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	Effective Date:	12-30-2021
	Document Type:	Standard Operating Procedure
	Page Number:	1 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	<b>ARTERIAL DUPLEX STUDY OF THE UPPER EXTREMITIES</b>

**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 scan 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.
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. Patients for arterial duplex scan should wear hospital gown.
6. Results will be released to out-patients upon presentation of the Official Receipt (OR) or HMO ID for charged clients.

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		Effective Date:	12-30-2021
		Document Type:	Standard Operating Procedure
		Page Number:	2 of 7
		Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
		Document Title:	<b>ARTERIAL DUPLEX STUDY OF THE UPPER EXTREMITIES</b>

**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 arterial 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.
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 exposing only the areas to be examined (shoulders and arms).




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		Effective Date:	12-30-2021
		Document Type:	Standard Operating Procedure
		Page Number:	3 of 7
		Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
		Document Title:	<b>ARTERIAL DUPLEX STUDY OF THE UPPER EXTREMITIES</b>

### **DIRECT EXAMINATION PROCEDURES:**

- 1 Place the transducer on the neck (light touch) to visualize the Subclavian artery. The subclavian artery may be visualized via supraclavicular, infraclavicular, or sternal notch approach. The origin of the left subclavian artery from the aorta, the origin of the right subclavian artery from the innominate artery, and the origin of the innominate artery from the artery should be visualized whenever possible.
- 2 Following the standard exam protocol as with venous Doppler studies, evaluate each segment. Studies may be unilateral or bilateral. The axillary, brachial, radial and ulnar arteries should all be interrogated in their entirety, if a complete duplex evaluation is deemed necessary.
- 3 All of the vessels interrogated should have spectral Doppler waveforms recorded with a minimum peak systolic velocity measurement.
- 4 Interrogation of the chosen conduit (i.e.; arteries, bypass grafts, fistulas, or stents) should include the proximal, mid, and distal segments and anastomotic sites.
- 5 If disease sites are identified, Doppler spectral velocity measurements should be documented throughout the area being evaluated.

### **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.


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	Effective Date:	12-30-2021
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	Page Number:	4 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	<b>ARTERIAL DUPLEX STUDY OF THE UPPER EXTREMITIES</b>

- 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 upper extremity.
- 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 include patient's ability to tolerate the procedure, potential contraindications to the procedure and physical assessment.




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	Document Type:	Standard Operating Procedure
	Page Number:	5 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	<b>ARTERIAL DUPLEX STUDY OF THE UPPER EXTREMITIES</b>

- 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.
- 10 The Nurse Technician positions the patient in supine position 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.
- 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.

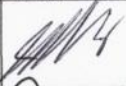
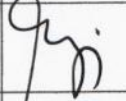
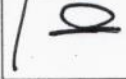
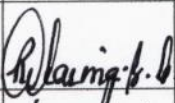
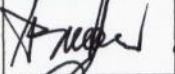
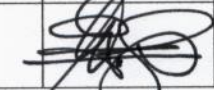
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	Document Type:	Standard Operating Procedure
	Page Number:	6 of 7
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	<b>ARTERIAL DUPLEX STUDY OF THE UPPER EXTREMITIES</b>

**TURN AROUND TIME (TAT)**


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

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	Document Type:	Standard Operating Procedure
	Page Number:	7 of 7
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**APPROVAL:**


	Name/Title	Signature	Date
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Reviewed by:	<b>DENNIS C. ESCALONA, MN, FPCHA, FPSQua</b> Quality Assurance Supervisor		1/27/22
Recommending Approval:	<b>ROSARIO D. ABARING, RN, MN, PhD, FPCHA</b> Ancillary Division Officer		02.02.2022
	<b>HENRY F. ALAVAREN, MD, FPSMID, FPSQua</b> Total Quality Division Officer		2/3/2022
Approved:	<b>GENESIS GOLDI D. GOLINGAN</b> President & CEO		3/3/22



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	Document Type:	Work Instruction
	Page Number:	1 of 5
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	<b>ARTERIAL DUPLEX STUDY OF THE UPPER EXTREMITIES</b>

<b>OUT-PATIENT PRE-EXAMINATION PROCEDURE</b>	
<b>KEY TASK</b>	<b>PERSON RESPONSIBLE</b>
1. Presents a written request from the Attending or Referring Physician to the Nurse <u>T</u> echnician.	Patient
2. Processes the requested procedure on the Bizbox computer system.	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 maintaining the patient's privacy and confirms the patient's identity by interview based on the data given.	
6. Assesses 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 supine position exposing only the areas to be examined.	
9. Performs direct examination according to different approaches.	



