

*The Next Quality Challenge*

# THE **STENOSIS** SURVEILLANCE PROJECT

Project Survey Results and Recommendations

**A Texas Dialysis Community Quality Improvement Project**



The End Stage  
Renal Disease  
Network Of Texas

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## PROJECT INTRODUCTION AND DATA HIGHLIGHTS

In 2001 the ESRD Network of Texas, in partnership with the Texas dialysis community, implemented a Quality Improvement Project entitled **The Stenosis Surveillance Project**. The primary objectives of the two-year project are to:

- Encourage the practice of reporting and proactively responding to vascular access thrombosis data in facility quality management programs.
- Increase vascular access stenosis monitoring and surveillance processes (VAS) in dialysis facilities.
- Minimize incidence of clotted grafts by referring patients to a specialist for diagnostic testing when indicators of possible stenosis are identified.
- Preserve remaining vascular access sites.

### *Introduction*

ESRD Network #14 is under contract with the Centers for Medicare and Medicaid Services (CMS) prepared this report.

The contents presented do not necessarily reflect CMS policy.

The ESRD Network and Medical Review Board (MRB) are proud to provide this innovative report on a burgeoning clinical issue in the dialysis community. It is the hope of the Network and MRB that each reader will review the enclosed information and compare their facility outcomes and practices to the statewide outcomes and referenced practice guidelines.

This report and facility specific charts document the results of the first phase of the project - the collection of facility specific data on vascular access utilization, stenosis monitoring methods, graft thrombosis data and quality management practices in the Texas dialysis community. The data, which was reviewed by the MRB for identification of the need for education and intervention activity, was used to identify "Recognized" facilities with low graft thrombosis rates and formal stenosis-monitoring programs. Subsequently, these facilities were consulted and have agreed to share their processes with the dialysis community.

A final report detailing ESRD Network interventions and project results will be published at the conclusion of the project in 2003.

Publication date  
June 2002

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**Overview**  
*The End Stage Renal  
Disease Network  
of Texas, Inc.*

The End Stage Renal Disease (ESRD) Network of Texas, Inc. (Network #14) is one of eighteen regional ESRD organizations that contract with the Centers for Medicare & Medicaid Services (CMS) to fulfill a well-defined set of requirements. Network tasks include quality improvement projects, grievance resolution, rehabilitation and information sharing as well as maintenance of a comprehensive database of all Texas dialysis and transplant providers and patients.

The ESRD Network is under the direction of an Executive Committee and Medical Review Board comprised of both professional and patient representatives from the Texas ESRD community.

The Network staff provides support to the Texas dialysis and transplant community by:

- Collecting data about ESRD patients and their treatments.
- Evaluating the quality of care and services provided to ESRD patients.
- Supplying providers with important clinical information and data.
- Implementing quality improvement projects to assess and improve the outcomes of care provided to ESRD beneficiaries.

The mission of the Network is to:

- Improve the quality of care for persons with ESRD consistent with current professional knowledge.
- Ensure that care is medically necessary, efficient and of high quality.
- Protect patients from harm.

# ESRD Network of Texas Board Members & Office Personnel

## Medical Review Board Members

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## Network Personnel

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Nancy Carlson, BS <i>Data Coordinator</i>
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Bobbie Knotek, RN, BSN, CNN <i>Assistant Quality Management Coordinator</i>
Ramiro Valdez, PhD <i>Director of Patient Services</i>
Debbie O'Daniel <i>Office Manager</i>
Arleene Thomas <i>Event Specialist</i>
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Leigh Husni, BS <i>Project Assistant</i>
Cindy Wright, RN, CNN, CCRC <i>USRDS Nurse</i>
Josh Conley <i>Computer Systems Technician</i>

## Overview

### *The Texas Dialysis Community*

During 2001 in Texas, over two million outpatient dialysis treatments were performed for 23,674 hemodialysis patients. Eight percent of the nation's dialysis patients were treated in one of the 289 Texas Medicare certified dialysis facilities.

Snapshot of 2001 Texas ESRD Community	
Number of patients at the end of 2001	23,674
Number of new patients in 2001	7,216
Percent increase in patients from 2000	5.2%
Number of patient deaths	4,962
Percent of patients who expired in 2001	21.5%
Number of transplants	982
Percent of patients 60 years of age or older	49%
Percent of ESRD caused by diabetes	49%
Percent of ESRD caused by hypertension	25%
Percent of African-American patients	31%

The number of Texas ESRD patients receiving dialysis increased by 5.2% at the end of 2001 compared to 2000.

Texas ESRD patient growth rate continues to rise by more than 5% annually. Continued new patient growth in the dialysis patient population is expected due to:

- An aging general population.
- Greater longevity of patients with diabetes and hypertension (the two patient groups at highest risk for ESRD).
- Rapid growth in the general population of Hispanics and African-Americans, both of who have a higher incidence of ESRD.

## *Project Overview*

**The Stenosis Surveillance Project** is the title of the 2002-2003 ESRD Network of Texas and Medical Review Board (MRB) Quality Improvement Project (QIP). The project is the Network specific initiative in support of the CMS efforts to assist providers in the improvement of patient care, safety and outcomes. The project builds on past QIP successes and community partnerships to identify improvement opportunities and strategies that measurably improve the quality of care for persons on dialysis.

### **BACKGROUND:**

- If not identified by the treatment team, venous stenosis can lead to access thrombosis. Research has identified that the vast majority of thrombotic episodes are associated with anatomical lesions, and that a significant number of thrombotic episodes result in graft (AVG) loss.

The National Kidney Foundation–Dialysis Outcomes Quality Initiatives (NKF-DOQI™) Clinical Practice Guidelines for Vascular Access Group proposed that an organized monitoring approach with regular assessment of clinical parameters of the AV access could improve patency and decrease the incidence of thrombosis. The vascular access workgroup's goal is **0.5** episodes of graft thrombosis per patient - per year (1 graft thrombosis episode every 2 years).

- The 2000 USRDS Annual Data Report reports that Medicare costs for vascular access in hemodialysis patients represents between 14 to 17% of total spending for hemodialysis patients per year at risk, with an average cost to Medicare of about \$8,000 per year. USRDS data indicates that perhaps 25% of Medicare spending for ESRD patients, approximately 3 billion dollars, is spent annually on vascular access alone.
- The preferable form of permanent vascular access is the fistula (AVF). However, synthetic AVGs are frequently placed in ESRD patients. Unfortunately, AVGs have a greater tendency to develop venous outflow stenosis which accounts for many of the vascular access hospitalizations and procedures.
- The 2001 Clinical Performance Measures Report (CPM) identified that the majority of Texas dialysis patients utilized an AVG (59%), with 22% using an AVF and 19% using a catheter. Compared to other ESRD Networks, Texas has the second highest AVG utilization rate (range 31-61%), lowest AVF rate (range 22-42%) and 5<sup>th</sup> lowest catheter rate (range 16-30%).
- The DOQI Vascular Access Workgroup has stated that the theoretical benefit of graft and fistula monitoring is successful treatment of early endothelial hyperplasia with percutaneous techniques or surgical revision, thereby preventing thrombosis and extending the life of the access.
- The K/DOQI Practice Guidelines recommend (Evidence) three techniques, not mutually exclusive, that can be used to monitor for stenosis:
  1. Intra-access flow (identifies both inflow and outflow stenosis).

