Sacred Heart Hospital Pensacola

Sacred Heart Health System Nuclear Medicine Department Information

Procedures Ordering Guide & Preps

| Regular Hours: | Hospital: DePaul Building, Ground Floor  
|               | Monday - Friday, 7:30 am - 4:00 pm |
| Scheduling/Orders: | Phone: 416-2940  
|                  | Fax Server: 416-7337 |
| Results: | Radiology Film File Department - Phone: 416-6020 |
| Contact: | Nuclear Medicine Department  
|          | Fax: (850) 416-6034  
|          | Dean Platt - Chief Technologist  
|          | Pager: (850) 802-3576 |
| Locations: | Ground floor, DePaul Building (Medical Mall)  
|            | Use Valet Parking Service or Park in Brent Lane Parking Garage. |

All Out-Patient Nuclear Medicine Scans (with the exceptions of Sentinel Lymph Node localizations of surgical breast cancer patients) can be scheduled through our scheduling department at (850) 416-6800. Due to the necessity of ordering in advance the radioactive drugs necessary to perform all Nuclear Medicine exams, this department operates by appointment only. NO walk-ins. Some Nuclear Medicine exams are emergent in nature, but they still require emergency scheduling prior to the patient arriving in the Nuclear Medicine Department.

Nuclear Medicine is primarily a diagnostic imaging tool. This technology utilizes safe diagnostic levels of radiation along with sophisticated radiation detection cameras to image body organs and organ systems. To accomplish these studies, a licensed technologist typically introduces the radiation into the patient’s body via IV injection or oral consumption. Imaging generally follows immediately, or several hours after the patients been made radioactive. Some studies require patients to have multiple imaging sessions with some studies requiring the patient to return as long as five days after the radiation was introduced into their body. Imaging sessions can range from 30 minutes to 3 hours continuously. Imaging start times, and the length of time required for image completion, is dependent on the type of scan the ordering provider has requested, and the patient’s personal medical history. Nuclear Medicine looks at the functional process of body organs. Most of these internal processes take a considerable amount of time for the body to complete. For this reason, nuclear medicine studies often require lengthy imaging sessions, and sometimes patients are asked to return for imaging to be performed at a later date/time.

**Expectant Mothers or Women Who Are Actively Nursing**

Nuclear Medicine scans introduce safe diagnostic levels of radiation for which patient’s will have NO adverse reaction to however, developing embryos are ultra-sensitive to radiation. If the patient is pregnant or nursing, Nuclear Medicine exams should be scheduled at a later date after child delivery and nursing has been completed. If there is any possibility a patient might be pregnant, a pregnancy test should be performed and a negative result should be verified prior to scheduling the exam.
Patient Preparation for a Nuclear Medicine Scan

When a patient is coming to Nuclear Medicine for an exam they should wear warm, comfortable clothing, preferably without metal. A sweat suit or something similar would be ideal. Sometimes patients will be asked to hold medications they are currently taking due to the fact that those medications might alter the results of a specific Nuclear Medicine exam.

Following are some helpful guidelines for ordering a number of Nuclear Medicine Exams

STUDIES REQUIRING SEDATION

*Most pediatric patients require sedation to be scheduled through the Radiology Nursing office*

For procedures requiring sedation services, please click on the following link for additional information: "[Click here]" or see Section T, Radiology Nursing.

Total Body Bone Scan

Commonly ordered on patients with diagnosed or suspected cancers, generalized bone pain, arthritic evaluations, post trauma, and more. No prep, other than it would be advised to bring copies of x-ray films from outside facilities that are pertinent to the condition warranting the ordering of the bone scan. The patient will be given an IV injection of a radioactive drug (Sometimes in addition to the later pictures, we obtain images immediately after the IV injection.) and then they will be given a time to return a minimum of 2 hours and a maximum of 24 hours after the injection for imaging that takes approximately 30 minutes. Return times are patient specific based on their medical history, but the most common return time given is 2.5 hours after the injection. Patients will be encouraged to drink liquids and to empty their urinary bladder frequently after the injection to facilitate higher quality images upon their return.

Limited Bone Scan

Commonly ordered on patients when interested in a single body location of injury, specific area of bone pain, post surgery, cases of infection, and more. (In the infection cases a 3-phase form of the limited bone scan is performed). When there are “multiple” sites of concern or any history of cancer is present, a Total Body Bone Scan should be ordered requesting special attention to those specific sites. The methods for a Limited Bone Scan are identical to the Total Body Bone Scan listed above, with the only difference being the most common return time for imaging in these cases is 4-6 hours after the injection. Due to the later return times post injection; these should not be scheduled for injection later than noon.

