



MANITOBA RENAL PROGRAM

SUBJECT <ul style="list-style-type: none"> ▪ Venipuncture of Arteriovenous Fistula/Graft 	SECTION 30.20 Vascular Access
	CODE 30.20.01
AUTHORIZATION <ul style="list-style-type: none"> ▪ Professional Advisory Committee, Manitoba Renal Program ▪ Nursing Practice Council, St. Boniface Hospital 	EFFECTIVE DATE January 2001
	REVISION DATE March 2003 August 2006 November 2008 June 2010 September 2011 November 2014 March 2015 March 2017

PURPOSE:

1. To achieve adequate blood access for hemodialysis through venipuncture.
2. To promote adequate rotation and healing of puncture sites.

POLICY:

1. Registered Nurses and Licensed Practical Nurses in Hemodialysis who have demonstrated competency to the renal educator or delegate shall perform venipuncture of fistula/grafts.
2. Initial puncturing of new/revised fistula/graft is based on nursing assessment of maturation of access.
3. A native fistula will not be punctured for at least 8 – 10 weeks unless otherwise ordered by Vascular Surgeon or Nephrologist.
4. Buttonhole technique should only be established per physicians order.
5. A prosthetic graft will not be punctured for at least 2 weeks after placement and until swelling has subsided sufficiently to palpate course of the graft weeks unless otherwise ordered by Vascular Surgeon.
6. Fistula failing to mature after 8-12 weeks will be investigated by the Vascular Access team.

EQUIPMENT:

Venipuncture:

- Clean drape
- 1 pair clean disposable gloves
- 1 single use tourniquet
- 2 fistula needles
- 2 pkg sterile occlusive dressings
- 2 – 10 mL syringes with heparin prime and/or saline
- 2 pkg 2% Chlorhexidine (CHG) with 70% Alcohol wipe

Removal of Needles:

- 1 – 10 mL syringe with 0.9% NaCl
- 2 pkg sterile gauze or hemostatic dressings
- 1 pair clean disposable gloves (nurse)
- 1 clean disposable glove (patient)

- 2 pkg gauze (optional)
- Tape/securement device
- Lidocaine 1% without epinephrine (optional)
- 2 – insulin or tuberculin syringes with 25 g needles or 28 g needles (optional)

PROCEDURE:

A. Prepare Patient:

1. Wash or have patient wash access site with CHG soap and water. Dry with single use paper towel (s).

B. Prepare Equipment:

1. Perform hand hygiene.
2. Prepare syringes with heparin prime/saline as required.
3. **Optional:**
Prepare 2 syringes, each with 0.1 – 0.3 mL of 1% lidocaine without epinephrine.

C. Venipuncture:

1. Position clean limb on clean drape.
2. Perform hand hygiene and don personal protective equipment (PPE) according to Routine Practices.

KEY POINTS:

- For a fistula being punctured for the first time, unless specifically ordered by a physician, the following steps can be used to avoid trauma to a new fistula:
 - For patients with a central line, it is preferable to perform only one puncture (using a teflon/angio needle) for three consecutive treatments. Use the fistula as arterial to assess blood supply or use as venous return to assist development of fistula. Use the Central line for opposite blood line.
 - If no difficulties with the above step, puncture fistula for both the venous blood return and the arterial blood supply for three more consecutive treatments.
 - If there are no difficulties with puncturing fistula during these six consecutive treatments, obtain order for removal non-tunnelled central line (refer to procedure 30.20.07).
 - Once fistula has been successfully cannulated with 2 needles x6, convert to steel needles where possible.
- For puncturing a graft, steel fistula needles are required.
- If patient does not have a central line, two punctures may be attempted.

PROCEDURE:

3. Assess access as per Procedure 30.20.06 *Vascular Access Assessment*
 - Inspection
 - Palpation
 - Auscultation
4. Confirm direction of blood flow in loop graft. If unable to confirm the direction of flow by asking patient, or by documentation in chart, assess the flow direction as follows:
 - Compress the access near its midpoint.
 - Check pulse/thrill on both sides of point of compression.
5. Select sites. If patient has a buttonhole, refer to procedure 30.20.03 *Establishing and Maintaining Buttonhole Venipuncture Sites*
6. Swab selected sites with 2% CHG/70% alcohol solution using a back and forth rubbing motion. Allow to dry completely prior to access.
 - Do not blot solution.
 - If the patient has documented allergy to CHG/alcohol, use aqueous CHG.
 - If the patient has documented allergy to aqueous CHG, use povidone iodine.
7. **Optional:** Administer Lidocaine without epinephrine intradermally.

