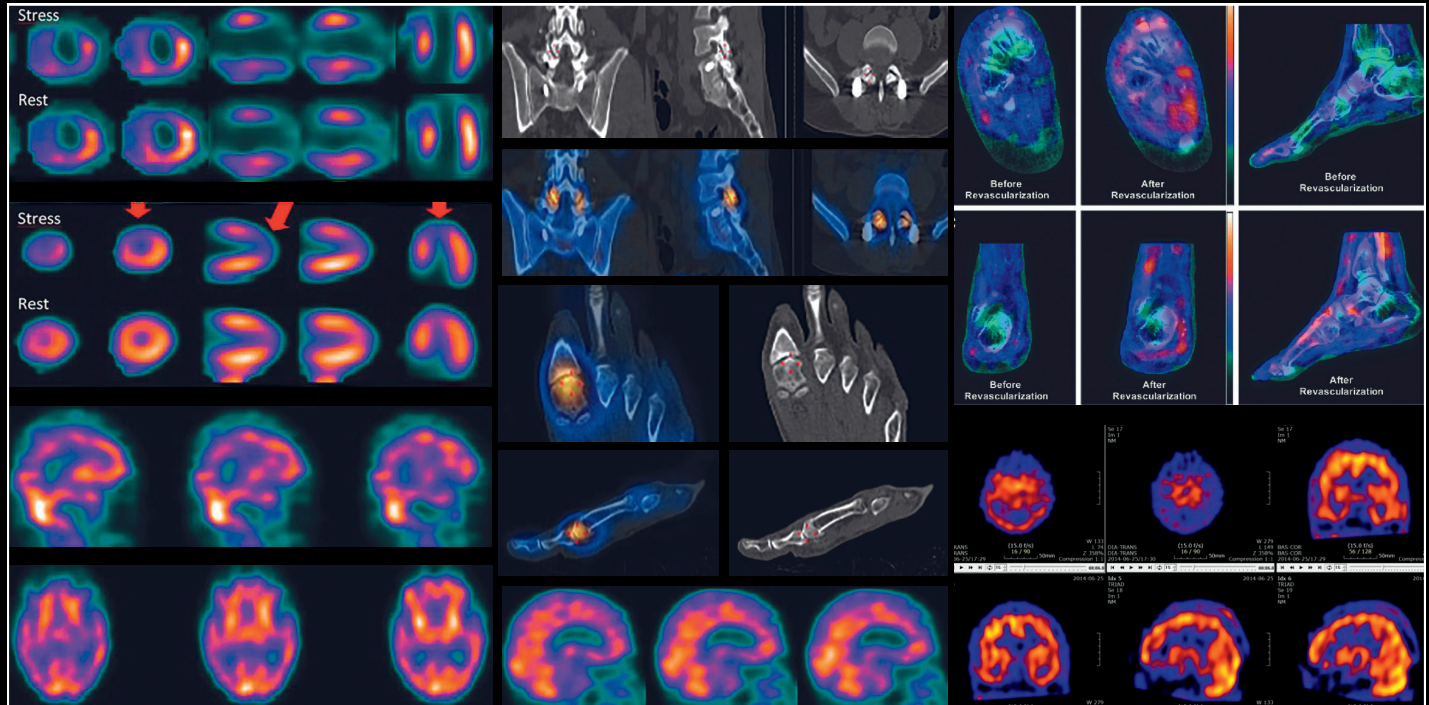


Referrer's Guide to Nuclear Medicine Procedures



Australasian Association of
NUCLEAR MEDICINE SPECIALISTS
www.aanms.org.au

The information published in this guide has been adapted from the Australasian
Association of Nuclear Medicine Specialists (AANMS)

Acknowledgement

Referrer's Guide to Nuclear Medicine Procedures

This information has been prepared by the Australasian Association of Nuclear Medicine Specialists (AANMS) to:

- outline the application of the more commonly performed Nuclear Medicine procedures,
- assist you in requesting the most appropriate procedure for a given patient, or
- use as a basis for discussion with X-Ray & Imaging's Nuclear Medicine technologist.

For any further information about Nuclear Medicine procedures, other clinical problems and less commonly performed procedures, please contact X-Ray & Imaging's Nuclear Medicine technologist on 07 5436 0888.



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Nuclear Medicine Procedures

Referral forms may use different terminology for procedures. For example, myocardial perfusion scans are also known as myocardial perfusion stress tests or are sometimes listed according to the radiopharmaceutical used (e.g. MIBI, Myoview or Thallium scans). If the procedure you'd like to request seems not to be listed, describe the clinical indication(s) and region of the body that you're interested in and our Nuclear Medicine technologist will decide the most appropriate scan to undertake in discussion with you.

