

NKF-K/DOQI Vascular Access Clinical Practice Guidelines-2000 Update

ESRD Network #15 Summary Paper

Abbreviated Introduction:

"Adequate care of an ESRD hemodialysis dependent patient requires constant attention to the need to maintain vascular access patency. An ideal access delivers a flow rate adequate for the dialysis prescription, has a long use-life and has a low rate of complications. Although no current access type fulfills all of these criteria, the native arteriovenous fistula (AVF) comes the closest to doing so. The substitution of synthetic grafts for native AVFs has increased patient care costs in part due to the increased number of procedures needed to maintain patency of grafts compared to AVFs. After evaluating all of the available data on vascular access, the Vascular Access Work Group concluded that quality of life and overall outcomes for hemodialysis patients could be improved significantly by achieving two primary goals: increasing the placement of native AVFs and detecting access dysfunction prior to access thrombosis" (National Kidney Foundation, K/DOQI Clinical Practice Guidelines for Vascular Access, 2000).

Note: For the purpose of this Summary Paper, evidence- and opinion-based guideline information related to the arteriovenous fistula will be addressed. For the complete text of the K/DOQI Vascular Access Clinical Practice Guideline Update, please refer to the American Journal of Kidney Diseases, Volume 37, Number 1 (January), pages S141-S149.

Guideline 1: Patient History and Physical Exam

A comprehensive evaluation of the patient's peripheral vascular system and cardiovascular system are imperative for successful access intervention. The outcome of this evaluation will influence the type and placement of the dialysis access. History and physical exam should include:

History

- ✓ Previous central venous or peripheral arterial or venous catheter
- ✓ History of anticoagulant therapy of coagulation disorder
- ✓ History of cardiovascular disease, heart valve disease or prosthesis
- ✓ History of co-morbid conditions limiting patient's life expectancy
- ✓ History of previous arm, neck or chest surgery/trauma
- ✓ Dominant arm
- ✓ History of previous dialysis access
- ✓ History of diabetes mellitus
- ✓ Anticipated living related transplant

Physical

- ✓ Physical exam of the arterial system (peripheral pulses, Allen test, bilateral upper extremity B/Ps)
- ✓ Physical exam of the venous system (edema, arm size comparability, collateral veins, tourniquet venous palpation with vein mapping, examination for previous central or peripheral venous catheters, evidence of arm, neck or chest surgery/trauma)
- ✓ Cardiovascular examination for evidence of heart failure

Guideline 2: Diagnostic Evaluation Prior to Permanent Access Selection

The following methods of diagnostic evaluation are recommended prior to the selection of a permanent hemodialysis vascular access:

- Venography is indicated for patients with the following: edema in the proposed access site extremity, collateral vein development in the proposed access site, differences in extremity size, any subclavian catheter placement, any transvenous pacemaker placement, arm, neck or chest trauma/surgery, or multiple accesses in the extremity in which the access is planned.
- Doppler ultrasound (evidence) or MRI (opinion) studies in cases where multiple vascular accesses have been placed or when contrast studies are not desirable due to residual renal function.
- Arteriography or Doppler examination may be indicated when arterial pulses in the desired access location are markedly diminished.

Guideline 3: Selection of Permanent Vascular Access and Order of Preference for Placement of AVF

The order of preference for AVF placement is:

- Radial-cephalic primary AVF
- Brachial-cephalic primary AVF

If either of these options is not viable, the following access may be created:

- AVG of synthetic material
- Transposed brachial-basilic vein fistula

Cuffed tunneled central venous catheters should be discouraged as permanent vascular access.

Guideline 7: Preservation of Veins for AV Access

Subclavian vein catheterization should be avoided for temporary access in all patients with kidney failure due to the risk of central venous stenosis. Significant stenosis will generally preclude the use of the entire ipsilateral arm for vascular access.

Although opinion-based, it is widely recognized that arm veins suitable for vascular access placement should be preserved, regardless of arm dominance. The following may assist in this preservation:

- Educate patients in the need to protect their vessels
- Educate the health care team on the importance of vessel preservation
- Medic alert bracelets have been found to be helpful

Guideline 8: Timing of Access Placement

All items referenced in this guideline are opinion-based, but were included by consensus of the K/DOQI Vascular Access Work Group:

- It is generally accepted that patients should be referred for surgery to attempt a primary AVF when their CrCl is <25 mL/min, their serum creatinine is > 4mg/dl or within 1 year of an anticipated need for dialysis.
- Patients should be referred to a nephrologist prior to the need for access to receive educational intervention regarding modalities of treatment.
- A new primary AVF should be placed 1-4 months before hemodialysis is anticipated (see Guideline 9-Access Maturation)
- Hemodialysis catheters should not be inserted until hemodialysis is needed.

Guideline 9: Access Maturation

This guideline is supported primarily by opinion-based consensus information. Access maturation will be different for each individual. The following guidance is provided:

- A primary AVF is mature and suitable for use when the vein's diameter is sufficient to allow for successful cannulation. This should not be sooner than one month and preferably 3-4 months after construction.
- The following may enhance the maturation of the native AVF:
 - ✓ Hand-arm exercises
 - ✓ Selective obliteration of major venous side branches
 - ✓ Resting the access after an infiltration
- Patients with persistent edema two weeks after access placement should receive a venogram or non-contrast study to evaluate central veins
- Cuffed and non-cuffed central venous catheters do not require any maturation time and may be used immediately for hemodialysis.

**This Summary Paper is provided as an Educational Resource by Network #15 for the 2002-2003
Fistula Quality Improvement Project**

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