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	Effective Date:	12-30-2021
	Document Type:	Standard Operating Procedure
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	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	DOBUTAMINE STRESS ECHOCARDIOGRAM

PURPOSE:

To provide a guidelines on how to perform the procedure to patient correctly.

SCOPE:


Applies to all the staff of Non-Invasive Cardiovascular Imaging Sciences (NICIS) of Dr. Pablo O. Torre Memorial Hospital

RESPONSIBLE PERSON:

Cardiologist (Echocardiographer), Stress Test Technician and 2D Echo Technician (Registered nurse, Physical therapists and other healthcare professionals who had undergone training or certification.)

GENERAL GUIDELINES:

1. Patient must have a referral/request from a cardiologist for a dobutamine stress echo.
2. Only a trained cardiologist or trained health care professional are allowed to perform the test.
3. Privacy and confidentiality should be maintained throughout the procedure.
4. Avoid giving personal comments or impressions with regards to the result. Only a qualified healthcare professional and cardiologist are allowed to interpret and explain the final results.
5. Machines and equipment should be routinely checked for damages and efficiency to ensure safety and accurate results.

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PROCEDURE:

EQUIPMENT:

1. Exercise ECG/ Stress Testing system (example: Philips Sress Vue, GE Marquette cardiosys) with ECG electrodes attachments and monitoring device.
2. Height adjustable sphygmomanometer
3. Color Duplex ultrasound scanner machine (HDI 5000 or HD11-XE)
4. Low frequency transducer / select frequency appropriate to body habitus P4-2 for adult / P7-4 for pedia) Phased array with Doppler and/or Color (Doppler capabilities)
5. Warm acoustic coupling gel
6. Recording device (VHS tape or Compact disc and thermal paper)
7. Infusion pump/drip meter for dobutamine infusion

PATIENT PREPARATION:

1. No food intake 2 hours prior to testing.
 2. Take medications as ordered unless given special instructions by attending physician.
 3. Bring necessary medications that may be needed while undergoing the procedure. (Ex. Inhalers for asthmatic patients, etc.).
 4. Bring snacks to be taken after testing (optional).
 5. Bring adult companion during the session.
- ** Preferably given by the cardiologist who will perform the procedure.**


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OUT-PATIENT PRE-EXAMINATION PROCEDURES:

1. Patient must be assessed first if fit to do the stress test. Health conditions, medications and disabilities which may affect the test should be identified prior to the procedure.
2. Turn on the machine:
 - 2.1. Plug in power cord of electronic voltage regulator, treadmill machine, CPU of the computer and printer.
 - 2.2. Turn on Electronic voltage regulator and wait for the red button to turn green.
 - 2.3. Turn on power button of the CPU of the computer and the printer.
 - 2.4. Run test printer by printing the test print sheet.
 - 2.5. Click the "StressVue" icon on the desktop screen to begin testing.
3. Interview patient for necessary data which includes: Name, age, sex, address, birthday, attending physician, height, weight, reason for testing and medications and inform the performing cardiologist that patient has arrived.
4. Patient pays to the cashier for cash transactions. For transactions chargeable to insurances or company, procedure is charged accordingly.

DIRECT EXAMINATION PROCEDURES:


1. Instructions for the procedure should be clearly explained to ensure the comfort and safety of the patient.
2. An IV access should be provided for the infusion of dobutamine. If patient has an ongoing intravenous fluid, secure physician order to stop/reduce the rate of the fluid or change to heparin lock.
3. Skin prep the area of the chest where the ECG electrodes are to be attached.
4. Wipe/Clean the skin with cotton wet with alcohol or an alcohol swab.
5. Patient with chest hair; shave chest hair properly.