*Project  
Overview  
Continued*

2. Static venous pressures (identifies outflow stenosis only).
3. Dynamic venous pressures (identifies outflow stenosis only).

Data from these and other tests, clinical assessment and dialysis adequacy measurements should be collected and maintained for each patient's vascular access in his/her medical record. The data should be tabulated and tracked in QI to assess ongoing outcomes.

**OBJECTIVES OF THE PROJECT:**

The primary objectives of the two-year project are to:

- Encourage the utilization of vascular access thrombosis reporting data in facility quality management programs.
- Increase stenosis monitoring and surveillance processes (VAS) in dialysis facilities.
- Minimize incidence of clotted grafts by referring patients to a specialist for diagnostic testing when indicators of possible stenosis are identified.
- Preserve remaining vascular access sites.

**METHODOLOGY:**

The project includes all Texas outpatient dialysis facilities open as of *December 2001*. Baseline facility specific vascular access type utilization and graft thrombosis data was collected for the months December 2001-February 2002. Stenosis monitoring methods and practices were reported as of *December 2001*. This report highlights the results of the survey.

Facilities identified as having outstanding (low %) graft thrombosis rates and utilizing recommended K/DOQI monitoring techniques were identified "peer facility representatives" and asked to share their vascular access management procedures and processes with the community. All facilities will be provided feedback charts documenting their facility outcomes compared to the state, the K/DOQI practice guidelines and other comparative data sources. In addition, all facilities will be provided K/DOQI stenosis monitoring recommendations, professional and patient education materials, QI tools and sample stenosis monitoring policy and procedures. Lastly, all facilities were invited to attend an educational seminar on the subject vascular access stenosis.

Facilities identified as having an opportunity to improve as a result of having no stenosis monitoring surveillance program, no graft thrombosis reporting and or elevated graft thrombosis rate, will be requested to begin implementing a stenosis monitoring surveillance quality improvement program.

At the conclusion of this two-year project, a follow-up survey will be distributed to evaluate changes in hemodialysis stenosis practices and graft thrombosis rates within individual facilities and across Texas. The results of the project will be published and made available to CMS and the other ESRD Networks.

## *Data Sources*

The Texas hemodialysis vascular access type data and stenosis monitoring practices presented in this report were drawn from the *Stenosis Surveillance Project Facility Data Collection Form* and *2002 Texas Department of Health Quality of Care Indicators Survey Addendum*. Outpatient dialysis facilities were requested to report prevalent hemodialysis vascular access data for their chronic patient population on *December 31, 2001, January 31 and February 28, 2002*. Facilities were also asked questions regarding their vascular access stenosis monitoring methods and quality management practices. All 289 Texas Medicare certified outpatient dialysis facilities completed the survey on total of nearly 17,700 hemodialysis patients.

The national vascular access utilization data and stenosis monitoring methods are sourced from the *2001 Clinical Performance Measures Report* and *Centers for Disease Control and Prevention-2001 National Surveillance of Dialysis-Associated Diseases in the United States*. Also included in this report are complete or paraphrased guidelines from the *National Kidney Foundation Dialysis Outcomes Quality Initiative: Clinical Practice Guidelines for Vascular Access™* published in 2001. Additional information regarding the K/DOQI™ guidelines is included in this report.

The ESRD Network of Texas acknowledges the limitations of the survey tool used to collect the self-reported facility specific data. The survey was pilot tested; however, a lack of standardized graft thrombosis data collection and reporting uniformity within the dialysis community at the time of the data collection was expected. It is the opinion of the MRB that facilities without a formal thrombosis data collection system may have under-reported their facility specific thrombosis episode counts. For example, some facilities may not have documented in their facility QM data, patients who thrombosed, but did not miss a dialysis treatment or may have relied on memory or chart review to retrospectively count the number of thrombosed grafts.

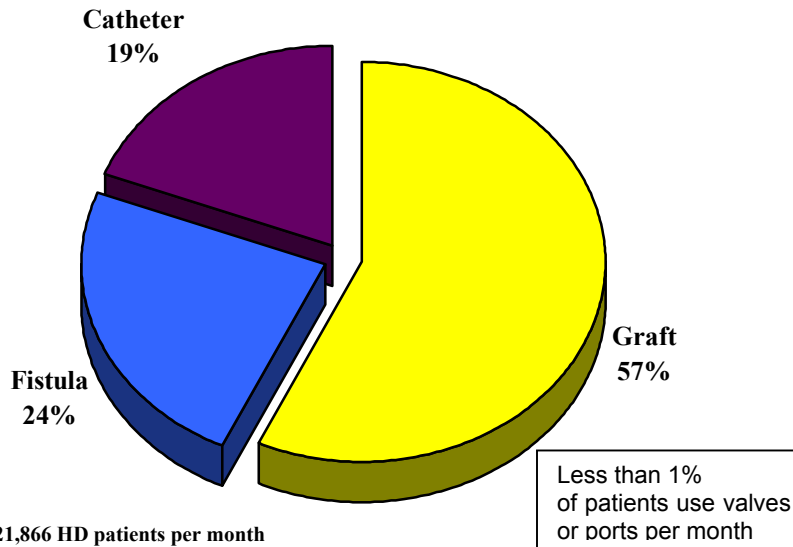
Lastly, the three months of thrombosis data from each facility may not accurately reflect the facilities annualized data due to changes in patient census or development of a stenosis-monitoring program.

Special patient circumstances unique to some facilities may require specific clarification related to stenosis monitoring methods and access type utilization. The survey should be considered a “snap shot” in time of the Texas dialysis community’s utilization of vascular access types and stenosis monitoring practices.