Gastric Emptying

Commonly ordered on patients with gastroparesis, nausea, vomiting, esophageal reflux, severe weight loss, abdominal pain, and more. This test will provide a gastric emptying half time. Prep for this study requires the patient to be NPO 4 to 6 hours prior to exam. Adult patients will be required to ingest two scrambled eggs with a radioactive drug added during the eggs preparation. They will also drink 4 oz of water. They will then be positioned on their back on an imaging table and imaged continuously without interruption for 90 minutes. Approximately 50
minutes into the imaging cycle an IV injection of reglan may be given to patients that have images demonstrating a possible delay in emptying. On pediatrics not capable of ingesting eggs, liquids will be utilized. The parent or guardian should bring the child’s normal liquid (ie. formula with bottle) feeding to be supplied to the technologist for the child’s testing. If the child has special connectors for G-tube feedings or something of that nature, all necessary feeding tools should be brought with them to accomplish feeding. Pediatrics will be imaged on their back for a total of 60 minutes without sedation (Sedation not possible due to feeding). Reglan will not be utilized in pediatrics. For all patients: If nausea/vomiting is so severe that they are unable to keep any feedings down, this testing is not possible in such cases.

**GI Reflux Scan**
Commonly ordered on patients with gastroparesis, nausea, vomiting, esophageal reflux, severe weight loss, abdominal pain, and more. Most commonly ordered on infants and toddlers. This test simply looks for episodes of esophageal reflux over a course of 1 hour. This test does not provide a gastric emptying half time. Prep for this study requires the patient to be NPO 4 to 6 hours prior to exam (2 hours NPO is acceptable for infants). Liquids are utilized in this testing. For pediatrics, the parent or guardian should bring the child’s normal liquid (ie. formula with bottle) feeding to be supplied to the technologist for the child’s testing. If the child has special connectors for G-tube feedings or something of that nature, all necessary feeding tools should be brought in to accomplish feeding. Adults will be given orange juice provided by our department. All patients will be imaged on their back for a total of 60 minutes without sedation (Sedation not possible due to feeding). If nausea/vomiting is so severe that they are unable to keep any feedings down, this testing is not possible in such cases.

**Gallium Scan**
Commonly ordered on patients with FUO (fever of unknown origin), osteomyelitis, chronic infections, localization of specific tumors, and more. Gallium was routinely used for lymphomas (Hodgkins lymphoma), but with the advent of PET scanning and its superior image quality, gallium is seldom used in lymphoma cases this day and age. There is NO prep. Patient will be given a radioactive injection IV. They will leave after the injection without any side effects and be given time(s) to return either 24, 48, 72, and/or 96 hours later for imaging. Days of return are diagnosis driven per each patient and can be multiple return days. Sometimes patients are given a bowel prep kit after their injection to be accomplished at home prior to return imaging visit(s). Each imaging session takes a minimum of an hour to a maximum of 3 hours.

**Hepatobiliary Scan with GBEF** (Also known as Gallbladder Scan, HIDA Scan, DISIDA Scan)
Commonly ordered on patients with RUQ pain, nausea/vomiting, cholecystitis, suspected biliary leaks, and more. Patient prep is NPO 4 to 6 hours and absolutely NO pain medications for 6 hours prior to testing. The patient will be given an IV injection of a radioactive drug that has no side effects. The patient will be imaged with a camera over their chest and abdomen continuously for 30 minutes to 2 hours. The length of time is different for each patient, because the speed of biliary function is different for each and every patient. Most common time is 1 hour. If the patient’s gallbladder is visualized during the imaging, scanning will be stopped and
Sacred Heart Hospital Pensacola

the patient will be given a fatty meal (~22 grams of milk chocolate and 4 oz of ½ & ½ milk) to ingest. They will then be asked to relax in the waiting room for a minimum of 1 hour. At the conclusion of this 1 hour wait time; the patient will be placed under the camera for an additional 1 minute picture. At this time the study will be complete. At our institution we attempt to obtain a GBEF on all our routine hepatobiliary scans when their biliary function allows. A GBEF will not be obtained on an emergency basis or in situations where the patient can’t withhold pain meds. In these circumstances we will simply be ruling out acute cholecystitis and nothing more.

**Debray Hepatobiliary Scan**
These studies are only performed on patients that have had their gallbladder surgically removed. Commonly ordered on patients that have had a cholecystectomy, but abdominal pain similar to that pain prior to gallbladder removal persists. Usually they are suspected of having some sort of sphincter of oddi dysfunction. Patient prep is NPO 4 to 6 hours and absolutely NO pain medications for 6 hours prior to testing. Patient must not be allergic to morphine. Patient will not be able to operate a motor vehicle after this test, so they must have a driver accompany them. The patient will be given and injection of a radioactive drug that has no side effects. Imaging will be started immediately after this injection and take place for 60 to 90 minutes. At some point during the imaging, the patient will be given an injection of morphine subcutaneously (under the skin of their arm) by our radiology nurse. This is done in an attempt to induce the patient’s symptomatic pain while we are imaging. If symptomatic pain is reproduced, we will administer nitroglycerin sublingual (under the tongue) in an attempt to eliminate the pain while still imaging. Since the morphine will remain in the patients system for several hours, the radiology nurse will release the patient to the driver with verbal instructions to take it easy for the remainder of the day.