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6. Make sure that the patient is not allergic to alcohol.
7. Electrodes on designated part over fleshy areas and fix them properly as follows:


LIMB ELECTRODES:

Code	Location	Color Code(GE Marquette)	Color Code (Philips stress vue)
RA (Right arm)	Just below the right clavicle medial to the deltoid muscle	White	White
LA (Left Arm)	Just below the left clavicle medial to the deltoid muscle	Black	Black
RL (Right Leg)	Just above the right iliac crest on mid axillary line (GE Marquette) ; On the sternum, midway between the clavicle and the 4 th intercostals space (Philips)	Green	Green
LL (Left Leg)	Just above the left iliac crest on mid axillary line	Red	Red


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CHEST ELECTRODES:

Code	Location	Color Code(GE Marquette)	Color Code (Philips stress vue)
V1	Placed in the fourth intercostal space to the right of the sternum.	Red	Red
V2	Placed in the fourth intercostal space to the left of the sternum.	Yellow	Yellow
V3	Placed directly between leads V2 and V4.	Green	Green
V4	Placed in the fifth intercostal space in the midclavicular line (even if the <u>apex beat</u> is displaced).	Blue	Blue
V5	Placed horizontally with V4 in the anterior axillary line	Orange	Orange
V6	Placed horizontally with V4 and V5 in the midaxillary line.	Violet	Violet

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8. Electrodes on designated part over fleshy areas and fix them properly as follows:
 - 8.1. Encode patient's data in the computer and set dobutamine stress protocol indicated.
 - 8.2. Take pre-exercise ECG and blood pressures and encode in computer. Print out a copy of the ECG strip.
 - 8.3. A baseline echocardiogram is taken by the cardiologist before the infusion of the dobutamine.
 - 8.4. Infusion is then started at prescribed rate based on computed dosage. Dosage is then gradually increased as ordered by the physician with every stage (usually every 3-5 minutes intervals).
 - 8.5. Different 2d echocardiogram views are then captured for every level of the dobutamine dosage.
 - 8.6. Blood pressure should be checked as often as possible (usually every 2 minutes during infusion and during recovery stage).
9. Watch out for danger signs during dobutamine infusion
 - 9.1. Very fast and labored respiration
 - 9.2. Cyanosis, sudden severe pallor
 - 9.3. Cold, clammy perspiration
 - 9.4. Fainting spells, loss of consciousness
 - 9.5. Severe nausea
 - 9.6. Sudden drop/ increase in blood pressure
 - 9.7. Sudden drop/ increase in cardiorespiratory rate
 - 9.8. Severe chest pain/angina
 - 9.9. Sudden severe headache
10. After patient has reached his/her target heart rate based on age. Recovery period is then initiated to lower the patient's heart rate back to baseline by stopping the infusion. Blood pressure and ECG printouts are taken immediately post infu-

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sion (30 secs in recovery), 1 minute after and every 2 minutes thereafter until the end of the test.


11. An echocardiogram view is then taken post infusion.
12. Leave electrodes attached and continuously monitor patient until instructed by cardiologist to remove or until the test is finished.

POST-EXAMINATION PROCEDURES:

1. After the test, remove electrodes, wipe off electrode residues and let patient rest, change clothes, drink water and other personal necessities. Observe for signs and symptoms of complications.
2. Facilitate completion of all necessary data and information for interpretation of results.
3. Complete the necessary data and information on the stress test worksheet.
4. Secure all ECG tracings.
5. Cardiologist interprets and makes final result.
6. Stress test technologist encodes final result in the computer and let cardiologist sign the official result for releasing.
7. Results released in two days after test.

IN-PATIENT PRE-EXAMINATION PROCEDURES:

1. The staff nurse on duty encodes request on the bizbox computer system and schedules patient upon receiving doctor's order for dobutamine stress echo.
2. Nurse Technician renders request for dobutamine stress echo. All rendered request are automatically charged to the patient's account.
3. Patient is given the list of preparation for the stress testing.
4. The Nurse Technician calls the station to bring down the patient at the NICIS Department before the scheduled time.


