



**COHESIVE HEALTHCARE MANAGEMENT & CONSULTING
MANGUM REGIONAL MEDICAL CENTER**

TITLE		POLICY
Arterial Blood Gases		RES-014
MANUAL	EFFECTIVE DATE	REVIEW DATE
Respiratory	07/2020	
DEPARTMENT	REFERENCE	
Respiratory	See below	

SCOPE

This policy applies to all Respiratory Care Practitioners (RCPs), lab, and/or trained Licensed Nursing Personnel for the performing of Arterial Blood Gases (ABGs).

POLICY

Respiratory Care Practitioners (RCP), lab, and/or trained Nursing Personnel shall provide sampling for arterial blood gas analysis, as ordered by a patient's medical provider.

Blood shall be drawn anaerobically from the radial, or brachial artery via needle puncture.

Arterial blood samples shall be obtained by trained healthcare staff. Healthcare staff who perform arterial blood sampling shall be evaluated for ABG skills and competency upon hire and annually.

Only attempt an arterial puncture twice, use a new and sterile needle for each puncture. Perform post-puncture care.

Indications:

- To evaluate the adequacy of ventilatory (PaCO₂), acid-base (pH and PaCO₂), oxygenation (PaO₂ and SaO₂) status, and the oxygen-carrying capacity of blood (PaO₂, HbO₂, Hbttotal and dyshemoglobins);
- To determine the patient's response to therapeutic intervention and/or diagnostic evaluation (i.e., oxygen therapy, exercise testing);
- To monitor severity and progression of a documented disease process;
- Preoperative assessment of high-risk patients receiving general anesthesia;
- Smoke inhalation or suspicion of carbon monoxide poisoning

Contraindications:

- Negative results of a modified Allen test;
- DO NOT perform an arterial puncture through a lesion or through or distal to a shunt (i.e., dialysis patient);
- Evidence of an infection or peripheral vascular disease in the selected extremity; choose an

alternate site;

- The patient is on a medium to high dose of anticoagulation therapy

PROCEDURE

1. Verify the physician's order;
2. Review the patient's medical record (i.e., Is patient receiving anticoagulants? Does patient have a history of bleeding disorders?);
3. Obtain supplies & equipment:
 - Blood Gas Kit
 - Patient Label
 - 70% isopropyl or other suitable antiseptic solution
 - 4 x 4s
 - Gloves
 - Syringe cap
4. Introduce yourself and explain procedure to the patient;
5. Reassure the patient as necessary;
6. Verify the patient's identity using two (2) patient identifiers;
7. Perform hand hygiene prior to procedure, put on gloves;
8. Palpate radial pulse;
9. Perform Allen's test to check for collateral circulation
10. **Technique:**
 - The radial and ulnar arteries are then palpated followed by the Allen's test:
 - The hand is clenched into a tight fist and pressure applied to the radial and ulnar arteries. The hand is opened (but not fully extended); the palm and the fingers are blanched.
 - Removal of the pressure on the ulnar artery should result in flushing (positive test).
 - If the ulnar artery does not adequately supply the entire hand (negative test), the radial artery should not be punctured.
 - If the collateral circulation is adequate, continue with the procedure.
 - If the collateral circulation is not adequate, test patient's other hand. If collateral circulation to both hands is inadequate, notify the physician.
 - The physician or medical provider may request that an alternate site be used for the puncture.
 - The physician or medical provider may decide to attempt the radial arterial puncture himself/herself.
 - Prep puncture site with an alcohol swab.
 - Using aseptic technique, insert the needle into the artery at a 30-degree angle, needle bevel pointing up.
 - Blood will pulsate into the syringe. Collect the amount needed for ABGs (usually 1-2 mL). If the artery is missed, withdraw the needle until the tip is just beneath the skin; adjust the needle angle and proceed again.
 - Remove needle after obtaining blood sample and apply pressure to the puncture site with a sterile piece of gauze for a minimum

of five (5) minutes.

- Assess puncture site before applying a pressure dressing. Do not constrict blood flow to the wrist.
- Remove and dispose of the needle per policy and procedure. Apply syringe cap.
- Roll the syringe between hands to mix the blood and heparin in the syringe.
- Ensure there are no air bubbles in the syringe.
- Label syringe with patient information that includes two (2) patient identifiers. Label the syringe in the presence of the patient.
- Immediately send the blood sample to the laboratory, along with a completed lab requisition.
- Assess puncture site for hematoma.
- Assess the distal pulse and capillary refill of the nailbeds of the affected extremity to ensure that the patient's circulation has not been interrupted.
- Remove gloves and wash hands.

11. Excess bleeding:

- a) **The Medical Provider should be alerted to excess bleeding.**
- b) If bleeding persists longer than five minutes, the attending physician should be notified of the problem. Pressure must be continued on the site as long as necessary to stop the bleeding.
- c) If the patient is under anticoagulant therapy or has prolonged clotting time, hold pressure on the site for a longer period. Two minutes after relieving pressure, inspect the site over the artery to ascertain that no hematoma is developing and that the distal circulation is intact.

12. Limitations:

- RCP and Nursing will not perform femoral arterial punctures.
- RCP and Nursing will be limited to two skin punctures before requesting assistance from a second phlebotomist.
- Nursing will not draw arterial blood on children under the age of six.

13. Documentation should include:

- Date and time;
- Vital Signs, including temperature;
- Oxygen therapy;
- Patient's activity level;
- Results of Allen test;
- Site of puncture;
- Pressure applied;
- Site or puncture site post procedure;
- Patient's tolerance of the procedure;
- Blood specimen sent to laboratory

14. Possible Complications:

- Air or clotted-blood emboli
- Anaphylaxis from local anesthesia
- Arterial occlusion

- Arteriospasm
 - Hematoma
 - Hemorrhage
 - Infection
 - Pain
 - Trauma to the vessel
 - Vasovagal response
15. Notes:
- Specimens from mechanically ventilated patients with minimal pulmonary pathology adequately reflect the effects of a change in oxygen concentration 10 minutes after the change has been made.
 - In spontaneously breathing patients, at least 20-30 minutes should elapse following oxygen concentration change before an arterial puncture is performed. Patients with obstructive defects and increased residual volumes may require 30 minutes or longer for the change in oxygen concentration to take effect.
16. When orders are written for the physician to be notified of ABG results, it will be the responsibility of the RCP or Nursing personnel drawing the ABG to notify the physician of the patients ABG values.

REFERENCES

Infusion Nurses Society (INS). (2016). *Policies and Procedures for Infusion Nursing*, Fifth Edition. Norwood, MA: Infusion Nurses Society.

Nettina, Sandra M. (2014). *Lippincott Manual of Nursing Practice*, Tenth Edition. Philadelphia, Pennsylvania: Lippincott Williams and Wilkins.

Singh, Virendra; Khatana, Shruti; & Gupta, Pranav. (2013). Blood gas analysis for bedside diagnosis. *National Journal of Maxillofacial Surgery*, Volume 4, Number 2, pages 136-141. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3961885/>

ATTACHMENTS

NA

REVISIONS/UPDATES

Date	Brief Description of Revision/Change