Nuclear Medicine

North Queensland X-Ray Services (Townsville)

The attached information is aimed to serve as a guide for referring clinicians what each Nuclear Medicine examination involves.

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Nuclear Medicine Bone Scan

Indications:

Evaluate bony pathologies such as:

- bone tumours - primary and secondary
- arthritis
- osteomyelitis/ infection of the bone
- metabolic bone diseases such as Paget's disease
- sports injuries
- stress fractures,
- suspected fractures with normal x-ray
- avascular necrosis
- joint prosthesis evaluation

What does this scan involve?

Nil preparation. There are 2 parts to a bone scan:

1. **Injection +/- pictures as injection of 99mTc HDP (a phosphate compound) is given (time 5-15 minutes)** – depending on the clinical indication. Blood flow and Blood pool images are taken to assess if there is any inflammatory/hyperaemic component to an area of interest. It is often performed for pathologies involving trauma, infection/inflammation, or an unknown lesion for assessment.
2. **Delayed images (up to 45 minutes)** – delayed images are performed when the radioactive tracer has cleared out of the bloodstream and taken up by the bones to assess osteoblastic activity, normally at least 2 hours after the injection. Images can be in the form of static planar images, wholebody sweeps, and tomography (SPECT). To counteract attenuation properties of other structures in the body and to localize pathologies, a low dose CT scan is performed in the same sitting and both anatomic (CT) and physiological (SPECT) are fused.

Are there any side effects to the injection?

There is very little chance of any reaction to the injection, if any. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication.

The injected dose is reduced in paediatric patients based on weight.

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is 1 hour.

Nuclear Medicine MPS (Myocardial Perfusion Study)

Indications:

Assess myocardial perfusion:

- for diagnosis of coronary artery disease and risk stratification
- for efficacy post revascularisation (surgical or percutaneous)
- for preoperative assessment of patients at risk of ischaemia/ myocardial infarction
- in the presence of unexplained arrhythmia

Functional studies: Assess significance of:

- known coronary artery disease not requiring immediate revascularisation
- possible stenotic lesions post revascularisation (surgical or percutaneous)
- lesions detected on CT coronary angiography

What does this scan involve?

Preparation: Nil caffeine 24 hours prior. Some patients may need to be off beta blockers for 2-3 days prior. Patients are to wear loose comfortable clothing for exercise where exercise is deployed. There are 4 parts to an MPS:

1. **Injection of radiotracer under REST conditions** (5-10mins)
2. **SPECT/CT scan** of radiotracer uptake given under REST conditions (15mins)
3. **Injection of radiotracer under STRESS (physical/pharmacological) conditions** (20-30mins)
4. **SPECT/CT scan** of radiotracer uptake given under STRESS conditions. (15 mins)

Patients should be informed however that the total time taken to perform an MPS may be 3-5 hours.

SPECT/CT scans are performed most commonly to counteract any attenuation artefacts caused by other organs adjacent to the left ventricular myocardium, most notably the diaphragm and its potential to cause artifact along the left ventricular inferior wall.

Are there any side effects to the injection?

There is very little chance of a reaction to the injection (99mTc MIBI or 99mTc Tetrofosmin) used for an MPS. There may be side effects to medications used in pharmacological stress testing (Adenosine), but only lasts briefly owing to the short half life of Adenosine compared to dipyridamole. Stress tests always carry a risk; an explanation sheet will be given to patients explaining risk, which is no different to performing a cardiac stress test elsewhere.

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is 4 hours.

Nuclear Medicine Thyroid Scan

Indications:

- Hyperthyroidism (e.g. Graves Disease, thyroiditis, toxic adenomas)
- Enlargement of thyroid gland (goitre)
- Thyroid nodules
- Confirmation of hyperthyroidism prior to Iodine-131 therapy
- Neonatal hypothyroidism

What does this scan involve?

Nil preparation in most cases. Depending on the clinical indication, patients may need to cease exogenous T4 supplement for up to 4 weeks, when necessary. No CT or X-Ray contrast 4 weeks prior (Thyroid scans should be performed prior to CT with contrast).

