Camera Notes

Dr. Geetha M. Reddy
Libertyville, IL

To start acquisition computer:

1. Turn on monitor
2. Enter username: genieacq (press enter)
3. Enter password: genieacq (press enter)

To log off the acquisition computer:

1. Log off at the end of each day
2. Select top left hand side icon that looks like file folders
3. Select Shutdown
4. Select Yes
5. Turn off monitor

To reboot entire gantry:

1. Turn computer off by normal methods or hard boot
2. Go to the back of the gantry and turn the switch on the left off for 10 seconds
3. Do not turn off the switch on the right – there is a sign above it
4. Turn the switch on the left back on and start up the computer
5. Full reboot takes about 15 minutes

Full shutdown of acquisition system:

1. At the log in screen, type shutdown for username and shutdown for password, press enter
2. This will bring you to a screen that says you may shut off the computer after a few seconds
3. After waiting the recommended amount of time, press the power button on the cpu tower to shut off the computer. To reboot, press the power button on the cpu. Reboot takes about 15 minutes.

To start processing computer:

1. Turn on monitor
2. Double click xeleris icon
3. Enter the password: xeleris

To shutdown processing computer:

1. Do a full shutdown on the computer once a week and a partial shutdown the rest of the week
2. Select the “X” in the upper right hand side of screen to close the xeleris program
3. Select Full or Partial

To change/add reviews templates to acquisition computer:

1. Do not change this information unless necessary, as it is matched up with the information stored in the processing computer.

DOBUTAMINE STRESS PROTOCOL

INDICATION

Dobutamine is a pharmacologic stressing agent indicated for radionuclide myocardial perfusion imaging in patients unable to perform exercise stress testing and are unable to perform Lexiscan/Adenosine/Dipyridamole testing due to severe asthma or bronchospastic disease.

CONTRAINDICATIONS

1. Second and third degree AV blocks or sinus node dysfunction without having a functional artificial pacemaker in place.
2. Unstable Angina
3. Ventricular Arrhythmia's
4. Current use of beta blockers
5. Caffeine within last 24 hours
6. Uncontrolled hypertension: BP > 200/110 Hg
7. Abdominal Aortic Aneurysm

ADVERSE REACTIONS

- Flushing
- Dyspnea
- Headache
- Chest pain or chest discomfort
- Nausea
- Dizziness
- Nervousness

PROTOCOL

1. Review chart and examine the patient to rule out contraindications for Dobutamine. Consult with supervising physician and request assistance in high risk patients.
2. Informed consent for Dobutamine is explained and signed.
3. Patients are asked to avoid Caffeine for 24 hours before testing and remove Nitroglycerin patches at least 1 hour before testing.
4. Patient will be laying down on his/her back on an exam table and will be prepped by the EKG tech or nurse
5. The skin will be cleaned with rubbing alcohol and NuPrep to exfoliate the skin.
6. 10 EKG leads will be placed on the patient's skin and connected to an EKG monitor.

LEXISCAN (REGADENOSON) STRESS PROTOCOL

INDICATION

Lexiscan is a pharmacologic stressing agent indicated for radionuclide myocardial perfusion imaging in patients unable to perform exercise stress testing.

CONTRAINDICATIONS

1. Second and third degree AV blocks or sinus node dysfunction without having a functional artificial pacemaker in place.
2. Known or suspected bronchoconstrictive or bronchospastic lung disease (i.e. asthma)
3. Hypersensitivity to Lexiscan
4. Unstable Angina
5. Acute Myocardial Infarction
6. Caffeine within last 24 hours
7. Theophylline and Dipyridamole products in last 24 hours

ADVERSE REACTIONS

Flushing
Dyspnea
Headache
Chest pain or chest discomfort
Nausea
Dizziness

PROTOCOL

1. Identify the patient according to the “Patient ID” policy and assess all females for pregnancy.

2. Review chart and examine the patient to rule out contraindications for Regadenoson.

3. Consult with supervising physician and request assistance in high risk patients.

4. Informed consent for Regadenoson is explained and signed.

5. Patient will be lying down on his/her back on an exam table and will be prepped by the EKG tech or nurse.

6. The skin will be cleaned with rubbing alcohol and NuPrep to exfoliate the skin.

To put studies onto a CD for back-up

1. Put CD in top slot on processing computers CPU
2. Select arrow next to Cache at the top
3. Attach
4. Select arrow next to Cache at the top again
5. Initialize
6. Continue
7. Name disk
8. Initialize Medium
9. Select Local tab at the top
10. Highlight desired patient(s) to be saved to disk
11. Select Cache tab at the bottom of the page. This will take a few minutes to transfer selected patients to the Cache tab.
12. Once all patients have transferred, select Cache tab at the top. Confirm all selected patients are transferred.
13. Select arrow next to Cache at the top, and select Write Now.
14. This will take a few minutes to write all patients to CD.
15. The hard drive should blink a yellow light and make a noise
16. Once complete, select DicomCD at top to confirm all patients are written to CD.

