

Nuclear Medicine Department

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Introduction

Nuclear medicine is a medical specialty that uses radioactive substances, called radiopharmaceuticals, to diagnose and treat disease. Radiopharmaceuticals are made up of two parts: a radioactive atom and a carrier molecule. The radioactive atom gives off radiation, which can be detected by special cameras. The carrier molecule helps the radiopharmaceutical travel to the specific organ or tissue that the doctor wants to study.

There are three main uses of nuclear medicine:

- **Diagnosis:** Nuclear medicine scans can be used to diagnose a variety of diseases, including cancer, heart disease, gastrointestinal disorders, and neurological disorders. The scan can show how the organ or tissue is functioning and whether there are any abnormalities.
- **Treatment:** Nuclear medicine can also be used to treat cancer. Radioactive substances are used to deliver a targeted dose of radiation to cancer cells. This can help to destroy the cancer cells while minimizing damage to healthy tissue.
- **Research:** Nuclear medicine is also used in research to study the body's functions and to develop new treatments for diseases.

Major Milestone of Nuclear Medicine Department of GCRI

- Started with rose bengal labelling of ¹³¹Iodine in late 1980s
- Department and Gujarat received its 1st Single headed Gamma Camera with help of British High Commission in 1994
- Gujarat 1st radio-iodine ward was established in 2002 in GCRI, Ahmedabad
- Single headed Gamma Camera was replaced with Dual headed Camera in 2007
- Department and Gujarat received its 1st PET/CT machine in 2010
- Second PET/CT machine was established in 2018

Current Equipment and Services available at Department

- **PETCT** - Whole body FDG PETCT scan, Whole body PSMA PETCT, regional FDG PETCT scan, Cardiac FDG PETCTscan and Brain FDG PETCT scan.
- **SPECT** : Bone scan, DTPA, DMSA, HIDA, Sulphur colloid scan, Thyroid scan, GI bleed scan, Meckel scan, HYNIC TOC scan, para thyroid, Milk scan, Salivary scan, Sentinel scintigraphy and MUGA scan.
- **Therapeutic** - High dose radioiodine therapy and low dose radioiodine therapy.

Future Prosepects of Department

- Department is planning into make itself a completely self-reliant for its radiopharmaceutical needs.
- For this ambitious target honorable Chief Minister of Gujarat has approved 1st state aided Cyclotron Project in May 2023 and the project is expected to be completed in next 18-24 months.
- As all of us are aware of rising cases of cancers in parts of world and to meet demand of higher diagnostic facilities for these patients, Department is planning to setup a new advanced diagnostic facility which will includes all technologically advanced diagnostic machines such as Digital PET/CT machine, SPECT/CT machine and PET/MR machines
- "If cancer is curse than radiation is boon to society" this dictum very well explained the upcoming role of radiation in cancer treatment and for same department is planning to setup a 20 bedded ward specifically designed for various radiation based therapies
- Medicine is a continuous evolving branch and to fulfill the moto of research given by our institute, department is planning to setup an advanced animal research facility with animal PET/CT machine installation.