

Project Example: Decreasing Central Venous Catheters (CVCs) in your Chronic Hemodialysis Patients

First, look at your data from your most recent annual Kidney Epidemiology and Cost Center Report (KECC report) and your quarterly Fistula First summary. If you track catheter rates using other methods, include these reports in your review. How do you compare to others in your geographic area? If your catheter rates have increased or are greater than 10% for prevalent patients, you should consider an improvement effort in this area.

Next, decide which people at your facility should be included in the team effort. Do you have a designated vascular access coordinator? Is your medical director and /or interventional nephrologist/radiologist or surgeon aware of the CMS goals for reducing catheter use and placement? Nephrologists and surgeons should evaluate all patients as soon as possible for an AV fistula, using the recommended methods from the Fistula First Breakthrough Initiative. Who else would you like to include on your team?

Now, take a closer look at your clinic to see what is going on that might be impacting your catheter rates. How many patients are being seen by a nephrologist before starting dialysis? How many CKD patients are being evaluated for a primary access before starting dialysis? Are surgeons aware of access placement rates? Do you have a process that includes referring patients, who have catheters, to a surgeon or interventional radiologist? Is staff at your facility given yearly competency evaluations regarding catheter care? How do you educate elderly patients, or those who speak Spanish, regarding the need to have a permanent access placed? Answering these questions may assist you in narrowing your focus and allow you to concentrate on the root cause of the problem.

To get started, the following **barriers** to catheter reduction have been identified by Medical Review Board members of Network #15

- Lack of patient and staff education regarding the hazards of CVCs
- Lack of procedures to remove temporary catheters allows patients to think of them as “permanent” accesses, leading to resistance to placement of “another” access
- Patients prefer a catheter because they have a “needle phobia”
- Facilities don’t know strategies to reduce catheter placement
- CVCs are placed as a convenience
- Patients are not seen early enough or have limited number of visits with the nephrologist which decreases the chance of having an access placed prior to starting dialysis.

Root cause: Your QI team should determine the root cause of the problem at your facility. See attached root cause document for more suggestions.

Decide on an “AIM” Statement; what are you trying to accomplish?

- Decrease CVC’s utilized in chronic dialysis patients to less than 10% by January 2010 by following the CQI Action Plan developed by your QI team.

Goals:

- Reduce CVC’s used in first dialysis by 10% (incident patients)
- Reduce CVC’s used for chronic dialysis by 5% (prevalent patients)

How will you measure improvement?

Monthly measurement for CQI meeting – for example, review CVC rate in incident patients admitted to your facility each month.