**Hemangioma Scan (Tagged Red Blood Cell Scan)**
Commonly ordered on patients with liver lesions seen on some other diagnostic test (CT, MRI, Ultrasound) with the suggested diagnosis of hemangioma. There is NO prep for this exam. However, the patient will need adequate venous access for insertion of a large bore needle (similar to the size needle used for blood donations). Patient should plan on 3 hours for completion of testing. Patient should plan on the possibility of two needle punctures: One to draw approximately 5mls of blood. This blood will be tagged with a radioactive drug. This tagging process takes about 30 minutes. Second, the radioactive blood will then be reinjected IV into the patient’s body, with no side effects. Immediately after reinjection a 10 minute set of images will be taken. Two more sets of 10 minute images will be taken at 1 hour and 2 hours after the first imaging set. Study is then complete.

**I-131 Thyroid Uptake with Tc99m Thyroid Scan (Adults Only)**
Ordering this Uptake and Scan, gives the most complete analysis of thyroid function offered by Nuclear Medicine. This will render a % (percentage) value of iodine uptake (euthyroid, hyperthyroid, or hypothyroid) by the patient’s thyroid gland. It will also provide functional images of the thyroid gland indicating size, uniform functionality vs. nodular activity (hot vs. cold nodules). Commonly ordered in patients suspect for hyperthyroidism, hypothyroidism, thyroiditis, and more. Prep includes: the patient should be off any and all thyroid medications for 3 to 4 weeks prior to appointment date. The patient also must not have had any contrast enhanced radiology/cardiology exams within the last 3 months (ie. CT with contrast, angiogram,
heart cath.). The patient will be turned away and the ordering doctors office will be notified if this pertinent questioning was not answered correctly during scheduling. NPO preferred for 1st day of exam, but will continue with exam if NPO not accomplished. This test requires 2 days. The first day, the patient will be given a radioactive iodine capsule to be taken orally after the technologist obtains a detailed verbal history from patient. The amount of radioactive iodine given causes no reactions (safe for everyone, even patients allergic to iodinated contrasts). The patient will then be sent home with a specific time to return the following day (approx. the same time as the 1st day). At this time an uptake will be performed. This takes about 5 minutes of sitting still in front of a device that looks similar to a dental x-ray machine. Upon completion of this uptake, an IV injection will be given of a radioactive drug that has NO side effects. Approximately 10 minutes after this injection, 4 images of the patient’s neck will be obtained, taking about 30 minutes to complete. This entire process on the second day takes about 1 hour.

### I-131 Thyroid Uptake Only

Ordering an Uptake only, simply gives a % (percentage) value of iodine uptake by the thyroid gland. This provides NO images of the thyroid gland. Commonly ordered when hyperthyroidism has already been diagnosed and radioactive iodine treatment dosage levels are being determined. Prep includes: the patient should be off any and all thyroid medications for 3 to 4 weeks prior to appointment date. The patient also must not have had any contrast enhanced radiology/cardiology exams within the last 3 months (ie. CT with contrast, angiogram, heart cath.). The patient will be turned away and the ordering doctors office will be notified if this pertinent questioning was not answered correctly during scheduling. NPO preferred for 1st day of exam, but will continue with exam if NPO not accomplished. This test requires 2 days. The first day, the patient will be given a radioactive iodine capsule to be taken orally after the technologist obtains a detailed verbal history from patient. The amount of radioactive iodine given causes no reactions (safe for everyone, even patients allergic to iodinated contrasts). The patient will then be sent home with a specific time to return the following day (approx. the same time as the 1st day). At this time an uptake will be performed. This takes about 5 minutes of sitting still in front of a device that looks similar to a dental x-ray machine.