There are 2 parts to a thyroid scan:

1. **Intravenous injection** of 99mTc as Pertechnetate, which is taken up by the thyroid in a similar way to how iodine is extracted by the thyroid, however there is no organification of the radiotracer injection.
2. **Scan 20 minutes later** at various angles of the thyroid which takes no longer than 20 minutes in total

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. Most is cleared out via urinary excretion; good hydration is encouraged following test. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is 26 hours

Nuclear Medicine Parathyroid Scan

Indications:

Assess for parathyroid adenoma or hyperparathyroidism, often when elevated blood calcium levels have been detected.

What does this scan involve?

A nuclear medicine parathyroid scan involves the injection of 99mTc-MBI, known to be a non-specific tumor imaging agent, which is also used for MPS.

Parathyroid adenomas demonstrate increased uptake of 99mTc MIBI in the early or delayed stages, and typically has a slower “washout” of the radiotracer compared to areas of normal uptake.

Images are acquired within 10 minutes after the injection, and again at 3-4 hours afterwards.

Dedicated high resolution images are acquired of the neck, and SPECT/CT images are often deployed to localize any pathology, and rule out ectopic parathyroid adenomas which can be located in the chest.

Are there any side effects to the injection?

There are extremely little, if any, side effects to the injection. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication.

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is 4 hours.

Nuclear Medicine MAG 3 Renal Scan

Indications:

- Assess renal function, relative renal function.
- To differentiate obstructive versus non-obstructive hydronephrosis
- Assess urinary drainage.
- Hypertension where narrowing of the renal arteries is suspected, assessment of RAS diagnosed on RADU or angiography

What does this scan involve?

A nuclear medicine MAG3 renal scan evaluates the renal dynamics, including perfusion, extraction (peak uptake), and clearance. Differential function can be determined on a MAG3 renal scan as well. Good hydration prior to the appointment is encouraged. Patients should cease taking their usual diuretic medication on the day of the scan. Some patients may need to cease ACE inhibitors and ACE2 antagonists for a few days prior for Renal Artery Stenosis studies.

Rapid dynamic images are acquired as the radiotracer (99mTc MAG3) is administered intravenously to evaluate perfusion. Sequential dynamic images are then continued for up to 20-40 minutes following the intravenous injection to evaluate extraction and clearance. Where obstruction is questioned, IV Lasix is administered half-way through the 40 minute dynamic scan.

Are there any side effects to the injection?

There are extremely little, if any, side effects to 99mTc MAG3. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication.

40mg Lasix is often employed in adults for hydronephrosis differentiation, 1mg/kg for paediatrics

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is not required.

Nuclear Medicine DMSA Renal Scan

Indications:

Displays viable cortical tissue, allows measurement of relative renal function, very sensitive test to indicate the presence of

- renal scars or
- active infection (pyelonephritis)

What does this scan involve?

There are 2 parts to a DMSA scan:

1. Intravenous injection of 99mTc DMSA (Dose is adjusted for paediatrics according to weight)
2. Images taken 3-4 hours after the injection +/- SPECT/CT (time taken 45 min)

Good hydration is encouraged before and after the radiotracer injection

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. Most is cleared out via urinary excretion; good hydration is encouraged following test. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is not required.

Nuclear Medicine Gated Heart Pool Scan (GHPS/MUGA/GBPS)

Indications:

Assess cardiac function e.g.in

- coronary artery disease
- cardiomyopathy
- before and after chemotherapy

What does this scan involve?

A GHPS involves labelling the patient's blood either by invivo or invivtro technique. The labelling of the patient's blood takes up to 30 minutes. Gated images of the heart rate taken at various angles for up to 30 minutes total. A Left Ventricular Ejection Fraction (LVEF) is calculated as part of the scan.

It is NQXRay policy that only one patient's blood is radio-labelled at any one time.

Are there any side effects to the injection?

There is extremely little, if any reaction to the blood labeling process. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication. It is NQXRay's policy to only label one patient's blood at any one time.

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), 12 hours.

Nuclear Medicine Brain Scan (Cerebral Perfusion)

Indications:

Detection and evaluation of cerebral disease including:

- dementia
- localisation of epileptic foci
- brain tumours including suspected recurrence
- stroke
- suspected brain trauma and brain death
- assess cerebral flow reserve

What does this scan involve?