Times allowed and preparations are intended as a guide only to assist you and your patients when organising appointment times for scans. Please note that the approximate time is the time from the administration of radiopharmaceutical to the end of scanning. For many procedures, there is a gap of an hour or more between the administration of the radiopharmaceutical and the scan. Patients may be asked to leave the department and come back later.

This information is designed as a reference source for medical practitioners and is intended to supplement, not replace, particular patient information provided by individual Nuclear Medicine services. Your patients should ask the Nuclear Medicine service at X-Ray & Imaging on 07 5436 0888 for specific information relevant to their procedure.

Please note that many procedures will be performed in conjunction with a low-dose CT scan for attenuation correction and anatomical localisation. This CT scan will usually take no more than 10 minutes.

Bone Scanning

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

Bone scan - whole body or localised

No patient preparation
Patients may be asked to drink 3 to 4 glasses of fluid after injection of radiotracer.

Up to 5 hours



Clinical Indication

Procedure to Request

Patient Preparation

Approximate Time

Brain/Neurological Disorders

CSF studies for:

- Assessing ventriculo-peritoneal or atrial shunt patency

CSF shunt study

The area around the shunt reservoir may be shaved

2-24 hours

- CSF leaks

CSF leak study

The lumbar puncture site will be prepared according to the standard approach.

2-24 hours

- Hydrocephalus

CSF flow study

The lumbar puncture site will be prepared according to the standard approach.

Up to 48 hours

Clinical Indication

Procedure to Request

Patient Preparation

Approximate Time

Gallbladder/Biliary

Assess biliary tract function including:

- Acute and chronic cholecystitis
- Common bile duct obstruction
- Gallbladder ejection fraction
- Post-cholecystectomy syndrome

Biliary (function) scan
with or without a
cholagogue or morphine

Nothing to eat or drink
(other than water) for 6-
8 hours before test

1-1½ hours
Some patients may
require a second injection
and further scan - allow
total of 2½ -3 hours

Lymphatic System

Lymphoedema

(Peripheral)
lymphoscintigraphy

No patient preparation

Up to 4 hours

Assess lymph drainage and identify
sentinel lymph nodes, particularly in
breast cancer and melanoma

Sentinel node scan/
lymphoscintigraphy

No patient preparation

Up to 3 hours

Cardiac

Assess cardiac function e.g.

- In coronary artery disease
- Cardiomyopathy
- Before and after chemotherapy

Gated blood pool scan

No patient preparation

1 ½ hours

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

Myocardial perfusion scan or functional imaging

Up to 5 hours if done on a 1-day protocol. If a 2-day protocol, the initial study may only take 2-3 hours. The patient may be called back on the following day for the second part - 1-1 ½ hours.

Clinical Indication

Procedure to Request

Patient Preparation

Approximate Time

Cardiac Cont'd

Myocardial viability - mostly used where a decision needs to be made as to whether cardiac surgery/revascularisation will provide significant benefit or not	Myocardial viability scan	Nothing to eat or drink (other than water) for 4-6 hours before test	Up to 5 hours A further scan may be performed on the following day - 1-1½ hours.
Assess size and location of recent myocardial infarct	Myocardial infarct scan	Performed 2-8 days after an infarct. No patient preparation	3-4 hours
Ventricular and atrial septal defects, patent ductus arteriosus (PDA)	(Qp:Qs) cardiac shunt scan	No patient preparation	1-1½ hours

Lymphoma

Staging and monitoring therapy	Gallium scan Consider 18F-FDG PET scan as an alternative where available	No patient preparation Please contact your nuclear medicine service regarding timing of scan in relation to chemotherapy	At least 2 appointments: 1. For injection of radiopharmaceutical - allow 30 minutes 2. Return 24 or 48 hours later for scan - allow 1-2 hours. 3. Some patients may need to return for further scan - allow 1-2 hours.
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Clinical Indication

Procedure to Request

Patient Preparation

Approximate Time

Gastrointestinal

<ul style="list-style-type: none">• Chronic unexplained cough• Recurrence of middle ear infections• GORD (heartburn & regurgitation)• Otagia• Dysphonia• Dysphagia• Globus	GORD study	Fast 4hr prior Must take reflux medication. Ask the team for instructions.	Imaging over a 4hr period
Gastric emptying disorders e.g. <ul style="list-style-type: none">• Diagnosis and follow-up of gastroparesis• Rapid gastric emptying/dumping syndrome• Investigate epigastric discomfort and bloating• Post-gastric surgery assessment	Gastric emptying study	Nothing to eat or drink for 6-8 hours before test	up to 4 hours
Investigate function of the colon, assess the severity and type of constipation	Colonic transit study	Preparation instructions vary according to indications. Please contact the nuclear medicine service for specific information.	Day 1 - allow the whole day - radiopharmaceutical taken in the morning as a drink, scan 6 hours later Days 2-5 - repeat scanning - allow 30 minutes each day

