?

Sometimes. Tell the imaging team if you are or may be pregnant. They will assess whether the test is needed and how to minimise exposure.

Will I need to remove my clothes?

Only clothing or objects that cover the area or contain metal may need to be removed. You may be given a gown.

Can I drive after the test?

Yes. A standard bone x-ray does not involve sedation. However, your injury may make driving unsafe.

## Sources

- Radiological Society of North America and American College of Radiology. Bone X-ray \(Radiography\) . RadiologyInfo.org
- US Food and Drug Administration. Medical X-ray Imaging
- American College of Radiology. ACR Appropriateness Criteria: Acute Trauma to the Ankle
- American College of Radiology. ACR Appropriateness Criteria: Acute Hand and Wrist Trauma
- American College of Obstetricians and Gynecologists. Guidelines for Diagnostic Imaging During Pregnancy and Lactation . Committee Opinion No. 723
- National Institute for Health and Care Excellence. Fractures \(non-complex\): assessment and management . NICE guideline NG38