A brain scan involves two parts

1. Injection of 99mTc HMPAO (Ceretec) under quiet conditions with minimal stimulation
2. SPECT/CT scan of the brain 30-60minutes following radiotracer injection

The brain scan can be performed a second time on another day following administration of Acetazolamide (Diamox) to assess cerebral flow reserve where indicated.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is not required (or 4 hours to be prudent as recommended by ARPANSA).

Nuclear Medicine CSF Shunt Study

Indications:

Hydrocephalus (should be discussed with neurologist/neurosurgeon to validate this test being requested)

What does this scan involve?

A Nuclear CSF Study involves an intrathecal injection of 99mTc DTPA, and images taken immediately, at 1 hour and 6 hours, and also at 24 and perhaps at 48 hours. (Time taken 10-15 minutes each session). PSECT/CT may be deployed at the 6 hour and/or 24 hour scan

The intrathecal injection will be performed under sterile condition, and the patient to remain lying flat for a few hours after the injection.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. The biggest risk from this test is from infection associated with the injection process. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is not required.

Nuclear Medicine HIDA Scan (Hepatobiliary Scan)

Indications:

Most common clinical indications

- Chronic acalculus cholecystitis
- Biliary Dyskinesis
- Assessment of Hepatic Lesions
- Post-chole Sphincter of Oddi Dysfunction
- Acute Cholecystitis (normally diagnosed via ultrasound and clinical assessment)

What does this scan involve?

A HIDA scan involves the intravenous injection of 99mTc- hepatobiliary agent. Dynamic imaging is commenced immediately. For Gallbladder ejection fraction, endogenous CCK is activated following a fatty meal provided half-way through the test. Time taken for a HIDA Scan is up to 3 hours.

Preparation includes fasting for a minimum 4-6 hours, and for chronic cholecystitis and biliary dyskinesis, patients should cease taking opiates 24 hours prior to the test.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is not required.

Nuclear Medicine Gastric Emptying Study

Indications:

- diagnosis and follow-up of gastroparesis
- rapid gastric emptying/dumping syndrome
- investigate epigastric discomfort and bloating
- post-gastric surgery assessment

What does this scan involve?

Most commonly a solid-phase Gastric emptying study is utilised. It involves the patient to eat a radio-labelled scrambled egg on toast, followed by water, images (each taking 5 minutes) immediately, and at 1, 2,4 and possibly 6 hours after ingestion.

Patient preparation is to be fasting minimum 4-6 hours. Insulin-dependent diabetic patients can bring in their insulin for the test.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer administration. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is not required.

Nuclear Medicine Colonic Transit Study

Indications:

Investigate function of the colon; assess the severity and type of constipation

What does this scan involve?

A colonic transit study involves the ingestion of a very small dose of Radioactive Gallium-67 Citrate, and imaging at 6, 24, 48, 72, and 96 hours (each image takes 5-10 minutes). Therefore this test can only be offered when patients are able to attend all appointments Monday-Friday. Images will be stopped if clearance has been achieved prior completion of study. Quantitative analysis is performed to determine colonic and segmental retention.

Patient preparation is to cease laxatives, enemas 3 days prior and during the examination.

Are there any side effects to the administration?

There is extremely little, if any reaction to the radiotracer administration. All is cleared out via GI system as there is no absorption of the radiotracer. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is not required.

Nuclear Medicine Meckel's Scan

Indications:

Meckel's Diverticulum (ectopic gastric mucosa)

What does this scan involve?

This test involves dynamic images performed as an intravenous injection of 99mTc pertechnetate (same injection for Thyroid scans) is administered. Time taken for test is up to 1 hour. SPECT/CT may be deployed if there are any abnormalities. Radiation dose is adjusted for paediatric patients based on weight.

Preparation: Fasting 4-6 hours, or for babies to miss their first morning feed prior t examination.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. Most is cleared out via urinary excretion; good hydration is encouraged following test. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication.

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is 34 hours.

Nuclear Medicine Liver/Spleen Scan

Indications:

Assess size, shape, position and function of liver and spleen helping to diagnose:

- focal disease (tumour, abscess, cyst, trauma)
- chronic liver disease
- portal hypertension

What does this scan involve?

Liver/Spleen scan involves in injection of a radioactive colloid, and imaging 20-30 minutes later, +/- SPECT/CT. Scan time is up to 45 minutes.

