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Department/Section:	Non-Invasive Cardiovascular Imaging Sciences	
Document Title: ARTERIAL DUPLEX STUDY LOWER EXTREMITIES		

#### **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 arterial duplex procedures should require a physician's order and a signed consent from the patient.
- 2. Patient should have an appointment or schedule on the day of procedure.
- 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. Patients for arterial duplex scan should wear hospital gown.
- 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 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.
- 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 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 Carotid Duplex Study of the lower extremities.
- 8. The Nurse Technician positions the patient in supine position exposing only the areas to be examined (thighs and legs).



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## **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 capture and recorded.
- 2 Begin scanning superior to the groin crease in a sagittal plane. Locate the common femoral artery (CFA).
- 3 Sample with Doppler thoroughly to assess blood flow velocity and waveform morphology throughout the length of the CFA.
- 4 Return superiorly to the level of the bifurcation and locate the SFA. Follow this artery inferiorly to just above the knee.
- 5 Next, the popliteal artery is to be examined. This may be done in a number of ways. The patient may be placed in a prone position with the knee slightly flexed, the leg may be bent slightly and positioned out to the side away from the patient, or the patient may be placed in a lateral decubitus position with the knee slightly flexed.
- 6 Locate the popliteal artery posterior and slightly lateral to the vein. Follow the artery as superiorly as possible into the thigh while gray scale imaging. Begin duplex scanning and follow the artery inferiorly to the superior aspect of the calf to the level of the vessel trifurcation into the anterior tibial, posterior tibial and peroneal arteries.
- 7 The tibial arteries may be evaluated using color Doppler. It may be helpful to follow the arteries up the left from the ankle if there is any difficulty following them down the calf.
- 8 After examining the popliteal artery, move down to the patient's ankle to examine the posterior tibial artery (PT) and dorsalis pedis artery (DP).



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### 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. 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 PROCEDURE:

- 1 The Staff Nurse on duty encodes request on the bizbox computer system and schedules patient upon receiving doctor's order for arterial duplex study of the lower extremity.
- 2 Nurse technician renders request for the procedure. All rendered request are automatically charged to the patient's account.



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- 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 include 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 explains to the patient the necessity and the time duration of the study.
- The Nurse Technician positions the patient in supine position exposing only the areas to be examined (thighs and legs).

# (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.



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- 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:	
<ol> <li>Equipment optimization and the actual hands-on time.</li> </ol>	30-45 minutes
POST-EXAMINATION PROCEDURES:	
1. Cleanup	5 minutes
<ol><li>Review exam data for preliminary and/or formal interpretation by Vascular Consultant.</li></ol>	15 minutes
Total:	Approximately 1 hour



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Approved:	GENESIS GOLDI D. GOLINGAN President & CEO	<b>100</b>	3/3/22



7. Explains to the patient the 1 duration of the procedure.

8. Positions the patient in sup only the areas to be examined

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OUT-PATIENT PRE-EXAMINATION PR	PERSON RESPONSIBLE
KEY TASK	PERSON RESPONSIBLE
1. Presents a written request from the Attending or Referring Physician to the Nurse Technician.	Patient
2. Encodes the request on the Bizbox computer system.	
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 maintaining patient's privacy.	Nurse Technicis
6. Assesses the patient prior to	



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	DIRECT EXAMINATION	
	KEY TASK	PERSON RESPONSIBLE
1.	Informs the patient that a clear water-based gel is going to be applied to the area of the body being studied.	
2.	Assesses blood flow velocity and waveform morphology throughout the length of the CFA.	
3.	Returns superiorly to the level of the bifurcation and locate the SFA.	Nurse Technician
4.	Examines the popliteal artery and locates the popliteal artery posterior and slightly lateral to the vein.	
5.	Evaluates tibial arteries using color Doppler and examines the popliteal artery.	



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<b>OUT-PATIENT POST-EXAMINATION I</b>	PROCEDURE	
KEY TASK	PERSON RESPONSIBLE	
<ol> <li>Removes the excess gel by wiping it off gently and gives instructions that the results are released 1-2 days after.</li> </ol>	Nurse Technician	
<ol><li>Analyzes and discusses the images with the Referring Physician about the findings.</li></ol>	Vascular Consultant Specialist	
<ol> <li>Submits to the Vascular Consultant the filled-up worksheet of result for final interpretation of the test.</li> </ol>		
<ol> <li>Encodes final result in the Bizbox computer system, prints them out for signing of the Vascular Consultant.</li> </ol>		
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.		