KEY POINTS:

- Do not puncture the fistula/graft and notify the physician in the following situations:
 - pulse, thrill or bruit is absent
 - new aneurysm
- If signs of infection present, notify Nephrologist. Do not puncture infected area.
- The side where the strongest pulse/thrill is felt is the arterial.
- Ropeladder rotation is the recommended method.
- Always direct venous needle antegrade. The arterial needle can be placed antegrade or retrograde.
- Arterial and venous needle bevels should ideally be 5 cm apart but at least 2.5 cm.
- Needle sites should not be within a needle's length of an anastomosis, obstruction or anatomical flexure.
- The site selected should be at least 0.6 – 1.2 cm away from previous puncture.
- Sites should be rotated from one treatment to the next by using entire graft or fistula. Ideally, equal halves of the access will be dedicated to arterial and venous needles.
- Avoid aneurysms, areas of hematoma and areas of skin breakdown.
- CHG/Alcohol cleansing is at least 30 seconds friction rub. Allow to dry until no longer shiny (at least 2 minutes).
- If using Aqueous CHG, allow to dry at least 2 minutes (it may take longer).
- If using povidone, perform the friction rub for 30 seconds. Allow each site to air dry for 2 – 3 minutes. Excess povidone that pools on the skin may be removed with sterile gauze by wicking, not wiping.
- **Do not touch site after cleansing.** If palpation is necessary, paint clean fingers with antiseptic agent.
- Aspirate plunger of syringe to verify that vein has not been entered. Do not inject Lidocaine into blood stream. If blood return is confirmed, remove syringe and perform a second intradermal injection.

PROCEDURE:

8. Perform first venipuncture.
 - Apply single-use tourniquet to fistula.
 - Stabilize access.
 - Insert needle bevel up at 20° to 45°.
 - Advance needle to hub.
9. Secure needle with dressing and tape/securement device.
10. Infuse heparin prime or 0.9% NaCl at this time.
11. Perform second venipuncture and secure as per Steps 6 –10.
12. Remove PPE according to Routine Practices and perform hand hygiene.
13. Establish hemodialysis.
14. Instruct patient to keep fistula arm exposed.

D. Removal of Needles:

1. Perform hand hygiene. Don PPE according to Routine Practices.
2. If patient is holding own sites, have the him/her perform hand hygiene and wear one glove to non-fistula hand for holding.
3. Remove the venous needle first.
 - With gauze or hemostatic dressing in place, remove needle completely before applying pressure

KEY POINTS:

- Tourniquet is not normally required on grafts.
- Puncture should occur over as firm an anatomical base as possible. Avoid needling near the anastomosis (2.5 cm).
- Degree of angle may change depending on depth and type of access.
- If using a teflon/angio needle follow separation technique.
- Following **2** unsuccessful attempts, the nurse must request assistance from a second nurse. There will be a maximum of **5** punctures per treatment, unless specific physicians order is obtained. If 5 punctures or more were required, notify charge nurse and vascular access team. If unable to use for hemodialysis draw/send stat electrolytes and notify physician.
- **NEVER REINSERT STEEL DIRECTOR back into teflon/angio once separation of needles has begun.**
- Refer to patient care plan for specific instructions for securing needles.
- Blood sampling, if required, should be done prior to infusing heparin prime/saline
- Ensure patency of needle by infusing 0.9% NaCl or heparin prime (10 mL syringe).
- For new fistulas/grafts; initial treatment blood flow should be 200-250 mL/min. maximum, increase each treatment by 50 mL/min.
- Once dialysis is established ensure needle sites are exposed for monitoring during the treatment.
- It is recommended to remove and hold pressure on only one needle at a time.
- Do not apply pressure while removing the needles.
- Refer to patient care plan for specific instructions for venipuncture site care.

PROCEDURE:

4. Maintain constant two finger manual pressure to site for a minimum of 10 minutes or longer, until bleeding stops.
5. Cover puncture sites with sterile dressing. It is recommended to use sterile gauze and/or Band-Aids. If using hemostatic dressing, these should be left in place
6. Remove PPE according to Routine Practices and perform hand hygiene.
7. Ensure the patient's sitting and standing blood pressures are stable prior to removal of arterial needle.
8. Repeat Steps 1-5 for the arterial needle.
9. Remove PPE according to Routine Practices, perform hand hygiene and have the patient do the same.

KEY POINTS:

- Two finger pressure allows for sealing of internal and external puncture sites.
- Palpate vessel proximally to ensure there is a pulse (vessel not occluded).
- If excessive bleeding, notify Vascular Access Team for further investigations to rule out stenosis
- The need for hemostatic dressings should be re-evaluated periodically.
 - Sure-Seals® to remain on for 6 hours The projected removal time should be written on the Sure-Seal dressings
 - Sovan® to remain on for up to 12 hours
 - Band-Aids® to remain on for 12 to 24 hours

DOCUMENTATION:

- MRP Chart
 - Hemodialysis Treatment Record
 - Integrated Progress Notes
 - Vascular Access Record
 - Renal Patient Kardex: diagram, comments
- In-Patient Chart:
 - Integrated Progress Notes

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