Clinical Indication

Procedure to Request

Patient Preparation

Approximate Time

Gastrointestinal Cont'd

Oesophageal motility disorders <ul style="list-style-type: none">• Achalasia• Dysmotility• Reflux/Aspiration• Scleroderma	Oesophageal transit study	Generally, patients will be required to have nothing to eat or drink (other than water) for 4-6 hours before the test.	30 minutes. In some cases delayed views at 24 hours for assessment of aspiration may be acquired
Acute gastrointestinal bleeding	Gastrointestinal bleeding scan	No patient preparation	14 -6 hours. Repeat images may be required 24 hours later
Inflammatory bowel disease	Labelled white blood cell scan	No patient preparation	Up to 5 hours. Repeat images may be required the following day
Meckel's diverticulum	Meckel's scan	Generally, patients will be required to have nothing to eat or drink (other than water) for 4-6 hours before test. Patients may be asked to take an H2 blocker such as Ranitidine at specified intervals before the test.	1 - 1 ½ hours
Salivary gland dysfunction	Salivary scan/study	Generally, no patient preparation	1 - 1 ½ hours

Clinical Indication

Procedure to Request

Patient Preparation

Approximate Time

Infection/Inflammation

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

Infection scan
(Gallium scan, labelled white blood cell scan or Leukoscan depending on indications)

No patient preparation

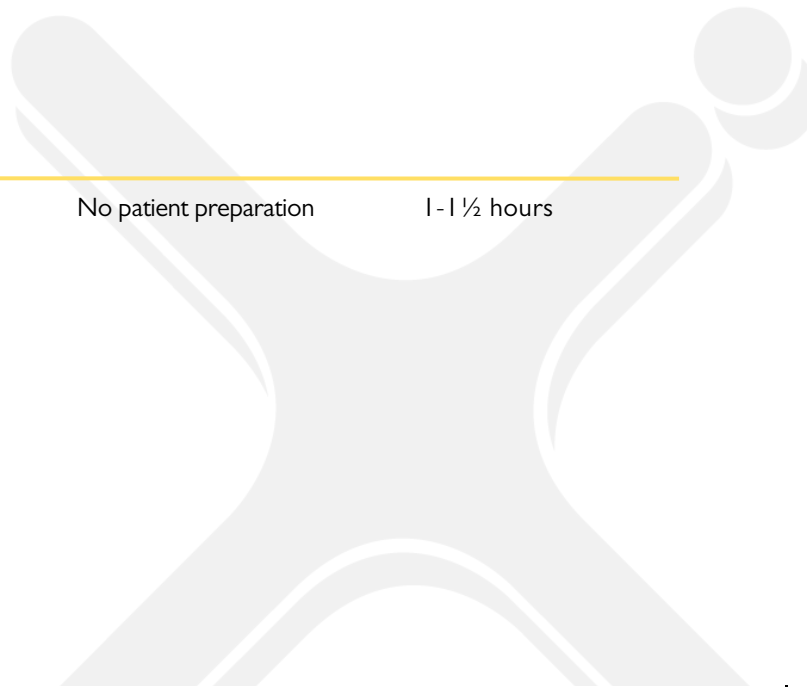
Up to 6 hours
Repeat scan may be required the following day, up to 1 hour.

Assess bone marrow distribution - supplement a bone scan and/or a Gallium or labelled white blood cell scan when looking for infection in bones and joints

Bone marrow scan

No patient preparation

1-1 ½ hours



Liver/Spleen

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

- Focal disease (tumour, abscess, cyst, trauma)
- Chronic liver disease
- Portal hypertension

Liver/spleen scan

No patient preparation

1-1 ½ hours

Evaluate liver mass to diagnose (or exclude) haemangioma

Labelled red blood cell liver/ haemangioma scan (sometimes called a liver blood pool scan)

No patient preparation

3-4 hours

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

Heat damaged red blood cell scan

No patient preparation

2-3 hours

Lung

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

Ventilation/perfusion (V/Q) lung scan
Lung perfusion scan

Lung ventilation study with dynamic images

No patient preparation

Helpful for patient who have had recent chest x-ray (within 24 hours of scan) - to come with patient

1 hour

1 hour

1 hour

Clinical Indication

Procedure to Request

Patient Preparation

Approximate Time

Renal/Urinary Tract

If uncertain which renal scan to request, please discuss with nuclear medicine specialist.