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	Page Number:	2 of 5
	Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
	Document Title:	<b>ARTERIAL DUPLEX STUDY OF THE UPPER EXTREMITIES</b>

<b>OUT-PATIENT POST-EXAMINATION PROCEDURE</b>	
<b>KEY TASK</b>	<b>PERSON RESPONSIBLE</b>
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. 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, prints them out for signing of the Vascular Consultant.	
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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Document Code:	DPOTMH-E-65-P01-WI09
Effective Date:	04-01-2022
Document Type:	Work Instruction
Page Number:	3 of 5
Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
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### 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	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. 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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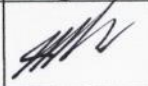
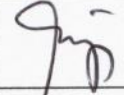


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Page Number:	4 of 5
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<b>IN-PATIENT POST-EXAMINATION PROCEDURE</b>	
<b>KEY TASK</b>	<b>PERSON RESPONSIBLE</b>
1. Removes the excess gel by wiping it off gently and gives instructions that the results are released 1-2 days.	Nurse Technician
2. Brings the patient back to the room/ward.	
3. Analyze and discusses the images with the Referring Physician about his/her findings.	Vascular Consultant Specialist
4. Submits to the Vascular Consultant the filled-up worksheet of result for the final interpretation of the test.	Nurse Technician
5. Encodes final result in the Bizbox hospital computer system.	
6. Does after care of the machine by wiping the excess gel on the probe and softly coils the wires.	
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Approved:	<b>GENESIS GOLDI D. GOLINGAN</b> President and CEO		





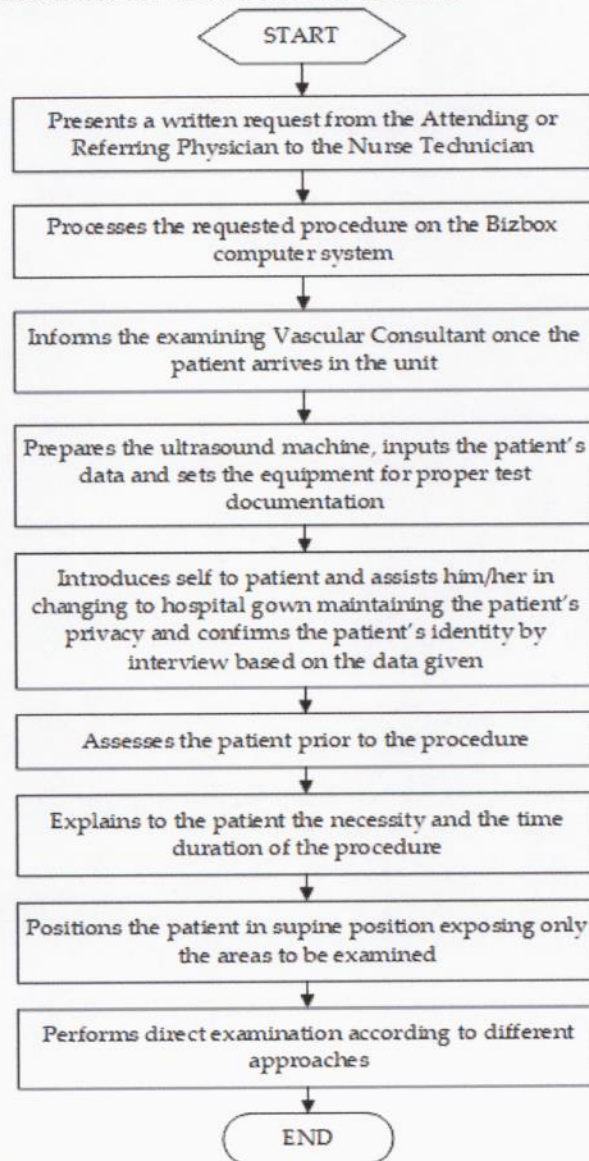
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Document Type:	Flowchart
Page Number:	1 of 6
Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
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## FLOWCHART

