Vascular Access Care Plans: How Can a Care Plan Really Improve Care and Make Everyone’s Job Easier?

Plan the Work ↔ Work the Plan

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What is a plan?
A method for achieving an end
An orderly arrangement of parts of an overall design

Questions:
1. Why have a vascular access (VA) plan?
2. What should a VA plan include?
3. What part do we play?

Why have a VA Plan?
Maintain an organized approach to a complex clinical condition
Multiple encounters over a dialysis patient’s lifetime
Many opportunities for things to go right/wrong

FFBI Change Concepts
1. Routine CQI review
2. Timely referral to nephrologist
3. Early referral to surgeon
4. Surgeon selection
5. Full range of appropriate surgery
6. Secondary AVF placement

FFBI Change Concepts Ctd.
7. AVF placement in pts with CVCs
8. Cannulation training
9. Monitoring and maintenance
10. Education of pts and caregivers
11. Outcomes feedback
FFBI Change Concepts Ctd.

12. Modify hospital systems to detect CKD and promote AVF planning

13. Support patient efforts to live the best possible quality of life through self-management

What should a VA plan include?

Process steps

- Vein Preservation (2, 12)
- Patient and caregiver education (10, 13)
- Vessel Mapping (3)
- Referral surgical evaluation (3)
- Surgery to place permanent VA (4, 5)

Process steps continued

- At 4–8 weeks, assess VA evaluate maturity (9)
- Intervention if necessary (9)
- Initiation of cannulation protocol (8)
- Catheter removal upon successful delivery of dialysis RX with two needles (8)

Vein Preservation

High priority before and after the initiation of dialysis

- Veins in both arms must be preserved
- When possible, utilize the dorsum of the hand
- Limit use of PICC lines

Patient/Caregiver Education

Pros and cons of access types: AVF, AVG, Cuffed Catheters

- Catheter as VA
  Utilize criteria for catheter as preferred access (KDOQI)

- Important to include patient/caregiver in the development of the VA plan

Who should have vessel mapping?

Patients with no permanent access in place

- Those labeled as having no access sites with no confirmation via vessel mapping
- A new/revised access is being planned and vessel mapping is not current
Referral for Vessel Mapping

**VESSEL** mapping, not **VEIN** mapping

Some surgeons perform their own vessel mapping

Operator skill is an important factor in obtaining good results

Referral to Surgeon for Evaluation for VA Placement

What are the surgeons outcomes?

Does the surgeon employ a wide range of surgical techniques for both simple and complex VA?

Are there geographic considerations?

Surgery to Place Permanent VA

Are mechanisms in place to assist patients throughout the VA process?

Coordination of dialysis schedule for surgical/interventional procedures

Follow-up?

Assess VA Maturity

VA exam at each dialysis

Overall appearance of VA

*Edema, pain or numbness, skin integrity, bruising, presence of collateral veins, check surgical site*

Listen to the bruit

Feel for the thrill

Feel for a pulse

Assess VA Maturity

Goal: Mature AVF is able to sustain 3 consecutive dialysis treatments without infiltrations or other complications

AVF is easily accessible, with BFR to support routine, problem free, 2 needle dialysis

Assess VA Maturity

If examination shows VA is not maturing as expected, consider referral for examination, imaging and intervention if indicated

- Surgeon
- Interventionist
Assess VA Maturity

KDOQI Rule of Sixes
AVF is a minimum of 6 mm in diameter with discernible margins with a tourniquet in place
AVF <6 mm below skin surface
AVF BFR > prescribed BFR measured by ultrasound or flow dilution

Cannulation of New AVF

Dialysis clinics have cannulation protocols
If no complications, 3–4 weeks from initiation to completion
Only EXPERT cannulators should cannulate new AVFs

Cannulation of New AVF

Always use a tourniquet when cannulating the AVF
Do not use a tourniquet during the dialysis treatment
Do not use clamps

Cannulation of New AVF

Week one:
Arterial: 17 gauge needle
Venous: catheter
BFR: 250 (200)
Week two:
Cannulate both with 16 gauge needles
BFR: 300

Cannulation of New AVF

Week Three:
Repeat week two or progress to prescribed needle gauge and BFR
When increasing BFR, match needle gauge to BFR

BFR and Needle Gauge

Smaller needle gauge requires lower BFR
Needle gauge may be a specific physician order
Must monitor pre–pump AP
Pre–pump AP should be ≤ −250 mm Hg for all gauges and BFRs
**BFR and Needle Gauge**

<table>
<thead>
<tr>
<th>BFR (ml/min)</th>
<th>Needle Gauge</th>
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<tbody>
<tr>
<td>&lt; 300</td>
<td>17</td>
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<tr>
<td>300–350</td>
<td>16</td>
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<td>350–450</td>
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<td>&gt; 450</td>
<td>14</td>
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**Facilitate Catheter Removal When Goals are Met**

Goal: Mature AVF is able to sustain 3 consecutive dialysis treatments without infiltrations or other complications

AVF is easily accessible, with BFR to support routine, problem free, 2 needle dialysis

**What Part Do We Play?**

New and established patient:
Once the patient crosses the threshold into the chronic dialysis world, all need and deserve a VA plan.

Any one of us can and should initiate VA plan no matter the site of care
- Dialysis clinic
- Access Center
- Hospital/outpatient facility

**What Part Do we Play?**

Catheter only:
Highly likely they will access the health care system frequently
- Catheter malfunction
- Catheter infection

Encounters to address co-morbid conditions and complications

**Catheter with Maturing AVF**

Look around you. Patients are stuck at this phase with no VA plan in place.

Have they exceeded the time recommended for maturation?

Has imaging of AVF been considered? If not, why not?

**Maturing or Mature AVF**

Are there resources to evaluate the VA properly?

Consider referral for evaluation by ultrasound

Proactively identify and intervene if
- Problems with outflow/inflow
- Collateral veins affecting flow
Ongoing Monitoring and Surveillance
VA plan versus procedure plan
To determine when to intervene or when a revised/new VA should be considered

Communication
Communication
Communication
This is necessary but complicated
Everyone is responsible for effective and consistent communication among all members of the VA team

Patient is the Owner of the VA
An educated patient/caregiver is the best advocate for the maintenance of the VA and the plan
Their VA is always with them
Patient empowerment is not the same as patient education

Resources
"A Practitioner’s Resource Guide to Hemodialysis Arteriovenous Fistulas"
http://www.fistulafirst.org/LinkClick.aspx?fileticket=CisQul6z7cwK5d&tabid=76
Gerald A. Bethard, MD, PhD

AVF Physical Examination Made Easy–Videos
Tushar Vachharanjani, MD, FACP, FASN, Dialysis Access Group of Wake Forest University School of Medicine, Winston-Salem, North Carolina

Resources
KDOQI Clinical Practice Guidelines for Vascular Access

Recommendations for the Limited Use of PICC Lines
http://www.fistulafirst.org/LinkClick.aspx?fileticket=w0p0bdGCVYK3d&tabid=122