<ul style="list-style-type: none">Assess renal function, relative renal function. Can be very useful in assessing the function of renal transplant grafts.Assess urinary drainageHypertension where narrowing of the renal arteries is suspected	DTPA or MAG3 renal scan with or without Frusemide	Patients should eat as normal then drink 2-4 glasses of water in the hour before their appointment.	1-3 hours
	DTPA or MAG3 renal scan with or without ACE inhibitor (usually Captopril)	Check with nuclear medicine service whether any medications such as diuretics or antihypertensives need to be stopped prior to the test.	1-3 hours
Displays viable cortical tissue, allows measurement of relative renal function, very sensitive test to indicate the presence of renal scars or active infection (pyelonephritis)	DMSA renal scan	No patient preparation	Up to 5 hours
Renal function	Glomerular filtration rate (GFR)	No patient preparation	Up to 4 hours

Thyroid

- Hyperthyroidism (e.g. Graves Disease, thyroiditis, toxic adenomas)
- Enlargement of thyroid gland (goitre)
- Thyroid nodules

Thyroid scan

Generally no patient preparation
Thyroid medication may need to be stopped before the test.
Patients will be instructed accordingly when their appointment is made.
When making their appointment, patients should advise staff if they have had a contrast injection (e.g. for a CT scan) in the previous 4 weeks.

1 hour



Clinical Indication

Procedure to Request

Patient Preparation

Approximate Time

Other Endocrinology

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

Parathyroid scan

No patient preparation

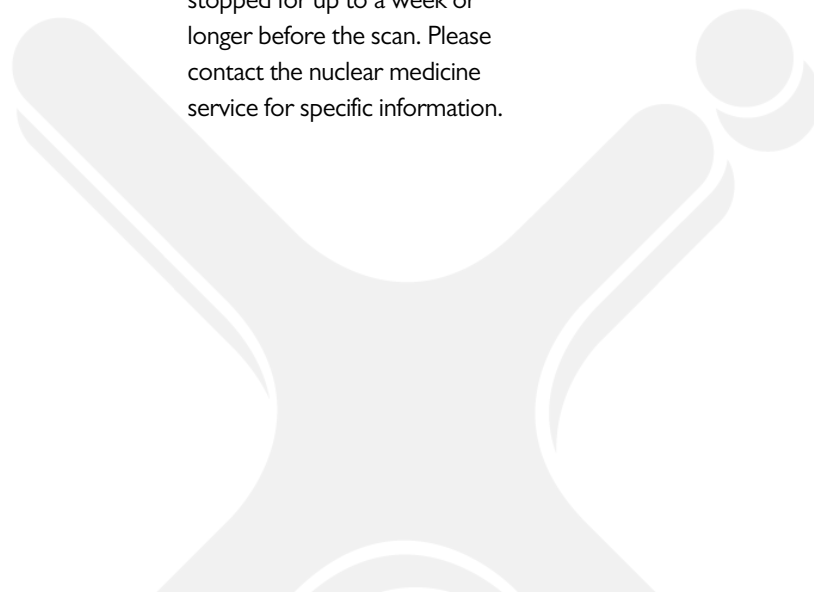
Up to 4 hours

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

MIBG (adrenal) scan

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.

Up to 24 hours



Clinical Indication

Procedure to Request

Patient Preparation

Approximate Time

Tumours (other than, e.g. bone, brain, lymphoma, thyroid as listed above)

Tumours

Gallium, Thallium, DMSA and MIBI scans can be useful in diagnosing a wide variety of tumour types.

Contact the nuclear medicine service to discuss the most appropriate scan for a given patient.
Ask the nuclear medicine service for information regarding patient preparation and the approximate time required for the scan to be performed.

Other Indications

Blockage in lacrimal drainage system (excessive tearing)

Lacrimal scan

No patient preparation

Up to 1 hour

Assess presence/patency of Leveen shunt

Leveen shunt scan/study

No patient preparation

Up to 4 hours



Nuclear Medicine procedures performed at Caloundra and Maroochydore.

BEERWAH CALOUNDRA COOLUM COOROY KAWANA MAROOCHYDORE SIPPY DOWNS

✓ **BULK BILLED**

✓ **WELL TOLERATED**

✓ **NO WAITING LIST**

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