

Guideline at a Glance: Assessment of Newly Created AV Fistulas and Grafts

The full version of this guideline is located on the BC Renal website: BCRenalAgency.ca ► [Health Professionals](#) ► [Clinical Resources](#) ► [Vascular Access](#) ► [Resources](#) ► [Assessment of Maturation](#). “Guideline at a Glance” summarizes the highlights.

Recommendation	HA/ HD centre
<p>1. At a minimum, schedule assessments of new AVFs and AVGs at:</p> <ul style="list-style-type: none"> • 2- and 6-weeks post-creation • Q6 months preemptive fistulas • 4 - 6 weeks prior to anticipated initiation of hemodialysis 	<input type="checkbox"/>
<p>2. Utilize physical examination as the primary mechanism for assessing <i>maturation, utility</i> and <i>problems</i> with newly created AVFs and AVGs; augment with portable ultrasound.</p> <ul style="list-style-type: none"> ► AVFs: Some AVFs may be mature enough to cannulate one-month post-creation while others require several months. Premature cannulation may result in infiltration, hematoma, and permanent loss of the AVF. ► AV grafts: Should not be cannulated for at least 2 weeks after placement and not until the swelling has subsided enough to palpate the course of the graft. Cannulation of an AVG in an edematous arm may lead to hematoma formation and graft wall damage. 	<input type="checkbox"/>

Assessing for Maturation & Utility:

Normal (6 Weeks Post-Creation)		Abnormal (Notify MD)	
AVF	AVG	AVF	AVG
<ul style="list-style-type: none"> • Palpable vein which is larger and firmer than original vein (not soft or mushy) • Vein depth <0.6 cm • Vein diameter of > 0.6 cm (min 0.4 cm for initial cannulation) • Area of straight vein for cannulation • Portable u/s flow > 500 mL/min (min 400 mL/min for initial cannulation) & biphasic bruit 	<ul style="list-style-type: none"> • Palpable, uniform sized graft • No irregular/dilated areas • Portable u/s flow >650 mL/min 	<ul style="list-style-type: none"> • Vein not easily palpable • Vein narrowed • Poorly defined area of straight vein for cannulation • Visible aneurysm or collateral veins • Dilated neck veins • At 6 weeks post-creation, portable u/s flow <500 mL/min &/ or monophasic bruit 	<ul style="list-style-type: none"> • Graft not easily palpable; • Graft not uniform in size. • Limited straight portions for cannulation. • Portable u/s flow <650 mL/min

Recommendation						HA/ HD centre
<i>Assessing for Problems:</i>						<input type="checkbox"/>
Item	Normal		Abnormal (Notify MD)		Possible Implications	
	AVF	AVG	AVF	AVG	AVF	AVG
Bruit (auscultation)	<ul style="list-style-type: none"> Prominent at the arterial anastomosis; ▼as move away from anastomosis 		<ul style="list-style-type: none"> High pitched, discontinuous, &/or audible on systole only 		<ul style="list-style-type: none"> Stenosis (arterial or venous) 	<ul style="list-style-type: none"> Stenosis (usually venous)
	<ul style="list-style-type: none"> Low pitched, continuous, & audible on diastole & systole 		<ul style="list-style-type: none"> No bruit 		<ul style="list-style-type: none"> Thrombosis 	
Thrill (palpation)	<ul style="list-style-type: none"> Prominent at arterial anastomosis; decreases as move away from anastomosis 		<ul style="list-style-type: none"> No palpable thrill Additional thrill palpable along the course of the access 		<ul style="list-style-type: none"> Thrombosis Stenosis (arterial or intragraft) 	<ul style="list-style-type: none"> Thrombosis Juxta-anastomotic venous stenosis (JAS) Venous stenosis
	<ul style="list-style-type: none"> Vessel is soft & easily compressible Pulse felt over entire graft (AVGs) 		<ul style="list-style-type: none"> Pulse palpable at stenotic site (if AVF, may have water-hammer feel) & disappears quite abruptly beyond the stenotic site. Proximal pulse weak. Vessel not easily compressible 			
Hand/Foot Temperature	Warm		Cool or cold		<ul style="list-style-type: none"> Steal syndrome Arterial stenosis Preexisting arterial condition 	
			Hot		<ul style="list-style-type: none"> Infection 	
Hand/Foot Colour	Normal		Dusky or blue		<ul style="list-style-type: none"> Steal syndrome Arterial stenosis 	
			Red		<ul style="list-style-type: none"> Infection Venous stenosis 	
Capil Refill	Normal		Delayed		<ul style="list-style-type: none"> Arterial stenosis Steal syndrome 	
Pain	Not present		Mild to severe pain		<ul style="list-style-type: none"> Steal syndrome Infection Neuropathy 	
Skin Integrity	<ul style="list-style-type: none"> Normal (but can be post-surgical red flare on the skin) 		<ul style="list-style-type: none"> Small pustular lesions 		<ul style="list-style-type: none"> Superficial infection 	
			<ul style="list-style-type: none"> Erythema, tight, shiny, & tender skin, drainage from access site, skin warm or hot to touch, & pain 		<ul style="list-style-type: none"> Deep infection Venous congestion (swelling) Steal syndrome (necrotic fingers) At risk for rupture 	
Edema	<ul style="list-style-type: none"> No edema; if edema present, goes away when limb elevated 		<ul style="list-style-type: none"> Edema of limb Edema in chest, neck, arm, &/or face Subcutaneous collateral veins observable in the neck, upper chest, & shoulder 		<ul style="list-style-type: none"> Venous stenosis Central vein stenosis 	

Recommendation	HA/ HD centre
<p>3. Teach patients to recognize and report signs and symptoms:</p> <ul style="list-style-type: none"> • Sensations of coldness, numbness, tingling, and/or impairment of motor function in the limb with the access • Absence of a thrill over the anastomosis site • Absence of a bruit • Redness, discharge, and/or pain in the limb with the access • Fever • Edema in the access limb which persists more than two weeks post-creation • Collateral vessels over the neck, upper chest, and/or shoulder • Emergency measures to take in the case of a bleeding fistula/graft (refer to the patient teaching pamphlet “<i>Bleeding Fistula or Graft: Emergency Measures</i>” at www.bcrenalagency.ca). 	<input type="checkbox"/>
<p>4. If the AVF or AVG has problems and/or the AVF has not matured within a 6-week timeframe, consult MD or VA Coordinator.</p>	<input type="checkbox"/>