Examples of potential measurement (if above goal is used): Monthly measurement

Numerator: # of incident patients with catheters

Denominator: total # of incident patients admitted to your facility
 or

Numerator: # of prevalent patients with catheters

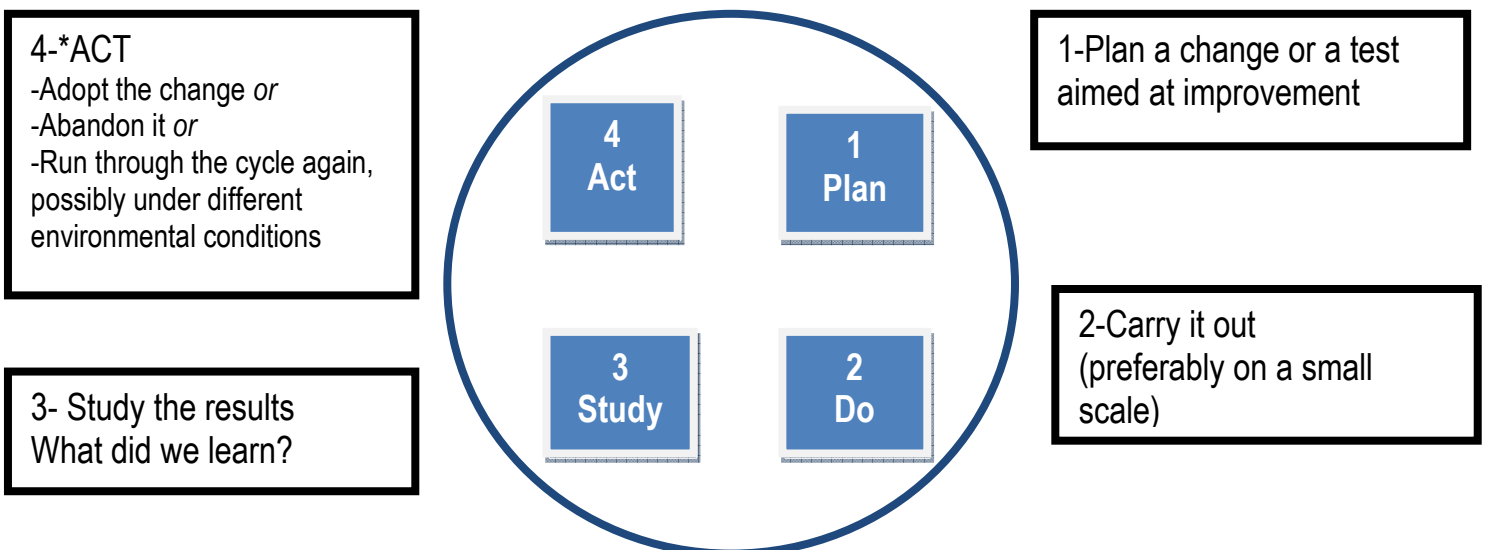
Denominator: total # of prevalent patients in your facility

Additional MRB recommendations that might support your AIM statement:

- Promote AVF placement anytime a CVC is placed
- Distribute patient education materials to address “needle phobias”
- Distribute catheter handout for patients, stressing CVC complications that can occur and their frequency

Brainstorm potential solutions based on barriers/root cause prioritized by your QI team.

Begin PDSA cycles and document your improvement!



Begin a new PDSA Cycle!

Name of Facility / Provider # _____

Facility Contact/Position _____

Root Cause Assessment
Vascular Access

Major Barriers	Potential Root Cause For Decreasing Catheter Rates and Increasing AVFs	Problem in facility?	Potential to change	
Patient Factors				
Awareness/ knowledge	• Lack awareness of long-term risks of catheters as opposed to fistulas	Y/N		
	• Lack awareness of benefit of fistulas compared with grafts	Y/N		
	• Obesity	Y/N		
	• Diabetes	Y/N		
	• Other disease affecting vasculature (e.g. scleroderma)	Y/N		
	• Vascular abnormalities that predispose to steal syndrome	Y/N		
	• Smoking	Y/N		
	• Long-term steroid use	Y/N		
	• History of or active drug abuse	Y/N		
	• Medical instability	Y/N		
	Physical factors that make a fistula more challenging or difficult	• Hypotension, severe cardiomyopathy with poor cardiac output that precludes keeping a fistula patent.	Y/N	
		• Recent bacteremia or other infection causing deferral of any surgical procedure	Y/N	
		• Suitable veins (especially superficial veins) thrombosed or stenosed by years of IVs and lab draws	Y/N	
		• Prior failed accesses, especially grafts, which may be associated with venous damage above the graft	Y/N	
• Repeated catheter failures (infections, poor flows, bad dialysis) that make a working arm access more urgent, thus increasing the likelihood that a graft will be placed which has a shorter maturation ^δ		Y/N		
Communication/ Education	• Failure to inform healthcare professionals of pre-ESRD or ESRD status (no process to refer patients for AVF)	Y/N		
Social	• Patient misses surgery appointments out of fear, lack of support (e.g. transportation)	Y/N		
	• No insurance	Y/N		
	• Preference for catheters since catheters do not require a “stick”	Y/N		
	• Preference for grafts because they are easier to stick than fistulas	Y/N		
Other	• Reluctance to self-cannulate	Y/N		
	• Plan for transplant (scheduled or hopeful) soon.	Y/N		
	• Plan for peritoneal dialysis	Y/N		
	• Prior bad experiences	Y/N		
	• Fear of pain, including pain of needlesticks, surgery, etc	Y/N		
	• Unsightly body image	Y/N		
	• Patient complacency	Y/N		

