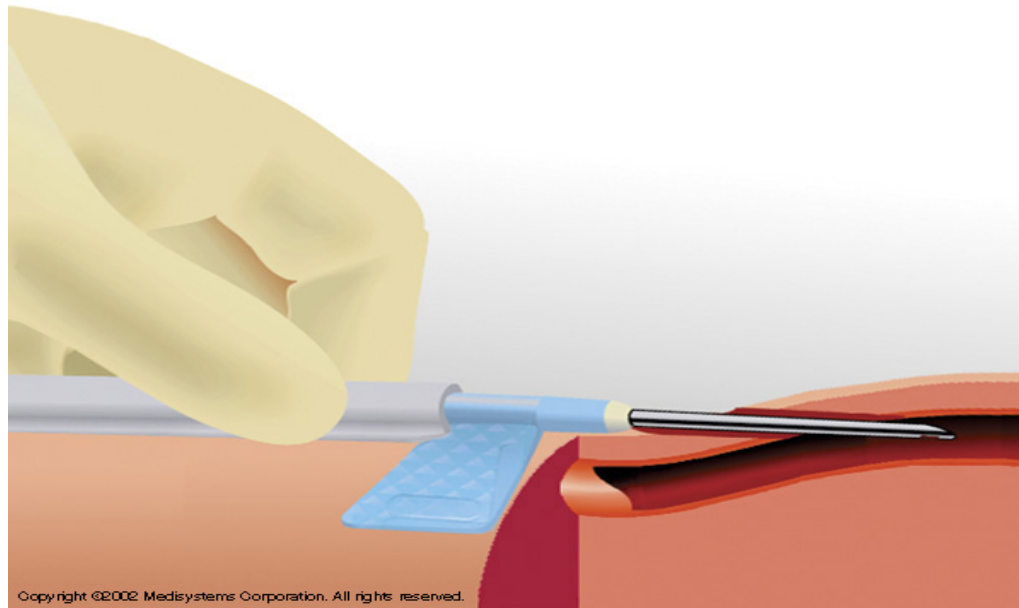


FORMING INITIAL BUTTONHOLE SITES/TRACKS FOR CANNULATION



What is a Buttonhole?

Technique which uses the same needle site, depth, & angle **each** time forming a “track”



What are the Benefits

- Benefits identified consistently in the literature:
 - Easier for patients to self-cannulate; increased patient satisfaction.
 - Can repeatedly cannulate AVF with limited space.
 - Less painful; less stressful.
- Benefits identified less consistently in the literature:
 - May help preserve the integrity of the outflow vein (KDOQI, 2006).
 - Fewer infiltrations (KDOQI, 2006).
 - Fewer missed needles and hematomas.
 - Less aneurysmal development; reduction of existing aneurysms.
 - Less time required for identifying appropriate needle sites.
 - Shorter bleeding time post dialysis.

What are the Drawbacks?

- Increased risk of infection through the needle sites (especially if cleaning is not done properly).
- If the track is being established using the sharp needle method, this requires the same person (or at most two persons) to cannulate the fistula until the track is established (usually 8 – 18 cannulations); this has scheduling implications if staff do the cannulation rather than the patient.
- Can only be used with fistulae (not with grafts).

What Types of Patients are Good Candidates for BHs?

- Indications for considering the BH method:
 - Self/caregiver cannulator now or planned in the future (BH is the preferred method for these patients).
 - Rope ladder method has not been successful.
- Risk factors for unsuccessful BHs:
 - Thin subcutaneous tissue.
 - Signs of active infection, hematoma, swelling, skin breakdown and/or cyanosis in the fistula limb.
 - Poorly functioning fistula.

Note: If combination fistula/graft, BH method may be used by stay away from the graft area.

Who May Establish a BH Track?

BH tracks may be established by select patients/caregivers and/or a designated nurse who is an advanced cannulator (advanced cannulators are designated by the vascular access nurse).

General:

- If possible, encourage patients/care givers to establish the BH track.
- Same cannulator should cannulate the access until the track is established (usually takes 8 – 12 cannulations).
- If the designated cannulator is not available, the access should be cannulated using conventional sharp needles, placed antegrade and a MINIMUM of 1 inch (2.5 cm) away from the BH and in the same direction as the BH track. Avoid needling into the BH track.

