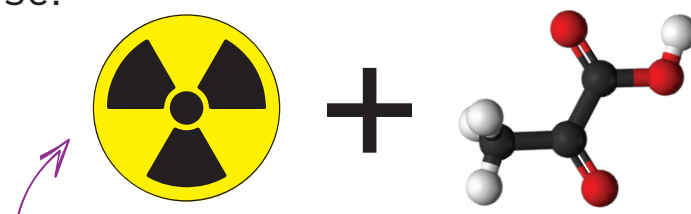


# Diagnosing disease with radioactivity

Nuclear medicine imaging uses radioactive materials to produce unique pictures of the body's inner workings. These images can be vital for a wide range of medical investigations, including tests for cancer, kidney disease and Alzheimer's.

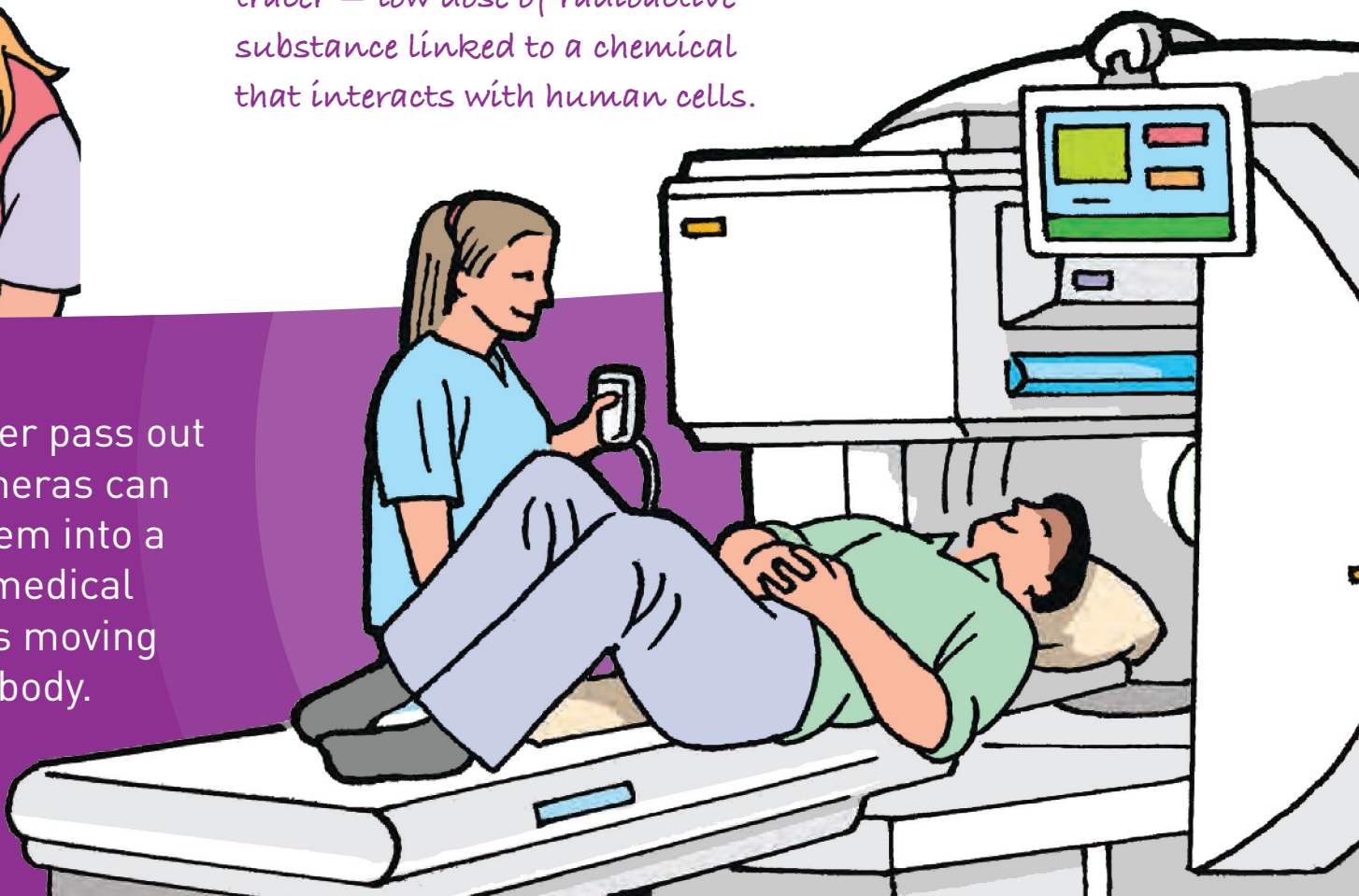
Physicists, doctors, radiographers and technologists work together in the nuclear medicine team. They give the patient a short-lived radioactive tracer, usually by injection.

The team carefully choose a tracer to minimise the patient's exposure to radioactivity and to target the body part under investigation. For example, to check brain function, they would choose a tracer containing a chemical used by the brain, such as oxygen or glucose.



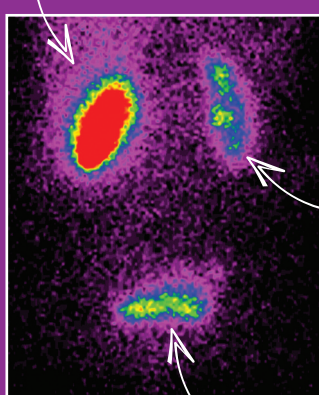
tracer = low dose of radioactive substance linked to a chemical that interacts with human cells.

Rays from the radioactive tracer pass out of the patient. Specialised cameras can detect the rays and convert them into a visual image. This allows the medical team to track how the tracer is moving around and being used by the body.



Nuclear medicine images are different from other medical scans, such as x-rays or magnetic resonance imaging (MRI): they reveal how well the body is working, rather than just showing its structure. This gamma camera image reveals a kidney problem.

high level of tracer shows that this kidney isn't draining properly to the bladder.

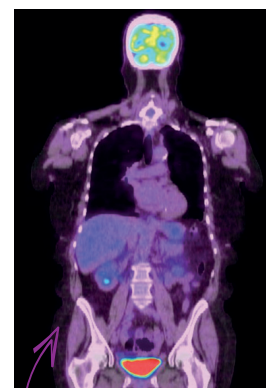


healthy kidney

bladder

Nuclear medicine can also be used to treat diseases such as cancer.

Nuclear medicine scans can be combined with other types of scan that show structural detail to produce images that are even more useful.



combined PET/X-ray image of whole body