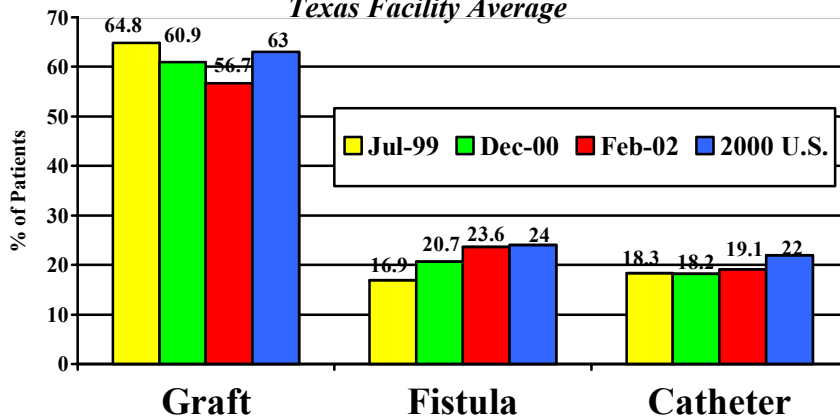
***The ESRD Network and Medical Review Board recognize the Texas dialysis community for their outstanding efforts in completing the data collection forms and working in partnership with the Network on this important quality improvement project designed to ensure that persons on dialysis in Texas receive the highest quality care.***

# Variability in Vascular Access Utilization In Texas

**Vascular Access Utilization By Type**  
Texas Facility Average For Dec 01-Feb 02

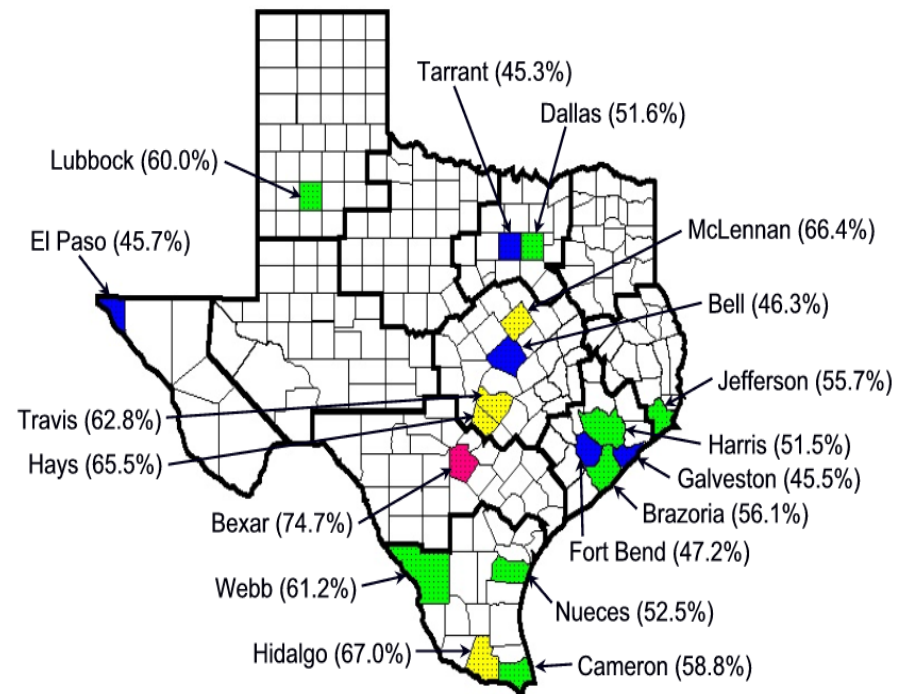


**Vascular Access Trends**  
Texas Facility Average

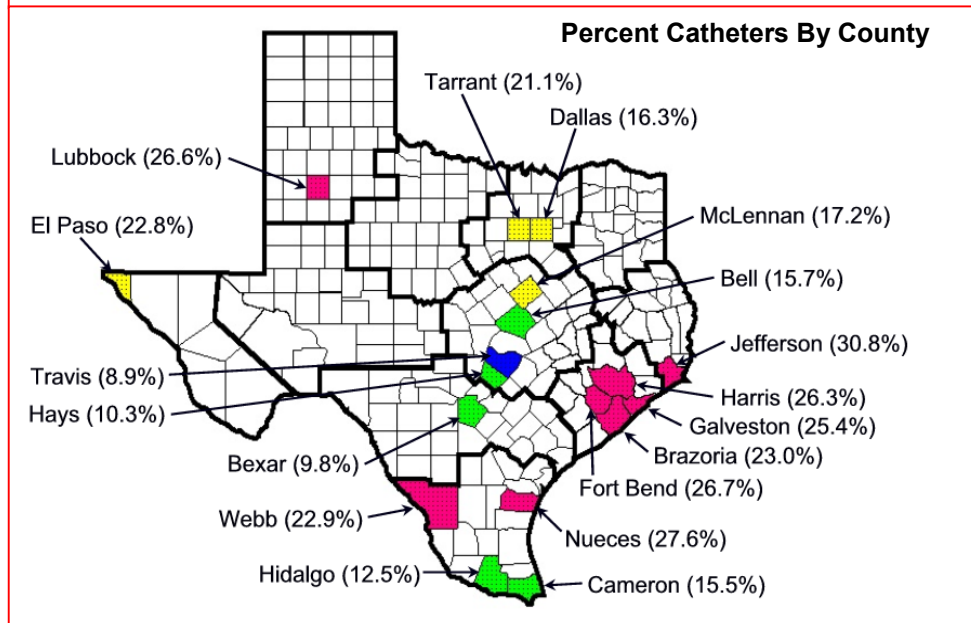
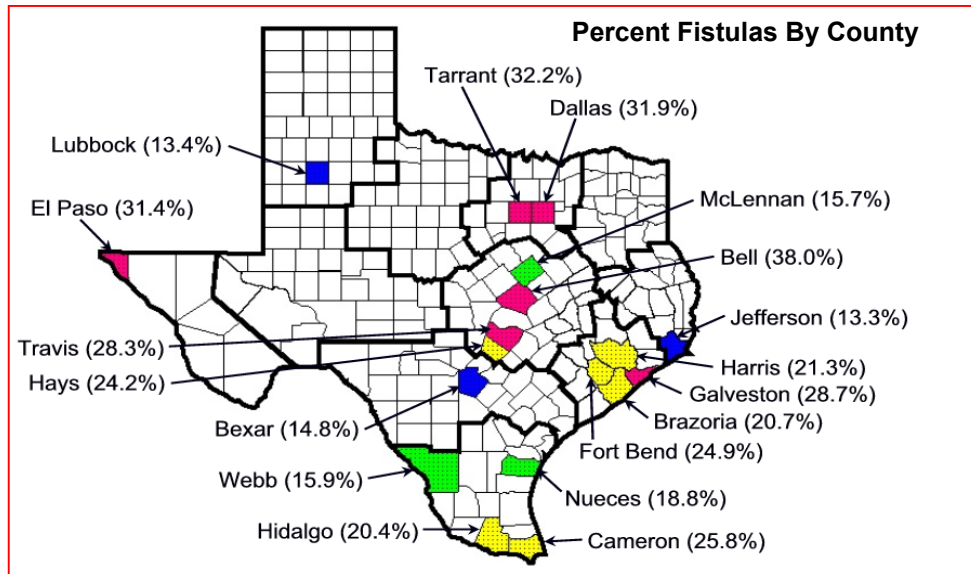


