



Common nuclear medicine diagnostic procedures: Radiation risks

You have been referred to the Royal Berkshire Hospital for a nuclear medicine procedure that your doctor needs in order to proceed with your diagnosis and treatment.

This leaflet outlines the small risk from the diagnostic use of nuclear medicine radiation, which we are legally obliged to tell you.

What is the radiation risk?

People are often concerned about being exposed to radiation during a procedure. However, the amount of radiation used is small and the dose to your body is as low as possible.

Generally, the amount of radiation you're exposed to during a nuclear medicine procedure is the equivalent to between a few days and a few years (depending on individual circumstance) of exposure to natural background radiation, coming from the earth and the atmosphere.

Being exposed to radiation does carry a very small risk of causing cancer many years or decades later. For examples of typical doses please see the table below. You can also visit. www.gov.uk to find out more about medical radiation doses.

It is important to understand that for an individual procedure the potential health benefit to you will always outweigh the small risk from the radiation.

The table below is a simple guide to the levels of radiation for various examinations. There are many other procedures carried out in nuclear medicine and details can be obtained from a medical physics expert or senior nuclear medicine staff.

Sometimes we will also use the CT part of our scanner to get extra images to help with the diagnosis. This also involves radiation.

Diagnostic procedure – all with Tc-99m	Typical effective doses (mSv)	Equivalent period of natural background radiation ¹	Lifetime additional risk of fatal cancer per examination ²
Lung perfusion	1	6 months	1 in 20,000
Kidney perfusion scan	1	6 months	1 in 20,000
Thyroid uptake scan	1	6 months	1 in 20,000
Bone scan / whole body / 2-phase	4	2 years	1 in 5000

Diagnostic procedure – all with Tc-99m	Typical effective doses (mSv)	Equivalent period of natural background radiation ¹	Lifetime additional risk of fatal cancer per examination ²
CT images of chest or abdomen in Nuclear Medicine	2	1 year	1 in 10,000

¹UK average = 2.2mSv per year: regional averages range from 1.5 - 7.5 mSv per year

² Approximate lifetime risk for patients 16 to 69 years old: for paediatric patients multiply risks by about 2, and for geriatric patients divide risks by about 5

*Public Health England – Guidance on Dose from Medical X-rays September 2008

Pregnancy and breastfeeding

- If you are, or think you may be pregnant, you must tell the operator before being exposed to radiation. If you are pregnant, the procedure may need to be delayed until after the pregnancy.
- The exception is if you are pregnant and the doctor needs to rule out the possibility of you having a pulmonary embolus (blood clot in the lung). If this was your diagnosis, it is important to get the correct treatment during pregnancy. The radiation dose that you and your baby could receive from the nuclear medicine lung scan does less harm than if you had a CT pulmonary angiogram. The radiation is minimised for the procedure to lower any risk.
- The other exception is if you are breastfeeding. It may be possible to continue with the procedure but you will be advised to temporarily stop breastfeeding and given instructions regarding when to restart breastfeeding your child.

If you have any concerns, please speak to a member of nuclear medicine staff before the procedure is started.

See the information leaflets for each individual procedure for details of how the procedure is carried out and an estimate of the absorbed radiation dose.

To find out more about our Trust visit www.royalberkshire.nhs.uk

Please ask if you need this information in another language or format.

RBFT Nuclear Medicine Department, October 2025

Next review due: October 2027