### OUT-PATIENT PRE-EXAMINATION PROCEDURE



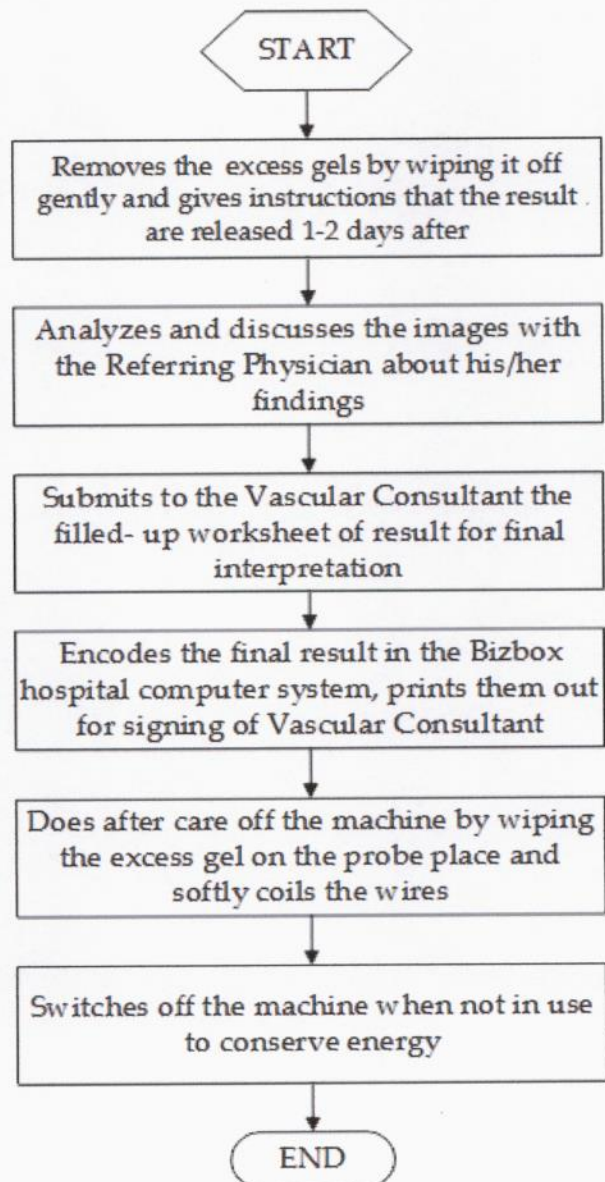


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Effective Date:	04-01-2022
Document Type:	Flowchart
Page Number:	2 of 6
Department/Section:	Non-Invasive Cardiovascular Imaging Sciences
Document Title:	<b>ARTERIAL DUPLEX STUDY OF THE UPPER EXTREMETIES</b>