1999, 2000 data source: Network 14 catheter project data base

**Percent Grafts By County**



# Hemodialysis Vascular Access Utilization By County

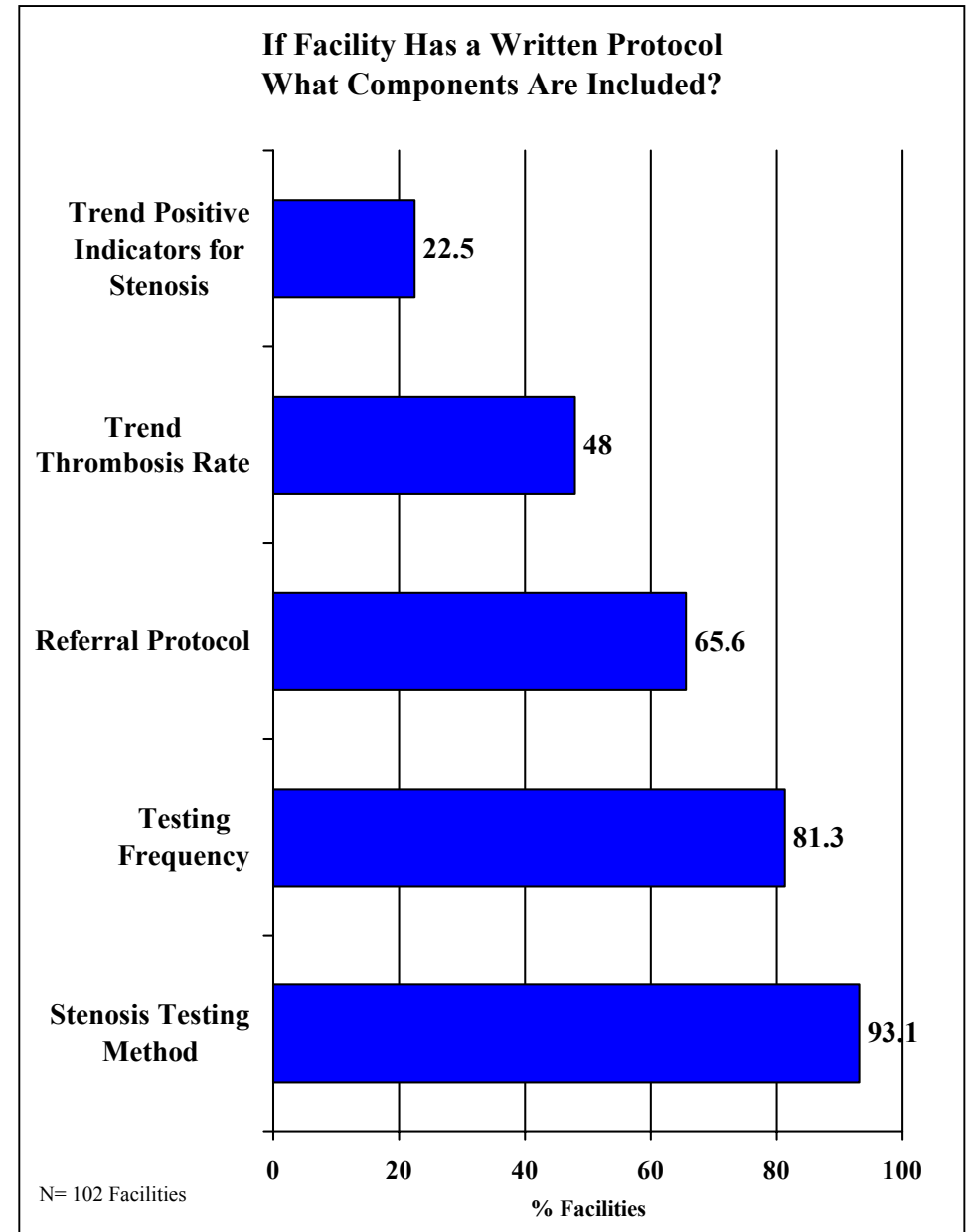
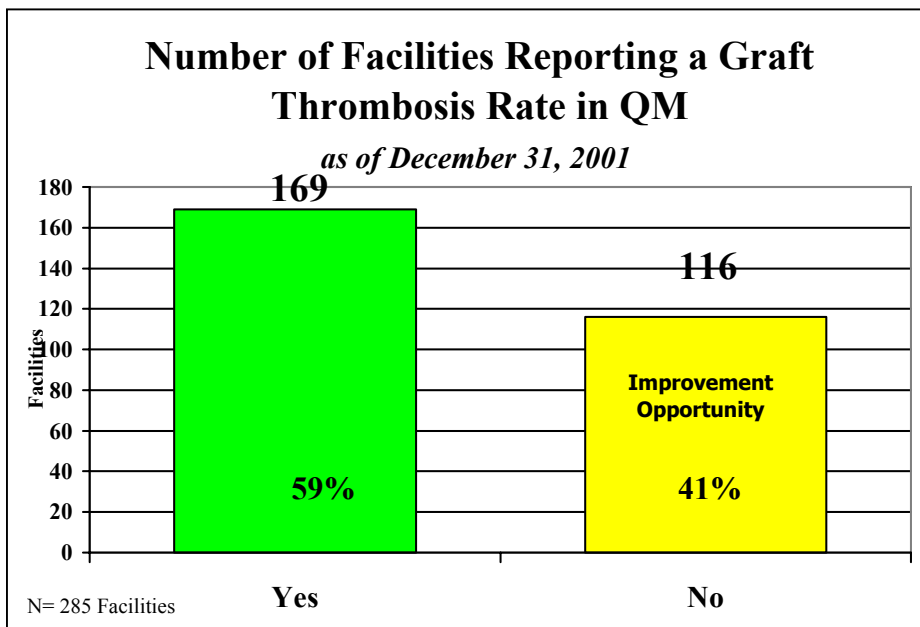
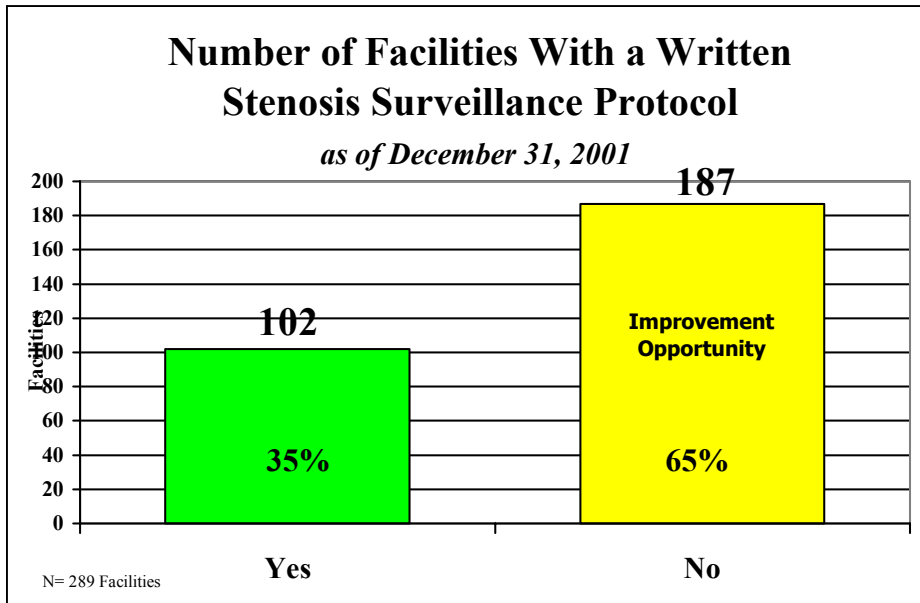


