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Effective Date: 12-30-2021		
Document Type:	Standard Operating Procedure	
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Department/Section: Non-Invasive Cardiovascular Imag Sciences		
Document Title:	TRANSCRANIAL DOPPLER ULTRASOUND	

PURPOSE:

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

SCOPE:

Applies to all Non-Invasive Cardiovascular Imaging Sciences (NICIS) staffs 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 transcranial Doppler ultrasound procedures should require a physician's order and a signed consent from the patient.
- Patient should have an appointment or schedule on the day of procedure.
- 3. Infection control measures should be adhered to in accordance to 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.
- Results will be released to out-patients upon presentation of the Official Receipt (OR) or HMO ID for charged clients.



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PROCEDURE:

EQUIPMENT:

- 1. Color Duplex ultrasound scanner machine (HDI 5000 or HD11-XE)
- 2. Low frequency transducer / select frequency appropriate to body habitus 2.0 3.0 mHz Transducer curved Array 4-2 with Doppler and/or color Doppler capabilities)
- 3. Warm acoustic coupling gel
- 4. Recording device (VHS tape or Compact disc and thermal paper)

PATIENT PREPARATION:

No special preparations required. However, the patient should remove **contact lenses**, and may wish to avoid the use of eye makeup, since the gel is likely to smear it. For convenience and comfort during the procedure, the patient should wear loose, comfortable clothing and no earrings or hair ornaments.

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 makes sure that the patient has complied with the preparations and processes the requested abdominal aorta and its branches 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.



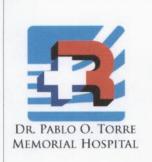
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- 6 The Nurse Technician assesses the patient prior to the venous duplex evaluation which includes patient's ability to tolerate the procedure, potential contraindications to the procedure and physical assessment.
- 7 The Nurse Technician explains to the patient the necessity and the time duration of the procedure.
- 8 The Nurse Technician positions the patient in supine position with the head slightly elevated to a level of comfort exposing only the areas to be examined. Patient is instructed that head part may be turned side to side during the procedure.

DIRECT EXAMINATION PROCEDURES:

Transtemporal Approach:

- 1 Place the transducer above the ear and angle the probe inferiorly, superiorly anteriorly and posteriorly to locate the temporal window. Add color Doppler and insonate the MCA from depths of 3-6 cm. Record mean flow velocities at proximal, mid and distal segments and note flow directions.
- 2 At a depth of approximately 6-7 cm evaluate the MCA ACA bifurcation. Record the highest velocity signal at the level of ACA. Assess the patency of the Anterior communicating artery (ACoA). Reversal of ACA flow direction with ipsilateral Common carotid artery compression suggests functioning AcoA.
- 3 At the about same level, angle the transducer inferiorly to locate the terminal ICA. Record the highest mean flow velocity.
- 4 At 6-7 cm depth, angle the transducer posteriorly to locate and evaluate the PCA and PCoA (Posterior communicating artery). Sweep through the vessel and record the highest mean velocity. Note flow direction.



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Trans-orbital Approach:

- 1 Locate the trans-orbital window by placing the transducer over the eyeball. Decrease power output to lowest settings (10 Db).
- 2 Evaluate the ophthalmic artery at about a depth of 4-5.5 cm. Obtain the highest peak velocity signal and note flow direction.
- 3 The carotid siphon is best evaluated at a depth of 6-7 cm.

Trans-occipital Approach:

- 1 With patient in left lateral decubitus position (head tilted down), place the transducer at the base of the skull to angle superiorly. At a depth of 6-7 cm, the intracranial vertebral arteries can be located.
- 2 At a depth of 8-10 cm, the basilar artery can be evaluated. Doppler velocity and flow direction are noted.

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. The official results are then ready for sorting and



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- 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 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 PROCEDURE:

- 1. The staff nurse on duty encodes request on the bizbox computer system and schedules patient upon receiving doctor's order for abdominal aorta and its branches 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.
- 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.
- The Nurse Technician explains to the patient the necessity and the time duration of the study.



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9. The Nurse Technician positions the patient in supine position with the head slightly elevated to a level of comfort exposing only the areas to be examined.

(Direct Exam Procedures: Refer to Out-Patient Direct Examination Procedures)

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 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 and instructed to resume the previous diet unless ordered by physician otherwise.
- 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. 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 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.



