

Are there any further precautions that need to be taken?

If the patient is a woman in her childbearing years then hospital staff must also consider the possibility that the patient may be pregnant and that a foetus must also be protected from any radiation risks. Female patients of childbearing years will be asked to comply with hospital protocols to limit radiation effects to an unsuspected foetus. If you are unsure whether you are pregnant, please mention this to a staff member in nuclear medicine prior to the administration of the imaging substance.

To put radiation exposures levels into perspective the following table lists the common nuclear medicine examinations and their equivalent period of natural background radiation.

Nuclear medicine examinations and their equivalent natural radiation period	
Nuclear Medicine Examinations	Equivalent Natural Radiation Period
Lung Ventilation	2 weeks-2 months
Lung Perfusion	6 months
Kidney	6 months
Thyroid	6 months
Bone	2 years
Cardiac – MUGA	2 years
Cardiac – Thallium	6 years
Cardiac – MIBI	2 years

If you have any queries as to the justification of this examination please ask your referring doctor.



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Nuclear Medicine



Information leaflet



What is radiation?

Radiation is a form of electrical and magnetic disturbance that transports energy. For example it is radiation that brings energy to us from the sun.

Where does it come from?

Radiation can come from natural sources like the sun, the earth, and the air. Radiation can also be created artificially in a variety of sources such as microwave ovens, ultraviolet lamps, x-ray machines, and radioactive sources.

Potassium, which is one of the chemicals in all living creatures, is a naturally occurring radioactive substance.

Are there different forms of radiation?

Yes. Radiation from microwave ovens and mobile phones is called non-ionising radiation. The radiation in nuclear medicine is called ionising radiation because it causes electrical charges (ions) to be created in the material it passes through.

How can radiation be measured?

Radiation is measured by monitoring the amount of energy it transports. Ionising radiation can be measured in units of microSieverts.

Is it possible to avoid being exposed to radiation?

No. We are all exposed to ionising radiation from the sun, from materials in the earth, from naturally occurring radioactive substances in our bodies and from gases, like Radon, in the air

we breathe. This is sometimes called 'background radiation'.

On average each person in Ireland gets 3,000 microSieverts of ionising radiation each year from natural sources. In some parts of the country the radiation levels can get up to 100,000 microSieverts each year.

People who travel by aeroplane get an additional 5 microSieverts of radiation for every hour of the flight.

Is background radiation different from artificial radiation?

No. Natural radiation and man-made radiation cause identical effects in the body.

Is radiation dangerous?

It has been recognised for a long time that exposure to large amounts of radiation can be harmful to the body. People who are exposed to large amounts of radiation are more likely to develop some forms of cancer, for example. There is no direct evidence that low exposures to radiation are harmful but it is considered prudent to limit exposure to the lowest amount possible.

Is there control on the use of radiation in hospitals?

Yes. All human exposure to medical radiation must be justified in advance of the procedure. Procedures are only justified if the benefit to the patient is greater than the risk. Hospital staff are conscious of the need to limit patient exposure and strive to reduce radiation levels to the lowest level possible.

How does a nuclear medicine scan differ from an X-ray?

Nuclear medicine patients are administered substances (usually in the form of an injection) that emit radiation and which enable staff to investigate processes that are happening in the patient's body. The amount of radiation is similar to that used in X-ray. In nuclear medicine the patient is emitting radiation for a period after the substance is administered. Generally speaking, the radiation levels from a nuclear medicine patient are reduced to insignificant levels over a 24 hour period.

Are there any precautions that need to be observed in the 24 hour period after a nuclear medicine injection?

Yes. During this 24 hour period it is recommended that patients avoid spending long periods of time (30 minutes or more) in close contact with young children or pregnant women. Young children or pregnant women should not accompany patients for long periods in the nuclear medicine waiting room.

Can the patient take any steps to protect against radiation?

If you have had a nuclear medicine scan in the recent past, inform a staff member to ensure that tests are not duplicated unnecessarily. In general patients should drink plenty of fluids and empty their bladders frequently on the day of the scan as it helps to clear the injected material from the body. Patients should observe careful hygiene when going to the toilet during this period.