



## MANITOBA RENAL PROGRAM

<b>SUBJECT</b> <ul style="list-style-type: none"> <li>▪ Establishing and Maintaining Buttonhole Venipuncture Sites</li> </ul>	<b>SECTION</b> 30.20 Vascular Access
	<b>CODE</b> 30.20.03
<b>AUTHORIZATION</b> <ul style="list-style-type: none"> <li>▪ Professional Advisory Committee, Manitoba Renal Program</li> <li>▪ Nursing Practice Council, St. Boniface Hospital</li> </ul>	<b>EFFECTIVE DATE</b> November 2005
	<b>REVISION DATE</b> November 2008 January 2012 November 2014 August 2017

### PURPOSE:

1. To allow puncturing of short length, severely aneurysmal or tortuous arteriovenous fistulae (AVF's) where rotation of sites is limited.

### POLICY:

1. Registered Nurses and Licensed Practical Nurses that demonstrate a highly developed skill level in cannulation of AVF's in hemodialysis may develop buttonhole sites.
2. Buttonhole Site development in a native fistula is based on nursing assessment for suitability and an order by a Nephrologist. Only consider hemodialysis patients with short, severely aneurysmal or tortuous AVF's, which limit access points, and Home Hemodialysis patients for buttonhole cannulation.
3. Only use buttonhole technique on a native AV fistula.
4. To develop buttonholes:
  - A single primary cannulator should perform all sharp needle cannulations until the sites are well established.
  - Cannulate the developing buttonhole site in the exact same place, using the same insertion angle and needle direction.
  - Always place needles antegrade to facilitate hemostasis after dialysis and decrease the chances of hematoma formation.
  - Do not use the buttonhole site if the designated primary cannulator(s) is/are unavailable. Choose an alternate site at least 2.5 cm from the buttonhole site for dialysis that treatment. Refer to 30.20.01, *Venipuncture of Arteriovenous Fistula/Graft*
5. If after one month there are ongoing difficulties in establishing or using a buttonhole site, contact the Renal Access/Vascular Access Nurse for further direction.
6. Once established, use blunt needles to cannulate the buttonhole. If unable to access with blunt needle, use another site (rope ladder method) 2.5 cm away from buttonhole site, using a sharp needle.
7. It is preferable to have a third buttonhole created once the first set of buttonhole sites is well established to serve as a back up. In such cases, alternate the cannulation of each buttonhole with each dialysis treatment. Puncture buttonhole sites minimally twice per week.

## **POLICY:**

8. The *Renal Patient Kardex* should clearly indicate instructions for accessing buttonholes.
9. Do not use Xylocaine or Emla Cream with buttonholes.
10. Do not use hemostatic dressings with buttonholes.  
**Key Point:** Surgicel and Surgi-Foam are Hemostatic; Sovan and Sureseals are not hemostatic.

## **EQUIPMENT:**

### **Establishing Buttonhole Sites**

- 1 – Sterile drape or clean towel
- 1 - single-use tourniquet
- 1 - pair clean disposable gloves
- 2 - sharp fistula needles
- 4 - packages 2% Chlorhexidine (CHG)/Alcohol 70% wipes.
  - Alternate product: Aqueous CHG, povidone iodine wipes if patient sensitive to CHG
- 2 - packages occlusive dressings
- 4 - packages gauze 5X5cm or 10x10 cm
- 2 – 10 mL syringes heparin/0.9% NaCl prime
- 2 - sterile tweezers or forceps and/or blunt fill needles and/or Buttonhole Needle Cap – Engineered as a “Scab Removal Pick”
- Antibacterial ointment (as ordered)
- Sterile 5cm x 5cm gauze for cleaning prn
- Sterile NaCl for cleaning prn

### **Maintaining Buttonhole Sites**

Same as above, except

- 2 – anti-stick blunt bevel buttonhole needles instead of the sharp needles

## **PROCEDURE:**

## **KEY POINTS:**

### **A. Establishing Buttonhole Sites in a Native AVF:**

1. Prepare Patient:
    - a. Wash or have patient wash access site with chlorhexidine (CHG) soap and water.
  2. Perform hand hygiene.
  3. Prepare equipment:
    - a. Remove supplies such as needles and sterile 0.9% NaCl syringes from packaging and place on a clean working field.
    - b. Prepare heparin/saline prime as required.
  4. Perform a complete physical assessment of AVF and select the buttonhole sites.
- It is imperative strict adherence to **aseptic technique and cleaning processes** be followed as buttonhole procedure is associated with high rates of infection.