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TURN AROUND TIME (TAT)

PRE-EXAMINATION PROCEDURES:	TIME
1. Completion of pre-exam paperwork	1 minute
2. Exam charging and billing activities	3 minutes
3. Exam room and equipment preparation	3 minutes
4. Patient preparation and positioning	3 minutes
DIRECT EXAMINATION PROCEDURES:	
1. Equipment optimization and the actual hands-on time.	20-40 minutes
POST-EXAMINATION PROCEDURES:	
1. Cleanup	5 minutes
Review exam data for preliminary and/or formal interpretation by Vascular Consultant.	15 minutes
Total:	Approximately 1 hour



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	OUT-PATIENT PRE-EXAMINATION PROCEDURE		
	KEY TASK	PERSON RESPONSIBLE	
1.	Presents a written request from the Attending or Referring Physician.	Patient	
2.	Encodes the procedure on the Bizbox Hospital computer system.		
3.	Informs the examining Vascular Consultant.		
4.	Prepares the ultrasound machine and inputs the patient's data.		
5.	Introduces self to patient and assists him/her in changing to hospital gown maintaining the patient's privacy.	Nurse Technician	
6.	Assesses the patient prior to the venous duplex evaluation.		
7.	Explains to the patient the necessity and the time duration of the study.		
8.	Positions the patient in supine position with the head slightly elevated to a level of comfort.		
9.	Performs direct examination according to different approaches.		



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OUT-PATIENT POST-EXAMINATIO	N PROCEDURE	
KEY TASK	PERSON RESPONSIBLE	
 Removes the excess gel by wiping it off gently are gives instructions that the results are released 1 days. 		
2. Analyzes and discusses the images with t Referring Physician.	he Vascular Consultant	
3. Submits to the Vascular Consultant the filled-worksheet of result for the final interpretation the test.		
4. Encodes final result in the Bizbox hospit computer system.	tal Nurse Technician	
5. Does after care of the machine by wiping the exce gel on the probe place.	ess	
6. Switches off the machine when not in use conserve energy.	to	



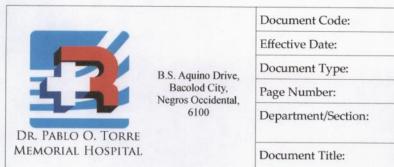
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	KEY TASK	PERSON RESPONSIBLE	
1.	Encodes request on the Bizbox computer system and schedules the patient.	Nurse-on-duty	
2.	Renders request for the procedure and instructs the Nurse-on-duty regarding patient preparation.		
3.	Calls the Station to bring down the patient at the NICIS Section.		
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 the equipment.		
6.	Introduces self to patient and assists him/her in changing to hospital gown maintaining the patient's privacy.	Nurse Technician	
7.	Assesses the patient prior to the procedure.		
8.			
9.	Positions the patient in supine position with the head slightly elevated to a level of comfort.		



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	IN-PATIENT POST-EXAMINATION PI	ROCEDURE	
	KEY TASK	PERSON RESPONSIBLE	
1.	Removes the excess gel by wiping it off gently and assists and gives instructions that the results are released 1-2 days after.		
2.	Analyzes and discusses the images with the Referring Physician about his/her findings on the ultrasound procedure.		
3.	Submits to the Vascular Consultant the filled-up worksheet of result for the final interpretation.	Nurse Technician	
4.	Encodes final result in the Bizbox hospital computer system and prints them out.		
5.	Does after care of the machine by wiping the excess gel on the probe and softly coils the wires.		