### Thyroid Scan Only (Tc99m) (Adults and Infants only)

Ordering a scan only will provide functional imaging, but will not provide a % (percentage) uptake of iodine by the thyroid gland. Commonly ordered when thyroid nodules have been seen on other exams (CT, Ultrasound) and knowing the functionality of these nodules is needed (hot vs. cold). Also utilized in infants to establish the presence of a thyroid, sublingual, or ectopic gland. Prep includes: the patient should be off any and all thyroid medications for 3 to 4 weeks prior to appointment date. The patient also must not have had any contrast enhanced radiology/cardiology exams within the last 3 months (ie. CT with contrast, angiogram, heart cath.). The patient will be turned away and the ordering doctors office will be notified if this pertinent questioning was not answered correctly during scheduling. The patient will be given an IV injection of a radioactive drug that has NO side effects. Approximately 10 minutes after this injection, 4 images of the patient’s neck will be obtained, taking about 30 minutes to complete.
Sacred Heart Hospital Pensacola

**I-123 Thyroid Uptake with I-123 Thyroid Scan (Pediatrics, but not infants)**

Ordering this Uptake and Scan, gives the most complete analysis of thyroid function offered by Nuclear Medicine. This will render a % (percentage) value of iodine uptake ( euthyroid, hyperthyroid, or hypothyroid) by the patient’s thyroid gland. It will also provide functional images of the thyroid gland indicating size, uniform functionality vs. nodular activity (hot vs. cold nodules). Commonly ordered in patients suspect for hyperthyroidism, hypothyroidism, thyroiditis, and more. Prep includes: the patient should be off any and all thyroid medications for 3 to 4 weeks prior to appointment date. The patient also must not have had any contrast enhanced radiology/cardiology exams within the last 3 months (ie. CT with contrast, angiogram, heart cath.). The patient will be turned away and the ordering doctors office will be notified if this pertinent questioning was not answered correctly during scheduling. NPO preferred for 1st day of exam, but will continue with exam if NPO not accomplished. This test requires 2 days. The first day the patient will be given 3 to 4 radioactive iodine capsules to ingest. The amount of radioactive iodine given causes no reactions (safe for everyone, even patients allergic to iodinated contrasts). The patient will then be given a time to return the same day approximately 6 hours after the first visit. At this time an uptake will be performed. This takes about 5 minutes of sitting still in front of a device that looks similar to a dental x-ray machine. When this uptake is done, 4 images of the patient’s neck will be obtained, taking about 30 to 45 minutes to complete. Upon image completion the patient will be given a time to return the next day, usually close to the same time as the initial visit, so that one more uptake can be obtained. Therefore, the second day visit should only take about 10 minutes.

**I-123 Thyroid Scan Only (Pediatric, but not infants)**

Ordering a scan only will provide functional imaging, but will not provide a % (percentage) uptake of iodine by the thyroid gland. Commonly ordered when thyroid nodules have been seen on other exams (CT, Ultrasound) and knowing the functionality of these nodules is needed (hot vs. cold). Prep includes: the patient should be off any and all thyroid medications for 3 to 4 weeks prior to appointment date. The patient also must not have had any contrast enhanced radiology/cardiology exams within the last 3 months (ie. CT with contrast, angiogram, heart cath.). The patient will be turned away and the ordering doctors office will be notified if this pertinent questioning was not answered correctly during scheduling. NPO preferred, but will continue with exam if NPO not accomplished. The patient will be given 3 to 4 radioactive iodine capsules to ingest. The amount of radioactive iodine given causes no reactions (safe for everyone, even patients allergic to iodinated contrasts). The patient will then be given a time to return the same day approximately 6 hours after the first visit. At this time 4 images of the patient’s neck will be obtained, taking about 30 to 45 minutes to complete.

**I-131 Therapy for Treatment of Hyperthyroidism**

Commonly ordered to treat patients with known hyperthyroidism. Prep includes: the patient should be off any and all thyroid medications for 3 to 4 weeks prior to appointment date. The patient also must not have had any contrast enhanced radiology/cardiology exams within the last 3 months (ie. CT with contrast, angiogram, heart cath.). The patient will be turned away and the ordering doctors office will be notified if this pertinent questioning was not answered correctly during scheduling. NPO preferred, but will continue with exam if NPO not accomplished. All pertinent reports confirming the patient’s hyperthyroid condition (thyroid labs,
uptakes, scans, etc.) need to accompany the doctor’s order for thyroid therapy. The licensed radiologist on staff must agree with the request for therapy in order for the radioactive iodine to be administered. The licensed technologist will explain the procedure, answer any questions, and offer some radiation protection advice. The patient will have to sign a consent form to indicate they understand the implications of the ordered therapy. They will then be given a therapeutic level of radioactive iodine designed to destroy thyroid function in the form of a capsule they swallow. They will then leave the department knowing follow-ups will be made with the ordering doctor.

**I-131 Total Body Scan**

Ordered on patients that have had thyroidectomies after being diagnosed with thyroid cancer. Prep includes: the patient should be off any and all thyroid medications for 3 to 4 weeks prior to appointment date. The patient also must not have had any contrast enhanced radiology/cardiology exams within the last 3 months (ie. CT with contrast, angiogram, heart cath.). The patient will be turned away and the ordering doctors office will be notified if this pertinent questioning was not answered correctly during scheduling. NPO 4 hours prior to appointment time preferred on 1st day, but will continue with exam if NPO not accomplished. This test requires 2 days. The first day the patient will be given a radioactive iodine capsule to ingest by mouth. The patient will then be released and given a time and date to return 2 to 3 days later for imaging. 3 days later being the most common. On the return day images will be taken of the patient’s entire body, with a camera scanning the front side and a camera scanning the backside of the patient. The images take approximately 1 hour to complete.