- a. Position arm on sterile drape.
- b. Assess access as per Procedure 30.20.06 *AVF /AVG Vascular Access Assessment*
  - inspection
  - palpation
  - auscultation
- c. Select site. Patient must be positioned the same way each treatment. This includes height and angle of the bed or chair, and most importantly, the arm orientation (i.e., palm up).
  - Do not cannulate in the following situations:
    - thrill or bruit is absent
    - development of a new aneurysm
  - If the tunnel track exit site is red, warm, draining or displaying signs and symptoms of infection, choose another site 2.5cm away from the tunnel track and the affected area and cannulate with a sharp needle. If there is drainage at the tunnel track exit site, cleanse site with normal saline and swab area for aerobic (and anaerobic if ordered).
  - Notify the renal/vascular access nurse, clinical resource nurse or physician.
  - Arterial and venous needle bevels should be at least 5 cm apart. Needle sites should not be within a needle's length (2.5 cm) of an anastomosis, obstruction or anatomical flexure.
  - Select straight sections of the fistula.
  - Choose areas that have not been overused. Ideally sites should be selected in areas without aneurysms. If not possible, select sites in areas of maximum skin integrity, least skin hematoma, avoiding any intra aneurysmal thrombus with the use of bedside ultrasound. If unable to avoid aneurysmal area, the buttonhole sites should be at the base of the aneurysm.
  - If the patient will be the primary cannulator, the sites selected must be easy for the patient to access.
  - For patients that are designated for Home Hemodialysis, it is preferable to have the patient establish their own buttonhole.

## 5. Prepare sites for cannulation.

- a. Perform hand hygiene and don personal protective equipment (PPE) according to Routine Practices.
- b. Swab selected sites with 2% Chlorhexidine (CHG)/Alcohol 70% 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.
- c. Scab removal. Some scabs may be removed with the above cleansing technique. If not, perform the following to aid in safe scab removal.
  - 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.
  - If scab is not present, proceed to step **d**.
  - Extended soak time may aid in scab removal.
  - Stretching skin around buttonhole site may aid in

- (i) Apply 0.9% NaCl soaked gauze to sites for 10 minutes or greater until scab softens.
  - (ii) Remove 0.9% NaCl soaked gauze in wiping motion.
  - (iii) If scabs not removed with soaking, gently remove with sterile tweezers/forceps, scab removal pick (cap of buttonhole needles) or blunt fill needle.
- d.** Using new packages of the same cleansing product, cleanse both sites again post scab removal as step **b** above.
- 6. Perform Venipuncture.**
- a.** Apply single-use tourniquet.
  - b.** To stabilize access, stretch skin on either side of the vessel.
  - c.** Using a sharp needle, holding the wings between thumb and forefinger align the needle cannula with the bevel facing up.
  - d.** Insert steel needle at 20° – 40° angle.
  - e.** Lower the angle of insertion once flashback is obtained and advance needle to within 1mm of the hub but not to the hub.
  - f.** Release the tourniquet.
  - g.** Secure needle at angle of insertion to ensure it is aligned within the vessel.
- scab removal.
  - DO NOT pick off scabs with fingers.
  - DO NOT stick needle through scabs.
  - Scabs contain large amounts of bacteria, predominantly *Staphylococcus aureus*. If scabs are broken up, pieces of it may be introduced into the buttonhole tracks and the bloodstream causing a tunnel or systemic infection.
  - One sterile tweezer/forcep/scab removal pick/blunt-fill needle per buttonhole site.
  - Scab removal pick from cap of buttonhole needle must remain sterile. DO NOT place pick onto clean field; needle should remain in sterile package until ready to use,
  - This second cleansing of the sites post scab removal is important in the prevention of infection.
  - It is important to cannulate the developing buttonhole in the exact same place, using the same insertion angle and depth of penetration each time.
  - It is recommended to insert the arterial needle first.
  - It may take approximately 8 – 10 cannulations using a sharp needle to create a scar tissue tunnel track in patients that have normal healing process. For patients with diabetes or others that have a delayed healing process it may take approximately 12 – 14 cannulations for the tunnel track to be fully developed.
  - A tourniquet should be used at all times to prevent trauma to the vessel and maintain a consistent vessel diameter.
  - It is important to stabilize access to keep the track and flap in alignment.
  - Degree of angle may change depending on depth and type of access. Self cannulators may require a steeper angle.
  - A flashback of blood indicates when the needle is in the access.
  - Inserting needle to the hub over time will cause “hubbing” (an indentation caused by the hub).
  - If unsuccessful cannulation of buttonhole site during the development of the track, select an alternative site for that treatment.
  - Refer to Procedure 30.20.01 *Venipuncture of Arteriovenous Fistula/Graft*.
  - Use facility protocol or patient care plan.

