

When this health benefit clearly outweighs the small radiation risks, the x-ray or scan may go ahead after discussing all the options with you.

Important points to remember:

In radiology departments, every effort is made to keep radiation doses low.

- The radiation dosed from x-ray examinations are small in relation to those we receive from natural background radiation, ranging from the equivalent of a few days worth to a few years.
- The health risks from these doses are very small in relation to the underlying risks of cancer, but are not entirely negligible for some procedures such as fluoroscopy or CT scan.
- You should make your doctor aware of any other x-rays or scans you may have had, in case they make further examinations unnecessary.
- The risks are much lower for older people and a little higher for children and unborn babies, so extra care is taken with young or pregnant patients. If you are concerned about the possible risks from an investigation using radiation, you should ask your doctor whether the examination is necessary. If it is, then the risk to your health from not having the examination is likely to be very much greater than that from the radiation itself.

‘Based on an information leaflet for patients prepared by NRPB together with the College of Radiographers, the Royal College of Radiologists and the Royal College of General Practitioners’

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To put radiation exposure levels into perspective, the following table lists the common x-rays examinations and the equivalent period of background radiation that gives approximately the same radiation dose.

| X-ray Examination | Equivalent Period of Background Radiation |
|---|--|
| Chest Dental Arms & Legs Hands & Feet | A few days |
| Skull Head Neck | A few weeks |
| Breast Hip Spine Abdomen Pelvis CT of Head | A few months to a year |
| Stomach-Barium Meal Colon—Barium Enema CT Chest CT Abdomen | A few years |



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Louth Meath Hospital Group Radiology Department



Radiation Patient Information Leaflet

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Patients are sometimes concerned about the possible harmful effects of x-rays, so this leaflet will explain the risks and put them into perspective. X-rays are only used if the benefit to the patient outweighs the small risk involved.

What are the different types of x-ray?

Radiography:

This is the familiar x-ray which most of us will have at some time during our lives, usually for looking at broken bones or at the chest or teeth. A machine directs a beam of x-rays through the part of your body that is being examined and the image is stored on a computer. Simple x-rays such as these involve low amounts of radiation.

Fluoroscopy:

This is sometimes called 'screening'. After passing through your body, the x-ray beam is viewed by a special camera which produces a moving picture on a TV screen. The radiologist or radiographer performing the examination can take images and store these on the computer. Fluoroscopic examinations usually involve higher radiation doses than simple radiography.

Computed Tomography (CT) scan:

For these examinations the patient lies on a narrow table which passes through a circular hole in the middle of the scanner. The x-ray sources and the detectors rotate around inside the machine. Images are taken of different slices of the body and displayed on a computer. The radiation dose can be as high as or higher than that for fluoroscopy.

What are the benefits of having an x-ray?

Using x-rays for diagnosis can bring very real benefits to patients. The overriding concern of your doctor and the radiology department is to ensure that when x-rays are used, the benefits from making the right diagnosis, and consequently giving you the right treatment, outweigh any small risk involved. If treatment decisions depend on the findings, then the risk to your health from not having the examination is likely to be much greater than that from the radiation itself.

Is it possible to avoid radiation completely?

We are all exposed to natural background radiation every day of our lives. This comes from the ground and building materials around us, the air we breathe, the food we eat and even from outer space (cosmic rays). In Ireland the largest contribution is from radon gas which seeps out of the ground and accumulates in our houses.

Each medical x-ray gives us a small additional dose on top of this natural background radiation. The level of dose varies with the type of examination ranging from the equivalent of a few days of natural background to a few years.

Is there some other way to make the diagnosis?

Before deciding to send you for this x-ray, your doctor will have considered the other types of tests available. X-rays are used when they are judged to be the most suitable method of assisting diagnosis.

Are x-rays dangerous?

The radiation doses used for x-ray examinations are too low to produce immediate harmful effects, such as skin burns or radiation sickness. The only effect on the patient that is known to be possible at these low doses is a very slight increase in the chance of cancer occurring many years or even decades after the exposure.

Are the risks the same for everyone?

Radiation risks for older people tend to be lower than for others. This is because there is less time for a radiation induced cancer to develop, so the chances of it happening are greatly reduced.

Children, however, with most of their life ahead of them, may be at twice the risk of middle-aged people from the same x-ray examination. This is why particular attention is paid to ensuring that there is a clear medical benefit for every child who is x-rayed. The radiation dose is also kept as low as possible without detracting from the information the examination can provide.

If you are about to have such an examination and are a woman of childbearing age, the radiographer or radiologist will ask you if there is any chance of your being pregnant. A baby in the womb may also be more sensitive to radiation than an adult, so we are particularly careful about x-rays during pregnancy. There is no problem with something like an x-ray of the hand or the chest because the radiation does not go anywhere near the baby. However, special precautions. If this is a possibility, your case will be discussed with the doctors looking after you to decide whether or not to recommend postponing the investigation. There will be occasions when diagnosing and treating your illness is essential for your health and your unborn child.