**Parathyroid Scan**

Ordered on patients suspect of primary hyperparathyroidism. Elevated blood Calcium levels, with elevated PTH (Parathyroid Hormone) levels. Also ordered preoperatively on the day of surgery for external skin markings to be made for neoprobe localization by surgeon. No Prep. Lab results indicating the elevated Calcium and PTH levels should accompany the doctor’s orders for this exam. When this is to be scheduled in conjunction with surgery on the same day, the patient should be scheduled to arrive in Nuclear Medicine 3 hours before surgery time. Due to this 3 hour need, surgery should not be scheduled before 11:00am. In all occasions, the patient will be injected IV with a radioactive drug that has NO side effects. A first set of images will begin immediately after the injection by placing the patient on a table with their head and neck in a tube. Four pictures, each taking 3 minutes will be obtained. [Severe claustrophobic patients will not tolerate this study.] The patient will then leave the department for at least 2 hours with a time to return. At the time of return, another set of images will be obtained identical to the first set. At the completion of this second set of images, another radioactive IV injection may possibly be given, with two more immediate images to follow, if deemed necessary by first two imaging sets. This will complete the study. If patient is scheduled for surgery, they will be taken to the OR prep area at this time. All others may leave and go about their normal routine.

**Liver / Spleen Scan**

With the advancements in CT and MRI, this testing is seldom utilized anymore. Was commonly used for patients diagnosed with hepatitis, cirrhosis, patients with abnormal liver enzymes, and more. Is still sometimes used locally to assist in same day scheduled liver biopsies, with skin markings requested. NO Prep, other than barium studies should not be within the last 3 days.
Sacred Heart Hospital Pensacola

The patient will be given an IV injection of a radioactive drug that has NO side effect. Imaging will begin approximately 10 minutes after the injection. 4 to 5 images will be obtained, each image taking 3 minutes. The test takes 30 - 45 minutes to complete.

**Lung V / Q Scan (Aerosol Ventilation with Perfusion)**
This is no longer the method of choice in ruling out pulmonary embolism. With the advent of thinner slice CT scanners, a "CT Scan of the Thorax with Contrast to R/O PE" is a better and much quicker diagnostic tool in this area. When the CT scan is not possible because the patient’s creatine is too high or they are allergic to CT contrast, nuclear medicine is still utilized in these cases. Commonly used to R/O PE in patients with symptoms of SOB, chest pain, hemoptysis, and more. Prep requires the patient to have a Chest X-ray (preferably 2 view chest) within 24 hours of our lung scan. The chest x-ray may be ordered to be obtained at our x-ray department, or the patient must bring the x-ray with them to their Nuclear Medicine appointment if the x-ray was obtained at an outside facility within the 24 hour criteria. The scan consists of two parts. 1st: The patient with breath on a hose with a mouthpiece looking similar to a straightened snorkel, with their nose pinched. This snorkel like device will have oxygen passing through it with a radioactive aerosol mixture. The patient will breathe in and out on this device for approximately 10 minutes. These 10 minutes of breathing will deposit the radioactive aerosol in the patient’s lungs without side effect. The patient will then lay flat with cameras around their chest. Eight pictures at different angles will be obtained. Picture duration depends on how well the patient ventilated on the snorkel device. Total picture time for this first part ranges anywhere from 10 minutes to 45 minutes. Part 2: Upon completion of the ventilation pictures, the patient will be given a radioactive drug injection IV, with no side effects. This injection will demonstrate the blood flow to the lungs. Pictures with the identical angles taken during the first set of pictures will be obtained. To complete all these pictures it usually takes between 10 and 30 minutes. Since Lung Scans are considered somewhat emergent in nature, the patient will then be asked to wait in the waiting room so that the radiologist can relay his interpretation to the ordering doctor. After the two doctors communicate, the patient is either released or sent to admitting if deemed necessary by the ordering doctor.

**Split Lung - Quantitative Scan**
Commonly ordered on patients with lung cancer, known pulmonary blood flow anomalies, and more. This exam gives a percentage of right to left lung function helpful in surgery planning. NO Prep. The patient while laying flat will be given an IV injection of a radioactive drug with NO side effects. A 1 minute picture, sometimes eight 1 minute pictures will be obtained. All this takes about 10 minutes to complete.