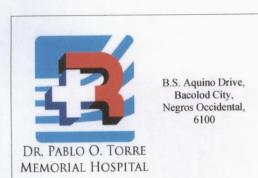
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	IN-PATIENT PRE-EXAMINATION PRO	OCEDURE
	KEY TASK	PERSON RESPONSIBLE
1.	Encodes request on the Bizbox computer system and schedules patient upon receiving doctor's order.	Patient
2.	Renders request for procedure.	
3.	Calls the Nursing Station to bring down the patient to 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.	Nurse Technician
7.	Assesses 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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	IN-PATIENT POST-EXAMINATION PR	OCEDURE	
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.	Vascular Consultant	
4.	Submits to the Vascular Consultant the filled-up worksheet for the final interpretation.		
5.	Encodes final result in the Bizbox hospital computer system.	Nurse Technician	
6. Does after care of the machine by wiping the excess gel on the probe and softly coils the wires.		ivuise recitiician	
7.	Switches off the machine when not in use to conserve energy.		



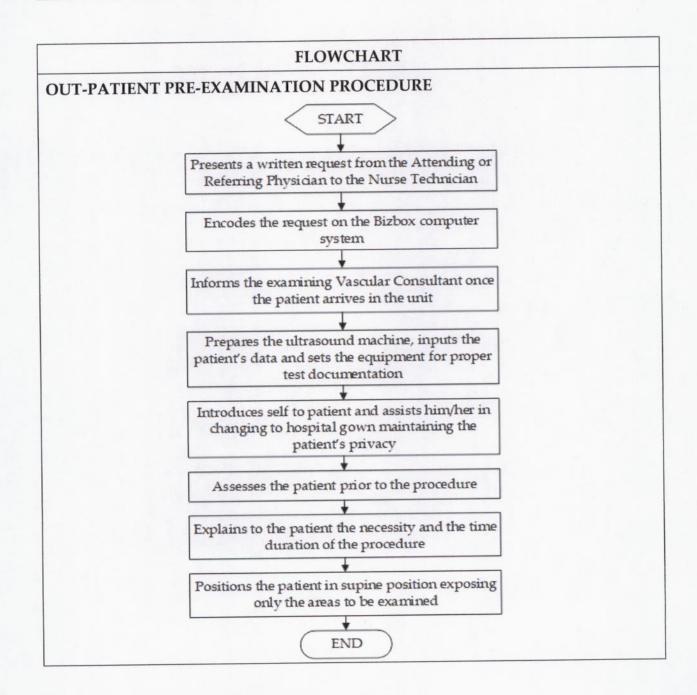
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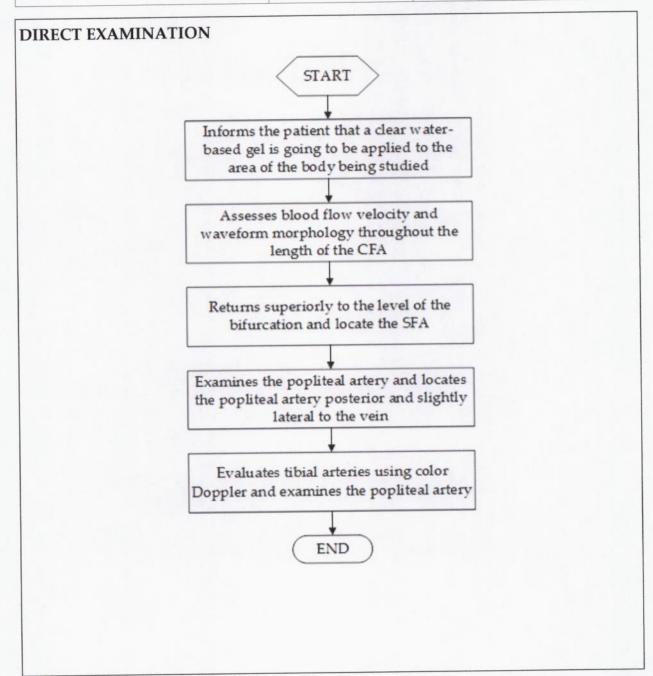


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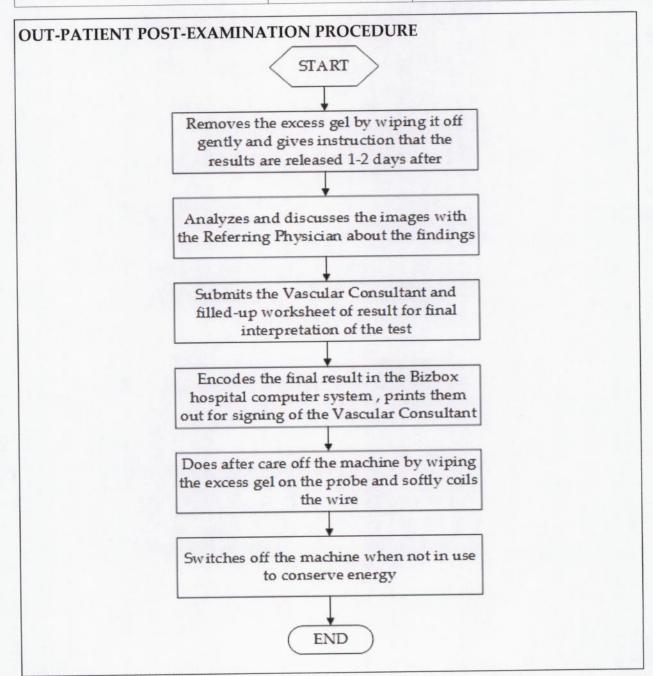


