

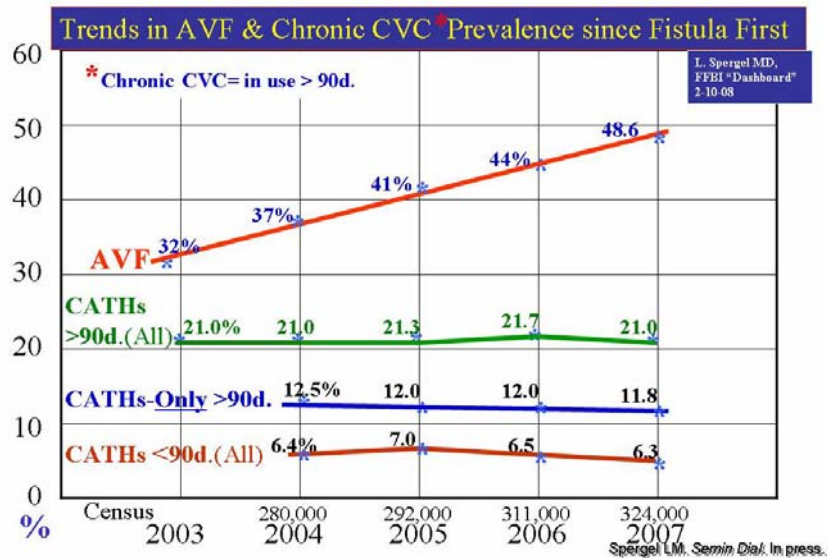
Catheter Reduction – More Ways to Make It Happen

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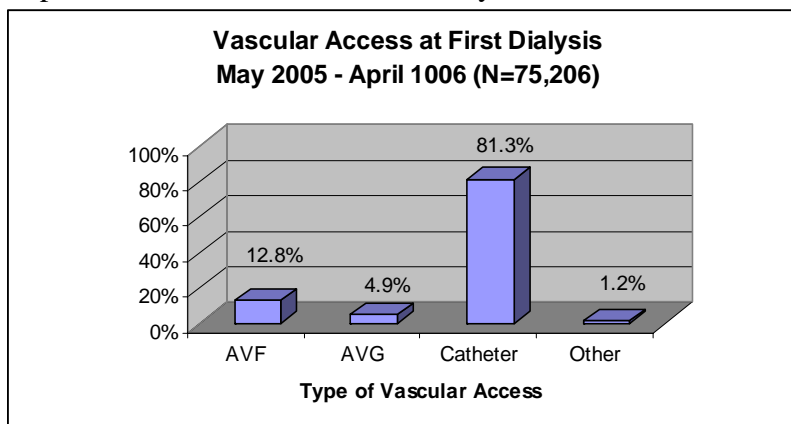
The Fistula First Breakthrough Initiative (FFBI) has been very successful in increasing the number of prevalent patients with arteriovenous fistulae (AVF). While the FFBI project has not increased catheter rates (Fig. 1), we are seeing a high number of incident patients starting dialysis with a catheter (Fig. 2). If we can identify ways to reduce

Fig 1: FFBI Dashboard Data



catheters, both short term (less than 90 days) and long term (greater than 90 days with no other access in place); we will continue to see an increase in the overall AVF rate, and a decrease in morbidity and mortality.

Fig. 2: Incident patient vascular access at first dialysis



Source: CMS 2728 unpublished data. Courtesy of Paul Eggers.

Five major areas have been identified in the literature to reduce the use of catheters in the chronic kidney disease (CKD) population: Early referral, communication, protocols, potential complications, and patient education.

Early Referral

Early referral can result in AV fistula placement occurring prior to the need to initiate dialysis, allowing time for the access to mature, and eliminating the need for catheter placement. Education of the primary care physicians in identifying chronic kidney disease patients and making appropriate referral to nephrologists need to be looked at as a collaborative process.

There needs to be a process of a more rapid referral system from nephrologist to surgeon, and then the ability of the surgeon to establish an AVF shortly after that referral. Too often, patients have to wait weeks to months to have an AVF placed, thus necessitating the insertion of a tunneled cuffed catheter to initiate dialysis. Studies by Dhingra et al., 2001; Combe et al., 2001; Xue et al., 2003; and Pisoni et al., 2005 have all identified increased mortality risk utilizing central venous catheters (Soule & Henry, 2007).