Nephrologist Factors			
General	• Total reliance on surgeon decision.	Y/N	
	• Failure to act as Vascular Access Team Coordinator (includes making recommendations to vascular surgeon, assisting in vein preservation and mapping, and working closely with HD unit staff to assure knowledge and skills re: access and cannulation)	Y/N	
	• Late referral to surgery for access placement	Y/N	
	• Sense of urgency to have a working arm access	Y/N	
	• Waiting for completion of transplant evaluation before making access plans*	Y/N	
Awareness/Knowledge	• Lack awareness that placement of catheters at certain sites may limit future access options	Y/N	
	• Lack of valid information about the benefit of AV fistulas in the long-term	Y/N	
	• Failure to recognize that peritoneal dialysis (PD) may be used while awaiting AVF	Y/N	
	• Failure to recognize the value of PD as an alternative to HD	Y/N	
	• Lack of awareness that even patients awaiting transplant and patients undergoing PD may need access placement	Y/N	
Communication/Education	• Failure to communicate to the surgeon their preference to have an AVF place	Y/N	
	• Failure to educate patients re: vascular access options, protecting potential access sites (e.g. no IV lines and no blood draws from non-dominant arm in patients with impending renal failure).	Y/N	
Training/Experience	• Lack of training re: vascular access (residency-based or postgraduate CME)	Y/N	
Facility Factors			
Awareness/Knowledge	• Lack awareness of long-term risks of catheters as opposed to fistulas	Y/N	
	• Lack awareness of benefit of fistulas compared with grafts	Y/N	
	• Lack awareness that episodes of hypotension need to be avoided, especially in patients with fresh or immature fistulas	Y/N	
Communication/Education	• Inadequate communication between facility and nephrologist, surgeon, radiologist	Y/N	
Training/Experience	• Techs and nurses may lack adequate training/experience in accessing fistulas and grafts (including the rotation of needle sites), development of immature fistulas, preservation of fistulas, and maintenance of fistulas leading to premature access failure and patient fear or reluctance	Y/N	
	• Staff preference for grafts because they are easier to cannulate than fistulas, thus requiring less time to initiate a dialysis treatment	Y/N	
	• Impatience with the slow-to-develop fistula	Y/N	
Administrative	• Lack of and/or failure to use a Quality Improvement program to monitor vascular access	Y/N	
	• Lack of and/or failure to use a stenosis monitoring program	Y/N	

