

STANDARDIZED PROCEDURE

ARTERIAL CATHETER INSERTION (Adult)

I. Definition:

This protocol covers the task of arterial line insertion by an Advanced Health Practitioner. The purpose of this standardized procedure is to allow the Advanced Health Practitioner to safely insert the arterial catheter when needed. An arterial catheter may be needed in routine (preoperative placement, non-urgent placement for titrating vasoactive agents more effectively in a stable patient, etc., and urgent case scenarios. The goal of arterial line placement is to provide a means of monitoring a patient's blood pressure moment-to-moment and to have access to the arterial blood supply for laboratory analysis.

II. Background Information

A. Setting: The setting (inpatient vs outpatient) and population (adults vs pediatrics) for the Advanced Health Practitioner (AHP) is determined by the approval of the privileges requested on the AHP Privilege Request Form. This procedure is for adults only.

B. Supervision:

The necessity of the procedure will be determined by the AHP in verbal collaboration with the attending physician or his/her designee. Direct supervision will not be necessary once competency is determined, as provided for in this procedure. At that time, general or indirect supervision is acceptable.

Designee is defined as another attending physician who works directly with the supervising physician and is authorized to supervise the AHP.

The Advanced Health Practitioner will notify the physician immediately upon being involved in any emergency or resuscitative events or under the following circumstances:

1. Patient decompensation or intolerance to the procedure
2. Bleeding that is not resolved
3. Outcome of the procedure other than expected

C. Indications:

The arterial line placement is intended to provide a means of monitoring a patient's blood pressure moment-to-moment and to have access to the arterial blood supply for laboratory analysis.

D. Precautions:

Whenever an artery is punctured, there is risk of hemorrhage, hematoma formation or limb ischemia.

III. Materials

The following materials may be used directly or indirectly during arterial line placement:

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1. Chlorhexadine solution
2. Gauze
3. Angiocath I.V. catheter (20-25 gauge or arterial line kit)
4. Pressure I.V. tubing with transducer set up
5. Pressure bag
6. Plain 0.9% Normal Saline 500 ml
7. Tape and/or steri-strips an arm board or towel roll
8. An arm board or towel roll
9. Opsite or Tegaderm cover dressing
10. Local anesthetic (1% or 2% lidocaine ,EMLA cream)
11. Suture material for femoral arterial line placement (2.0 silk)
12. Scissors
13. Monitor cable for transducing arterial waveform.

IV. Procedure

A. Pre-treatment evaluation:

Assess clinical necessity for arterial line (frequent arterial blood draws, blood pressure monitoring and length of time line has been placed). Working collaboratively, the necessity of the procedure will be determined along with the expected outcomes of the procedure, and the treatment plan.

B. Site selection

For adults, the preferred site selection is the following, in order of preference:

1. Radial
2. Femoral
3. Brachial

Any other sites must have the Attending physician approval.

C. Set up:

Gather all necessary materials and set up pressure tubing with transducer set up.

D. Patient preparation

1. Identify patient with two patient identifiers prior to start of procedure.
2. Inform the patient of the treatment plan, which includes arterial line placement.
3. Position the patient in a comfortable position that gives adequate access to the placement site.

E. Perform the procedure

1. Ensure that all preprocedure steps are taken and a time out is performed prior to the procedure.

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2. Assure that pressure tubing with transducer is connected to bedside monitor.
3. Wash hands and don gloves.
4. If necessary, apply anesthetic agent (local lidocaine 1-2% or EMLA cream).
5. Locate pulsating artery via ultrasound or palpation.
6. Cleanse area selected for arterial line placement.
7. Prepare patient for puncture.
8. Stabilize artery by pulling skin taut.
9. Puncture skin at 45-60 degree angle for radial artery; 90 degrees for femoral artery.
10. Advance catheter when flash of blood is observed in catheter.
11. Connect to pressure I.V. tubing and check for arterial waveform on bedside monitor.
12. Cleanse area of any blood and allow site to dry.
13. Secure arterial line with tape or steri-strips and cover with a Tegaderm dressing.
14. Secure I.V. tubing to prevent it from being caught and pulling on arterial catheter. If a femoral arterial line is placed, it should be secured with a suture.
15. Properly dispose of the I.V. sharps and other used materials.

F. Post-procedure

1. Record the procedure, outcome and plan in the progress note.
2. Send arterial blood sample if needed.

G. Follow-up treatment

1. Instruct the patient on what to expect while having an arterial line and that blood may be obtained from it as needed.
2. Instruct the patient that if the line should become dislodged accidentally, to apply direct pressure and call for assistance at once.

V. Documentation

A. Documentation is in the electronic medical record

1. Documentation of the pretreatment evaluation
2. Record the time out, indications, procedure, EBL, the outcome, patient tolerance, medications given, and the plan in the note, as well as any self-care instructions.

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B. All abnormal or unexpected findings are reviewed with the supervising physician.

VI. Competency Assessment

A. Initial Competence

1. The Advanced Health Practitioner will be instructed on the efficacy and the indications of this therapy and demonstrate understanding of such.
2. The Advanced Health Practitioner will demonstrate knowledge of the following:
 - a. Medical indication and contraindications of arterial catheter insertion.
 - b. Risks and benefits of the procedure
 - c. Related anatomy and physiology
 - d. Consent process (if applicable)
 - e. Steps in performing the procedure
 - f. Documentation of the procedure
 - g. Ability to interpret results and implications in management.
3. Advanced Health Practitioner will observe the supervising physician perform each procedure three times and perform the procedure **three** times under supervision.
4. Supervising physician will document Advanced Health Practitioner's competency prior to performing procedure without supervision.
5. The Advanced Health Practitioner will ensure the completion of competency sign off documents and provide a copy for filing in their personnel file and a copy to the medical staff office for their credentialing file.

B. Continued proficiency

1. The Advanced Health Practitioner will demonstrate competence by successful completion of the initial competency.
2. Each candidate will be initially proctored and signed off by an attending physician. Advanced Health Practitioner must perform this procedure at least **three** times per year. In cases where this minimum is not met, the attending must again sign off the procedure for the Advanced Health Practitioner. The Advanced Health Practitioner will be signed off after demonstrating 100% accuracy in completing the procedure.
3. Demonstration of continued proficiency shall be monitored through the annual evaluation.

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4. A clinical practice outcomes log is to be submitted with each renewal of credentials. It will include the number of procedures performed per year and any adverse outcomes. If an adverse outcome occurred, a copy of the procedure note will be submitted.

VII. RESPONSIBILITY

Questions about this procedure should be directed to the Chief Nursing and Patient Care Services Officer at 353-4380.

VIII. HISTORY OF PROCEDURE

Revised February 2012 by Subcommittee of the Committee for Interdisciplinary Practice

Reviewed February 2012 by the Committee on Interdisciplinary Practice

Prior revision June 2008

Approved February 2012 by the Executive Medical Board and the Governance Advisory Council.

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