Transferring patients from a CD to the local database

1. Put CD in top slot on processing computers CPU
2. Select **DicomCD** tab at the top of the page
3. Select patient(s) to be transferred

Dr. Geetha M. Reddy
Libertyville, IL

SUBJECT: Myocardial Perfusion Imaging: Dual Isotope one day / same day rest and stress Gated SPECT

PURPOSE/INDICATIONS:

1. Coronary Artery Disease – presence, extent, location
2. Myocardial Infarction – ischemia vs. scar
3. Risk assessment – pre-surgical clearance, post MI
4. Monitor treatment effect – Post CABG, medical therapy, lifestyle modification

PATIENT PREPARATION:

1. Patient is instructed to be NPO after midnight. Diabetic patients may eat a light breakfast. No caffeine or decaf for 24 hours prior to the test.
2. Patient should take all scheduled medications including medication that controls hypertension. Taking beta blockers is optional, based on referring physician orders.
3. Patients for a pharmacological stress should hold products or medications containing Theophylline or Aminophylline for 48 hours prior to exam.
4. Patients should wear or bring comfortable clothing and shoes for the exam along with reading material.

EXAM TIME: Approximately 3 hours

SUMMARY OF EXAMINATION:

1. A Saf-T-Intima IV is placed in an arm vein followed by a resting injection of Thallous Chloride through the venous access. The patient then waits 10-15 for the resting images. After the resting images, the patient is taken over to the Stress Lab for either the treadmill or pharmacologic stress portion of the test.
2. The second injection of Tc99m Sestamibi takes place on the treadmill or during the pharmacologic portion of the exam (by discretion of the cardiologist or pharmaceutical protocol)

CONTRAINDICATIONS:

Radioactive Materials should not be administered to pregnant or nursing mothers unless circumstances are exceptional.

PROCEDURE:

Dr. Geetha M. Reddy
Libertyville, IL

SUBJECT: Myocardial Perfusion Imaging: Tc99m Sestamibi one day / same day rest and stress Gated SPECT

PURPOSE/INDICATIONS:

1. Coronary Artery Disease – presence, extent, location
2. Myocardial Infarction – ischemia vs. scar
3. Risk assessment – pre-surgical clearance, post MI
4. Monitor treatment effect – Post CABG, medical therapy, lifestyle modification

PATIENT PREPARATION:

1. Patient is instructed to be NPO after midnight. Diabetic patients may eat a light breakfast. No caffeine or decaf for 24 hours prior to the test.
2. Patient should take all scheduled medications including medication that controls hypertension. Taking beta blockers is optional, based on referring physician orders.
3. Patients for a pharmacological stress should hold products or medications containing Theophylline or Aminophylline for 48 hours prior to exam.
4. Patients should wear or bring comfortable clothing and shoes for the exam along with reading material.

EXAM TIME: Approximately 3 hours

SUMMARY OF EXAMINATION:

1. A Saf-T-Intima IV is placed in an arm vein followed by a resting injection of Tc99m Sestamibi through the venous access. The patient then waits a minimum of 30 minutes and no longer than 2 hours for the resting images. After the resting images, the patient is taken over to the Stress Lab for either the treadmill or pharmacologic stress portion of the test.
2. The second injection of Tc99m Sestamibi takes place on the treadmill or during the pharmacologic portion of the exam (by discretion of the cardiologist or pharmaceutical protocol)

CONTRAINDICATIONS:

Radioactive Materials should not be administered to pregnant or nursing mothers unless circumstances are exceptional.

Dr. Geetha M. Reddy
Libertyville, IL

SUBJECT: MUGA (Multi Gated Blood Pool Study)

PURPOSE/INDICATIONS:

Assess Contractility of Myocardium
Calculate Ejection Fraction of Left Ventricle
Monitor patients who undergo chemotherapy
Differentiate pulmonary and cardiac causes of dyspnea

PATIENT PREPARATION

1. None
2. Patient's EKG should be in Normal Sinus Rhythm

CONTRAINDICATIONS: None

EXAM TIME: Approximately 1 hour

PROCEDURE

MATERIAL/DOSE

1. 20-35 mCi Tc99m Pertechnetate
2. 1 vial Pyrophosphate (In-vivo method)

