Vascular Access Strategies*	**Best Demonstrated Practices From Texas (NW #14) HD Facilities** *Produced by The End Stage Renal Disease Network of Texas, Inc. - January 2007*
Routine CQI Review of Vascular Access	☐ Medical Director is actively involved in vascular access planning and in CQI/QA meetings. ☐ Facility assigns staff member to be Vascular Access (VA) Coordinator. ☐ VA Coordinator given **adequate time** and **authority** to coordinate/oversee facility's VA processes. ☐ VA Coordinator coordinates the efforts of facility's other VA team members. ☐ Facility has (and uses) a process for evaluating all patients utilizing "catheter only" in QA meetings. ☐ VA Coordinator and CQI team monitor facility's vascular access outcomes on a monthly basis.
Outcomes Feedback to Help Guide Facility Practice	☐ Document and trend vascular access outcomes over time to identify opportunities for education/re-training: • Infiltration rates by staff member. • Multiple sticks by staff member. ☐ For patients with frequent infiltrations, track number and location of infiltrations to assist in the identification of a potential VA complication that would require interventional/surgical revision. ☐ Routinely review data - in QA meetings **and** in facility staff meetings. ☐ Track and trend surgeon-specific VA placement data & review surgeon-specific trends in monthly QA: • Percent of AVF placements compared to AVG placements (in patients who are candidates for AVF). • Percent of new AVFs that mature and can be used for sole HD access. • Maturation time for new AVF – from creation to first successful cannulation. • Percent of AVF placements that are logistically difficult to stick (vessel is too deep, cannulation area is too short or too "squiggly", cannulation area is on top of surgical scar, AVF is in an awkward and potentially dangerous location – i.e., non-transposed upper arm AVF located on underside of arm. • Number and type of interventional and/or surgical interventions performed/per patient to facilitate maturation of new AVF. (Note: Interventional and/or surgical procedures are indicated for primary AVF failure due to juxta–anastamosis stenosis, upstream stenosis or excess collateral vessels).
Timely Referral to Nephrologist	☐ Facility's Nephrologists work with referring PCPs to encourage early referral/collaborative care. ☐ Staff encourage patients with a family member "at risk for CKD" (diabetes, high blood pressure, PKD, etc.) to ask family member if their doctor has checked him/her for early kidney failure.

Early Referral to Surgeon for: • **"AVF Only" Evaluation** • **Timely Placement**	☐ Nephrologist, VA Coordinator, CQI team and other member of the facility's VA team develop and document AVF plan for all potentially eligible patients. ☐ Facility's VA team and nephrologists work together to ensure that VA physical exam and vessel mapping (using duplex ultrasound) are performed **before** patient is referred for access surgery. ☐ VA surgical referrals for **eligible patients** state in writing that the preferred access is an "AVF Only"; the Surgeon is asked to notify Nephrologist **before** placing any other access type. ☐ Referral to surgeon/radiologist for VA evaluation includes written vascular access history.
Surgeon Selection Based on: • **Best outcomes** • **Willingness** • **Ability to provide access services**	☐ Nephrologist collaborates with facility's Coordinator and CQI team to evaluate surgeon selection based on willingness to place AVFs and ability to consistently create functional fistulae. ☐ Patients eligible for AVF placement are referred **only** to surgeons able to create **functional** fistulas. ☐ Facility VA team and/or Nephrologist communicate preferred vascular access to surgeon. ☐ Surgeon provides post-operative access diagram that shows location of access and blood flow direction. ☐ Nephrologist refers to surgeons willing to receive/track data on their VA rates and outcomes. ☐ Nephrologist refers patients with failing AVG to surgeons skilled in placing secondary AVF's. ☐ Facility trends new AVF patency rates for all of their surgeons.
Full Range of Appropriate Surgical Approaches for AVF Evaluation & Placement	☐ Facility VA team and Nephrologist collaborate to refer patients for duplex ultrasound vessel mapping (if not already performed) to assist surgeon in determining optimal access type and access location. ☐ Ask facility's surgeons if they have a copy of Surgeon DVD, ***Placing AVF in All Eligible HD Patients.*** If "no" – order copies from ESRD Network #14 and ask Nephrologist to give them to surgeons. ☐ Encourage acute nursing staff to become more assertive in asking Nephrologists to order vein mapping: • Before dismissing new ESRD HD patients who are being dialyzed with a "catheter only". • For inpatient CKD patients who are expected to progress rapidly toward ESRD (i.e., Stage 4 CKD).
Secondary AVF Placement in Patients With AV Grafts	☐ In collaboration with nephrologist, examine upper arm veins on forearm AVG patients at least monthly for outflow vein(s) that could be converted to secondary upper arm AVF ("Sleeves Up" protocol): • Refer patients with failing AVG for vessel mapping to identify arteries/veins for future access sites. • Inform nephrologist and surgeon of findings and collaboratively develop new VA plan for patient. • If patient is eligible for AVG conversion to secondary AVF, schedule surgery **before AVG clots**. • Protocol at www.esrdnetwork.org → Fistula First → Dialysis Staff Resources → VA Procedures