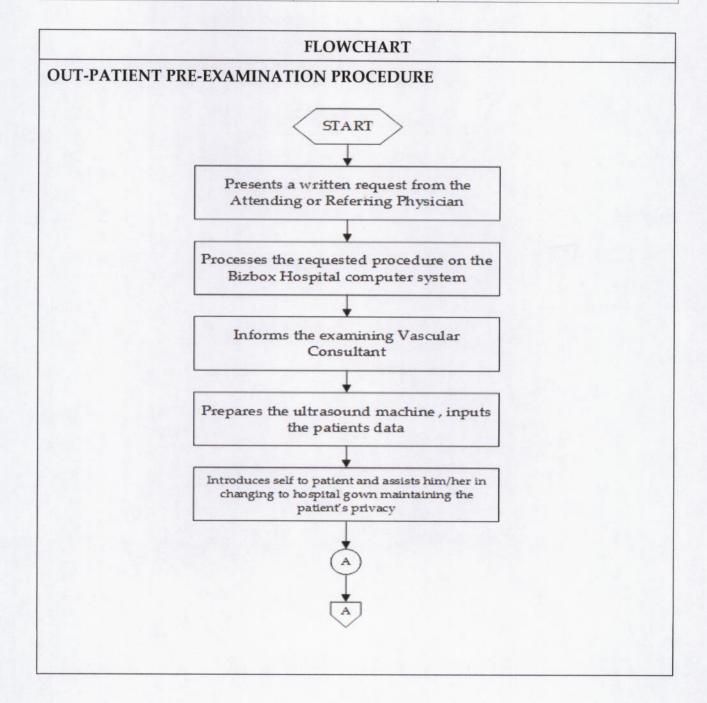
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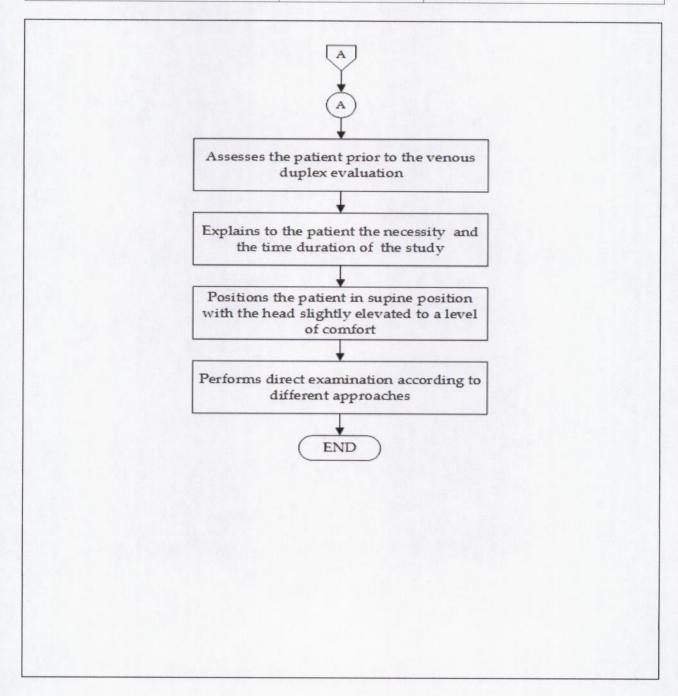


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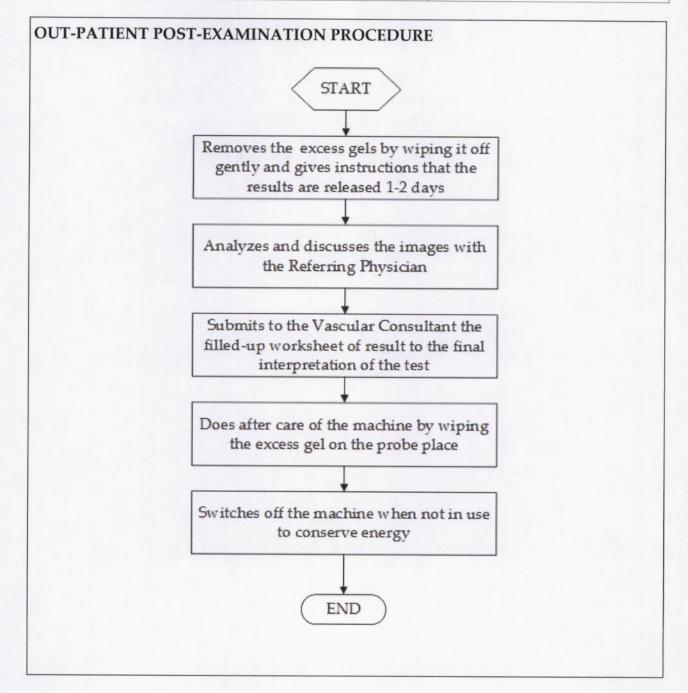