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5. The Nurse Technician informs the examining performing cardiologist once the patient arrives in the unit.
6. The Nurse Technician prepares machine, inputs the patient's data and sets the equipment for proper test documentation
7. The Nurse Technician introduces self to patient and assists him/her in changing to hospital gown maintaining the patient's privacy and confirms the patient's identity using the two patient identifier.

DIRECT EXAM PROCEDURES (Please refer to In-Patient Direct Examination Procedures)


POST-EXAMINATION PROCEDURES:

1. After the test, remove electrodes, wipe off electrode residues and let patient rest, change clothes, drink water and other personal necessities. Observe for signs and symptoms of complications.
2. Patient is brought back to the room/ ward.
3. Facilitate completion of all necessary data and information for interpretation of results on the stress test worksheet.
4. Secure all ECG tracings.
5. Cardiologist interprets and makes final result.
6. Stress Test Technologist encodes final result in the computer and let Cardiologist sign the official result for releasing.
7. Proper documentation should be observed.
8. Do after care of the machine and turn off properly when not in use.

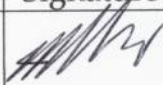
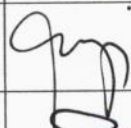

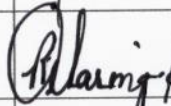

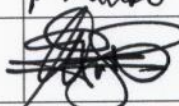
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TURN AROUND TIME (TAT)

1. Pre-exam procedures:	TIME
1.1. Completion of pre-exam paperwork	1 minute
1.2. Exam charging and billing activities	3 minutes
1.3. Exam room and equipment preparation	3 minutes
1.4. Patient preparation and positioning	3 minutes
2. Direct exam:	
2.1. Pre infusion baseline ECG and 2DEcho	20-30minutes
2.2. Infusion proper	6 stages each stage duration 3-5 minutes (18-30 mins)
2.3. Recovery	6-15 minutes (until baseline ECG and vital signs go back to pre-infusion levels) or depending on the cardiologist.
3. Post-exam procedures:	
3.1. Cleanup	5 minutes
3.2. Review exam data for preliminary and/or formal interpretation by cardiologist	15 minutes
4. Total:	Approximately 1 hour and 30 minutes

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Verified:	BONIFACIO C. SEPICO, RMT Department of Imaging Sciences Manager		3/3/22
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Recommending Approval:	ROSARIO D. ABARING, RN, MN, PhD, FPCHA Ancillary Division Officer		3.03.15-22
	HENRY F. ALAVAREN, MD, FPSMID, FPSQua Total Quality Division Officer		3/18/2022
Approved:	GENESIS GOLDI D. GOLINGAN President & CEO		4/7/22




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OUT-PATIENT PRE-EXAMINATION PROCEDURE	
KEY TASK	PERSON RESPONSIBLE
1. Assesses first the patient if fit to do the stress test.	Nurse Technician
2. Interviews patient for necessary data.	
3. Pays to the Cashier for cash transactions.	Patient
4. Performs direct examination according to different approaches.	Nurse Technician

OUT-PATIENT POST-EXAMINATION PROCEDURE	
KEY TASK	PERSON RESPONSIBLE
1. Monitors the patient for complications.	Nurse Technician
2. Facilitates completion of all necessary data and information for interpretation of results.	
3. Secures all ECG tracings.	
4. Interprets and makes final results.	Cardiologist
5. Encodes final result in the computer and signs the official result.	Stress Test Technologist


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IN-PATIENT PRE-EXAMINATION PROCEDURE	
KEY TASK	PERSON RESPONSIBLE
1. Encodes request on the bizbox computer system and schedules patient for the procedure.	Nurse-on-duty
2. Renders request for the procedure.	Nurse Technician
3. Gives the list of preparation for the procedure to the patient.	
4. Calls the Nursing Station to bring down the patient to the NICIS Section.	
5. Informs the examining Cardiologist once the patient arrives in the unit.	
6. Prepares machine, inputs the patient's data and sets the equipment for proper test documentation.	
7. Introduces self to patient and assists him/her in changing to hospital gown maintaining the patient's privacy.	


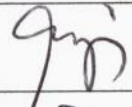

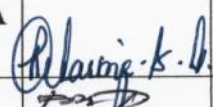
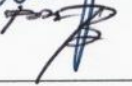
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IN-PATIENT POST-EXAMINATION PROCEDURE

KEY TASK	PERSON RESPONSIBLE
1. Removes electrode, wipes off electrode and lets patient rest.	Nurse Technician
2. Monitors the patient for possible complications from the procedure.	
3. Brings back the patient to the room.	
4. Facilitates completion of all necessary data and information for interpretation of results.	
5. Completes the necessary data and information on the Stress Test Worksheet.	
6. Secures all ECG tracings.	
7. Interprets and makes final result.	Cardiologist
8. Encodes final result in the computer and signs the official result.	Stress Test Technologist
9. Does after care of the machine.	Nurse Technician

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APPROVAL:

	Name/Title	Signature	Date
Prepared by:	MA. LLANA LINDA D. CARDONES, RN NICIS Supervisor		5-12-22
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Recommending Approval:	ROSARIO D. ABARING, RN, MN, PhD, FPCHA Ancillary Services Division Officer		07.01.2022
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Approved:	GENESIS GOLDI D. GOLINGAN President and CEO		



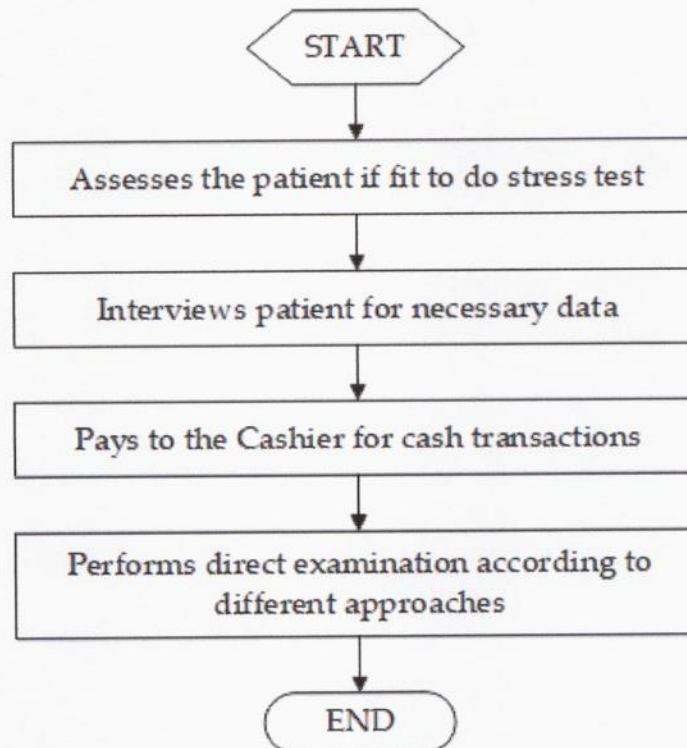
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FLOWCHART

OUT-PATIENT PRE-EXAMINATION PROCEDURES



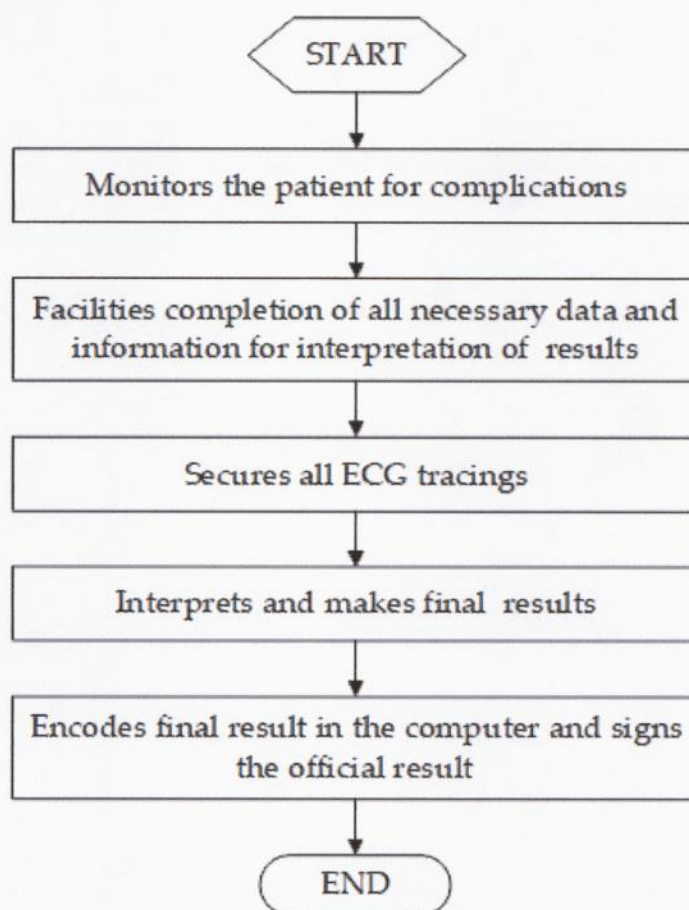


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OUT-PATIENT POST-EXAMINATION PROCEDURE



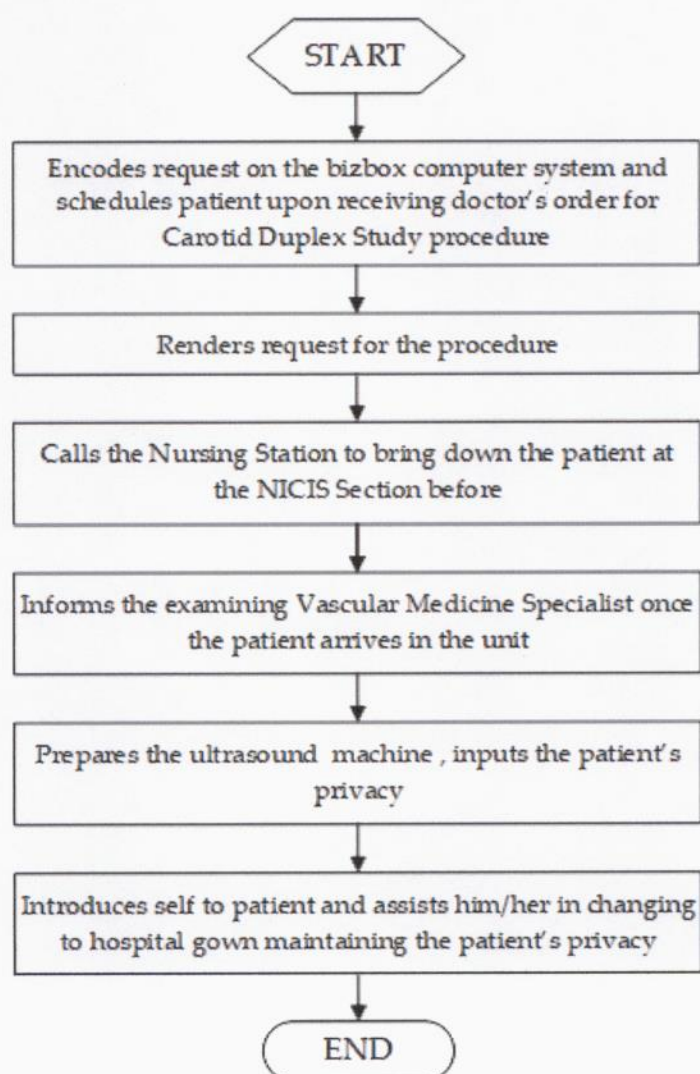


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IN-PATIENT PRE-EXAMINATION PROCEDURE



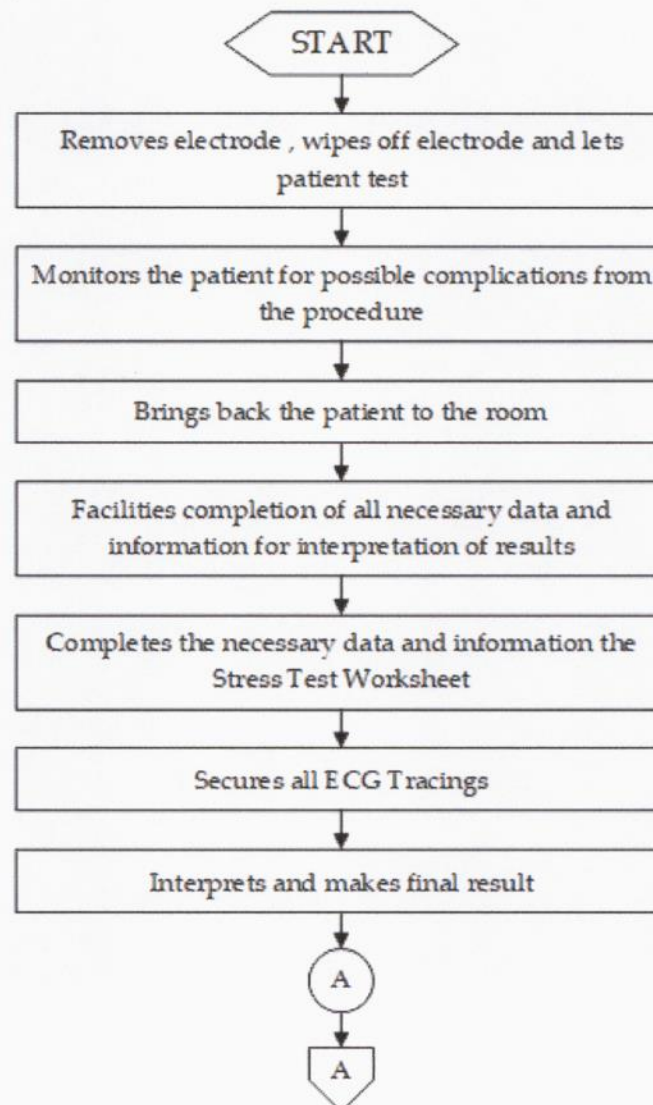


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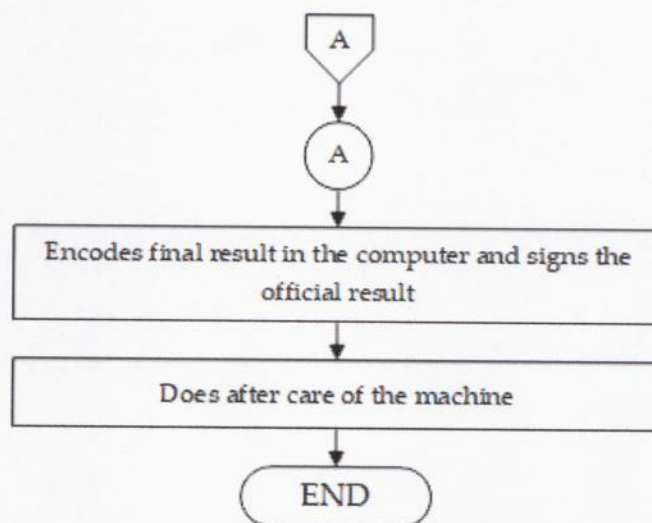





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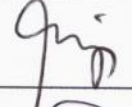

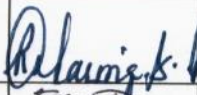

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