

 <p style="text-align: center;"><b>DIVISION OF ADULT INSTITUTIONS</b></p> <p style="text-align: center;"><b>POLICY AND PROCEDURES</b></p>	<b>DAI Policy #:</b> 500.31.04	<b>Page</b> 1 of 5
	<b>Original Effective Date:</b> 11/28/12	<b>New Effective Date:</b> 04/20/18
	<b>Supersedes:</b> 500.31.04	<b>Dated:</b> 11/28/12
	<b>Administrator's Approval:</b> Jim Schwochert, Administrator	
<b>Required Posting or Restricted:</b>		
<input checked="" type="checkbox"/> <b>Inmate</b> <input checked="" type="checkbox"/> <b>All Staff</b> <input type="checkbox"/> <b>Restricted</b>		
<b>Chapter:</b> 500 Health Services		
<b>Subject:</b> Cannulation of the New Graft		

**POLICY**

Newly created arteriovenous grafts shall be accessed per the current standards of care.

**REFERENCES**

Contemporary Nephrology Nursing – Principles and Practice, Second Edition. ANNA 2006

Guideline at a Glance – Cannulation of AV Fistulas and Grafts, BC Renal Agency, May 11, 2007

National Kidney Foundation's Guidelines, Kidney Dialysis Outcomes Quality Initiative, Updates 2006

Nephrology Nursing, Scope and Standards of Practice, 7<sup>th</sup> Edition. ANNA

**DEFINITIONS, ACRONYMS AND FORMS**

ACP – Advanced Care Provider

AVG – Arteriovenous Graft

BFR – Blood Flow Rate

DOC-3413 – Hemodialysis Kardex

DOC-3705 – New Graft/Fistula Cannulation Flow Sheet

HD – Hemodialysis

Pseudo aneurysm – Vascular abnormality that resembles an aneurysm, but the out pouching is not limited by a true vessel wall, but rather by external fibrous tissue.

**PROCEDURE**

- I. Assessment of the AVG shall be completed at each dialysis treatment. Document findings in the health care record. Assessment shall include:
  - A. Inspection for approximation of the suture lines in the first postoperative week and from the immediate postoperative period on, any signs or symptoms of infection.
  - B. Edema and ecchymosis should be expected as a result of the tunneling required during operative placement of the graft material.

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- C. Listening for a bruit, feeling for a thrill.
  - D. Educate the patient on checking the access for thrill along the arterial anastomosis and along the length of the AVG.
  - E. Determine the direction of the blood flow through the graft and document this on the DOC-3413 – Hemodialysis Kardex and in the health record. This can be accomplished by various methods:
    - 1. Auscultation will usually reveal a stronger bruit closer to the anastomosis on the arterial side of the graft.
    - 2. Momentarily occluding the AVG at the mid-portion should reveal a diminished bruit and thrill on the venous side.
- II.** Cannulation of the graft can usually be completed within two to three weeks. Within this time frame the operative swelling decreases and the subcutaneous tunnel tissue adheres to the graft material.
- A. Obtain an order from the vascular surgeon or the Nephrology ACP if the surgeon is not available, for a date to begin cannulation of the graft.
  - B. During the first week of usage, decrease the amount of heparin by one half to prevent bleeding into the surrounding tissue. It may be necessary to initiate saline flushes during this week.
  - C. Utilize 50 percent of the graft for venous needle placement and 50 percent for arterial needle placement. Needle sites should be rotated with each HD session, utilizing rope ladder technique.
  - D. Proper needle rotation will increase the longevity of the AVG and help to prevent the development of pseudo aneurysms. If aneurysms or pseudo aneurysms are present, do not cannulate into them.
  - E. Arterial needles can be placed using retrograde cannulation with needle tips placed at least three inches apart. With retrograde cannulation, the arterial needle is placed towards the arterial anastomosis and the venous needle towards the venous anastomosis.
  - F. Antegrade cannulation of the arterial and venous needle may also be utilized if needle tips are at least three inches apart.
  - G. Do not cannulate within one inch of the anastomosis and cannulate at least ¼ inch from a previous site.
  - H. Cannulation of the AVG shall be completed using a small gauge needle (17 or 16 gauge) initially, gradually increasing needle size. Use the smallest gauge needle that will achieve the desired blood pump speed.

