

### What is Nuclear Medicine ?

Nuclear Medicine is a field where radioactive sources (medicine) are used for health applications like diagnosis, treatment and research. Now, Nuclear Medicine has emerged as a large speciality with wide range of applications in clinical practice. Radio-isotopes are used safely for either diagnostic scanning procedures or for treating some diseases.

### What is a Nuclear Scan ?

Today's medical practice involves many non-invasive diagnostic scanning procedures like x-ray, ultrasound scan, CT scan, MRI etc. Nuclear scan, also referred to as **Isotope scan, Radionuclide scan or Scintigraphy** is based on the concept of administering radioactive tracer substances to the patient, mostly as intravenous injection and subsequent imaging of the localization and movement of the tracer with a suitable scanning machine called Gamma Camera.



**Technetium Tc99m**



**Cold kit**



**Labeling**

### What isotope is used for Nuclear Scanning ?

Pure Gamma ray emitting isotope with right energy and optimal life duration will be ideal for scanning purpose. **Technetium Tc99m** is ideal for this and this can be used to easily tag substances of our choice to target different organs. The various targeting substances like DTPA for kidneys, MDP for bone, Sestamibi for heart etc are available as ready to use cold kits. Iodine I-131 is another isotope used for both scanning and treatment of thyroid disorders.

**Gamma Camera** is the scanning equipment used to capture the radiation coming from the patient's body and form pictures. One can take still or video images. Whole body pictures and cut sections also can be obtained by SPECT technology.



*Patient Information Service*  
**What is Nuclear Scan ?**  
Dr K Kumaresan

### **Is Nuclear scan safe ?**

The radio-pharmaceutical injections do not produce any allergic reactions or side effects.

These injections do not have any toxicity to affect the kidney function (*which happens with contrast injections in other scans*)

These injections result in some radiation to the patient which is much less than in x-ray and CT scan procedures. Hence Nuclear scan is preferred over other scans in children and new born babies. (Nuclear scans are to be avoided in pregnant women and breast feeding mothers).

Most of the radiopharmaceuticals are eliminated from the patient's body through the urinary tract. Simple measures for cleanliness and hygiene are recommended to avoid radioactive contamination.

### **How to schedule a Nuclear Scan ?**

Nuclear scans will be done only with a doctor's prescription and on approval by a Nuclear Medicine specialist. Patient may be required to sign an informed consent for some procedures.

Nuclear scans are done as outpatient procedures.

Since availability of isotopes is critical for the test, the procedures have to be planned ahead and taking appointment one day in advance in person or through telephone will be better.

### **Patient preparation**

- Patient preparation before the scan is different depending on the test.
- Most of the procedures do not require fasting and in fact good hydration is recommended.
- For few procedures certain medications may have to be withdrawn before the test.
- For few procedures patients may be advised to carry specific food items to be taken as part of the procedure.
- Mostly nuclear scan procedures do not require any sedation.

### **How long will the scan take to complete ?**

The scanning procedure will vary depending on the test. Any imaging session in the camera room will be not more than 30 minutes but for some patients imaging will be repeated for few minutes every time over few hours. For few tests, delayed imaging may be done even on the next day.

### **What about the scan result ?**

You will be provided with a colour image print of the scan and a typed report on the interpretation of the image findings. The digital version of the images in jpg format and cine data if any in avi file format can be emailed to any account name furnished by you. The same may be provided in a CD on extra payment.

The information from the scan will be used by your own treating doctor to decide on the treatment plan. This will be done by pooling all information on the patient and not just based on this scan.

The Nuclear Medicine specialist will talk directly to your referring physician or surgeon if there are any special findings or concerns to be conveyed.