Administrative	<ul style="list-style-type: none"> Lack of and/or failure to use protocols for fistula development, preservation, and maintenance; clamp management; and dressing management 	Y/N	
	<ul style="list-style-type: none"> Lack of and/or failure to use protocols for management of new or fragile fistulas (e.g. rest the fistula following infiltration) 	Y/N	
	<ul style="list-style-type: none"> Lack of and/or failure to use protocols for tunneled catheter management, such that failing or infected catheters lead to more urgent permanent access placement 	Y/N	
	<ul style="list-style-type: none"> Lack of and/or failure to use an educational program to instruct patients about post-op care, signs and symptoms of problems, etc 	Y/N	
	<ul style="list-style-type: none"> Lack of and/or failure to use a policy to request/demand/receive surgical reports regarding access placements and revisions 	Y/N	
	<ul style="list-style-type: none"> Lack of support for self-cannulation 	Y/N	
Other facility factors	<ul style="list-style-type: none"> Inadequate dialysis related to facility factors may increase the urgency for a working arm access, thus increasing the likelihood that a graft will be placed which has a shorter maturation 	Y/N	
	<ul style="list-style-type: none"> Lack of flexibility in patient scheduling making it difficult to accommodate patients who desire to self-cannulate and patients who require longer for staff to cannulate 	Y/N	
Vascular Surgeon Factors			
Awareness/ knowledge	<ul style="list-style-type: none"> Misconception that the need to dialyze immediately (or very soon) requires that a graft be placed. 	Y/N	
	<ul style="list-style-type: none"> Belief that a patient's lifespan is so limited that a successful graft will be more useful and less problematic than a fistula that may develop slowly 	Y/N	
	<ul style="list-style-type: none"> Belief that sonography is not helpful for mapping vasculature prior to access placement 	Y/N	
	<ul style="list-style-type: none"> Lack of recognition of the requirements for success, e.g., fistula lengths must be adequate for cannulation, minimum blood flows that are necessary for dialysis must be achievable (not just a dopplerable blood flow), positions need to allow for appropriate needle placement during dialysis, etc. 	Y/N	
	<ul style="list-style-type: none"> Failure to recognize importance of Vascular Access Team and the surgeon's and nephrologist's roles on the team 	Y/N	
	<ul style="list-style-type: none"> Failure to recognize the importance of routinely providing a dialysis unit with the operative report for access placements and revisions 	Y/N	
Communication/ Education	<ul style="list-style-type: none"> Failure to educate the patient on post-op care and monitoring of a fistula 	Y/N	
	<ul style="list-style-type: none"> Failure to provide the patient with a pictorial description of the access for their own records, and for sharing with other care providers 	Y/N	
Training/Experience	<ul style="list-style-type: none"> Lack of training re: AVFs (includes mapping and surgical techniques). Surgical training programs place little emphasis on vascular access approaches, techniques and troubleshooting, especially for the more complicated procedures 	Y/N	
	<ul style="list-style-type: none"> Graft is technically less difficult than a brachial cephalic or transposition fistula 	Y/N	

Training/Experience	<ul style="list-style-type: none"> Lack of experience with placement of tunneled cuffed catheters or PD for short-term use while a fistula is maturing such that a graft is placed instead, especially if the surgeon has a perceived sense of urgency to have an arm access in place. 	Y/N	
	<ul style="list-style-type: none"> Surgeon may lack the patience, training, or commitment to manage the fistula that is not maturing properly—may be quick to convert to a graft if a fistula is not maturing quickly or they are experiencing difficulties with it 	Y/N	
	<ul style="list-style-type: none"> Lack of tools &/or reimbursement to fully assess patients as to whether or not they are suitable candidates for AVFs (e.g. sonography units not available, not funded, or lack expertise related to mapping) 	Y/N	
Business	<ul style="list-style-type: none"> Lack of surgeons that are interested in access, lack of O.R. availability – some excellent vascular surgeons choose not to do access work 	Y/N	
	<ul style="list-style-type: none"> Access work is seen as cumbersome due to the complicated patient population involved. The surgical procedure itself may not take long, but getting medication lists, problem lists, H&P, other necessary steps in getting to the OR takes a lot of extra time. 	Y/N	
	<ul style="list-style-type: none"> Reimbursement by Medicare for placement of a graft is higher than the reimbursement for fistula placement 	Y/N	
Social	<ul style="list-style-type: none"> Surgeons may prefer grafts due to their shorter maturation period which allows them to complete the “episode of care” for a difficult, challenging patient more quickly (i.e. they do not have to continue to care for the patient as long) 	Y/N	
	<ul style="list-style-type: none"> Unlike transplant surgeons, access surgeons get little or no recognition from patients or colleagues for great access results 	Y/N	
Insurance/ Reimbursement			
	<ul style="list-style-type: none"> Nonpayment for sonography in the surgeon's office or O.R. 	Y/N	
	<ul style="list-style-type: none"> Delayed surgical referral due to managed care problems (need to get referrals through PCP, no vascular access surgeon on panel, etc.) 	Y/N	
	<ul style="list-style-type: none"> Limited or no access to well qualified surgeon due to insurance/managed care or geographic reasons 	Y/N	
	<ul style="list-style-type: none"> Surgeon may not be reimbursed for the follow-up care, especially for the poorly maturing fistula 	Y/N	
	<ul style="list-style-type: none"> Both facilities and providers may wait for Medicare coverage to begin before placing an access. This delay in access placement may then lead to a perceived urgency to have an arm access and the choice of a graft over a fistula 	Y/N	
	<ul style="list-style-type: none"> Delays in access placement related to delays in the approval process for Managed Care patients may lead to a perceived urgency to have an arm access and the choice of a graft over a fistula 	Y/N	

