





**PROVINCIAL RECOMMENDATIONS FOR VASCULAR ACCESS
FOR PATIENTS WITH HD AS PRIMARY MODALITY**

Developed and supported by the Provincial Vascular Access Guidelines

Enclosed please find the Provincial Vascular Access Services Team and BCPRA support the guidelines for creation maintenance and evaluation of Vascular Access.

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PROVINCIAL RECOMMENDATIONS FOR VASCULAR ACCESS FOR PATIENTS WITH HD AS PRIMARY MODALITY

A) CREATION

1. Referral for creation of VA should be done when GFR < 25 ml/min *and* change in GFR is > 5 ml/min/year
2. It is recommended that patients be assessed pre-operatively by vascular surgeon *and/or* nephrologist whether radiological assessment of their vasculature by either ultrasound or venography is required prior to creation of vascular access
3. VA of choice are AVF followed by AVG and lastly tunneled catheters in pts who do not have any suitable vessels for AVF/AVG creation
4. Tunneled catheters should be placed if hemodialysis catheter is to remain in situ for > 1-3 months.
5. Catheters should be placed preferably in internal jugular veins as the first site.
6. Tunneled cuffed catheters should **not** be placed on the same side as a maturing AV access, if possible.
7. Real-time ultrasound guided insertion is recommended to reduce insertion-related complications (Guideline 5D).
8. Fluoroscopy is recommended for insertion of all cuffed dialysis catheters and the catheter tip should be adjusted to the level of the caval/atrial junction or into the right atrium to ensure optimal blood flow (Guideline 5C).
9. Femoral hemodialysis catheters may be placed when urgent vascular access is required, using long (≥ 20 cm) catheters and a more suitable access (IJ catheter) should be established as soon as possible (within one week).

B) MONITORING

a) Maturation of created access:

1. At **2 weeks** after creation: AVF and grafts (if applicable) should be assessed by trained individual (vascular access or kidney clinic nurse +/- nephrologist +/- vascular surgeon)
 - a. If absent thrill or bruit, the patient should be urgently referred back to the vascular surgeon
2. At **6 weeks** after creations: AVF and grafts (if applicable) should be assessed by the vascular access team for maturation failure
 - a. If inadequate maturation, appropriate investigations (fistulogram) and interventions should be initiated
3. At **4-6 weeks prior** to anticipated initiation of hemodialysis: AVF and grafts should be assessed by vascular access team
 - a. If access inadequate for cannulation, appropriate investigations and interventions should be initiated

b) Established Vascular Access:

1. AVF and AVG should be monitored on a q 4-6 weekly schedule by the preferable methods in following order:
 - a. Access flow measurements
 - b. Dynamic or venous pressure measurement
 - c. Access recirculation using 2 needle, 3 sample urea method if other technology not available
2. Catheter function can be followed using recirculation values preferably using dilution method (transonic machine) q 4-6 weekly
3. Evaluation and assessment should be preferably done by identified vascular access team:
 - a. Vascular access nurse
 - b. Nephrologist
 - c. Vascular Surgeon
 - d. Radiologist
4. Investigation and treatment by venography (fistulogram) is recommended
 - a. Within **1-2 weeks** for:
 - i. Absolute access flows of < 500 ml/min in AVF and < 650ml/min in AVG
 - ii. Decrease in access flow of > 20% from baseline values
 - iii. Inability to achieve a blood pump speed on dialysis of ≥ 300 ml/min by week 3 of initiating hemodialysis or <350 ml/min for established hemodialysis (in 2 consecutive runs).
 - iv. Difficulty with cannulation and excessive bleeding post hemodialysis otherwise unexplained
 - v. Arm or facial swelling
 - vi. High machine venous pressures or low machine arterial pressures on hemodialysis
 - b. Within **2 days** for:
 - i. Access flows of < 300 ml/min
 - ii. Decrease in access flow of ≥ 50 %
5. Pts with catheters who have catheter dysfunction may be treated by TPA empirically
 - a. The need for TPA on > 2 occasions in 2 week period should be investigated with hemodialysis catheter dye study to rule our persistent thrombus, fibrin sheath or malposition
 - b. If evidence of fibrin sheath around catheter, trial of catheter stripping under radiology may be attempted, if possible. If not, catheter will need to be replaced.
6. Persistent catheter dysfunction or the development of new facial swelling in any patient should be investigated with venography to rule our central vein stenosis

C) INTERVENTION

1. Treatment of stenosis of the fistula/graft or central veins should first be attempted by angioplasty unless otherwise directed by the radiologist or vascular surgeon.
2. Angioplasty should be done in a timely manner:
 - a. Usually within 2 weeks
 - b. Within 2 days if
 - i. absolute access flow < 300 ml/min or
 - ii. drop from baseline of > 50% or
 - iii. clinical indication (severe bleeding or unable to properly dialyze pts)
3. Surgical revisions of stenosed fistula/graft should be done on a more urgent basis, as per surgical priority scale