NKF-K/DOQI Vascular Access Clinical Practice Guidelines - 2000 Update
Section II – Monitoring, Surveillance, and Diagnostic Testing

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, or visit the National Kidney Foundation K/DOQI Website at http://www.kidney.org/professionals/kdoqi/index.cfm.

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).

Summary of Monitoring and Surveillance Tools:

MONITORING (PHYSICAL) INDICATORS

- Inspection
- Palpation
- Auscultation
- Bleeding/Swelling/Clotting/Cannulation Problems

SURVEILLANCE (TEST) INDICATORS

K/DOQI Preferred
- Intra-Access Blood Flow
- Static Venous Dialysis Pressure
- Dynamic Venous Dialysis Pressure
- Recirculation
- Arterial Dialysis Pressure (pre-pump)
- ↓KT/V (URR)
- Doppler Ultrasound

Section II: Monitoring, Surveillance, and Diagnostic Testing (Guidelines 10-12)

Guideline 10: Definition of terms, monitoring, surveillance, and diagnostic testing of AV grafts

- Physical exam of vascular access should be performed weekly and include, but not be limited to, inspection and palpation for pulse and thrill at the arterial, mid, and venous sections of the access. (Opinion)
- Available techniques that can be used to monitor for stenosis in AV grafts include:
  - ✓ Intra-Access Flow (Evidence)
  - ✓ Static venous pressures (Evidence)
  - ✓ Dynamic Venous Pressures (Evidence)
  - ✓ Access recirculation (Evidence)
  - ✓ Decreases in KT/V or URR (Evidence)
  - ✓ Physical findings: arm swelling, graft clotting, prolonged bleeding after needle removal, change in thrill or bruit (Evidence/Opinion)
  - ✓ Elevated negative arterial pump pressures limiting blood flow rates (Evidence/Opinion)

- ✓ Doppler ultrasound (Evidence/Opinion)
  - Persistent abnormalities in any of these parameters should prompt referral for venography. (Evidence)

Guideline 11: Monitoring primary AV fistula for stenosis

- Primary AV fistulae should be monitored for stenosis as outlined for dialysis AV grafts. (Opinion)
- Direct flow measurements are preferable, if available, compared to more indirect measures. (Evidence)
- Indirect measurement methods (i.e., dynamic and static venous pressures) are not as accurate for monitoring AV fistulae. (Evidence)
- Recirculation and Doppler analyses are both of possible benefit. (Opinion)

Guideline 12: Recirculation methodology, limits, evaluation, and follow-up.

- Recirculation should be measured using a nonurea-based dilutional method or the two needle urea-based method. (Evidence)
- The three-needle peripheral vein method of measuring recirculation should not be used. (Evidence)
- If access recirculation is >20%, correct needle placement should be confirmed before further testing (Evidence/Opinion)
- Elevated levels of access recirculation should be evaluated using angiography (fistulography) to determine stenosis (Evidence).