## OUT-PATIENT POST-EXAMINATION PROCEDURE





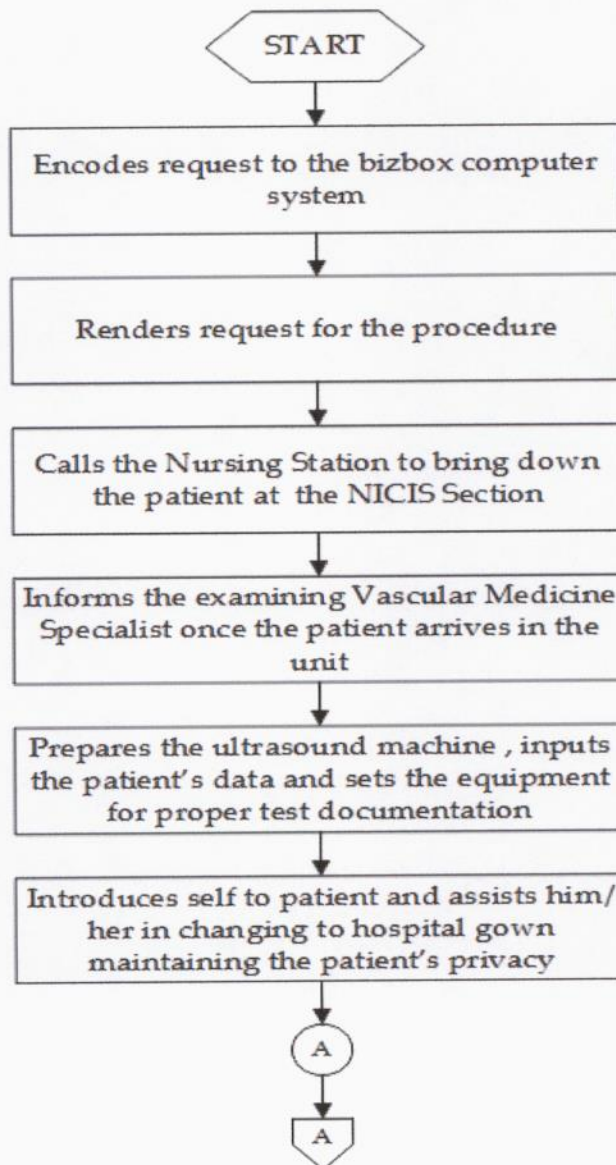


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Page Number:	3 of 6
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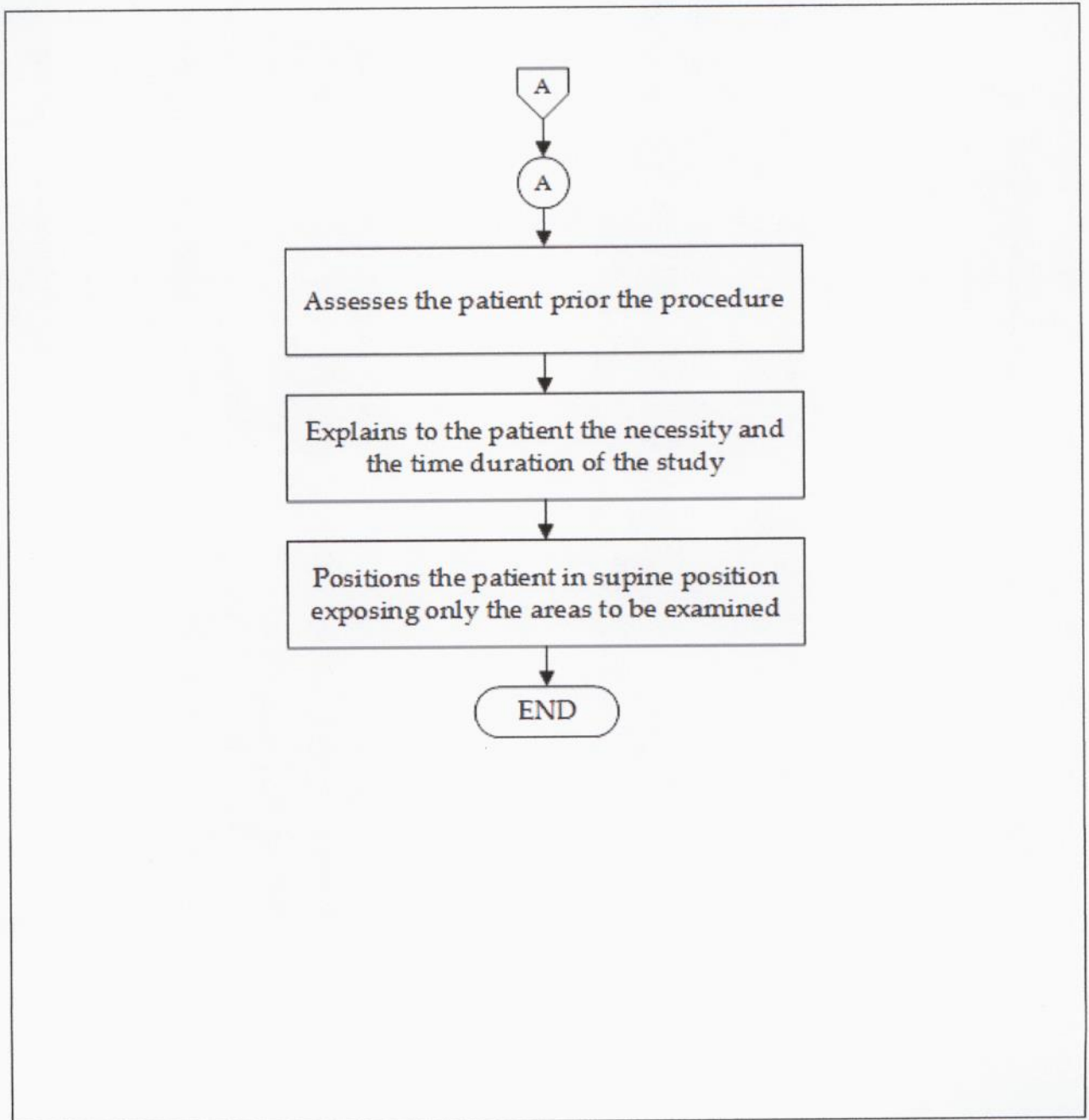




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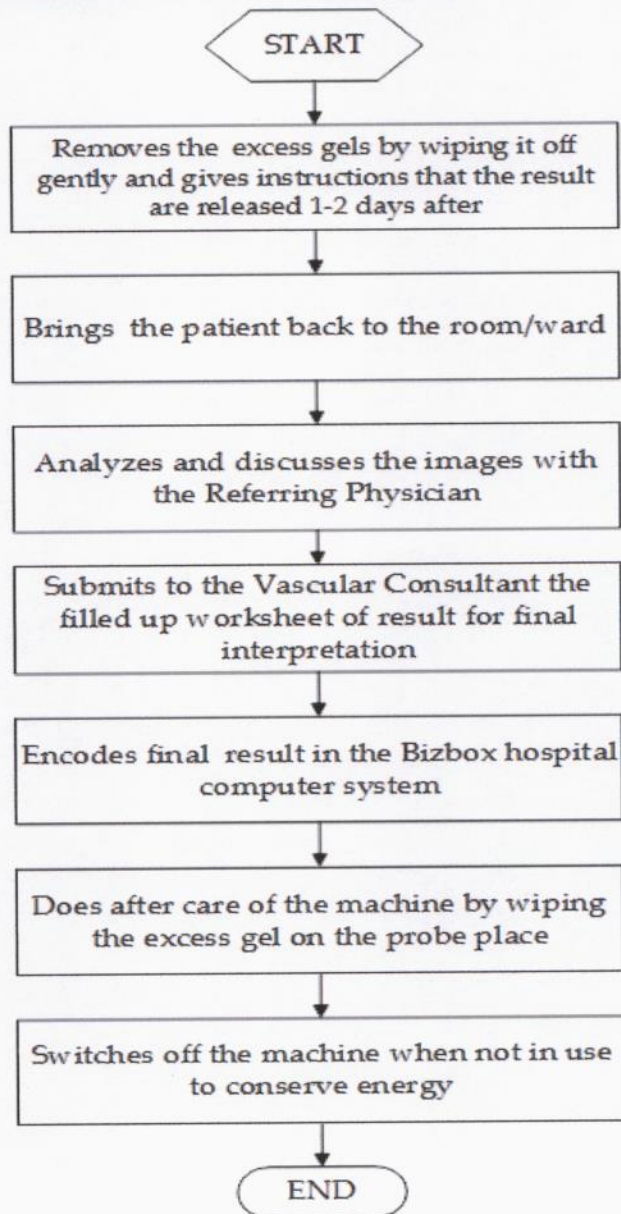



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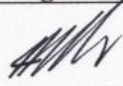
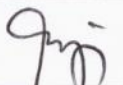

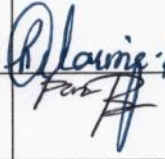
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### IN-PATIENT POST-EXAMINATION PROCEDURE



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**APPROVAL:**

	Name/Title	Signature	Date
Prepared by:	<b>MA. LLANA LINDA A. CARDONES, RN</b> NICIS Supervisor		5-12-22
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Reviewed by:	<b>DENNIS C. ESCALONA, MN, FPCHA, FPSQua</b> Quality Assurance Supervisor		06/03/2022
Recommending Approval:	<b>ROSARIO D. ABARING, MN, MBA-HA, PhD, FPCHA</b> Ancillary Services Division Officer		07-01-2022
	<b>HENRY F. ALAVAREN, MD, FPSMID, FPSQua</b> Total Quality Division Officer		7/7/22
Approved:	<b>GENESIS GOLDI D. GOLINGAN</b> President and CEO		