

 <p>central peninsula hospital 250 Hospital Place Soldotna, AK 99669</p>	POLICY TITLE: Arterial Blood Gas & Arterial Line Collection	DEPARTMENT: Laboratory CATEGORY: Laboratory Services SECTION: General Laboratory
	POLICY NUMBER: CPGH.700.090	EFFECTIVE DATE: February 2023 Original Date of Policy: GL-503 - Unknown
	AUTHORIZED BY: Laboratory Medical Director	Revised: CPGH.700.090 – 6/16, 5/17, 12/17, 1/19, 12/19; (GL-503 - 12/90, 6/92, 9/96, 5/97, 6/01, 8/01, 10/07, 12/08) Reviewed: 9/91, 4/95, 6/98, 12/02, 10/20; 11/21, 2/23

APPLIES TO: Collection of arterial blood specimens for laboratory testing.

RESPONSIBILITY: All CPH staff certified to draw ABGs. (Lab, Cardio-Pulmonary, RN) Arterial collection education and competency is under the authority and responsibility of the clinical laboratory.

Note: Only physicians and Cardio-Pulmonary Staff will draw from Brachial and Femoral sites.

POLICY: All nurses and respiratory therapists must be certified in drawing arterial blood gases before they are allowed to draw an arterial blood gas sample without supervision.

MATERIALS: Vacutainer Brand 3ml “Preset Dry-Hep Plastic Syringe” Kit (contains 22 gauge 1 ½ inch needle, 80usp Lypolyzed of calcium balanced Lithium Heparin, cork and cap).

Betadine swab
Alcohol pads
Sterile 2 x 2 gauze
Gloves

PROCEDURE: Always first establish the identity of the patient (an armband must be present on Emergency Department and In-house patients) by asking the patient to state his/her their name and date of birth. Compare the patient’s stated name, date of birth, and last three digits of Medical Record number out loud to the printed name on the order, requisition or printed label.

1. **Do Allen test:**
 - A. Have the patient rest his arm on the bedside table. Support the wrist with a rolled towel.
 - B. Occlude the radial and ulnar arteries with your index and middle fingers.
 - C. Without removing your fingers, ask the patient to clench and unclench his fist several times, until the skin of the hand pales.
 - D. Remove your finger from the ulnar artery, keeping your index finger over the radial artery. If the skin on the patient's hand becomes pink immediately, the blood supply to his hand is adequate. If the skin doesn't become pink, try the other hand. If neither hand has an adequate blood supply, do not draw the blood specimen. Notify the physician.
2. **Obtain arterial specimen:** Document the Allen Test in the electronic medical record
 - A. Explain procedure to patient.
 - B. Check order to determine if blood gasses are to be done on room air or with oxygen.
 - i. Note R.A. or O2/L, FiO2 and patient temperature on specimen.
 - ii. If the request is for R.A. patient must be off oxygen for 20 minutes before arterial sampling.

Radial Puncture

Only approved personnel may perform arterial blood draws.

1. Explain procedure to patient and elicit cooperation as appropriate. If possible, patient should be in a sitting position with legs down. Position the patient's arm straight out with palm up. Hyper-extend wrist and abduct thumb.
2. Check for pulsation in the ulnar artery and palpate radial artery. Perform Allen Test.
3. Prep skin with Betadine swab around radial artery location. Alcohol swab may be used to wipe Betadine off.
4. Prep your own-gloved fingers that you plan to use for palpation by rubbing vigorously with Betadine swab.
 - a. Flex hand downward holding thumb of patient as you palpate radial Artery.
 - b. Prep puncture site with Betadine using circular motion working from center outward. Leave dry 30 seconds.
 - c. Wipe clean with alcohol.
 - d. Brace artery with index and second finger.
 - e. Perform puncture using 45° angle.
 - f. Arterial blood will push up barrel of the syringe. Obtain about 1.5 ml.
 - g. Withdraw needle-syringe unit from artery and quickly cover puncture site with gauze 2 x 2.
 - h. Have patient or assistant maintain direct pressure on arterial site for 5 minutes.
 - i. Tap syringe and remove any air from syringe, slide needle into cork or shield.
 - j. Arterial sample should be mixed by rolling syringe barrel between palms of both hands.
 - k. Place label on specimen with:
 - Patient name
 - Date of Birth
 - Date/time of draw
 - Your initials
 - Patient temperature
 - FiO2
 - l. Place pressure bandage over puncture site.
 - m. Return to Laboratory with specimen.