**Patient Vascular Access Utilization by County**

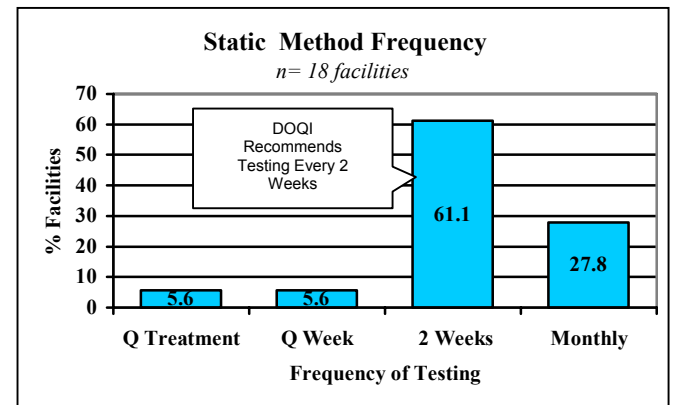
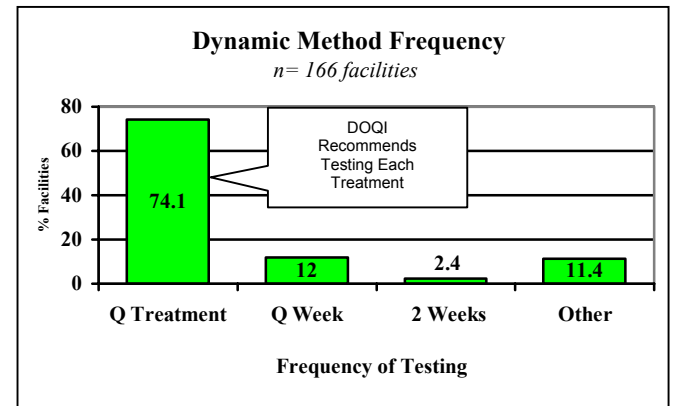
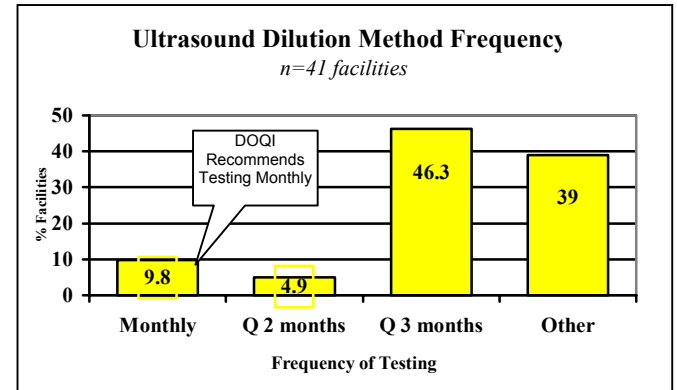
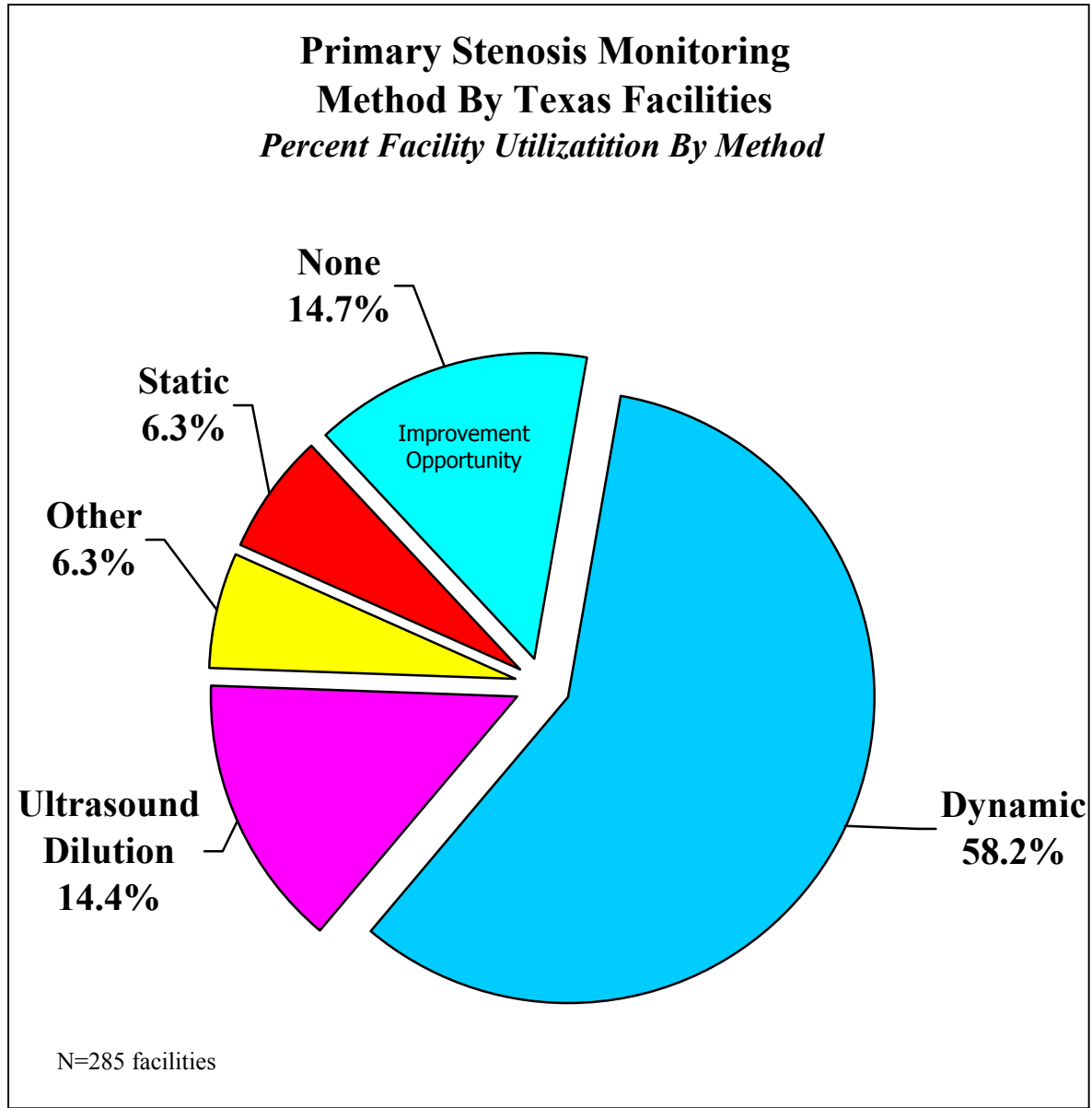
County (# Facilities)	# Patients	% Grafts	% Fistula	% Catheter
Bell (4)	332	46.3	38	15.7
Bexar (29)	2,174	74.7	14.8	9.8
Brazoria (3)	158	56.1	20.7	23.0
Cameron (6)	538	58.8	25.8	15.5
Dallas (22)	2,271	51.6	31.9	16.3
El Paso (10)	905	45.7	31.4	22.8
Fort Bend (4)	238	47.2	24.9	26.7
Galveston (4)	240	45.5	28.7	25.4
Harris (45)	3,802	51.5	21.3	26.3
Hays (3)	143	65.5	24.2	10.3
Hidalgo (9)	892	67.0	20.4	12.5
Jefferson (6)	414	55.7	13.3	30.8
Lubbock (4)	465	60	18.8	26.6
McLennan (3)	254	66.4	15.7	17.2
Nueces (7)	626	52.5	32.1	27.6
Tarrant (17)	1,336	45.3	28.3	21.1
Travis (10)	774	62.8	28.3	8.9
Webb (3)	307	61.2	16	22.9
Texas (289) (range)	21,866	56.7 (21.8-89.9)	23.6 (56.7-2.8)	19.1 (47.4-2.4)
U.S.	8,416	46	30	24