AVF Placement in Patients With Catheters ***(Where Indicated)***	☐ Complete/review "Checklist of Indications for Hemodialysis Catheter Use" monthly for **all** catheter patients. ☐ To facilitate early catheter removal, develop and implement QI process for tracking catheter patients. ☐ VA Coordinator and VA team are assertive about catheter removal and permanent access placement. ☐ Within the first (3) treatments following admission, Nephrologist, VA Coordinator and Nurse Manager talk to new dialysis patients with "catheter only" about catheter access: • Make it clear that even though their catheter is called a "perm-cath", it is **not** a permanent access. • Discuss need for permanent access placement. • Ask about scheduled VA assessment appointments (i.e., vessel mapping, referral to surgeon, etc.). ☐ Staff taught to refer to catheters as temporary or short-term access – not as permanent access. ☐ Catheter patients with maturing access taught catheter is bridge access to be used **only** until access matures.
AVF Cannulation Training & Cannulation of a New AVF	☐ Facility's best, most skilled cannulators are assigned to teach other facility staff how to cannulate AVFs. ☐ Categorize staff according to cannulation skills and experience using ***Staff Skills Checklist***.. ☐ **Only the most skilled staff** are assigned to cannulate patients with a new or difficult AVF. ☐ Assign same staff member (best cannulator) to cannulate patient with new AVF for entire first month. ☐ Use ***Recommended Procedure for Cannulation of a New Arteriovenous Fistula*** (or a similar break-in procedure) during the first 2-4 weeks a new AVF is being cannulated to minimize VA complications. Procedure should include use of smaller gauge needles and slower blood pump speeds with advancing needle gauge and pump speed, as tolerated and according to procedure. ☐ For patients with functioning catheter and a new AVF, follow this cannulation protocol: • Cannulate **only arterial needle** for 3 consecutive treatments (to prevent large venous return infiltration). • If no VA complications during above 3 treatments, cannulate both arterial and venous needles. • If cannulation is complication-free for 2 weeks – arrange to have catheter removed.
Monitoring & Maintenance to Ensure Adequate Vascular Access Function	☐ Develop/implement procedures and protocols for monitoring and surveillance of AVGs and AVFs that facilitate timely referral for intervention for failing accesses. ☐ Monitoring and surveillance protocol uses at least one of the 2006 K/DOQI VA recommended procedures for monitoring/detecting access stenosis to measure access flow rates and/or pressures. ☐ All staff members (licensed and non-licensed) are knowledgeable about and participate in facility access monitoring/surveillance program. ☐ Nephrologist, VA Coordinator and VA team monitor new AVFs for maturation, with an emphasis on early detection of "primary AVF failure".

Monitoring & Maintenance to Ensure Adequate Vascular Access Function *(Continued from Page 3)*	☐ New AVFs that do not show signs of maturing (primary AVF failure) at 4 weeks post-op are referred to surgeon or radiologist for assessment and, if indicated, surgical/radiological intervention. ☐ New AVFs assessed monthly for maturation and suitability for cannulation; assessment is documented and reviewed in QA. ☐ Nephrologist and Interventionalist/Surgeon develop criteria for determining allowable degree of intervention on current access, before the access should be "abandoned" and a new access placed. Closely monitor all AVF infiltrations to ensure that protocol for "Infiltration of New AVF" is utilized.
Education for Caregivers	☐ Offer frequent in-services and educational programs on vascular access to facility staff. ☐ All staff members (licensed and non-licensed) are taught access monitoring/surveillance protocols. ☐ Provide routine in-services for staff on AVF cannulation techniques, following the recommendations of the Fistula First Initiative. ☐ Consider implementing "button-hole cannulation" in your facility, particularly for patients with AVFs that have limited cannulation sites. ☐ Develop mechanism for maintaining current diagram and flow characteristics for each patient's AVF, for example: • Incorporate AVF diagram (provided by surgeon or developed by facility) with location of access and direction of blood flow on daily treatment record. Review access diagram monthly or as necessary to keep information current. • Develop a card for each AVF with a detailed picture of the access, location of arterial end and venous end, location of anastamosis, surgeon recommended cannulation areas, cannulation areas to avoid, etc. Card can be laminated and used as cannulation resource by staff. • Develop and utilize procedure for treating VA infiltrations that includes giving patient/family easy to read, clearly written instructions on a "take-home" education sheet following each infiltration.
Patient Education	☐ Provide education on vascular access for patients and their families. A good source for reliable, professional educator reviewed VA patient education is the ***Vascular Access Patient Education Electronic Notebook*** at www.esrdnetwork.org → Fistula First. ☐ Teach patients about their access – where arterial (pull) and venous (return) needles should be inserted, importance of rotating sites when using traditional cannulation techniques, protecting their access, checking the "buzz" every day, washing access at home and before every treatment, etc. ☐ Offer patients the option of learning how to self-cannulate their accesses.

* ***These Vascular Access Strategies (commonly referred to as the Fistula First Change Concepts) were developed and endorsed by the National Vascular Access Improvement Initiative (NVAII) at the beginning of the project in 2003.***