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- I. For skin preparation cleanse the area with:
  1. Clorhexidine gluconate/70% isopropyl alcohol antiseptic, if tolerated. Apply solution using back and forth friction scrubbing for 30 seconds. Allow area to dry. Do not blot the solution.
  2. Povidone-iodine can be used for patients with an allergy or skin sensitivity to Clorhexidine. Apply for 2-3 minutes for its full bacteriostatic action to take effect. Allow it to dry prior to needle cannulation.
  
- J. After skin preparation, pull skin taut in opposite direction of needle insertion. Avoid excessive pressure to the cannulation site to stabilize and prevent flattening of graft material.
  
- K. Cannulation shall be at a 45 degree angle.
  1. A lesser angle of insertion increases the risk of dragging the cutting edge of the needle along the course of the graft, and a steeper angle increases the risk of perforating the back wall of the graft.
  2. After a flashback of blood is present in the needle, flatten the needle and advance.
  
- L. If cannulation isn't easily successful:
  1. Remove the needle and apply pressure until hemostasis is reached.
  2. Probing is not recommended as the bottom or side of the graft material may be punctured and hemorrhage into the tunnel can occur.
  3. Maximum number of cannulation attempts at any one session is four. This includes arterial and venous, unless ordered otherwise by the ACP. Notify the ACP after four unsuccessful attempts.
  
- M. Tape needles securely utilizing Chevron technique to the skin. Bloodlines should be taped to the patient's arm or clothing, not the dialysis chair.
  
- N. Needle gauges, blood flow rates, and any existing current access cannulation issues shall be documented in the health record. Additional information, as appropriate, shall be documented in the Progress Notes of the Hemodialysis Chart.

<b>Blood Flow Rate</b>	<b>Recommended Needle Gauge</b>
<300 MI/MIN	17 Gauge
300-350 MI/MIN	16 Gauge
>350-450 MI/MIN	15 Gauge
>450 ML/MIN	15 Gauge (Largest Needle)

- O. Document cannulation on DOC-3705 and scan into EMR after three successful treatments with the largest needle size that is appropriate.

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P. When a graft infiltrates:

1. Let it "rest" until resolution of bruising and/ or swelling (usually 1-2 weeks) if a catheter is present. Notify the ACP.
2. If a catheter isn't present, contact the ACP for further orders.
3. If the patient has not received heparin, shut off pump, remove needle and apply digital pressure to the exit site.
4. If the patient has received heparin, assess infiltration site to see if needle should be pulled out or left in place with ice applied over the site until the dialysis treatment is completed.
5. Apply ice to access; on 10 min, off 10 min. Instruct patient to continue to apply x 24 hours. After 24 hours, patient may alternate cold and warmth.
6. Utilize smaller gauge needles, if available, with the next treatment. Document in the health record and DOC-3413 – Hemodialysis Kardex .
7. If a catheter is present, do not remove it until the patient has had six consecutive successful graft cannulations at the prescribed BFR and needle gauge.
8. Needles should be removed at the same angle, or similar angle, of insertion. Never apply pressure before the needle is completely out.
9. Never use clamps or tourniquets on new AVGs or if an access shows signs of infiltration or edema. Minimize the use of clamps whenever possible.

**Bureau of Health Services:** \_\_\_\_\_ **Date Signed:** \_\_\_\_\_  
James Greer, BHS Director

\_\_\_\_\_ **Date Signed:** \_\_\_\_\_  
Paul Bekx, MD, Medical Director

\_\_\_\_\_ **Date Signed:** \_\_\_\_\_  
Mary Muse, Nursing Director

**Administrator's Approval:** \_\_\_\_\_ **Date Signed:** \_\_\_\_\_  
Jim Schwochert, Administrator

<b>Facility:</b> Name		
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<b>Will Implement</b> <input type="checkbox"/> As written <input type="checkbox"/> With below procedures for facility implementation		
<b>Warden's/Center Superintendent's Approval:</b>		

## REFERENCES

## DEFINITIONS, ACRONYMS, AND FORMS

### FACILITY PROCEDURE

- I.
  - A.
  - B.
    - 1.
    - 2.
      - a.
      - b.
      - c.
    - 3.
  - C.

II.

III.

### RESPONSIBILITY

I. Staff

II. Inmate

III. Other