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	Effective Date:	03-31-2022
	Document Type:	Standard Operating Procedure
	Page Number:	1 of 5
	Department/Section:	Respiratory Therapy Services
	Document Title:	ARTERIAL BLOOD GAS SAMPLING (ABG)

PURPOSE:

1. To discuss the steps involved in performing Arterial Blood Gas (ABG).
2. The sampling of arterial blood gas for analysis of the respiratory and acid base is a common practice in acute care medicine. This is obtained for two (2) major reasons:
 - 2.1. To determine if the patient is well oxygenated.
 - 2.2. To determine the acid-base status of the patient.

SCOPE:


Applies to all Respiratory Therapy Services staff of Dr. Pablo O. Torre Memorial Hospital

PERSON RESPONSIBLE:

Respiratory Therapist, Medical Technologist, Nurse, Physician


GENERAL GUIDELINES:

1. Arterial blood gas sampling shall be performed as ordered by a physician.
2. It shall be performed by a trained Respiratory Therapist, Medical Technologist, Nurse, or Physician.
3. A universal precaution by the Infection Prevention and Control Unit shall be observed for proper handling of blood samples, proper disposal of contaminated needles and syringes in appropriate containers.
4. In trauma patients, the protocol calls for all team members to wear gloves, face and eye protection, and gowns.
5. In cases wherein processing of blood will take more than 10-15minutes, fill the container with ice to prevent alterations in result such as glycolysis, CO₂ & pCO₂ elevation, and decrease of pH & pO₂ values.


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PROCEDURE:

1. Check the patient's chart for the following:
 - 1.1. Physician's order
 - 1.2. Laboratory values:
 - 1.2.1. Hemoglobin
 - 1.2.2. Electrolyte (sodium & potassium)
 - 1.2.3. Prothrombin time
 - 1.2.4. Temperature
 - 1.3. Patient's Diagnosis
 - 1.4. Medication being administered:
 - 1.4.1.1 Anticoagulants
 - 1.4.1.2 diuretics
 - 1.4.1.3 electrolyte replacement
 - 1.4.1.4 steroids
2. Identify the patient by using the two (2) patient identifiers.
3. Introduce self and explain the procedure to the patient.
4. Check if:
 - 4.1. patient was suctioned recently.
 - 4.2. patient is attached to a ventilator, and make sure settings are as ordered by the physician.
 - 4.3. there has been a change in either a low-flow oxygen device or high-flow oxygen device. Either of this occurrence will affect blood gas result and interpretation. If the changes have been made without a Physician's order, readjust the parameters being administered to the correct settings. Wait for 20-30 minutes for stabilization before making the extraction.
5. Take note of the following; which are to be included in the official result:
 - 5.1. Patient's name, room number, age, sex, & Attending Physician.
 - 5.2. Ventilatory pattern observed; rate and depth of respiration.
 - 5.3. Indicate whether the patient is breathing room air or an enriched FiO₂.
 - 5.4. If attached to a ventilator, indicate whether it is volume or pressure controlled.

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6. Encourage the patient to relax and breathe normally.
7. Heparinize the syringe;
 - 7.1. Place the needle in the syringe aseptically.
 - 7.2. Introduce a small volume of air into the heparin bottle.
 - 7.3. Withdraw the needle from the bottle and pull the plunger back and forth with a rotating movement. Heparin serves as an anticoagulant and lubricant.
 - 7.4. Slowly expel the heparin from the syringe while making sure no air bubbles are left inside. This is best accomplished while holding the syringe in a vertical position.
8. Select the puncture site. There are three (3) common sites listed according to preference and safety:
 - 8.1. Radial Artery – most common site for puncture due to collateral circulation. Before doing an arterial puncture, a test known as Allen Sign shall be performed. This test is done to check for collateral circulation between the radial and ulnar artery.
 - 8.1.1. Instruct patient to clench fist.
 - 8.1.2. Occlude the radial and ulnar arteries.
 - 8.1.3. Instruct patient to open hand, while continuously applying pressure.
 - 8.1.4. Remove pressure from the ulnar artery.
 - 8.1.5. Observe hand of patient. Normally, entire hand shall return to normal color within fifteen (15) seconds even with the radial artery still occluded.
 - 8.1.6. If normal result is obtained, the radial artery can be used as puncture site.
 - 8.2. Brachial Artery
 - 8.3. Femoral Artery
9. Clean the puncture site with a cotton ball saturated with 70 % alcohol.
10. Hold syringe comfortably with the bevel up. Palpate the artery.

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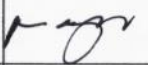

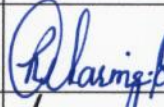


11. Make a smooth, deliberate puncture while stabilizing the artery with your fingers. Watch for the entrance of blood into the syringe. When it begins to enter the syringe, stop advancing the needle.
12. Once necessary volume is obtained, remove the needle and apply moderate pressure to the puncture site with a dry cotton ball for 3-5 minutes or until bleeding stops.
13. Plug the needle with a rubber stopper.
14. Mix the blood sample with the heparin properly before injecting it into the machine. It is done by rolling the syringe back and forth slowly between your hands for 5-10 seconds.
15. Feed blood sample into the ABG analyzer and record the result.
16. The result of the ABG is printed in duplicate and attached to the chart 10 minutes after blood extraction in the Emergency Department, or sent to the nurse's station for printing using the Examination Upshots of the Bizbox HIS.
17. The whole procedure takes 30 minutes to complete.