- h. Infuse heparin/saline prime as required
- 7. Perform 2<sup>nd</sup> venipuncture as per Steps 1 – 6.
- 8. Initiate dialysis treatment.
- 9. Instruct patient to keep needle sites visible at all times during treatment.
- 10. Continue to cannulate with sharp needles each treatment until the tunnel tracks are well developed. This will be individual to each patient.

Blood sampling if required should be done prior to infusing prime. 30.20.15 *Obtaining blood Specimens Pre and Post dialysis*

- To ensure needles are intact and no bleeding at sites.
- HHD patients use HemoDialert.
- Some signs which indicate the sites are ready for blunt needles includes:
  - a round hole at the site can be seen
  - the hole looks well healed
  - there is a significant decrease in resistance when inserting needles

**B. Removal of Needles:**

- 1. Perform hand hygiene. Don PPE according to Routine Practices.
- 2. Remove the venous needle first.
  - a. Apply prescribed antibacterial ointment to post hemodialysis dressing.
  - b. Place dressing to site and lightly hold in place without applying pressure.
  - c. Remove needle and immediately apply two finger pressure for 10 minutes.
  - d. If dressing needs replacement, re-apply prescribed antibacterial ointment to fresh bandage and cover puncture sites with bandage.
- 3. Ensure the patient's sitting and standing blood pressures are stable prior to removal of arterial needle.
- 4. Repeat Step 2 for the arterial needle.

- If patient is holding own sites recommend the patient perform hand hygiene and wear one glove to non-fistula hand for holding.
- **Remove only one needle at a time.**
- Refer to patient care plan for specific instructions for venipuncture site care.
- Hemostatic dressings are not to be used with buttonholes.
- First finger directly on buttonhole site and the second finger just above the external site. Two finger pressure allows for sealing of internal and external puncture sites.
- Hold for a minimum of 10 minutes, until bleeding stops.
- Palpate vessel proximally to ensure there is a pulse (vessel not occluded).
- Do not apply pressure while removing the needles.
- Remove dressing after 6 hours.

**C. Maintaining and Using Buttonhole Sites:**

- 1. The procedure for accessing the buttonhole sites once established is the same as above with the exception of the equipment. Blunt "buttonhole" needles are used in place of the

- The decision to switch from sharp needles to the blunt is made by the primary designated cannulator(s). Generally it takes 2 – 3 weeks to develop a proper track but it may take longer for

sharp needles.

2. The technique used for holding the blunt “buttonhole” needle is slightly different. Hold it by the tubing just behind the wings.

some individuals.

- This technique will allow the track to guide the needle to the correct location of the buttonhole site “flap”.
- If mild to moderate resistance is met while attempting to insert the needle, slightly rotate the needle side to side while advancing using gentle pressure.
- Do not use excessive force when inserting the blunt needles into the track. If force is required the site is not yet ready for blunt needles, continue to use sharp needles.

## **DOCUMENTATION:**

Manitoba Renal Program chart

- Hemodialysis Treatment Record
- Integrated Progress Notes
- Vascular Access Record
- Hemodialysis Patient Kardex
- Medication Administration Record (MAR)

In-patient chart

- Integrated Progress Notes
- Electronic Patient Record (EPR)

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