Counties with less than 3 facilities not included  
 # Patients is 3 month patient average (Dec 01-Feb 02)  
 U.S. Data source: 2001 CMS-CPM Report (October-December 2000)

# Written Stenosis Surveillance Protocol Utilization & Graft Thrombosis Rate Reporting in QM



# Primary Stenosis Method to Monitor for Indications of Stenosis



# Primary NKF-K/DOQI Stenosis Monitoring Methods

## **Intra Access Flow Method**

*Recommended every month or more frequently.*

- Intra-access flow is one of the most predictive methods of detecting early graft dysfunction.
- Intra-access flow may be measured by any one of a variety of techniques, including ultrasound dilution, conductance dilution, thermal dilution, and Doppler flow measurement.
- The threshold for action (grafts only) is:
  - Blood flow <600 ml/minute or
  - Intra-access blood flow of <1000 ml/min that has decreased rapidly or by a lesser percentage over a longer period of time (e.g., 25% over a four month period).
- A rapid flow reduction over a short period of time may indicate critical stenosis. Intra-access flow monitoring requires specialized equipment and, depending on the technique used, may require testing on off-dialysis days.

## **Dynamic Venous Pressure Method**

*Recommended every treatment.*

- This process requires no special equipment or additional use of resources.
- Using 15-gauge needles, the venous dialysis pressure is measured at QB 200 ml/minute during the first 2 to 5 minutes of therapy.
- The threshold for action is based on the machine manufacturer, tubing type and needle size.
- This procedure can be performed at each dialysis treatment and can provide repetitive, consecutive measurements.

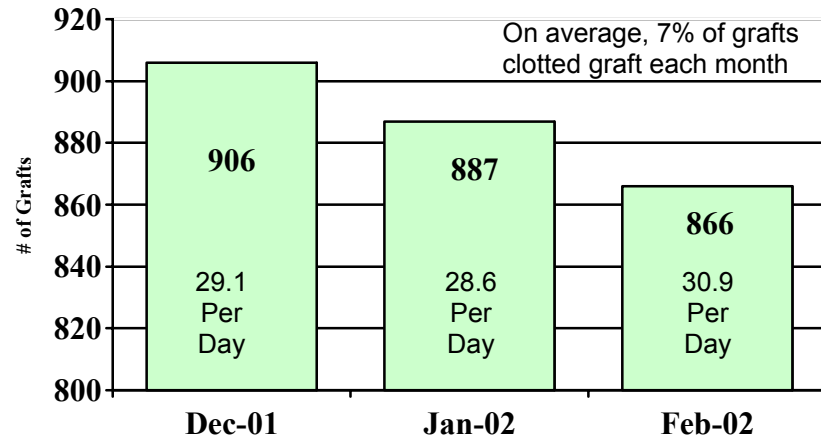
## **Static Venous Pressure Method**

*Recommended every two weeks.*

- Static venous pressure is measured after running the prescribed blood flow rate for one hour.
- The bloodlines are clamped between the dialyzer and venous drip chamber and measurement is obtained after 40 seconds.
- Static venous pressure is the natural resistance in the access.
- The threshold for action is based on a ratio of intra-access pressure to mean arterial pressure or a persistent trend of increasing pressure readings.