Other Factors			
	<ul style="list-style-type: none"> ER/ICU/General surgery staff and others may be unaware that subclavian lines can impact vascular access decisions 	Y/N	
	<ul style="list-style-type: none"> Late referral, or no referral, to nephrology, causing the need for temporary catheters which may impact on future access and cause a sense of urgency for a working permanent access 	Y/N	
	<ul style="list-style-type: none"> PICC lines are being used with increased frequency, sometimes even indiscriminately, and may impact future access options 	Y/N	
	<ul style="list-style-type: none"> Fistula outflow veins are difficult to declot requiring catheter placement. Because of recurrent problems, a graft may be opted for 	Y/N	
	<ul style="list-style-type: none"> Patients in crisis not identified quickly enough by other physicians to avoid placement of lines that affect future access decisions (e.g. a patient in ICU for several days may have had several peripheral IVs, multiple blood draws, central lines, etc. that could "ruin" vessels) 	Y/N	
	<ul style="list-style-type: none"> Lack of focus on access surgery with regard to quality assurance. Some surgical procedures and outcomes are tracked for QA purposes. There is no similar focus on access and there are no generally accepted standards in the surgical community related to access 	Y/N	
	<ul style="list-style-type: none"> Hospitals (nursing floors, labs) lack good protocols that preclude venipuncture in arms designated for access 	Y/N	
	<ul style="list-style-type: none"> Delays in access placement related to limited available OR space and/or surgeon-time may lead to a perceived urgency to have an arm access and the choice of a graft over a fistula 	Y/N	
	<ul style="list-style-type: none"> Lack of adequate sonography services (including familiarity on the part of the sonographer with the specific needs of vascular access mapping) 	Y/N	
	<ul style="list-style-type: none"> Lack of adequate tunneled catheter support, e.g., surgical or interventional radiology support for placement 	Y/N	
	<ul style="list-style-type: none"> Hospital medical records departments and/or surgical departments fail to recognize the importance of providing the operative reports for access placements and revisions to dialysis units and lack systems to assure that they are sent 	Y/N	

* This list does not include every root cause affecting access/catheter placement

Comments: **Top 5 Reasons for low fistula rates:**

1. _____
2. _____
3. _____
4. _____
5. _____

Decreasing Central Venous Catheters Resources

- Please contact us if you would like additional help developing a QI project that reduces Central Venous catheters!

Phone: 303-831-8818

E-mail: info@nw15.esrd.net

Resources and Web-site links:

- - Fistula First change package
 - Patient Education Resources Notebook
 - Physician Letter to Catheter Patient
 - Tools for Increasing Arteriovenous Fistulas
<http://www.esrdnet15.org/QI/Fistula First>
 - The Button Hole Technique for AVF Cannulation
 - Catheter Reduction Tool
 - Root Causes of High Catheter Rates
 - Conquering your fistula fear
<http://www.esrdnet17.org?QI/Fistula First>
<http://www.nwrenalnetwork.org/QI /FFBI>