**Mag3 Renal Scan with Lasix**
Commonly ordered for hydronephrosis, renal failure, right or left flank pain, and more. NO Prep. The patient will be positioned with a camera underneath their back. The patient will have an IV placed in their arm. The patient will receive an injection of a radioactive drug with NO side effects into the IV. Imaging begins immediately in conjunction with the injection. Images are continuous for a total of 30 minutes. At the 15 minute mark of the imaging cycle, IV lasix will be
Sacred Heart Hospital Pensacola

given without interruption of the imaging. For Pediatrics: This study will need a radiology nurse scheduled for sedation. The timing of this test is extended for pediatrics. Imaging takes 1 hour and the lasix is given at the 30 minute mark of the imaging cycle.

**Mag3 Renal Scan with ERPF**
This study is identical to the Mag3 Renal Scan with Lasix listed above. It simply adds a value known as an Effective Renal Plasma Flow (ERPF) to the results. To obtain this ERPF, an additional needle stick is required to draw blood approximately 15 minutes after the imaging cycle is complete. Since the blood draw would fall during the pediatrics imaging cycle and require an additional needle puncture, they are rarely performed on pediatrics. [Also mentionable: The value of ERPF results and their accuracy in children is questionable].

**Vasotec (Captopril) Mag3 Renal Scan**
Commonly ordered to R/O Renal Artery Stenosis (RAS) with the patient having symptoms of hypertension. Prep includes the patient should be off their blood pressure medications for however long the ordering doctor indicates is necessary for it to clear the patients system. Only the ordering doctor can attest to the safety of the patient holding such meds. However, accuracy of test results may be altered in patients unable to withhold their blood pressure medications. For testing, the patient will have an IV placed in their arm. 2.5mg of a blood pressure medication called Vasotec will be given IV. The patient will then be given several cups of water to drink and their blood pressure will be monitored for the next 15 minutes. After those 15 minutes, the patient will be sent to the nearest restroom and asked to empty their bladder. When they return, imaging will begin. The patient will be positioned with a camera underneath their back. The patient will receive an injection of a radioactive drug with NO side effects into the already placed IV. Imaging begins immediately in conjunction with the injection. Images are continuous for a total of 30 minutes. This will complete the scan. The patient will be released after we obtain a phone number they can be reached at for the next few days. We will explain to them, that if the radiologist deems it necessary based on the results of the images just obtained, our department may have them return for repeat imaging, excluding the Vasotec administration.

**DMSA SPECT Renal Scan**
Commonly ordered when the patient is suspect of pyelonephritis or renal cortical scarring, resulting from vesicoureteral reflux, urinary tract infections, and more. These are most commonly ordered in pediatrics. The majority of these pediatric patients will require a radiology sedation nurse to be scheduled. NO Prep, but if sedation is required, the radiology nurses have NPO requirements for safe sedation. The patient will receive an IV injection of a radioactive drug with NO side effects (No sedation for injection). The patient will then be given a time to return 2 to 3 hours after the injection. Images will take place when they return. The images take 30 to 45 minutes of the patient staying perfectly still while on their back. This imaging portion is when the sedation takes place if required. This completes the scan. If sedation was utilized, the radiology nurses will take some time to recover the patient and release them to their parents.
Sacred Heart Hospital Pensacola

**Cystogram (VCUG) (Pediatrics Only)**
Commonly used as a follow-up study in children that have had positive reflux diagnosed on a past X-ray VCUG. Used on children with history of urinary tract infections (UTI) and vesicoureteral reflux. This is a somewhat unpleasant study for the child and parents alike. Sedation is only used on rare occasions. The test requires a small foley cath to be placed in the child's urethra. This is only slightly uncomfortable to the child, but most often they are not willing participants in this procedure. After the cath is in place, a radioactive liquid will be infused into the urinary bladder backwards. The radioactive liquid has NO side effects and is painless. While this filling takes place, a camera will be underneath the child taking continuous images. When the bladder is filled to its capacity, the child will be asked to urinate on the table while images continue. This is another difficult task for a potty trained child, since we have reinforced in them not to wet the bed. After the child has urinated on the table the test is complete. The child will be cleaned up and released without any side effects.

**Resting MUGA Scan**
Commonly used in cancer patients prior to chemotherapy, during chemotherapy, as follow-up to chemotherapy, and more. This test provides a Left Ventricular Ejection Fraction (LVEF) at Rest. There is NO prep. When the patient arrives in the department, they will be asked to wait approximately 30 minutes while material soon to be injected is prepared (They may not have to wait if some material was pre-prepared due to earlier scheduled patients). The patient will then receive an injection IV of a material that will tag their red blood cells. NO side effects. During this tagging process that takes approximately 20 minutes, the patient will sit in the waiting room. After the 20 minutes have past, the patient will receive another IV injection of a radioactive drug that tags to the first injection, enabling us to see the blood in their heart. NO side effects. We will them place some EKG patches on their skin and obtain 2 images. Each image takes 5 to 10 minutes. The entire testing process takes 60 to 90 minutes.