Self/caregiver characteristics:

- On or a candidate for home hemodialysis (may also be an in-centre and/or community dialysis patient if the remaining characteristics apply).
- Wants to self-cannulate and/or has a care giver willing to cannulate.
- Lower arm fistulas on the non-dominant arm are easiest to self-cannulate.
- Good hand dexterity (able to hold the needle and not shaky) & good sensation in fingers
- Good eyesight.
- Good personal hygiene.
- Mental capacity to be successful at self/care giver cannulation.

Nurse characteristics:

- Advanced cannulator as designated by the VA Nurse or an advanced cannulator.
- Received specific education on establishing a BH track.
- Available for each cannulation until track is established (8 – 12 cannulations).

Who May Cannulate an Established Track?

- Patient or care giver (recommended)
- 2 - 4 different nurse cannulators for a given patient (fewer is better).
- If designated cannulator not available, use conventional sharp needles placed antegrade and a MINIMUM of 1 inch (2.5 cm) away from the BH and in the same direction as the BH track. DO NOT use sharps in the BH track and avoid needling into the BH track.



Selecting BH Sites

BH tracks may be established on new or existing mature, well functioning fistulas.

Points to consider:

- If creating a BH for a self-cannulator, choose sites easy for the patient to cannulate. If possible, have patients cannulate their own sites.
 - When choosing sites, choose straight, relatively unused sections of the access (if possible). If possible, allow at least 2 inches between the tips of the needles.
 - Avoid compromised areas such as aneurysms or areas without sufficient subcutaneous tissue to enable a tunnel track to develop.
 - Create buttonhole sites at the centre of the vessel, not on the sides.
 - If available, use bedside ultrasound to map BH sites.
 - Measure and document BH site locations and needles used. BH site locations:
 - Upper arm BH sites: measure in centimeters from the antecubital fossa/elbow crease with the arm bent at a 90 degree angle.
 - Forearm BH sites: measure in centimeters from the bent wrist.
- Photograph of the BH sites is recommended for the Kardex/patient record.