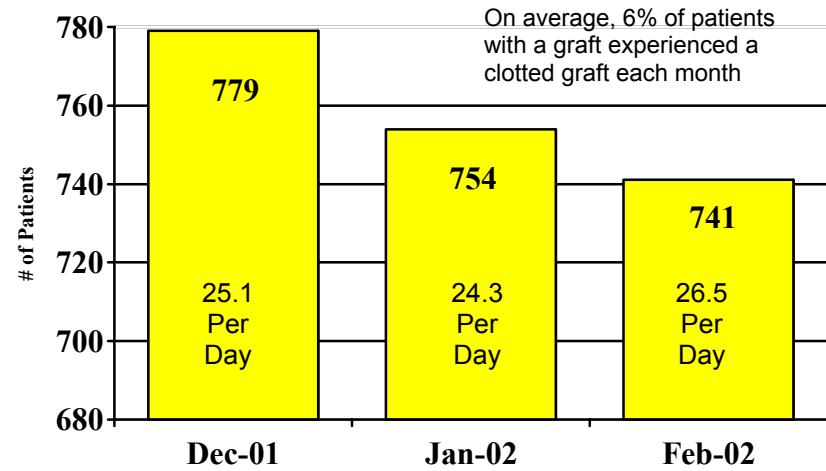
# Graft Thrombosis & Referral Activity

**Total Number of Clotted Grafts Reported Each Month**

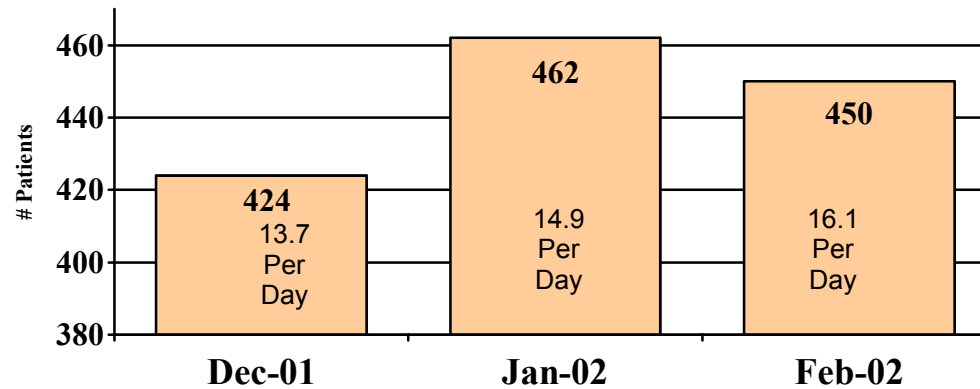


Average of 12, 866 graft patients each month

**Total Number of Patients With a Clotted Graft Each Month**

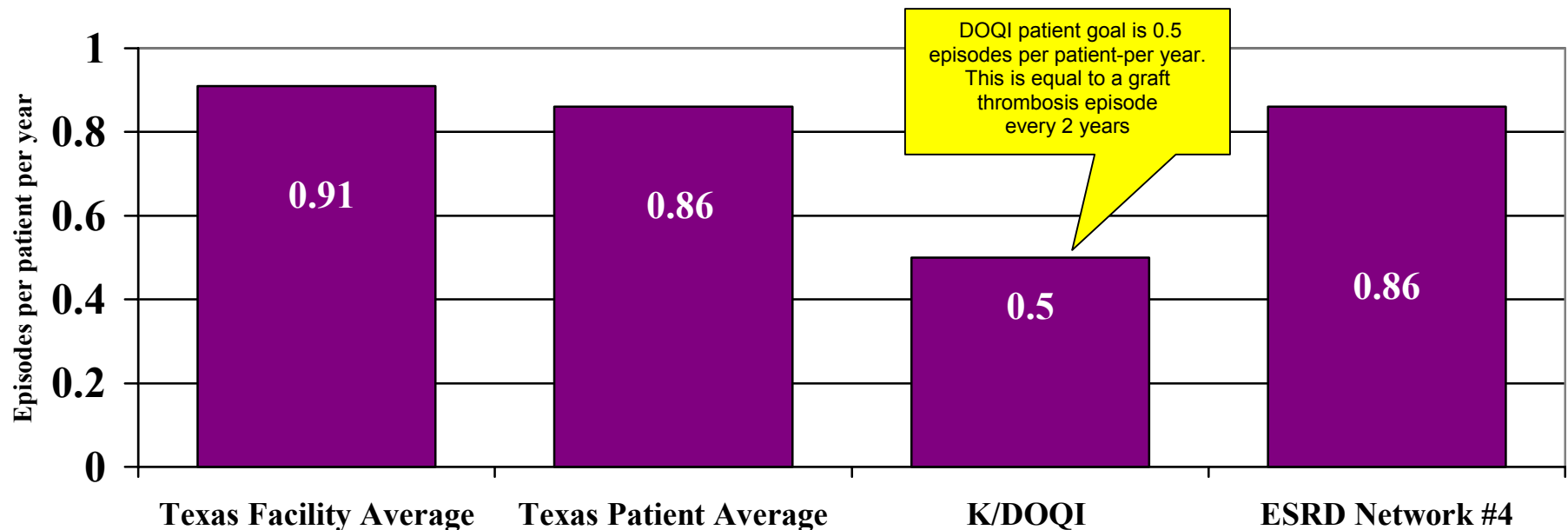


**Total Number of Patients Referred to a Surgeon/Radiologist for Positive Indicators of Graft Stenosis Each Month**



# Graft Thrombosis Rate Comparison

## Texas Facility Average Graft Thrombosis Rate *Thrombosis Episodes Per Patient - Per Year\**

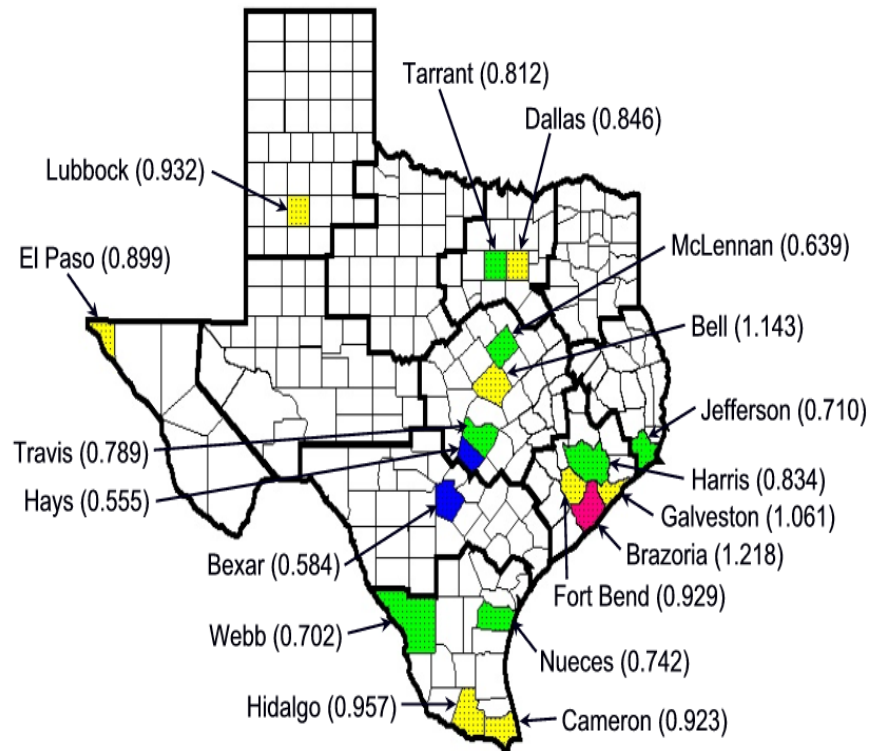


### *Notes Regarding The Texas Thrombosis Rate Data*

- \* Texas and facility specific thrombosis rate data has been annualized from three months of data
- *Texas Facility average* = average of all Texas facilities combined
- *Texas Patient Average* = average of all Texas patients combined
- *ESRD Network #4* = Network #4 (Pennsylvania, Delaware) is doing a comparative QIP

