

# Improving Dialysis Access Services at BIDMC

## The Problem

Patients with end-stage renal disease require dialysis (hemodialysis or peritoneal dialysis) or kidney transplantation to survive. Achieving appropriate access for hemodialysis or peritoneal dialysis is a multi-step process with many potential barriers to timely creation of usable access. National guideline recommend high rates (>65%) of fistula use with low use (<10%) of tunneled catheters.

- Rates of fistulas versus tunneled dialysis catheters at our main outpatient dialysis center were cited as being unfavorable.
- Assuring timely, appropriate access creation improves patient outcomes and survival on dialysis and decreases the risks of access-related complications including infections, central vein stenosis or occlusion, hospitalization, and death.

## Aim/Goal

The overall goal of this project is to increase the rates of fistulas (AVFs) and grafts (AVGs) to over 90% in our outpatient access population while decreasing the rate of catheters in use to less than 10%. We undertook a multidisciplinary analysis to identify the steps in the process of creating dialysis access and potential areas of improvement involving nephrology, access surgery, Advanced Vascular Care Center, and the dialysis unit.

## The Team

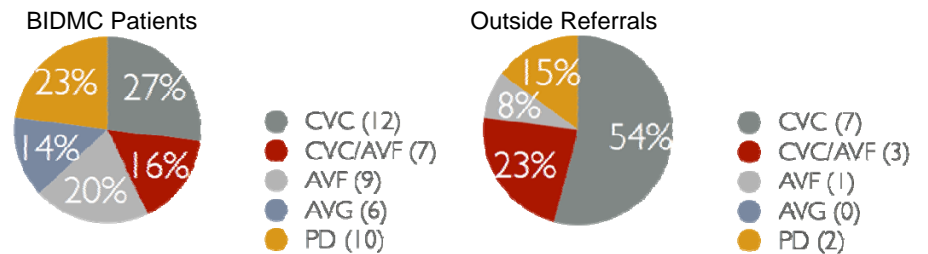
- Nephrology: Robert S. Brown, MD, Mark Williams, MD
- Access Surgery: Amy R. Evenson, MD, Kristin E. Raven, MD, Khalid Khwaja, MD, Louise C. Riemer, MS APRN BC CNN CCTC, Clare Sullivan
- Advanced Vascular Care Center: Yael Vin, MD
- Brookline DaVita Dialysis Unit: Cyndy Diluigi, RN, Kathleen Smith, RN

## The Interventions

- Collected information on:
  - Time from referral to initial appointment, to surgical procedure, and to use of the access.
  - The stage of chronic kidney disease in patients being referred for hemo- or peritoneal dialysis access creation.
  - The types of procedures performed, success rates, and outcomes of secondary procedures to salvage accesses.
- Followed the dialysis unit inflow/outflow for 1 year to assess access in patients entering and leaving the unit.
- Improved existing access database to capture above information prospectively to allow real-time monitoring and longitudinal data analysis.
- Case-by-case assessment of “failures” of the current system.

## The Results/Progress to Date

Types of Access at Dialysis Initiation at Brookline DaVita Unit by Referral Source



Key: CVC, central venous catheter; CVC/AVF, CVC with maturing fistula; AVF, AV fistula; AVG, AV graft; PD, peritoneal dialysis catheter.

## Lessons Learned

- Of patients new to dialysis, patients from within our system have a better chance of having a functioning access (57%) than those referred from other institutions (23%), but the rates are still lower than the goal of >90%.
- Many patients are referred after starting dialysis or with very low residual kidney function instead of the recommended eGFR of 20-30.
- 27% of patients followed in our system are not referred for dialysis access creation prior to starting dialysis.
- Our team's rate of fistula creation rates (69%) and maturation rates (79%) are excellent. Our rate of salvaging thrombosed accesses is 94%.
- “Failure” to start dialysis with an access is often related to missed appointments by patients and refusal to schedule access creation procedures.
- Some inpatients treated at BIDMC prior to starting dialysis are not referred for outpatient nephrology or surgery follow-up on discharge.

## Next Steps/What Should Happen Next

- Continue current practice of scheduling surgery date at end of initial clinic visit, eliminating need for patients to call to schedule surgery.
- Survey of patients regarding attitudes, roadblocks, preferences regarding access.
- Recommend earlier referral and increased patient counseling prior to referral.
- Develop system to refer inpatients to nephrology and access surgery.
- Follow rate of AVF/AVG/PD catheters in use at 90 days per Medicare requirements.
- Ensure surgical team has access to newest techniques and thought-leaders by attendance at national meetings.
- Ongoing monthly review of new patients at dialysis unit to ensure plan for permanent access is created and executed.
- Ongoing weekly review of recent cases to discuss concerns.

**For more information, contact:**

Amy R. Evenson, MD, MPH, BIDMC Transplant Institute  
aevenson@bidmc.harvard.edu



Beth Israel Deaconess  
Medical Center



HARVARD MEDICAL SCHOOL  
TEACHING HOSPITAL

THE SILVERMAN INSTITUTE  
For Health Care Quality and Safety