Nil preparation.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication.

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is not required.

Nuclear Medicine De-natured RBC (Splenic) Scan

Indications:

Examine the spleen or identify sites of residual splenic tissue if the spleen has been damaged, operated on or removed in the past.

What does this scan involve?

This test is quite technical in nature. It involves the autologous labelling of a patients RBC's with 99mTc pertechnetate, then the patient's RBC's are de-natured by heating the blood at 50 degrees Celsius for 30 minutes and then re-injecting that radio-labelled blood. Labelling process takes up to 1 hour, imaging commences 1-2 hours following re-injection which takes up to 45 minutes. Total time = up to 4 hours.

It is NQXRay policy that only one patient's blood is radio-labelled at any one time.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication.

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), 4-12 hours.

Nuclear Medicine RBC Liver/Spleen Scan

Indications:

Evaluate liver/splenic mass to diagnose (or exclude) haemangioma

What does this scan involve?

This test involves labelling the patient's blood either by invivo or invivtro technique. The labelling of the patient's blood takes up to 30 minutes.

Imaging is commenced immediately upon re-injection of the patient's radio-labelled blood, and up to 4 hours after re-injection. Both scan phases take up to 45 minutes to perform. SPECT/CT is deployed where necessary to localise lesions.

It is NQXRay policy that only one patient's blood is radio-labelled at any one time.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication.

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), 12 hours.

Nuclear Medicine GIT Blood Loss Study

Indications:

Active GIT blood loss.

What does this scan involve?

This test involves labelling the patient's blood either by invivo or invivtro technique. The labelling of the patient's blood takes up to 30 minutes.

Imaging is commenced immediately upon re-injection of the patient's radio-labelled blood for up to 1-2 hours. Delayed imaging may be deployed where required. 24 hour imaging may be required. SPECT/CT is performed to localise active sites bleeding.

It is NQXRay policy that only one patient's blood is radio-labelled at any one time.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. Most is cleared out via urinary excretion; good hydration is encouraged following test. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is 12 hours.

Nuclear Medicine WBC Scan

Indications:

- Assess sites of possible infection and inflammation - a means of detecting infection or inflammation in bone, joints and soft tissue as well as inflammation due to other causes, such as inflammatory bowel disease (Ulcerative colitis and Crohn's disease)
- Occult infection/PUO

What does this scan involve?

A WBC Scan involves the autologous radio-labelling of a patient's White Blood Cells (WBC's) with a radioactive colloid. Labelling process takes 1 hour to perform.

Patient is re-injected with their radio-labelled blood.

Imaging is carried out at 1 and 4 hours post-reinjection of radio-labelled blood. Each set of images takes up to 45 minutes. SPECT/CT is deployed to localise pathology.

It is NQXRay policy that only one patient's blood is radio-labelled at any one time.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is 24 hours.

Nuclear Medicine Gallium Scan

Indications:

- Assess sites of possible chronic infection and inflammation - a means of detecting infection or inflammation in bone

What does this scan involve?

This test involves an injection of Gallium-67 Citrate (which requires to be ordered) and imaging at 24-48 hours post-injection.

Images take up to 1 hour to perform.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Nuclear Medicine VQ Lung Scan

Indications:

- Suspected pulmonary embolism
- Pre-operative assessment for lung volume reduction surgery
- Ventilation lung clearance studies to assess activity of inflammatory lung disease

What does this scan involve?

Test takes up to 1 hour. It involves 2 parts:

Ventilation Phase – Patient breathes a radioactive gas/aerosol and images are acquired thereafter.

Perfusion Phase – an injection of 99mTc MAA (macro-aggregated albumin) intravenously is administered and identical images to the ventilation phase are acquired/

A low-dose CT is performed at the end to localise pathology and rule out other causes for symptoms.

VQ scans are performed on pregnant patients, at a lower dose and without low dose CT. Please discuss with the nuclear medicine department at North Queensland X-Ray for any guidance. General population lifetime risk of cancer is currently 1:4 (25%). Added risk from a VQ scan to an unborn child is estimated to be 1:38,000 (0.002%)

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer administration. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication.

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), 13 hours.