**Meckels Scan**
Commonly used when a patient is suspect of having a meckels diverticulum sometimes signaled by blood in the patients stool. A rare condition primarily found in infants. Prep NPO 4 to 6 hours. 2 hours NPO is acceptable for infants. Most pediatrics require sedation. The patient will be given an IV injection of a radioactive drug in combination with a drug called glucagon. The radioactive drug has NO side effects, but the glucagon slows stomach activity and can occasionally elicit nausea soon after injection. This nausea usually subsides quickly. Images will be taken over the patient's abdomen immediately after injection for 30 minutes continuously. The study is complete after the 30 minutes of images.

**Myocardial Perfusion Scan Stress and Rest**
[Also referred to as Cardiolite Scan, Myoview Scan, Sestamibi Scan, Tetrofosmin Scan, Mibi Scan.] There are several methods of accomplishing this scan. It is always a two part test, which evaluates the blood flow to the heart muscle at rest and the blood flow to the heart muscle at stress. It can be accomplished in one day on the more fit patients. It should take 2 days on patients weighing over 200 pounds, especially females in excess of 200 pounds. Adipose tissue degrades our images, but there are methods to improve image quality when the test is split in half over two days. There are also several methods of accomplishing the stress portion of the imaging. When a patient is capable of reaching an adequate heart rate by
physically performing the stress, they should be scheduled for stress utilizing the treadmill. If the patient has physical limitations that will prevent them from adequately stressing their heart on a treadmill, they should be scheduled for stress chemically with Adenosine or Dobutamine. If there is any question as to whether or not the patient can adequately perform on the treadmill, it would be best to schedule one of the chemical forms of stress (Adenosine or Dobutamine). All methods are commonly ordered on patients with chest pain, shortness of breath during exertion, ischemia, myocardial infarcts, and more. Prep for all methods includes: Nothing to eat or drink 4 hours prior to test if scheduled for treadmill stress. Nothing to eat or drink for 6 hours prior to test if scheduled for chemical stress. Absolutely NO caffeine for 12 hours prior (24 hours ideal). Diabetics should hold insulin until after study is complete. In most cases patients are instructed to hold blood pressure medications for this test, but only the ordering doctor can clarify if he wants these meds to be held. When this test is scheduled for a single day protocol, the patient should plan on the test taking a total of anywhere from 3.5 hours to 5 hours. When this test is done utilizing a two day protocol the patient should plan on the test taking anywhere from 1.5 hours to 3 hours both days. In all instances patient will have an IV placed. They will receive an injection of a radioactive drug at rest, and they will receive an injection of the same radioactive drug during exercise (physical or chemical) when their heart is at peak stress. The radioactive injections have NO side effects. However, the chemical stress agents used can have some unpleasant effects. The most common effect being headaches. After each of these injections, the patient will wait a minimum of 30 minutes and a maximum of 2 hours before imaging takes place. Both injections, at separate times, require this wait. After each injection and its accompanied wait time, the patient will be imaged on their back, with their arms positioned above their head for approximately 20 minutes. When scheduling these tests, please clarify on the written order if the test is a 1 day or 2 day protocol as well as the method of stress to be utilized (Treadmill, Adenosine, or Dobutamine). If uncertain on which method to order, contact the Heart and Vascular Center for assistance.

**Resting Thallium Viability Scan**

Commonly ordered on patients with known heart disease needing further assessment in deciding whether to revascularize or not. Our institution does Immediate imaging and 4 hour or 24 hour Redistribution images. The ordering doctor should specify the desired redistribution image time (4 or 24 hour). Prep NPO 4 to 6 hours prior. Absolutely NO caffeine 12 hours prior (24 hours ideal). The patient will receive an IV injection of a radioactive drug with NO side effects. Images will occur immediately after injection and take 20-30 minutes. The patient will then return 4 or 24 hours later based on their doctor’s request. A booster IV injection of the same radioactive drug will be given and the same pictures as earlier will be repeated.

There are several more Nuclear Medicine studies not mentioned on this print out. The tests not mentioned are more unique and complicated to order and schedule. This does not mean we are not willing to perform such tests. This simply means the tests not listed often require assistance from the Nuclear Medicine technologist when scheduling due to the radioactive drug availability and cost. Please feel free to call for our assistance if not listed, as well as for those listed if needed.
# Outpatient Nuclear Medicine Request Form