***See attachment RED BLOOD CELL LABELING TECHNIQUES ***

CAMERA: GE Millennium MG with Xeleris Software
PASSORD: genieacq
SERIAL NUMBER:
WEIGHT LIMIT: 400 lbs.
COLLIMATOR:LEHR

1. Test is explained and IV access is obtained with a 18-22 gauge Saf-T-Intema (A 22 gauge or larger needle/angiocath should be used to prevent damage to the red blood cells.
2. Reconstitute vial of PYP (Pyrophosphate) with 3 mL normal saline.
3. Inject 1.5 mL "cold" PYP straight stick injection of feasible, if not use IV access.
4. Wait 20 minutes for venous circulation, then inject 20-30 mCi Tc99m Pertechnetate straight stick injection if feasible, if not use IV access.
5. Obtain gated scan 15 minutes following Technetium injection.
6. Resting images are acquired with the patient supine in LAO 45, Left Lateral, and ANT views. Patient is connected to an EKG monitor using 3 leads; right arm, left arm, and left leg.
7. When setting up the patient, be sure that the camera is as close as possible. Instruct the patient

DR. GEETHA M. REDDY
NUCLEAR CARDIOLOGY STRESS WORKSHEET

_____ Rest Tc99m/Stress Tc99m 1 Day Protocol _____ Rest Tc99m/Stress Tc99m 2 Day Protocol _____ Dual Isotope Protocol

Patient Name: _____ Date: _____

MRN: _____ Primary Physician: _____

DOB: _____ Age: _____ Ordering Physician: _____

Male: _____ Female: _____ Copy to: _____

Height: _____ ft _____ in Weight: _____(lbs) Pregnant: Y or N Breastfeeding: Y or N

Coronary History	**Cardiac History**	**Medications**	Taken Today?	
			YES	NO
Family Hx CAD_____	MI_____			
HTN_____	PTCA_____	_____	_____	_____
Elevated Cholesterol_____	STENT_____	_____	_____	_____
Diabetes_____	CABG_____	_____	_____	_____
CAD_____	Pacemaker/Defibrillator_____	_____	_____	_____
Smoker_____	Irregular Heartbeat_____	_____	_____	_____

Indication for today's exam

_____

_____

Treadmill Stress Protocol:_____

MPHR_____ 90%_____85%_____

Resting HR_____ Resting BP_____

Injection HR_____/_____%

Exercise Time:_____Mets_____

Max HR:_____/_____% BP_____

Reason for Termination_____

_____

Pharmacologic Stress

Resting HR_____ Resting BP_____

Final HR_____ Final BP_____

Regadenoson (Lexiscan) 0.4 mg(5ml)

Adenosine_____mg (0.140 mg/kg/min for 4 min)

Dipyridamole_____mg (4 min infusion)

Aminophylline_____mg @ _____min

Symptoms_____

Rest Injection **Stress Injection**

Patient Study Corrections

Dr. Geetha M. Reddy
Libertyville, IL

WRONG PATIENT ACQUISITION

To be used to correct a study acquired under the wrong patient name

1. On the processing computer, select the patient to be corrected, then select **All Applications** tab
2. Select **Admin**
3. Select **Database Tool**
4. Make sure correct patient is listed. Under *****Patient Attributes*****, type in correct patient name and ID number.
5. Merge study
6. **Save**

RENAME SERIES INFORMATION

To be used to correct a mislabeled study view under a patients name

1. On processing computer, select patient to be corrected, then select **All Applications** tab
2. Select **Admin**
3. Select **Database Tool**
4. Make sure correct patient is listed. Expand your patient and study to see the series you want to change. You cannot have 2 series with the same name. If you already have an ANT view, you must rename it first before renaming ANT-1 to that name. Under *****Patient Attributes*****, type in the correct study view (series) name. Be very careful!!! You can do some real damage if you incorrectly change something.
5. After making the series name change, click **Save** in the middle of the screen.
6. Confirm the changes in the patient database.

Nuclear Cardiology Worksheet
Pharmacologic

Patient Name:_____ Date:_____

DOB: _____ Age: _____ Ordering Physician:_____

Height: _____ Weight: _____

History: CAD CABG HTN Hypercholesterolemia CP SOB
Diabetic Obese Arrhythmia A-fib LBBB RBBB FATIGUE

Other:_____

_____

PHARMACOLOGIC PROTOCOL: 0.4 MG IV LEXISCAN (REGADENOSON) OVER 15-20 SECONDS

Maximum HR Achieved: _____ %MPHR Achieved: _____

BLOOD PRESSURE	***HEART RATE***	***SYMPTOMS***
RESTING	BPM	
1 MINUTE	BPM	
3 MINUTE	BPM	
5 MINUTE	BPM	
7 MINUTE	BPM	
9 MINUTE	BPM	