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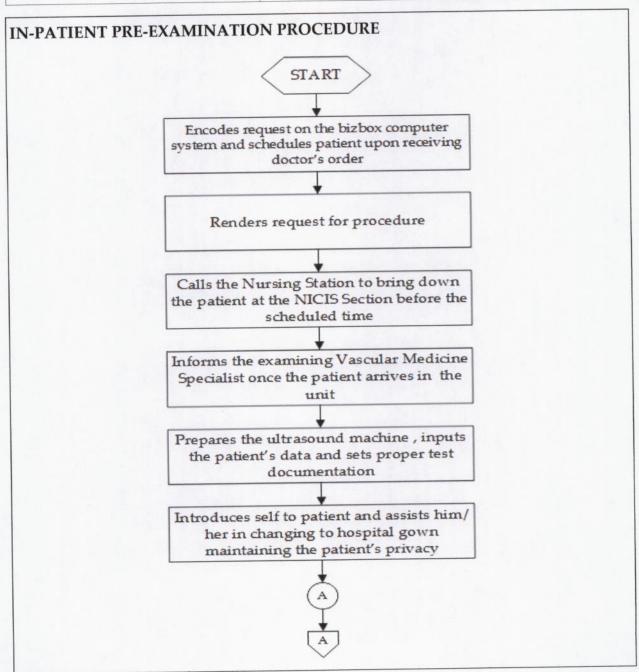


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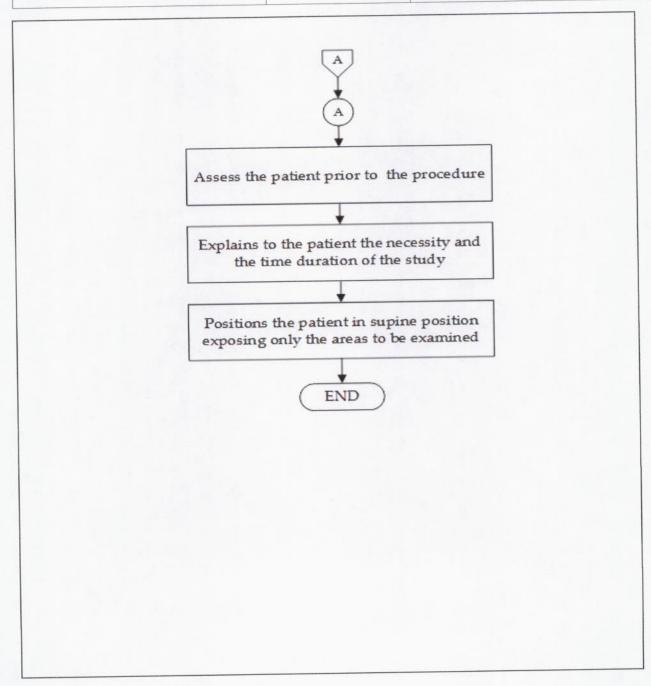


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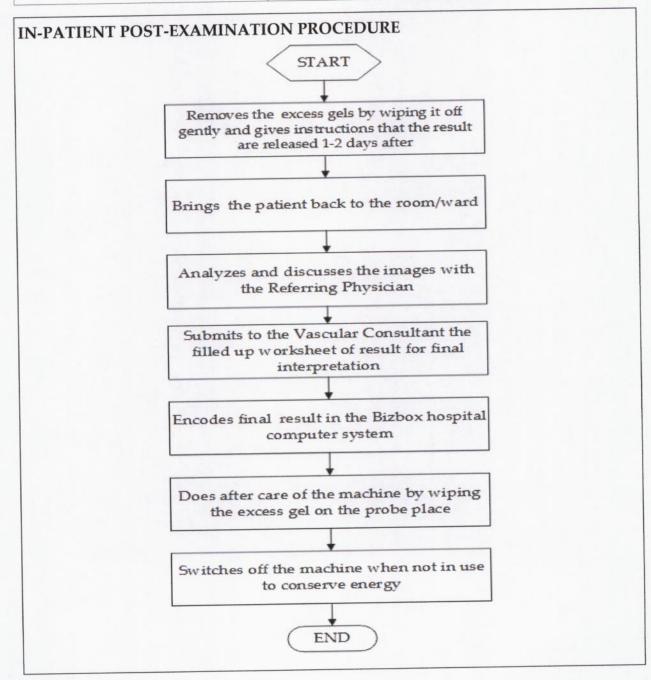


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