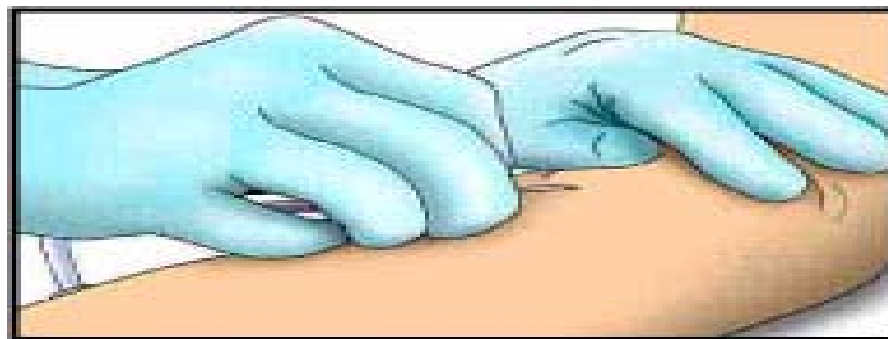


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Establishing a BH Track

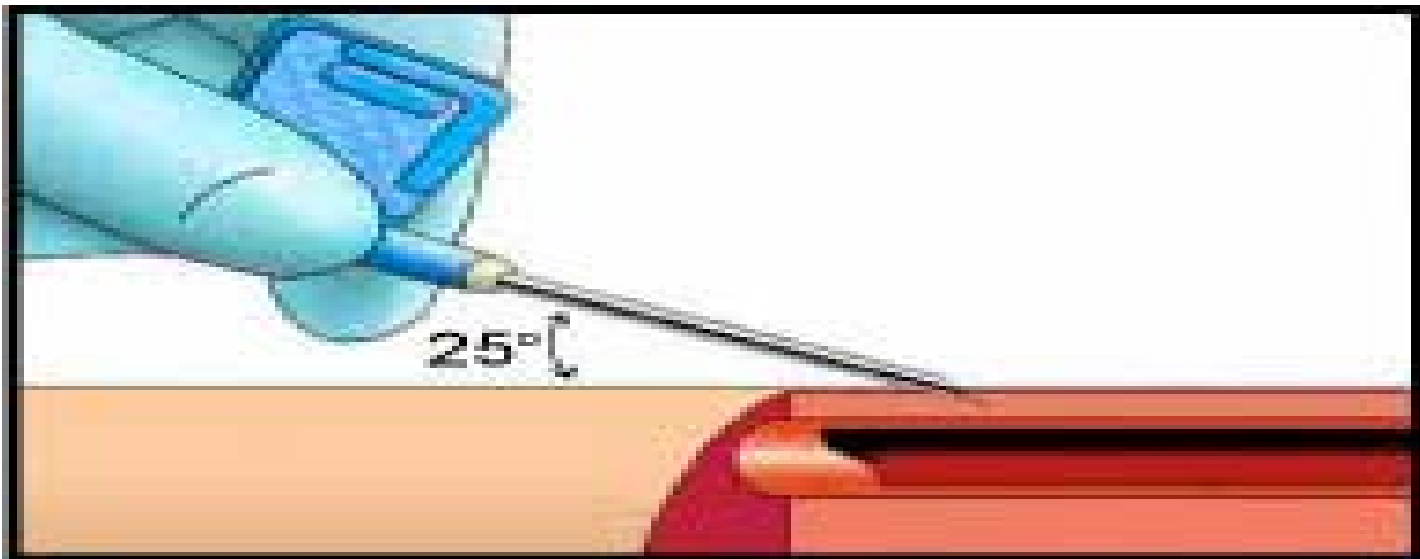
1. Instruct patient to wash access.
2. If first cannulation, select appropriate cannulation sites (using bedside ultrasound if available).
3. Cleanse sites with appropriate cleansing solution. Cleanse before and after removing the scab.
4. Using a sharp needle, grasp the needle wings and remove the tip protector. Align the needle cannula bevel up over the site and pull the skin taut



Photograph provided courtesy of Medisystems, a NxStage Company.

Establishing a BH Track cont'd

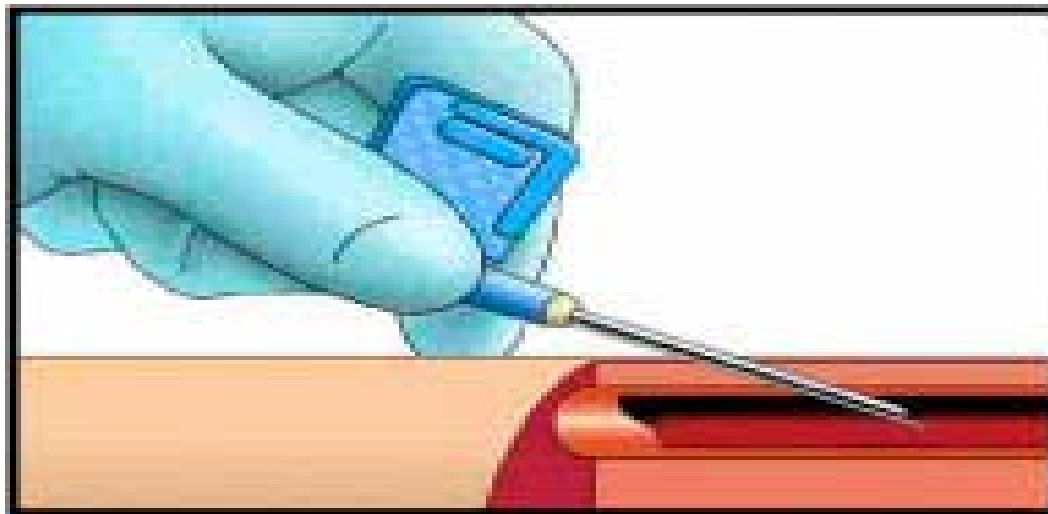
5. Cannulate the site at a 25° angle (will vary depending on how close the vessel is to the skin; self-cannulators may require a steeper angle) . Maintain this angle until you enter the vessel.



Photograph provided courtesy of Medisystems, a NxStage Company.