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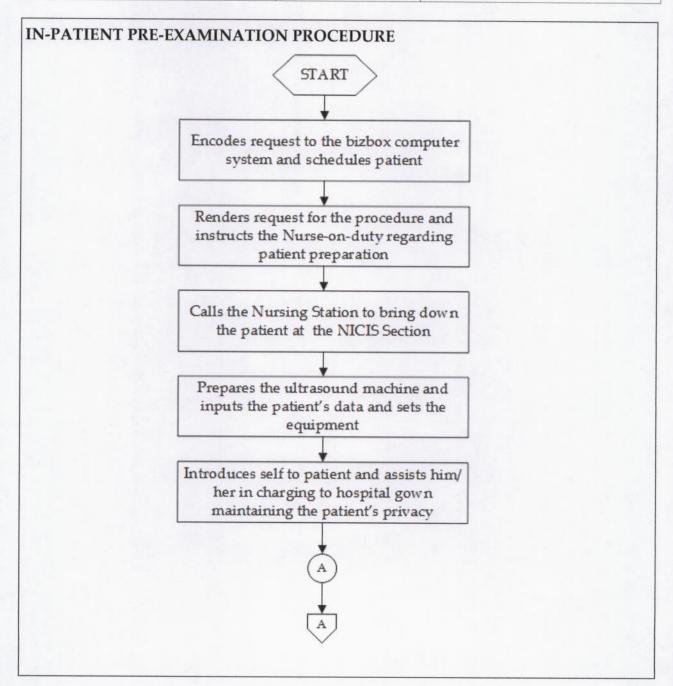


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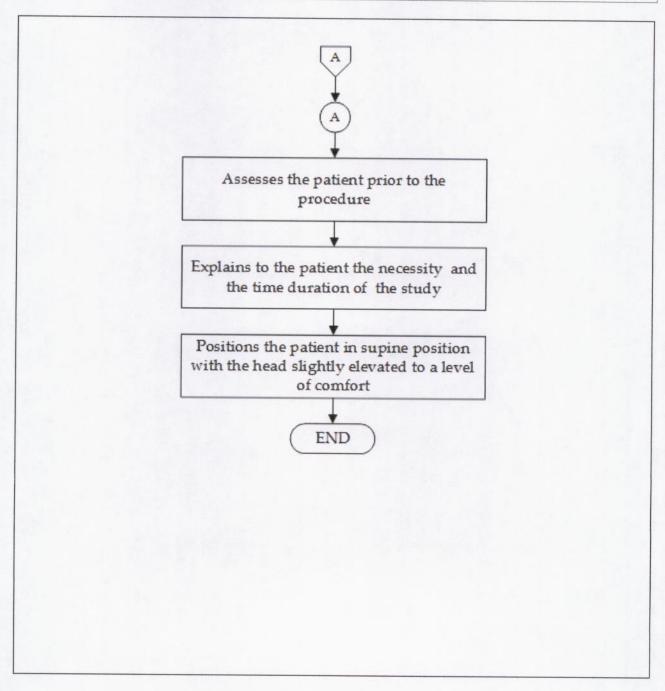


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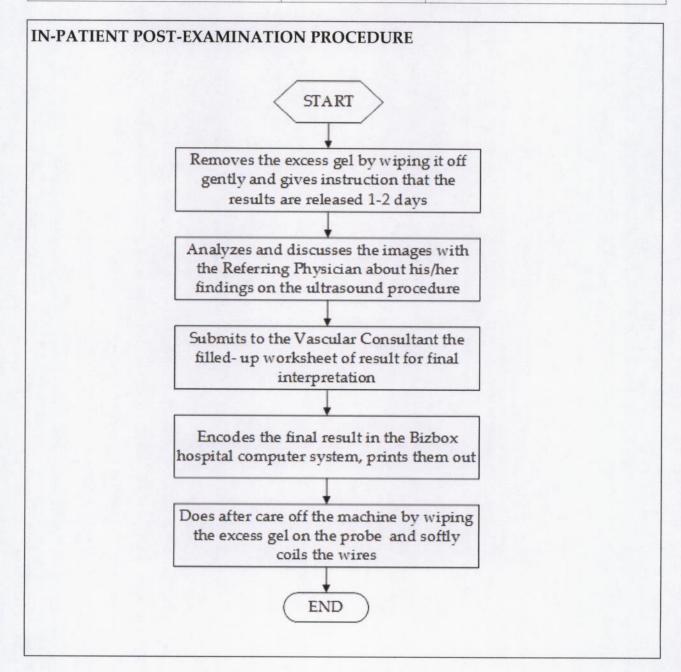


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