



NUCLEAR MEDICINE and Your Health

Nuclear medicine is a medical specialty that uses radiopharmaceuticals to diagnose, treat and monitor diseases. Nuclear medicine and molecular imaging procedures have a long history of use.¹

RADIOPHARMACEUTICALS are drugs that use radionuclides for diagnostics or therapeutics. These drugs are comprised of a radionuclide attached to a targeting molecule that can be used to diagnose, treat or monitor different diseases.



RADIONUCLIDE

An atom that releases excess energy in the form of radiation.

ALPHA AND BETA RAYS don't travel very far, but are powerful.

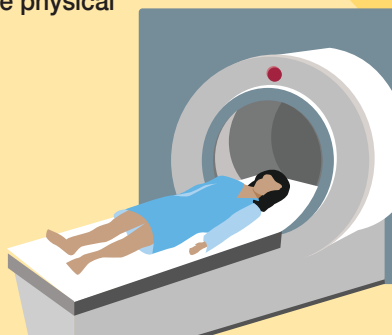
They are used primarily for treatment as they can damage and kill diseased cells.

GAMMA RAYS travel farther and can be detected using specialized cameras. They cause very little damage to cells, making these rays a useful diagnostic tool.²



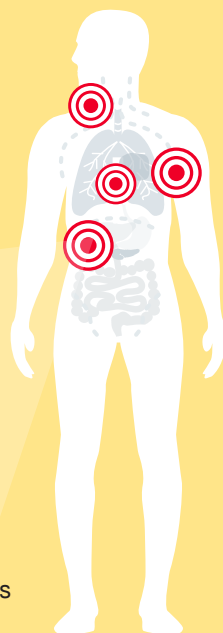
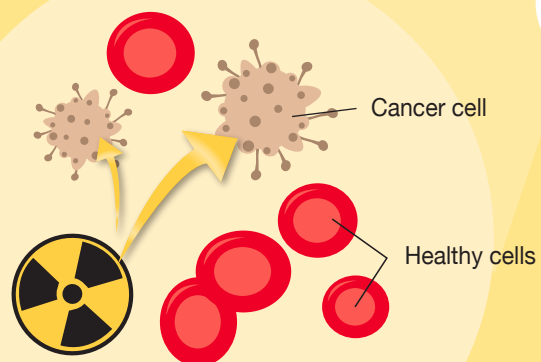
IMAGING AND DIAGNOSIS

Nuclear medicine diagnostics, or molecular imaging, uses radiopharmaceuticals to see how the body is functioning and to observe its chemical and biological processes.³ Other diagnostic imaging procedures, such as X-rays or computed tomography (CT), assist in detecting changes in the physical structures.



TREATMENT

Nuclear medicine can be used as treatment for many diseases such as certain types of cancer. In nuclear medicine therapy, a radiopharmaceutical is injected into a patient's bloodstream, where it binds to a specific receptor expressed on a particular tumor cell.





Nuclear Medicine and Radiation In Everyday Life

Radiation exists naturally in our environment. All living beings are exposed to radioactive elements every day in the air, water, plants, and even the food we eat.

BACKGROUND RADIATION

Humans are exposed to radiation in many forms every day, including from natural vegetation, food, air travel, and other common sources.⁴

AIR TRAVEL



FOOD



VEGETATION

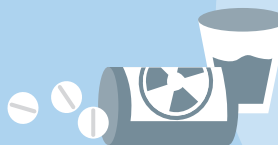


MEDICAL RADIATION

Medical radiation is used as a targeted form of treatment or for diagnosis. Nuclear medicine uses measured amounts of radiation to help patients.⁵

THYROID DISEASE AND CANCER TREATMENTS

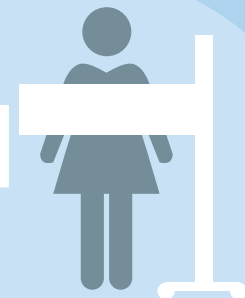
PET SCAN



MRI



MAMMOGRAM



X-RAY

Is Nuclear Medicine Safe?

Today, nuclear medicine procedures are common across the globe with the U.S. and Europe being the leaders in using this technology.

- The levels of radiation used in diagnostic nuclear medicine are equal to, or often less than, the levels used in a diagnostic X-ray.⁶
- Discuss the benefits and risks of nuclear medicine treatment with your medical provider.

20 MILLION
nuclear
medicine
procedures
per year⁷

10 MILLION
nuclear
medicine
procedures
per year⁸

Speak to your doctor to learn more about nuclear medicine procedures.

Advanced Accelerator Applications (AAA) is a leader in the development of molecular nuclear medicine diagnostics and therapeutics. To learn more, visit www.adacap.com



1. Nuclear medicine and molecular imaging procedures have a long history of use <http://www.snmim.org/Patients/About/content.aspx?ItemNumber=22909> 2. Ducret V. Optimisation de la radioprotection du personnel. Thèse de doctorat 2014 3. Nuclear medicine, or molecular imaging, uses radiopharmaceuticals to see how the body is functioning http://www.brolbrol.com/NUC/upload/will_i_glow_in_the_dark.pdf; <http://www.snmim.org/Patients/About/content.aspx?ItemNumber=13294&navItemNumber=13295#work> 4. Humans are exposed to radiation in many forms every day, including from natural vegetation, food, air travel, and other common sources. <http://www.snmim.org/Patients/About/content.aspx?ItemNumber=22909> 5. Nuclear medicine is one of the many types of radiation that can be used to help patients <http://www.snmim.org/Patients/About/content.aspx?ItemNumber=22909> 6. Level of radiation used in diagnostic nuclear medicine is equal to, or often less than the levels used in a diagnostic x-ray http://www.brolbrol.com/NUC/upload/will_i_glow_in_the_dark.pdf 7. 20 million nuclear medicine procedures per year in US <http://www.world-nuclear.org/information-library/non-power-nuclear-applications/radioisotopes-research/radioisotopes-in-medicine.aspx> 8. 10 million nuclear medicine procedures per year in Europe <http://www.world-nuclear.org/information-library/non-power-nuclear-applications/radioisotopes-research/radioisotopes-in-medicine.aspx>