

## Do you have questions regarding nuclear medicine?

What is nuclear medicine?

This is a branch of medicine that uses radiation to provide information about a person's anatomy and the functioning of specific organs. In most cases, the information enables physicians to provide a quick, accurate diagnosis of conditions such as cancer, heart disease, thyroid disorders and bone fractures. In some cases, radiation is used to treat this condition. What are the benefits of nuclear medicine?

Nuclear Medicine enables doctors to produce a quick, accurate diagnosis of a wide range of conditions and diseases in a person of any age. This is because information gathered using a nuclear medicine technique is much more comprehensive than other imaging procedures since it describes organ function, not just structure. The result is that many diseases and cancers can be diagnosed much earlier. This allows the appropriate treatment to begin as early as possible, which means it has a far greater chance of being fully effective. In addition, the tests are painless and most scans expose patients to only minimal amounts of radiation. In fact, nuclear medicine procedures utilize only very small doses of short-lived isotopes (ones that only stay radioactive for a few hours or days), thus the amount of radiation received is generally less than or equal to that of an x-ray. Whole body and healthy tissue doses can be minimized while the radioisotope is targeted toward the affected tissue or organ.

Nuclear medicine therapy involves the use of medical isotopes for the treatment of thyroid and prostate cancer, hyperthyroidism, cancer bone pain, and polycythaemia (abnormal red cell and blood increase). Some researchers predict that over 80% of cancer types should be treatable with radioisotopes. In Europe, it is being used to treat arthritis although the U.S. FDA has not yet approved radioisotope treatments for arthritis.

Central to the progress of new radioisotope treatments has been the invention of unique and effective "delivery systems" which enable physicians to point the selected isotope directly at the diseased tissue. One of these is called radioimmunotherapy. In this technique, radioisotopes are attached to antibodies with a specific affinity for certain cells in the body. The antibodies guide the isotope to the cancer cells where the radioisotope then destroys them.

Cancer therapies involving radioisotopes may well lead the way into a new future for millions around the world who would have otherwise been given little or no hope. The Nuclear Medicine Research Council is proud to facilitate greater awareness of these promising developments Is nuclear medicine safe?

Nuclear medicine is extremely safe because the radioactive tracers, or radiopharmaceuticals, used are quickly eliminated from the body through its natural functions. In addition, the tracers used rapidly lose their radioactivity. In most cases, the dose of radiation necessary for a scan is very small. For example, a patient having a lung scan is exposed to the same dose of radiation they would receive from two return air flights between Sydney and London. Who carries out nuclear medicine procedures?

If your doctor recommends you for a scan or nuclear medicine treatment, you will be placed in the care of a team of specially trained professionals. Physicians, technologists, nurses and pharmacists will ensure that you receive a high level of care and that your doctor is provided with accurate reports on your condition. Are there any side effects?

Side effects are extremely rare for diagnostic scans. When radiation or radiopharmaceuticals are used in therapy, there are sometimes minor side effects such as nausea or swelling in the salivary glands. To prevent the latter, patients are often advised to simply suck lollies.