



HEALTH HOLDING
HAFER ALBATIN HEALTH
CLUSTER
MATERNITY AND
CHILDREN HOSPITAL

Department:	Maternal Intensive Care Unit		
Document:	Multidisciplinary Policy and Procedure		
Title:	Direct Arterial Puncture in Maternal Intensive Care Unit		
Applies To:	All Maternity Intensive Care Unit Staff and Respiratory Therapists		
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1. PURPOSE:

- 1.1 To provide guidelines on direct arterial puncturing.

2. DEFINITIONS:

- 2.1 **Arterial Puncturing** – an invasive procedure in which the arteries are directly punctured for blood sampling.
- 2.2 **Arterial Line** – An intra-arterial catheter usually connected to a monitoring system consisting of pressure tubing, a transducer, and a monitor that permits continuous monitoring of blood pressure and access to arterial blood for samples analysis.

3. POLICY:

- 3.1 An arterial puncture may be performed by the physician, RTs or well-skilled MICU nurse in emergency situations in MICU for on-time sample for arterial blood gas measurement.
- 3.2 Maintain aseptic technique throughout the procedure.
- 3.3 Select the site to be used for percutaneous stick. Arterial blood can be obtained from radial, brachial or femoral artery. Radial artery is usually the site of first choice.
- 3.4 Discard excess heparin and air from the syringe while holding the syringe with needle pointing upward. The only heparin remaining in the syringe should be in the dead space of the needle or the walls of the syringe.
- 3.5 After the blood obtained, push the air out, never withdraw air into the syringes.
- 3.6 Cap the syringes tightly or plunge it into the rubber stopper, immediately. (Prevents room air from mixing with blood specimen)
- 3.7 Arterial blood sample must be submerged in ice cup or ice water and send to the laboratory immediately.
- 3.8 Maintain pressure dressing for 4 minutes. If the patient is receiving anticoagulation therapy maintain pressure for at least 10-20 minutes or longer. The pressure dressing must not be restrictive.
- 3.9 Inspect puncture site periodically. Assess for cold hand, numbness, tingling and discoloration.

4. PROCEDURE:

- 4.1 Radial Puncture
 - 4.1.1 Check the Physician's order
 - 4.1.2 Wash hands
 - 4.1.3 Assemble all the equipment's
 - 4.1.4 Explain the procedure to the patient (for conscious patient)
 - 4.1.4.1 Heparinize the syringe.
 - 4.1.4.2 Attach a needle other than the one to be used for puncture to the syringe.
 - 4.1.4.3 Cleanse top of the Heparin with alcohol swab.
 - 4.1.4.4 Withdraw 0.01ml heparin into the syringes, draw plunger back and forth several times to coat plunger with heparin.

- 4.1.4.5 Rotate plunger to eliminate drops spots and hold syringes in an upright position and expel excess heparin and air bubbles.
- 4.1.4.6 Discard needle used for heparinization, and place the sure tightly needles selected for arterial puncture.
- 4.1.4.7 Palpate the radial artery.
- 4.1.4.8 Performs the Allen's (for conscious patient)
- 4.1.4.9 Elevate patients' hand occlude both radial and ulnar arteries while the patient alternately clenches and unclenches hand.
- 4.1.4.10 Lower the patient's hand when the hand blanches, release the pressure of ulnar artery while maintaining pressure on the radial artery.
- 4.1.4.11 If the hand quickly becomes pink, collateral circulation is good and the radial site is usable.
- 4.1.4.12 Position the patient's wrist in hyperextension by placing a small rolled towel under it, with the palmar surface of the hand facing upward.
- 4.1.4.13 Cleanse the site carefully with povidone iodine or alcohol swab. Wipe with the circular method allowing at least a 30-second contact time with intended puncture site.
- 4.1.4.14 Palpate the artery and align two or three finger tips along the direction the artery flows.
- 4.1.4.15 Hold syringes and needle (bevel up) no higher than 30 degree angle with the needle pointed directly toward the artery.
- 4.1.4.16 Quickly enter skin and artery as the blood will forcefully enter the syringes. If blood pressure is low, withdraw arterial blood gently on the plunger.
- 4.1.4.17 Collect approximately 0.2-0.7 ml of blood and withdraw needle and syringes.
- 4.1.4.18 Apply firm pressure immediately with one hand. With the other, hold syringe with needle upright and promptly cork or apply rubber stopper.
- 4.1.4.19 Roll the syringes back and forth between the hands for 5 to 10 seconds (to ensure mixing of the blood and heparin). Place the capped blood sample syringe in the glass of ice water, with the blood level completely submerge in ice water.
- 4.1.4.20 Bring blood sample immediately for analysis.
- 4.1.4.21 After applying continuous firm pressure to puncture site for 5 minutes assess the site for bleeding and apply pressure dressing.
- 4.1.4.22 Leave pressure dressing in place for about 30 minutes assessing the site periodically.
- 4.1.4.23 Document the procedure in the nurse's notes.

4.2 Femoral Puncture

- 4.2.1 The femoral artery is usually easily palpated with the patient is supine position.
- 4.2.2 Wearing gloves, prepare site of puncture as done in the radial artery procedure.
- 4.2.3 The entry may be performed with the same techniques used for radial artery.
- 4.2.4 Maintain pressure for at least 10-20 minutes or longer in an anti-coagulated patient and release pressure slowly.

5. MATERIAL AND EQUIPMENT:

- 5.1 Hypo Tray
- 5.2 Alcohol Swab
- 5.3 Sodium Heparin (1000 VISP u/ml)
- 5.4 Syringe (1-3ml) for radial: 25 gauge x 5/8 inch or 22 gauge x 1 for femoral artery:
- 5.5 22 Gauge x 1 ½ inch or 20 gauge x 1 ½ inch
- 5.6 Sterile Gloves
- 5.7 Sterile 2x2 u=inch gauze and cotton
- 5.8 Rubber stopper or syringe cap
- 5.9 Container with ice (paper cup)
- 5.10 Adhesive Tape.

6. RESPONSIBILITIES:

- 6.1 Physician
- 6.2 Nurse
- 6.3 Respiratory Therapist

7. APPENDICES:

N/A

8. REFERENCES:

- 8.1 Guidelines for Adult ICU Care/ Ministry of Health, General Directorate of Health Centers- Riyadh, 2013

9. APPROVALS:

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