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3. Kumar V. Karon BS. Comparison of measured and calculated bicarbonate values. Clin Chem. 2008 Sep;54(9):1586-7 [PubMed]


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APPROVAL:

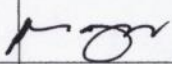

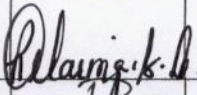

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KEY TASKS	PERSON RESPONSIBLE
1. Checks the patient's chart and identifies the patient using the two (2) patient identifiers.	RTS Staff
2. Checks patient if suctioned recently, attaches to a ventilator, and makes sure settings are as ordered by the physician.	
3. Encourages the patient to relax and breathe normally.	
4. Heparinize the syringe and selects the puncture site.	
5. Collects the blood sample.	
6. Feeds the blood sample into the ABG analyzer and records the result.	
7. Duplicates a copy of the result and attaches it to the patient's chart, or sends the result to the nurse's station using the Examination Upshots of the Bizbox HIS.	

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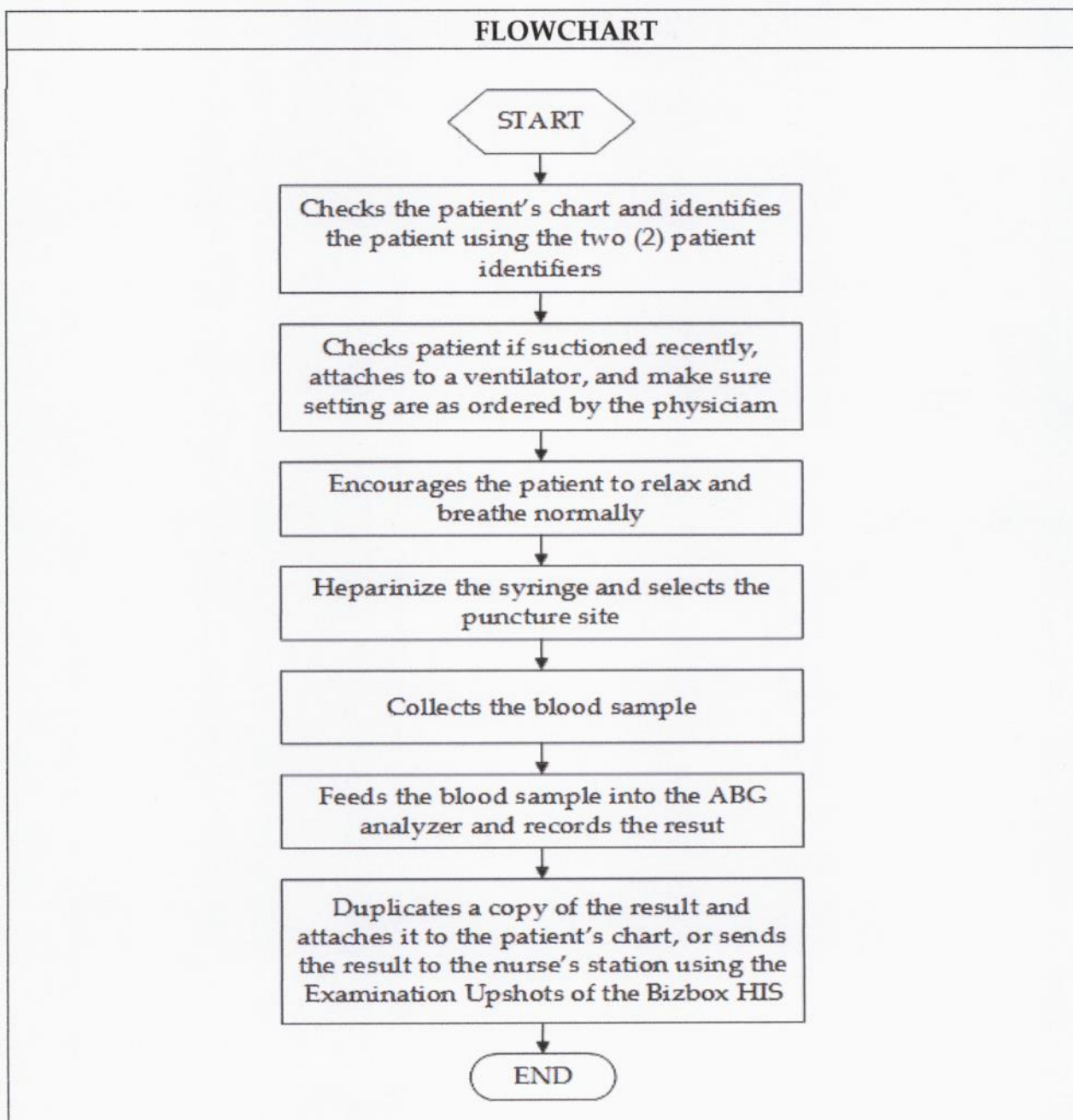



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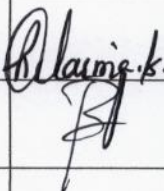
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FLOWCHART



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