Note: The Clinical and Laboratory Standards Institute now recommends that arterial specimens be collected in a plastic syringe, left at room temperature and analyzed within 30 minutes. Accordingly, blood gas syringes should now be transported to the laboratory at room temperature.

- n. Mark appropriate charges:
First set: If this is the first specimen for this patient on this day.
Subsequent set: If this is an additional specimen on the same patient on the same day.
- o. All arterial blood gasses will be processed as STAT specimens.

Brachial Artery- Only performed by approved personnel:

1. Obtain order from physician for brachial puncture
2. Prepare needle as outlined above.
3. Support patient's elbow and prep brachial site with Betadine.
4. Palpate brachial artery using 2 fingers at the medial aspect of the antecubital fossa.

5. Hold syringe and needle at a 45 - 90 ° angle to the artery.
6. Insert needle until blood return is noted in syringe. Syringe will fill by itself unless patient's blood pressure is low.
7. Apply direct pressure to the site for at least 5 minutes or until bleeding stops. Do not delegate responsibility for maintaining the pressure to puncture site.

Femoral Artery-Only performed by approved personnel:

1. Obtain order from physician for femoral puncture.
2. Prepare needle as outlined in step 5 of section on preparation using a 1 1/2 inch 20-23 gauge needle.
3. Expose groin area of patient's leg and prep femoral area with Betadine.
4. Palpate femoral artery using 2 fingers between the iliac crest and the symphysis pubis below the inguinal ligament.
5. Hold syringe and needle at a 90 ° angle to the artery.
6. Needle is inserted until blood return is noted in the syringe.
7. Apply direct pressure to the site for at least 5 minutes or until bleeding stops. Do not delegate responsibility for maintaining the pressure to puncture site.

Pediatric Patients

The radial artery is used to obtain an arterial blood sample. Do not use the brachial or femoral artery because of the high risk of thrombosis.

- Additional equipment:

- o 23 - 25 gauge butterfly needle
- o Pre-heparinized TB syringe

1. Prep site and perform puncture as outlined for radial artery stick with butterfly tubing open to air.
2. When a flash back of blood is seen, attach TB syringe and slowly aspirate to obtain sample. 0.3 mL is adequate for infants and young children.
3. The autostik may be used on larger children instead of a TB syringe.
4. Attach a patient label to the sample and take to the laboratory.

Collection from an Arterial Line

Materials:

Vamp Direct-Draw Vacutainer Sheath

Heparinized syringe

Gloves

Chlorhexidine-based antisepticssuch as ChlorPrep® for cleaning the drawing port

1. Turn stopcock off to the pressure bag.
2. Squeeze blood reservoir by compressing clamps on each side. This will result in the blood aspirating into reservoir.
3. Cleanse the drawing port, and attach the Needle-Less Cannula to the drawing port. Insert the heparinized syringe into the cannula. The sample will aspirate into the syringe.
4. Remove syringe and Needle-Less cannula.
5. Open stopcock.
6. Flush system until tubing runs clear by compressing flush device on transducer.
7. Attach patient label that includes patient name, date and time of draw, FiO₂ and patient's temperature.
8. Take or send sample to the Laboratory as soon as possible for analysis.

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Training and Competency

Initial Competency

1. Candidate must complete ABG collection education approved by the laboratory medical director. Lippincott is the current approved source of education. A knowledge test will assess the effectiveness of the education.
2. Candidate must perform three successful radial ABG draws under the supervision of designees appointed by the Laboratory Medical Director. Approved designees will have a 4 year college degree in a health science and have been signed off as competent to collect ABG specimens.
3. Additional observations may be requested at the discretion of the candidate or designee.
4. Competency will be assessed at 6 months, and one year, then annually thereafter.

Annual Competency

1. Annual competence should be assured by two observed arterial draws, and a knowledge test.
2. A certificate of competence, (Initial or annual) should be kept in the employee's personnel file upon successful completion of the education and required sticks.
3. Authorized personnel will be approved and signed by the Laboratory Medical Director, or the Chief of Medical Staff.

REVISION

RESPONSIBILITY: Laboratory Administrative Director and/or designee(s)

REFERENCES:

American Society of Clinical Pathology, "Collection of Arterial Blood Gas Samples", revised 1990.

The Joint Commission NPSG # 1 2005-2006 camlab.