Nuclear Medicine Lymphoscintigraphy

Indications:

1. Lymphoedema
2. Assess lymph drainage and identify sentinel lymph nodes, particularly in breast cancer and melanoma (Sentinel Lymph Node Scan) pre-operatively.

What does this scan involve?

1. Lymphoedema – this involves the intradermal/subcutaneous injection of a radioactive colloid and dynamic imaging commenced immediately, and delayed images which may take up to 4 hours later
2. Sentinel Lymph Nodes – this involves peri-tumoral (or subareaolar in breast cancer cases where the lesion is adjacent to the axillary tail, and intradermal for melanomas) of a radioactive colloid. For breast cancer patients, peri-tumoral injections may be carried out under ultrasound guidance. Test time – up to 3 hours. This test is often requested by surgeons on the day of the surgery.

Are there any side effects to the injection?

There is extremely little, if any reaction to the radiotracer injection. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is not required.

Nuclear Medicine MIBG Scan

Indications:

Suspected phaeochromocytoma or other tumours composed of cells derived from, or related to, medullary cells of the adrenal glands.

What does this scan involve?

The scan involves ordering a radioactive injection of I123-MIBG. Patients are injected and scanning is performed at 5 hours, 24 hours and possible 48 hours post-injection, each imaging session takes up to 1 hour to perform.

Many drugs can interfere with this study and may need to be stopped for up to a week or longer before the scan.
Please contact the nuclear medicine service for specific information.

Are there any side effects to the injection?

There is little, if any reaction to the radiotracer injection. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is 22 hours.

Nuclear Medicine Dacroscintigraphy

Indications:

Blockage in lacrimal drainage system (excessive tearing)

What does this scan involve?

This test involves low-dose radioactive drops placed in the outer canthus of both eyes and imaging commenced immediately. Test time up to 1.5 hours. SPECT/CT may be deployed to localise pathology where required.

Most often radiological Dacrocystograms are performed which also serve as treatment for blockage.

Are there any side effects to the injection?

There are no known side effects from this examination. It is not related to x-ray/CT contrast dye, contains no iodine, and will not affect renal function, nor interfere with patient medication

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), is not required.

Nuclear Medicine I-131 therapy for Thyrotoxicosis

Indications:

Common indications for therapy of thyroid diseases with 131I include, but are not limited to, benign diseases such as certain types of hyperthyroidism (131I may be indicated for the treatment of Graves disease and toxic nodular [uninodular or multinodular] disease) and nontoxic nodular goitre (131I therapy may be used successfully to diminish the size of nontoxic nodular goitres, especially when surgery is contraindicated or refused.

What does the treatment involve?

The treatment involves the patient to swallow a radioactive capsule of radioactive I131. The patient will need to follow precautions for the first few days following administration to reduce radiation exposure to others as result of direct or indirect contamination. Patients will be provided information at the time of making an appointment.

The goal of therapy for hyperthyroidism is to achieve a nonhyperthyroid status—either a euthyroid state or iatrogenic hypothyroidism that has been completely compensated to the euthyroid state with oral levothyroxine. The goal of therapy for a large nontoxic nodular goitre is the reduction of thyroid volume to relieve symptoms caused by compression of the goitre on structures in the neck.

Follow-up TFT's is recommended 5-6 weeks after treatment, normally organised by Endocrinologist.

Patient preparation

For a sufficient time before therapy, patients must discontinue use of iodide-containing medications and preparations that could potentially affect the ability of thyroid tissue to accumulate iodide. TFT's and a Nuclear Medicine Thyroid scan are recommended prior to consideration. Referrals by Endocrinologist are recommended.

Pregnancy status needs to be ascertained prior to treatment.

Are there any side effects to the treatment?

There is little, if any reaction to radioactive Iodine. Please see information above regarding outcomes of treatment. Most is cleared out via urinary excretion; good hydration is encouraged following test. It is not related to x-ray/CT contrast dye, and will not affect renal function, nor interfere with patient medication.

Breast feeding cessation period, as recommended by the Australian Radiation Protection and Nuclear Safety Agency (http://www.arpansa.gov.au/pubs/rps/rps14_2.pdf), has not been

documented, however breast feeding should not take place following treatment and supplement feeding is encouraged.

Where is Nuclear Medicine?

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