COMMENTS:_____

_____

Dr. Geetha M. Reddy
Libertyville, IL

Prone Parameters

Acquisition parameters: Non-Gated Prone Stress Tc99m Sestamibi (64)

Patient orientation: feet in / prone	Matrix: 64 x 64
Isotope: Tc99m	Uniformity Corr: Yes
Energy: 140 keV, 20% window	No. of projections: 64
Collimator: LEHR	Orbit: Circular
Rotation: clockwise	Start Angle: 225
Time per stop: 15 sec (may be adjusted)	Zoom: 1.33

Acquisition Setup: Non-Gated Prone Stress Tc99m Sestamibi (64)

1. Select Patient
2. Verify parameters for acquisition
3. Proceed with gantry set up (See gantry set up)
4. Once complete, review images for motion and quality prior to dismissing the patient. Motion correct images using motion correction software or repeat scan if necessary
5. For processing and display, see Myocardial Perfusion Processing and display protocol.

GANTRY SET UP PRONE STRESS:

6. Make sure the gantry has been put into CARDIAC GEOMETRY by using the gantry icon on the top left hand side of screen.
7. Ask the patient to roll onto his/her stomach. Arms should be out in front and above head.
8. Use the gantry icon to move the patient in by pressing Extend Table—OK
9. Press Stop when the patient has been moved in to the desired location
10. Position the gantry's at 225 degrees (will be underneath the patient)
11. Move the patient table down as far as it will go, as to position the patient as close as possible to the gantry.
12. Choose study under patient's name labeled TOMO-STRESS. Press camera ON-Press OK 5 times to go through the set up prompts – this will rotate the heads around the patient to get adjusted to scan. Press Yes---Press Start.
13. Study will acquire and automatically transfer to the processing computer.

Quality Control

Dr. Geetha M. Reddy
Libertyville, IL

Daily: Flood and home gantry
Weekly: Bars
Monthly: COR

Flood acquisition:

1. On Monday morning, go to ADD---PATIENT---QUALITY CONTROL----FLOOD AND BARS.
2. This will open a preset protocol for floods for Monday thru Sunday and a one-time protocol for bars.
3. Enter Patient ID (today's date) and name (Quality Control)
4. Make sure the extender for the bed is not attached
5. Move camera heads in as close as possible
6. Place Co-57 sheet source down on head 2
7. On acquisition computer screen press Camera On
8. Double check acquisition parameters
9. Press Start
10. Once acquisition is complete, the flood images will automatically transfer to the processing computer

Parameters:

Energy: 122 keV
Zoom: 1.0
Counts: 6 million
Acquisition: Extrinsic

Matrix: 256 x 256
Collimator: LEHR
Window: 20%

Flood Processing:

1. Under patient "Weekly Bars" select the day of the week to be processed
2. Select "Favorite Applications" tab on the top right hand side of the screen
3. Select "Flood Uniformity" start icon on the bottom right hand side of screen
4. This will load the flood into the processing program.
5. Note the extrinsic uniformity numbers for both Head 1 and Head 2. Both heads needs to be under 6% to pass.
6. Log the numbers into the QC Log book

Home Gantry:

1. There are 3 buttons on the upper left hand side of the acquisition screen. The middle button looks like a camera gantry. Press this is to bring up the menu for moving the camera heads.

Quick Camera Notes

Dr. Geetha M. Reddy
Libertyville, IL

To start acquisition computer:

1. Turn on monitor
2. Enter username: genieacq (press enter)
3. Enter password: genieacq (press enter)

To transfer patient from worklist (General NM):

1. Under Worklist tab, enter today's date (DD/MM/YYYY) in "TO & FROM" fields
2. Click on Query
3. Select Patient
4. Select "Add To DO"
5. Under "To Do" tab, Click on patient name -- select ADD---SCAN
6. Chose correct menu and exam

To manually enter a patient (Cardiology):

1. ADD---PATIENT---(Select correct) MENU—(Select correct exam)
2. Enter Patient ID (N#)
3. Enter patient name (Doe, John M.)
4. Select OK
5. Enter DOB & M or F

To log off the acquisition computer:

1. Log off at the end of each day
2. Select top left hand side icon that looks like file folders
3. Select Shutdown
4. Select Yes
5. Turn off monitor

To reboot entire gantry:

1. Turn computer off by normal methods (use user name: shutdown - password: shutdown) or hard boot
2. Go to the back of the gantry and turn the switch on the left off for 10 seconds
3. Do not turn off the switch on the right – there is a sign above it
4. Turn the switch on the left back on and start up the computer
5. Full reboot takes about 15 minutes

To start processing computer: