 <p>DR. PABLO O. TORRE MEMORIAL HOSPITAL</p>	Document Code:	DPOTMH-E-65-P01-S04
	Effective Date:	12-30-2021
	Document Type:	Standard Operating Procedure
	Page Number:	1 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	CAROTID DUPLEX STUDY

PURPOSE:

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

SCOPE:


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

RESPONSIBLE PERSON:

Cardiologist (Vascular Medicine Specialist), Cardiovascular Technician (Registered nurse, Allied Healthcare Professionals who have undergone training or with certification.

GENERAL GUIDELINES:

1. All carotid duplex procedures should require a physician order and signed consent from patient.
2. Patient should have an appointment or schedule on the day of procedure.
3. Infection control measures should be adhered to in accordance to infection control policies like handwashing, use of PPE'S and proper disposals of linens and supplies.
4. The Cardiovascular Technician must ensure the comfort, safety, security and general condition of a patient throughout the procedure.
5. The Cardiovascular Technician instructs the patient to kindly remove any jewelry, or other objects that may interfere with the scan.
6. Results will be released to out-patients upon presentation of the Official Receipt (OR) or HMO ID for charged clients.

 <p>DR. PABLO O. TORRE MEMORIAL HOSPITAL</p>	Document Code:	DPOTMH-E-65-P01-S04
	Effective Date:	12-30-2021
	Document Type:	Standard Operating Procedure
	Page Number:	2 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	CAROTID DUPLEX STUDY


PROCEDURE:

EQUIPMENT:

1. Color Duplex ultrasound scanner machine (HDI 5000 or HD11-XE)
2. Low frequency transducer / select frequency appropriate to body habitus 5.0 – 7.0 Linear array with Doppler and/or color Doppler capabilities)
3. Warm acoustic coupling gel
4. Recording device (VHS tape or Compact disc and thermal paper)


OUT-PATIENT PRE-EXAMINATION PROCEDURES:

1. The client presents a written request from his/her attending or referring physician to the Nurse Technician.
2. The Nurse Technician processes the requested venous duplex procedure on the Bizbox Hospital computer system after the patient had completely filled up the admission data and consent form.
3. The Nurse Technician informs the examining Vascular Consultant once the patient arrives in the unit.
4. The Nurse Technician prepares the ultrasound machine, inputs the patient's data and sets the equipment for proper test documentation.
5. 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 by interview based on the data given on the admission slip.
6. The Nurse Technician assesses the patient prior to the venous duplex evaluation which include patient's ability to tolerate the procedure, potential contraindications to the procedure and physical assessment
7. The Nurse Technician explains to the patient the necessity and the time duration of the Carotid Duplex Study of the lower extremities.
8. The Nurse Technician positions the patient in supine position exposing only the areas to be examined (neck part).

 <p>DR. PABLO O. TORRE MEMORIAL HOSPITAL</p>	Document Code:	DPOTMH-E-65-P01-S04
	Effective Date:	12-30-2021
	Document Type:	Standard Operating Procedure
	Page Number:	3 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	CAROTID DUPLEX STUDY

DIRECT EXAMINATION PROCEDURES:

1. The Vascular Nurse Technician informs the patient that a clear water-based gel is applied to the area of the body being studied to help the transducer make secure contact with the body and eliminate air pockets between the transducer and the skin. Then she presses the transducer firmly against the skin and sweeps it over the area of interest until the desired images are captured and recorded.
2. Place the transducer low on the neck, posterior to the sternocleidomastoid muscle, to visualize the common carotid artery in long axis. Sweep the Doppler sample through the vessel and record a representative signal at an angle of 60 degrees to the vessel wall in the mid common carotid artery. If the flow pattern is turbulent, interrogate the origin of the common carotid artery in the same manner. Note any plaque visualized.
3. Slide the transducer cephalad and evaluate the distal common carotid with Doppler, and record a signal.
4. Slide or angle the transducer anteriorly at the distal common carotid artery to visualize and evaluate the external carotid artery with Doppler, and record a signal.
5. Slide or angle the transducer posteriorly to visualize the internal carotid artery. Sweep the Doppler sample throughout the length (at least 3 cm) of the vessel. Record the highest velocity and representative sample in the proximal, mid, and distal segments. Record these Doppler signals mid stream and at an angle of 60 degrees to the vessel wall. Document the presence of plaque or flow separation.
6. Place the transducer anteriorly on the neck and angle slightly laterally. Visualize the vertebral artery in long axis. Record a Doppler signal at an angle of 60 degrees to the vessel wall and note the flow direction. Follow the vertebral artery to its origin, if possible, to identify any stenosis.
7. Evaluate the subclavian arteries directly with duplex and/or indirectly with brachial systolic blood pressures. Place the transducer posterior to the clavicle to visualize the subclavian arteries in long axis. Record a Doppler signal at an angle of 60 degrees to the vessel wall. Note the phasicity of the flow pattern.


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	Effective Date:	12-30-2021
	Document Type:	Standard Operating Procedure
	Page Number:	4 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	CAROTID DUPLEX STUDY

POST-EXAMINATION PROCEDURES:

1. The Nurse Technician removes the excess gel by wiping it off gently and asks the patient to wait while the ultrasound images are being reviewed by the vascular medicine specialist.
2. The Nurse Technician gives instructions that the results are released 1-2 days after the vascular consultant specialist had affixed his/her signature and are considered official.
3. The Vascular Consultant Specialist will analyze the images and may discuss with the referring physician about his/her findings on the ultrasound procedure.
4. The Nurse Technician submits to the vascular consultant the filled-up worksheet of result for the final interpretation of the test.
5. The Nurse Technician encodes final result in the Bizbox hospital computer system, prints them out for signing of the vascular consultant (refer to protocol on encoding and releasing of results). The official results are then ready for sorting and releasing. The patient's data with the date and time of the procedure is being recorded in the vascular procedures log book for future reference.
6. The Nurse Technician does after care of the machine by wiping the excess gel on the probe and softly coils the wires and after which the probe is secured on its proper place to be ready for the next patient.
7. The Vascular Nurse Technician switches off the machine when not in use to conserve energy and should be covered to free it from dust.

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 Carotid Duplex Study.
2. Nurse Technician renders request for the procedure. All rendered request are automatically charged to the patient's account.
3. The Nurse Technician calls the station to bring down the patient at the NICIS Department before the scheduled time.
4. The Nurse Technician informs the examining vascular medicine specialist once the patient arrives in the unit.


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	Effective Date:	12-30-2021
	Document Type:	Standard Operating Procedure
	Page Number:	5 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	CAROTID DUPLEX STUDY

5. The Nurse Technician prepares the ultrasound machine, inputs the patient's data and sets the equipment for proper test documentation.
6. 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.
7. The Nurse Technician assesses the patient prior to the procedure which includes patient's ability to tolerate the procedure, potential contraindications to the procedure and physical assessment
8. The Nurse Technician explains to the patient the necessity and the time duration of the study.
9. The Nurse Technician positions the patient in supine position exposing only the areas to be examined (neck part).

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

POST-EXAMINATION PROCEDURES:

1. The Nurse Technician removes the excess gel by wiping it off gently and assists or asks the patient to dress and wait while the ultrasound images are being reviewed by the vascular consultant.
2. The Nurse Technician gives instructions that the results are released 1-2 days after the vascular consultant specialist had affixed his/her signature and are considered official.
3. The patient is brought back to the room/ward.
4. The vascular consultant will analyze the images and may discuss with the referring physician about his/her findings on the ultrasound procedure.
5. The Nurse Technician submits to the vascular consultant the filled-up worksheet of result for the final interpretation of the test.
6. The Nurse Technician encodes final result in the Bizbox hospital computer system, prints them out for signing of the vascular consultant (refer to protocol on encoding and releasing of results). The official results are then ready for sorting and re-


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	Effective Date:	12-30-2021
	Document Type:	Standard Operating Procedure
	Page Number:	6 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	CAROTID DUPLEX STUDY

leasing. The patient's data with the date and time of the procedure is being recorded in the Vascular procedure log book for future reference.

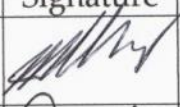
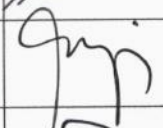
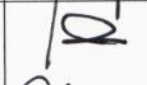
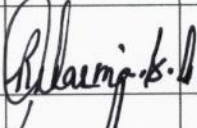

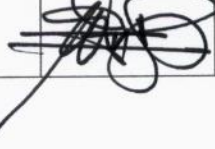
7. The Nurse Technician does after care of the machine by wiping the excess gel on the probe and softly coils the wires and after which the probe is secured on its proper place to be ready for the next patient.
8. The Nurse Technician switches off the machine when not in use to conserve energy and should be covered to free it from dust.

TURN AROUND TIME (TAT):

	TIME
1. Pre-examination procedures:	
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 examination:	
2.1. equipment optimization and the actual hands-on time	30-45 minutes
3. Post-examination procedures:	
3.1. Cleanup	5 minutes
3.2. Review exam data for preliminary and/or formal interpretation by vascular consultant	15 minutes
4. Total: Approximately 1 hour	

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	Effective Date:	12-30-2021
	Document Type:	Standard Operating Procedure
	Page Number:	7 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
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Reviewed by:	DENNIS C. ESCALONA, MN, FPCHA, FPSQua Quality Assurance Supervisor		3/3/22
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	HENRY F. ALAVAREN, MD, FPSMID, FPSQua Total Quality Division Officer		3/18/2022
Approved:	GENESIS GOLDI D. GOLINGAN President & CEO		4/2/22



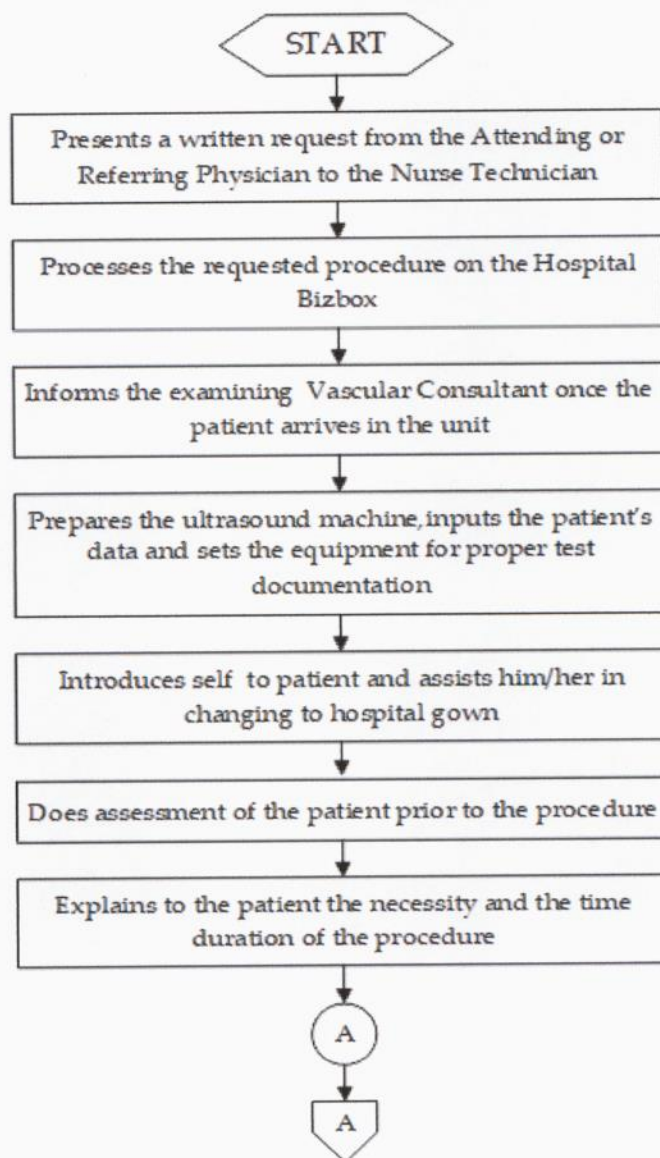
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Document Code:	DPOTMH-E-65-P01-FC04
Effective Date:	04-01-2022
Document Type:	Flowchart
Page Number:	1 of 6
Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
Document Title:	CAROTID DUPLEX STUDY

FLOWCHART

OUT-PATIENT PRE-EXAMINATION PROCEDURES

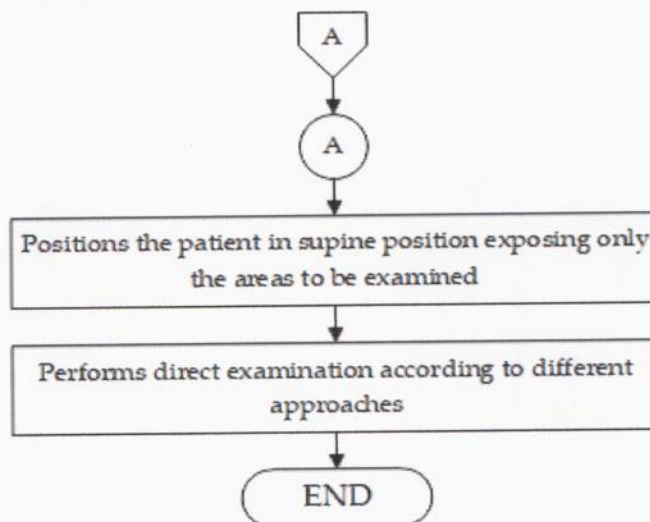




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Document Code:	DPOTMH-E-65-P01-FC04
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Document Type:	Flowchart
Page Number:	2 of 6
Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
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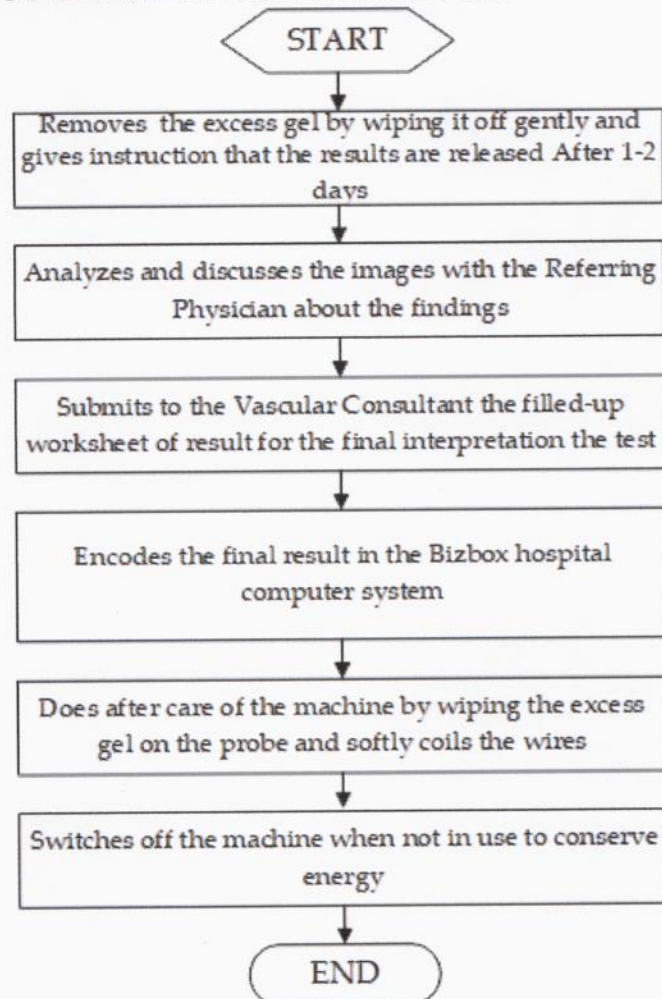


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Document Code:	DPOTMH-E-65-P01-FC04
Effective Date:	04-01-2022
Document Type:	Flowchart
Page Number:	3 of 6
Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
Document Title:	CAROTID DUPLEX STUDY

OUT-PATIENT POST-EXAMINATION PROCEDURE



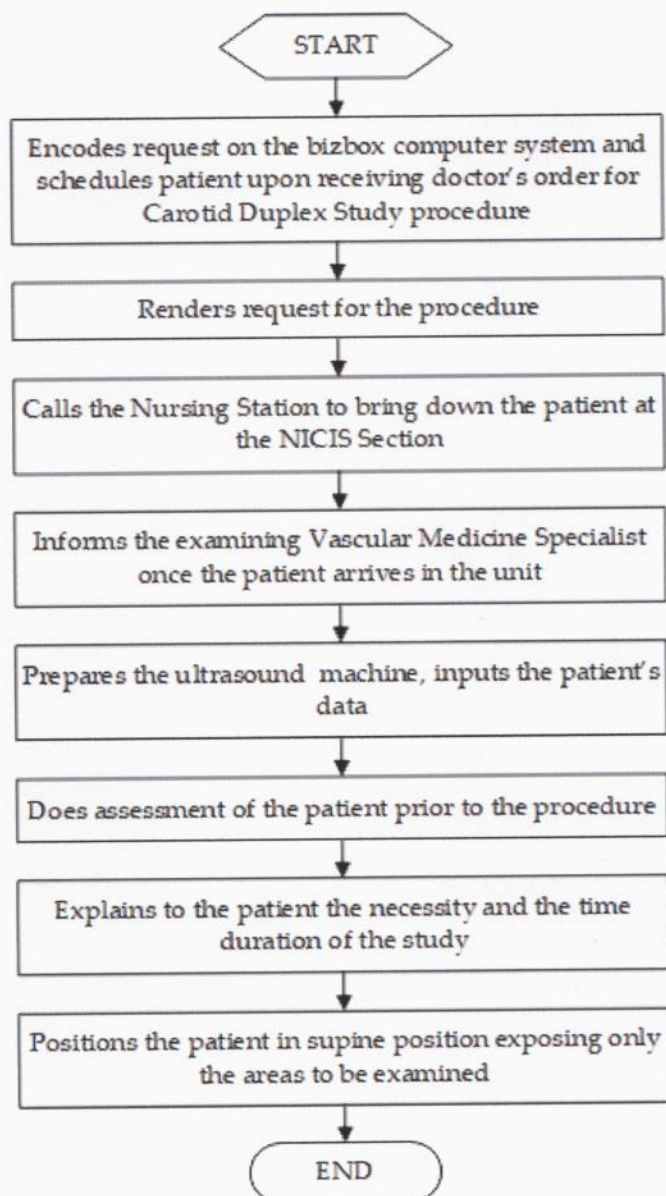


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Document Code:	DPOTMH-E-65-P01-FC04
Effective Date:	04-01-2022
Document Type:	Flowchart
Page Number:	4 of 6
Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
Document Title:	CAROTID DUPLEX STUDY

IN-PATIENT PRE-EXAMINATION PROCEDURE



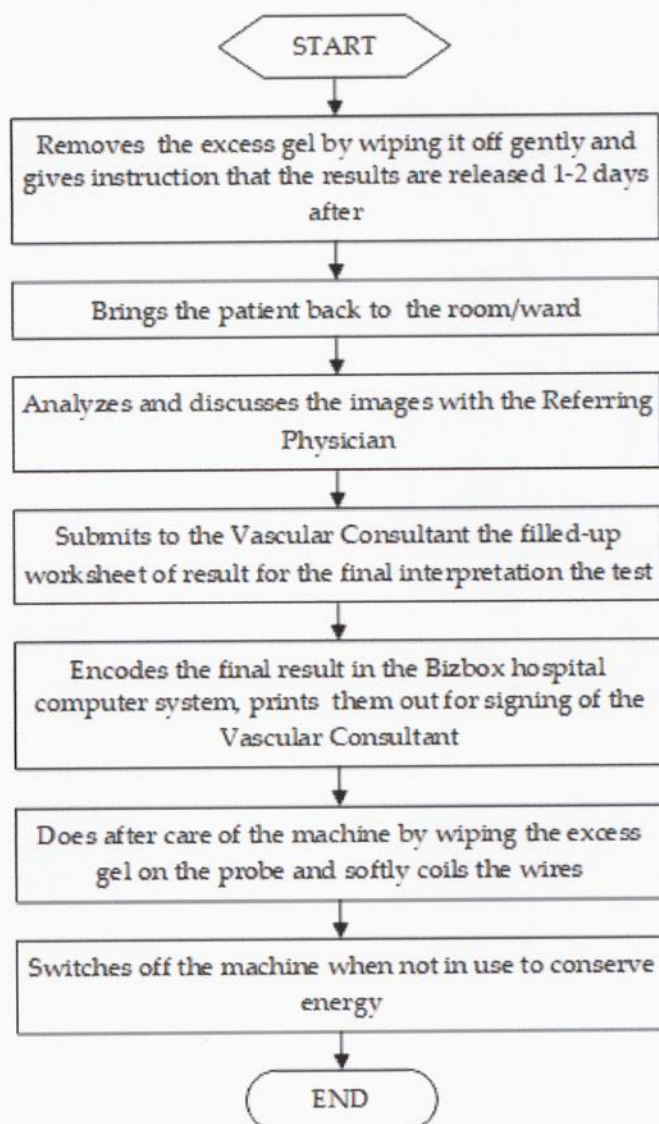



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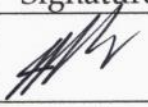
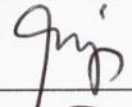
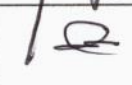

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Effective Date:	04-01-2022
Document Type:	Flowchart
Page Number:	5 of 6
Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
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IN-PATIENT POST-EXAMINATION PROCEDURE



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APPROVAL:

	Name/Title	Signature	Date
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	HENRY F. ALAVAREN, MD, FPSMID, FPSQua Total Quality Division Officer		7/7/22
Approved:	GENESIS GOLDI D. GOLINGAN President and CEO		

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	Effective Date:	04-01-2022
	Document Type:	Work Instruction
	Page Number:	1 of 5
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	CAROTID DUPLEX STUDY

OUT-PATIENT PRE-EXAMINATION PROCEDURE	
KEY TASK	PERSON RESPONSIBLE
1. Presents a written request from the Attending or Referring Physician to the Nurse Technician.	Patient
2. Processes the requested procedure on the Hospital Bizbox.	Nurse Technician
3. Informs the examining Vascular Consultant once the patient arrives in the unit.	
4. Prepares the ultrasound machine, inputs the patient's data and sets the equipment for proper test documentation.	
5. Introduces self to patient and assists him/her in changing to hospital gown.	
6. Does assessment of the patient prior to the procedure.	
7. Explains to the patient the necessity and the time duration of the procedure.	
8. Positions the patient in a supine position exposing only the areas to be examined.	
9. Performs direct examination according to different approaches.	




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6100

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Effective Date:	04-01-2022
Document Type:	Work Instruction
Page Number:	2 of 5
Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
Document Title:	CAROTID DUPLEX STUDY


OUT-PATIENT POST-EXAMINATION PROCEDURE	
KEY TASK	PERSON RESPONSIBLE
1. Removes the excess gel by wiping it off gently and gives instructions to the patient that the result is released 1-2 days after.	Nurse Technician
2. Analyzes and discusses the images with the Referring Physician about the findings.	Vascular Consultant Specialist
3. Submits to the Vascular Consultant the filled-up worksheet of result for final interpretation of the test.	Nurse Technician
4. Encodes final result in the Bizbox hospital computer system.	
5. Does after care of the machine by wiping the excess gel on the probe and softly coils the wires.	
6. Switches off the machine when not in use to conserve energy .	

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	Page Number:	3 of 5
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	CAROTID DUPLEX STUDY

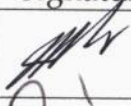
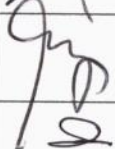



IN-PATIENT PRE-EXAMINATION PROCEDURE	
KEY TASK	PERSON RESPONSIBLE
1. Encodes request on the bizbox computer system and schedules patient upon receiving doctor's order for Carotid Duplex Study procedure.	Patient
2. Renders request for the procedure.	Nurse Technician
3. Calls the Nursing Station to bring down the patient at the NICIS Section before the scheduled time.	
4. Informs the examining Vascular Medicine Specialist once the patient arrives in the unit.	
5. Prepares the ultrasound machine, inputs the patient's data and sets proper test documentation.	
6. Introduces self to patient and assists him/her in changing to hospital gown maintaining the patient's privacy.	
7. Does assessment of the patient prior to the procedure.	
8. Explains to the patient the necessity and the time duration of the study.	
9. Positions the patient in supine position exposing only the areas to be examined.	

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	Document Type:	Work Instruction
	Page Number:	4 of 5
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
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IN-PATIENT POST-EXAMINATION PROCEDURE	
KEY TASK	PERSON RESPONSIBLE
1. Removes the excess gel by wiping it off gently and gives instructions that the results are released 1-2 days after.	Nurse Technician
2. Brings the patient back to the room/ward.	
3. Analyzes and discusses the images with the Referring Physician.	
4. Submits to the Vascular Consultant the filled-up worksheet of result for the final interpretation of the test.	
5. Encodes final result in the Bizbox hospital computer system, prints them out for signing of the Vascular Consultant.	
6. Does after care of the machine by wiping the excess gel on the probe and softly coils the wires.	
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Reviewed:	DENNIS C. ESCALONA, MN, FPSQua Quality Assurance Supervisor		06/02/2022
Recommending Approval:	ROSARIO D. ABARING, RN, MN, PhD, FPCHA Ancillary Services Division Officer		07.01.2022
	HENRY F. ALAVAREN, MD, FPSMID, FPSQua Total Quality Division Officer		7/7/22
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