Investing in the Lifeline:

The Value of a Vascular Access Coordinator

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When I joined the Nephrology Division faculty at the University of North Carolina (UNC), Chapel Hill in 1995, one of the things I was asked to do was to organize the vascular access care of the hemodialysis patients. Renal fellows were overwhelmed and the patients needed continuity of care.

I first looked at how vascular access was initiated, and discovered very quickly that part of the fellows' burden was their practice of putting in temporary catheters——but not necessarily because an immediate need for dialysis existed. After dialysis was initiated, patients were scheduled to get a tunneled cuffed catheter before leaving the hospital. By instructing the fellows to forgo placement of the temporary catheter and go directly to a tunneled cuffed catheter, we saved patients from an extraneous procedure that had the inherent possibility of infection. We also saved patients' and fellows' time, and saved the system the expense of the temporary catheter. It was a win-win situation and a case in point that proved the value of the vascular access coordinator.

Vascular Access Needs a Special Focus

Certainly, the economics of the academic setting may not be the same for the freestanding outpatient environment, where the majority of dialysis patients in this country are treated. My charge at UNC came with no purse strings attached; outpatient clinics have to justify every hiring decision. But I do believe that by having one person who focuses on the patients' vascular access needs and follows an algorithm of best practice (see sidebar, p. 52), the position of the vascular access coordinator pays for itself. The algorithm of best practice assumes that the coordinator is supported by a proactive medical director and involvement of a continuous quality improvement (CQI) team composed of nephrologists, surgeons, interventionalists, dialysis nurses, and technicians.

How can you justify hiring a vascular access coordinator? Here are some ways to quantify the possible savings such a role could effect:

- eliminate the loss of revenue associated with missed treatments in the clinic when access problems require hospitalization
- reduce the cost of vascular intervention and operating room appointments in a fee-for-service environment
- save time for nephrologists and dialysis staff in keeping the access working and healthy

Not as easily quantified is the potential improvement in patient outcomes. However, minimizing catheter placement——a logical goal for the vascular access coordinator——reduces the comorbidities of infection and vessel occlusion. A reduction in the use of catheters and an increase in fistula creation——along with protecting maturation until the access is ready for use——is part of the focused attention of a vascular access coordinator. Risk of infection is decreased and greater

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Best Practice: Access Coordinator

I believe there is a defined algorithm that the vascular access coordinator must follow for best practice, and that the responsibilities logically follow. The vascular access algorithm includes:

- early vein preservation and referral from nephrologists
- assessment, including vein mapping
- referral to surgeons for peripheral access assessment and a surgical plan
- access creation and postoperative follow-up
- ongoing monitoring and surveillance
- troubleshooting and referral for appropriate care of complications, such as stenosis and thrombosis

Therefore, the responsibilities of the vascular access coordinator are to:

- assess new and established patients' vascular access status and needs and organize appropriate interventions per nephrologists' orders
- oversee data collection and management
- organize and maintain a CQI process that involves all members of the vascular access team
- interact with dialysis staff to assure ongoing access monitoring
- assure patient and staff teaching and support

The vascular access coordinator role must include being a patient advocate, a teacher (for patients and colleagues), and the access liaison (communicator extraordinaire). The coordinator must be flexible and mobile, assertive, and accountable, a manager of the CQI process, a researcher, and last but not least, a collaborator. There is no "I" in team.[1]

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1. Sands J. There is no "I" in team: Improving vascular access outcomes is a collaborative effort. Nephrol News Issues 16:6:52–53, 2002

use of and regular maintenance of fistulas preserves major vessels. Such good outcomes could extend the lives of the existing patient base and attract new patient referrals.

Shifting Patient Care to Patients

There is no better time than now to consider the value of a vascular access coordinator. According to the 2002 report of the U.S. Renal Data System (USRDS),[1] the number of annual vascular access events quadrupled between the years of 1991 and 2000. But where these vascular access procedures were performed has changed, which may be placing greater responsibility for care in the hands of the dialysis staff and patients. Even though the number of events has quadrupled over the nine-year period, the amount of Part B physician payments has not quite doubled—from $104 million in 1991 to $200 million in 2000. The USRDS attributes this disproportionate increase in physician payment costs—collectively, a decrease of almost 200% per event—to the shift of access care from the inpatient to the outpatient arena. While this should be good news for the taxpayer, it is the patient and family who are most affected by this shift. Follow-up care for the access now ends up in their hands. At UNC, one of our graduating fellows presented a study showing that patients who had access surgery as an outpatient had no more bleeding or pain complications than those who had the surgery in an inpatient setting with an overnight stay. But with a greater number of our patients getting their initial access as outpatients, more oversight and education needs to be done to make sure the access is protected. That is the role of the vascular access coordinator.

Others have looked at the economic benefits. Kalman et al. wrote, "The organization of a vascular access program in a practical and cost-effective way for reduced length of hospital stay is streamlined through a dedicated access coordinator, who ensures an integrated, multidisciplinary approach."[2] A similar finding was recently published on a Welsh initiative that incorporated the vascular access coordinator role to "capture" patients approaching end-stage renal disease (ESRD). Their results were significant. "The additional cost of a coordinator is more than offset by the improvement in patient care, better utilization of resources, and the reduction in waiting lists," the authors wrote.[3]

Protecting the Lifeline

The monitoring and surveillance of established vascular access sites also falls under the purview of the vascular access coordinator. Patients probably would not mind submitting to the pain and anxiety of access creation if they could be assured that the complications would be minimized and use of the access maximized. What started with nephrologist Steve Schwab's seminal work with dynamic venous pressure has led to a rich literature base now full of descriptions of techniques and technology that can help us accomplish this surveillance. McCarley et al. showed that the cost of flow monitoring was readily recouped by the savings in not-missed dialysis treatments as well as decreased hospitalization and catheter costs.[4] At the Robert Byrd Medical Center in West Virginia, nephrologist Anatole Besarab instituted a vascular access surveillance program over the course of 14 months that included biweekly collection of static venous pressures. With 43.2 patient (graft) years at risk, not one of the 49 grafts thrombosed.[5] While these outcomes were not directly linked to the role of the vascular access coordinator, there is no doubt that a coordinated vascular access team with a CQI process is more likely to have a protocol for monitoring and surveillance than a center where access care is piecemeal.