Communication

The needs of a dialysis patient require the use of a multidisciplinary team. The research has shown that nephrologists and surgeons need to develop a good working relationship. Nephrologists need to be up to date on current literature, which includes Doppler vessel mapping to identify the best veins; developing a written plan based on mapping results; and recommending the appropriate site and type of vascular access to the surgeon (Nguyen et al., 2003).

The role of a vascular access coordinator is that of a facilitator (Barclay, 2003). They can track patients and be the go-between with the nephrologists, surgeons, and interventionalists. They can provide education to primary care physicians for the need for early referrals for access placement. They can also provide education to patients regarding the types of accesses available, and ensure follow through with physicians and surgeons.

Protocols

Protocols can serve as useful tools in many ways. A protocol for determining maturity of a new AVF (Ball, 2007) will allow intervention of the “failure-to-mature” and early failure accesses sooner, and decrease the amount of time that the patient will require the use of a catheter.

A protocol for stenosis identification can potentially save an access from clotting and the subsequent insertion of a catheter, in the event a new access (graft or AVF) is needed. Identifying clues in an expedient manner can potentially save an access from failure and prevent the need for catheter insertion. This requires knowing how to do a complete physical assessment (i.e., looking, listening and feeling) of the vascular access at each dialysis treatment (Ball, 2003).

A protocol for catheter flow reduction or occlusion should be part of a facility's catheter policy and procedure. The use of anti-thrombolytics has been effective in extending the life of catheters.

An additional protocol should include a tracking tool for catheter patients, to ensure that catheters are removed in a timely manner. Tracking patients will make sure they have a plan for a permanent access, and prevent them from having a catheter for longer than is necessary.

Potential Complications

The Dialysis Outcomes and Practice Patterns Study (DOPPS) identified outcomes associated with hemodialysis catheter use (Rayner et al., 2003). They found a significant association between those patients utilizing a catheter for dialysis and:

- A lower mean hemoglobin
- A higher hospitalization risk
- A higher mortality risk
- An increased risk of failure of a subsequent AVF
- A higher risk of infection – 5-fold for tunneled catheters

In addition to the complications listed above, catheters can cause stenosis and clotting of large draining veins from the extremities, making it difficult, if not impossible to create a fistula in the extremities.

In addition, Dr. Scott Trerotola (2000) attributes late infections in catheters to thrombosis, as bacteria adhere quite well to fibrin, the basic framework of clots.

Patient Education

Dr. Vo Nguyen, who has been able to sustain a 90% AVF and a 10% catheter rate in his facility, focuses on patient education as one of his strategies for catheter reduction. He invites the entire family for the initial visit, because they will turn out to be the motivators for the patient to get their accesses placed. Regardless of which modality the patient selects, he recommends an AVF be placed. He explains, “A fistula is like car insurance – we hope that we will never need to use it, but we will be glad to have it in case of an accident.” With those patients who are late referrals, he suggests they use peritoneal dialysis while the AVF is maturing.

If peritoneal dialysis is not an option for late referral, the patient must understand that the use of a catheter is temporary, and is considered a bridge device while their permanent access is maturing. Schwab and Beathard (1999) emphasize that a catheter is “inferior to and not a substitute for a peripheral access” (p. 15), and early placement of an AVF is the best way to avoid the complications associated with catheters.

The Centers for Disease Control and Prevention (CDC, 2008) recommends that catheters should only be used when essential to patient care, not for convenience or as a “routine” practice. Ideally, catheters should only be placed when a patient is not a candidate for a fistula or a graft. This should be presented to the patient at the first doctor’s visit and reinforced by the multidisciplinary team.

The take away message is to prepare the patient and the family for an AV fistula before they see a surgeon. Designate a nephrology staff person to educate patients and families on the benefits of AV fistulae and protecting vessels (FFBI, n.d.).

This is not an all-inclusive list of catheter reduction strategies. Please visit the Fistula First web site for additional resources at www.fistulafirst.org or find your local ESRD Network web site at <http://www.esrdncc.org>.

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