**Patient's Name:**

- **Last:**
- **First:**
- **MI:**

**Address:**

**Sex:**

**Race:**

**DOB:**

**SSN:**

**Phone:**

**Home:**

**Work:**

**Other:**

**Any Pertinent History:**

**Home Health Care Agency:**

**Insurance Carrier:**

**Subscriber's Name:**

**Relationship:**

**Policy #:**

**Group #:**

**Plan #:**

**Insurance Authorization #:**

**Exp. Date:**

**Physician's Name:** (Print and Sign)

**Physician's Signature:**

**Physician's Phone Number:**

**Send Copies To:**

**Form Completed by:**

**Phone:**

**Fax Report To:**

**Telephone Report**

**Fax #:**

**Phone #:**

**Routine**

- **Do Not Detain Patient**

- **Do Not Detain Patient**

- **Release Films**

- **Return Patient to Doctor's Office**

*When ordering tests for which Medicare reimbursement will be sought, physicians (or other individuals authorized by law to order tests) should only order tests that are medically necessary for the diagnosis or treatment of a patient, rather than for screening purposes.*

<table>
<thead>
<tr>
<th>ICD9 Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>994.51</td>
<td>Total Body Bone Scan</td>
</tr>
<tr>
<td>742.03</td>
<td>Limited Bone Scan</td>
</tr>
<tr>
<td>742.04</td>
<td>Specify Area:</td>
</tr>
<tr>
<td>742.31</td>
<td>3 Phase Bone Scan</td>
</tr>
<tr>
<td>742.11</td>
<td>Hepatobiliary Scan with GBEF</td>
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<tr>
<td>742.21</td>
<td>Debray Hepatobiliary Scan</td>
</tr>
<tr>
<td>742.22</td>
<td>Gastric Emptying Scan</td>
</tr>
<tr>
<td>742.23</td>
<td>GI Reflux Scan</td>
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<tr>
<td>742.24</td>
<td>Meckels Scan</td>
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<tr>
<td>742.25</td>
<td>Thyroid Uptake (I-131) with Thyroid Scan (99mTc)</td>
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<tr>
<td>742.26</td>
<td>Thyroid Scan Only (99mTc)</td>
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<tr>
<td>742.27</td>
<td>Thyroid Uptake Only (I-131)</td>
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<tr>
<td>742.28</td>
<td>I-123 Thyroid Uptake and Scan (Primarily Pediatrics)</td>
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<tr>
<td>742.29</td>
<td>I-123 Thyroid Scan Only (Primarily Pediatrics)</td>
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<tr>
<td>742.30</td>
<td>I-131 Hyperthyroidism Therapy Requested amount (mCi)</td>
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<tr>
<td>742.31</td>
<td>I-131 Whole Body Scan</td>
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<tr>
<td>742.32</td>
<td>Parathyroid Scan</td>
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<tr>
<td>742.33</td>
<td>Lung-VQ Scan (Aerocoi Ventilation with Perfusion)</td>
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<tr>
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<td>Split Lung Scan (Quantitative Lung Perfusion)</td>
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<tr>
<td>742.35</td>
<td>Lymphoscintigraphy - Breast Ca.</td>
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<tr>
<td>742.36</td>
<td>Lymphoscintigraphy - Melanoma</td>
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<tr>
<td>742.37</td>
<td>Mag3 Renal Scan with Lasix</td>
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<td>742.38</td>
<td>Mag3 Renal Scan with ERPF</td>
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<tr>
<td>742.39</td>
<td>Vasoct (Captopril) Enhanced Mag 3 Renal Scan</td>
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<tr>
<td>742.40</td>
<td>DMSA SPECT Renal Scan</td>
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<tr>
<td>742.41</td>
<td>Cystogram (Nuclear VCUG)</td>
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<tr>
<td>742.42</td>
<td>Liver / Spleen Scan</td>
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<tr>
<td>742.43</td>
<td>Liver Hemangioma Scan</td>
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<tr>
<td>742.44</td>
<td>Resting MUGA Scan</td>
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<tr>
<td>742.45</td>
<td>Myocardial Perfusion w/GXT (eg. Cardiolite / Myoview)</td>
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<td>742.46</td>
<td>Myocardial Perfusion w/Adenosine (eg. Cardiolite / Myoview)</td>
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<td>742.47</td>
<td>Myocardial Perfusion w/Dobutamine (eg. Cardiolite / Myoview)</td>
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<td>742.48</td>
<td>Resting Thanilium Viability with 4 hour Redistribution</td>
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<td>Resting Thanilium Viability with 24 hour Redistribution</td>
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<td>Brain SPECT Thallium Scan</td>
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<td>742.51</td>
<td>Brain SPECT HMPAO Scan</td>
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<td>742.52</td>
<td>WBC Indium Tagged Scan</td>
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<td>742.53</td>
<td>WBC Ceratec Tagged Scan</td>
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<td>Gallium Scan</td>
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<td>Octreoscan Scan</td>
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<td>Oncoscint Scan</td>
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<td>742.57</td>
<td>I-123 MIBG Scan</td>
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<tr>
<td>742.58</td>
<td>Other:</td>
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