Case Studies

Different programs and places have different needs for the role of vascular access coordinator. At the University of Alabama in Birmingham, the Nephrology Division employs two full-time vascular access coordinators. The roles of the coordinators do overlap to a certain degree, but one concentrates on scheduling access interventions while the other focuses on data collection. The position of the first is funded by the hospital, while research monies underwrite the position of the data collection coordinator. The database that has been created by these coordinators has been the source of numerous articles from the vascular access team.

Likewise, the Virginia Commonwealth University Health System, Medical College of Virginia Hospitals and Physicians,

has recently instituted a program of vascular access care with two full-time coordinators. The institution justified the costs for both positions by projected profits from coordinated vascular access care and improved patient outcomes. Early outcome data supports the benefit of these positions to the patients with a fistula creation rate that now exceeds 50% of all vascular accesses.

What works for an academic center might not be suitable for a group of freestanding units. In one large practice, nephrologists prevailed upon a large dialysis provider to hire a nurse to coordinate vascular access activities for four dialysis units and more than 600 patients, and to deal with day-to-day access emergencies. This nurse does not do any scheduling but does perform data collection and has the responsibility of planning care, making referrals, and conducting follow-up. By referring patients to a surgeon who is enthusiastic about fistula creation, the coordinator has markedly increased the number of fistulas in his patient population. Different providers have varying models for CQI but it is fairly common for the nurses to have a primary care load and to provide monthly review. One approach would be to make vascular access the primary focus of one nurse with the experience and commitment for this role. Dialysis providers with freestanding units who are near dedicated vascular access centers might find great efficiency in incorporating such centers into the access team. Same-day care can reduce catheter numbers as well as increase access monitoring and simplify data collection for the access coordinator.

Setting up the Position

Though different models exist, the following framework can be adapted to meet the varied situations. In programs with multiple dialysis facilities and very large patient populations, the role of the access coordinator can be covered by more than one person. Where patient numbers are small, it could be a part-time position. Does the coordinator have to be a nurse? For the assessment and teaching responsibilities, it would be ideal to have a nurse with dialysis cannulation experience. Knowing when an access is ready for cannulation and understanding the frustration the dialysis staff experiences when trying to cannulate a difficult access is essential if the coordinator is going to function as the patient's advocate relative to the care and use of his access. For this reason, my role at UNC stimulated the creation of "the shunt clinic." Previously, dialysis patients were scheduled randomly amongst all the other vascular surgery clinic patients. The surgeons had minimal history with each patient and less than optimal appreciation for the complexity of the patient's condition. The creation of a focused vascular access clinic and my presence provided reassuring continuity for the patient; a reliable, instantaneous history for the surgeon; representation for patients' nephrologists, and the opportunity for patient education. (The value of patient education, which should permeate every encounter, is difficult to quantify, but every patient who understands, protects, and maybe even cannulates his own access is much more likely to have fewer complications. It is the vascular access coordinator who has the most opportunities as well as the expertise to do this teaching.)

Prior to my role at UNC, all upper arm grafts were created in loop configurations. Demonstrating to the surgeons how difficult it was to cannulate the medial limb led to the immediate institution of arc grafts if the brachial artery at the antecubital fossa was healthy.

The cannulation issue further explicates the need for the vascular access coordinator to demonstrate excellent teaching and communication skills. Many times I've heard surgeons bemoan the "trashing" or loss of a good access by poor cannulation. Some surgeons fail to appreciate that adequate flow is not the sole criterion for a successful access. Access to the access site has to be relatively simple and reliable. However, there is no doubt that cannulation is largely an unstudied variable in the outcomes of vascular access, and that the nephrology nursing community needs to expand cannulation research and education. The current work in buttonhole technique is evidence that this is happening.

I envision that vascular access coordinators of the future will collaborate to accomplish such research and teaching and add to the value of the role as fewer access sites are "trashed." Such clinical activities are time-consuming, and the nurse coordinator may be easily overwhelmed. There are parts of the job, such as data gathering and processing, scheduling, and communicating between team members and patients, that could be done by others as long as they are done in conjunction with the assessment/teaching nurse coordinator.

Putting Guidelines to Work

The advent of the National Kidney Foundation Dialysis Outcomes Quality Initiative (NKF-DOQI) guidelines in 1997 was a watershed event in the history of vascular access for dialysis. The guidelines, born of evidence and expert opinion, set what appeared to be reasonable goals to improve the survival and quality of life for our patients. How is it that, six years later, the gains that we've made are minimal and the goals remain elusive? We hear reports of programs and centers that create a team with a coordinator to tackle the problems, and the outcomes are impressive. The problem is that this focused effort is the exception rather than the rule. If we are to realize the vision of NKF-DOQI, coordinated vascular access teams must be instituted across the country, serving all patients. Will it take tying reimbursement to outcomes to make this happen?

I believe the intrinsic value of a vascular access coordinator is not just in the individual talents and commitment, but in the collaborative commitment and support from the team. The question is not, "Can we afford to implement the role of the vascular access coordinator?" but "Are we willing to form the team?" And if so, "How can we afford NOT to have a vascular access coordinator?" ■

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