Establish a BH Track cont'd

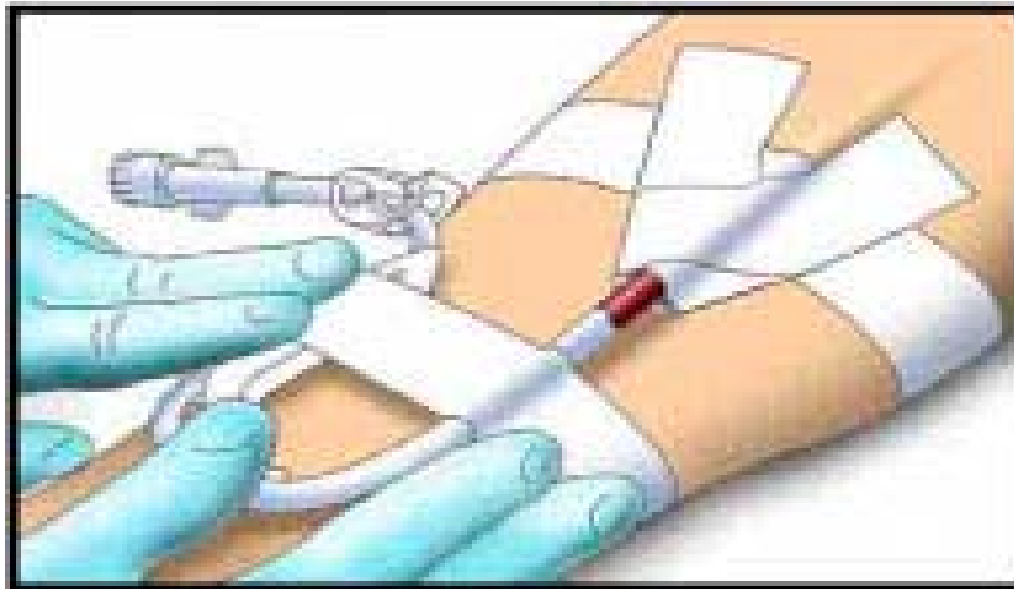
6. Check for flashback of blood.
7. Lower the angle of insertion & continue to advance the needle until it is appropriately positioned within the vessel. Aspirate to confirm patency.



Photographs provided courtesy of Medisystems, a NxStage Company.

Establishing a BH Track cont'd

8. Securely tape the AV fistula needle & proceed with dialysis treatment



Photographs provided courtesy of Medisystems, a NxStage Company.

Removal of Needles

- After dialysis, remove the AVF needles in the direction they were inserted. Apply direct pressure 10-15 min.
- Cover exit site with a sterile 2x2 gauze.

When to Change to Blunt Needles?

- BH site looks well-healed
- BH site has a round hole
- Resistance in the track is decreasing with each use.
- If unsuccessful with blunt needles, return to using sharp needles. At each subsequent dialysis treatment, try again with a blunt needle.

Tips/Trouble-Shooting BH Tracks

Problem	Description	Tip
Fluid overload	Causes tissues to swell & may narrow the BH track	<ul style="list-style-type: none">•Gently rotate the needle slightly, side to side•Flush the needle tubing with saline, allowing it to drip off the end of the needle.
Needle won't go in	Drinking extra fluids may cause fluids to stay in the track and cause the track to stretch and/or the flap to move out of position	Insert needle into the vessel, then gently lift up or lower the needle and try to insert.
Unstable BH site	Excess upper arm tissue or skin	Place cushion under access arm as far up in the axilla area as possible (better visualization and raises and stabilizes arm for cannulation)

Tips/Trouble-Shooting BH Tracks cont'd

Problem	Description	Tip
Difficulty getting blunt needles into the fistula (“trampoline” effect)	Fistula is thick walled; and/or blunt needles not pointed enough	<ul style="list-style-type: none"> Use touch cannulation technique. Allow needle to direct the needle down the BH, and not the cannulator. Hold tubing with the thumb and forefinger just behind the wings.
Oozing and large scabs		<ul style="list-style-type: none"> Use single cannulator (prevents cone-shaped tunnels and large scabs)
Excessive bleeding		<ul style="list-style-type: none"> Check for stenosis, track being cut or damage to vessel wall flap Do not use sharp needles Do not flip needles Evaluate anticoagulation

Tips/Trouble-Shooting BH Tracks cont'd

Problem	Description	Tip
Infection	Dialysis patients are highly susceptible to infection (immunocompromised, frequently hospitalized)	<p>Skin cleaning:</p> <ul style="list-style-type: none"> •Patient to wash arm immediately prior to cannulation •Cleanse needle sites prior to and after scab removal (circular, outward motion) <p>Proper scab removal:</p> <p>DO: use aseptic tweezers/blunt needle, stretch skin around scab.</p> <p>DON'T: flip the scab off with the needle you will use for cannulation; let patients pick off their scabs; stick through scabs.</p>