# Graft Thrombosis Rate Variation Among Texas Counties

## *Episodes Per Patient - Per Year*



Patient Graft Thrombosis By County				
County (# Facilities)	# Patients	% Grafts	% Clotted Grafts	Thrombosis Rate Episodes per patient - per year
Bell (4)	332	46.3	9.5	1.143
Bexar (29)	2,174	74.7	4.9	0.584
Brazoria (3)	158	56.1	10.1	1.22
Cameron (6)	538	58.8	7.7	0.928
Dallas (22)	2,271	51.6	7.0	0.846
El Paso (10)	905	45.7	7.5	0.899
Fort Bend (4)	238	47.2	7.7	0.929
Galveston (4)	240	45.5	8.8	1.061
Harris (45)	3,802	51.5	7.1	0.83
Hays (3)	143	65.5	4.6	0.555
Hidalgo (9)	892	67.0	7.8	0.957
Jefferson (6)	414	55.7	5.9	0.710
Lubbock (4)	465	60	7.8	0.932
McLennan (3)	254	66.4	5.3	0.639
Nueces (7)	626	52.5	6.2	0.742
Tarrant (17)	1,336	45.3	6.8	0.812
Travis (10)	774	62.8	6.6	0.789
Webb (3)	307	61.2	7.0	0.702
<b>Texas (range)</b>	<b>21,866</b>	<b>56.7</b> (21.8-89.9)	<b>7.1</b> (0.0-20.8)	<b>0.858</b> (0.0-2.5)

Percent clotted grafts and thrombosis rate data is patient average by county  
 Counties with less than 3 facilities not included  
 # Patients is an average of three months

# How Do Facilities Maintain a Low Graft Thrombosis Rate?

The ESRD Network QM nurses consulted with dialysis facilities across Texas that reported a low graft thrombosis rate. Nephrologists and nurses were asked to identify specific vascular access management processes believed to result in their low rate. Listed below are practices common to these facilities and practices in published literature believed to play a role in minimizing graft thrombosis.

- Nephrologist-led stenosis surveillance programs that focus on early detection of stenosis and proactive referral for evaluation of access.
- The success of a surveillance program appears to be strongly dependent on consistent implementation of a process that identifies vascular access at risk and facilitates timely referral.
- Nephrologist proactively identifies and establishes collaborative working relationship with surgeon(s) and interventionalist(s) who recognize the benefit to patients and facilities of minimizing thrombosis episodes.
- Surveillance program is coordinated and managed by one or more key staff members (RN, RD, PCT).
- Use of dedicated vascular access facility and or surgeon(s)/interventionalist(s) for proactive stenosis evaluation and procedures.
- Use of vascular access surveillance strategy that includes:
  - Collection and reporting of vascular access thrombosis information in QM Programs.
  - Routine monitoring of grafts using one or more methods for prospectively identifying signs of stenosis.
  - Prompt referral of patients to surgeon/interventionalist for evaluation of access.
  - Facility standing orders that enable nurses to expedite referrals for access evaluation.
  - Patient VA history/access concerns provided to interventionalist or surgeon via a standardized referral form or verbal communication.

# Example Dialysis Facility Stenosis Monitoring Program Flow Charts

Please contact Network office for copies of flow charts

# Key NKF-K/DOQI Hemodialysis Graft Stenosis Surveillance Practice Recommendations

In 2001 the National Kidney Foundation published updated Dialysis Outcomes Quality Initiatives (K/DOQI™) with the goal of promoting the implementation of evidence-based vascular access clinical practice guidelines. A workgroup of representatives from the nephrology and surgical community developed thirty-eight-evidence and opinion based vascular access guidelines. The guidelines provide the dialysis and surgical community with expert opinion and proven practice recommendations for the formation, maintenance and care of vascular accesses. Catheter specific guideline highlights are shown below. The complete set of K/DOQI™ guidelines can be viewed on the National Kidney Foundation's web page - [www.kidney.org](http://www.kidney.org).

## **Guideline 10 - Monitoring Dialysis AV Grafts**

- Physical examination of an access graft should be performed weekly and should include, but not be limited to, inspection and palpation for pulse and thrill at the arterial, mid, and venous sections of the graft. (Opinion)
- Data from the clinical assessment and dialysis adequacy measurements should be collected and maintained for each patient's access. The data should be tabulated and tracked within each dialysis center's Continuous Quality Improvement program. (Opinion)
- Each center should establish a database to track the types of accesses created and the complication rates. (Opinion)
- Prospective surveillance of AV grafts for hemodynamically significant stenosis, when combined with correction, improves patency and decreases the incidence of thrombosis. (Evidence) Techniques, not mutually exclusive, that can be used in surveillance for stenosis in AV grafts include, in order of decreasing preference:
  - Intra-access flow (Protocol provided in Table III-3) (Evidence)
  - Static venous dialysis pressure (Protocol provided in Table III-4) (Evidence)
  - Dynamic venous pressures (Protocol provided in Table III-5) (Evidence)
- Patients should be re-evaluated for possible construction of a primary AV fistula after failure of every dialysis AV access. (Opinion)

## **Guideline 17- When to Intervene—Dialysis AV Grafts for Venous Stenosis:**

- Appropriate intervention in AV grafts should be initiated upon identification of hemodynamically significant stenosis. (Evidence)  
*Hemodynamically significant stenosis is defined as a  $\geq 50\%$  reduction of normal vessel diameter (graft or draining venous system) accompanied by a hemodynamic, functional, or clinical abnormality, such as: elevated static or dynamic pressures, decreased blood flow, elevated access recirculation, a swollen extremity, or unexplained reduction in Kt/V.*

# Professional Practice To Minimize Graft Thrombosis Rates

The formation, maintenance and care of a vascular access involve the coordination and skills of multiple healthcare professionals. Each professional has a specific role and set of responsibilities in assuring that ESRD patients are provided with quality vascular access services. A health-care team working in collaboration and following recommended practice guidelines can make a critical difference in minimizing hemodialysis graft thrombosis.

## **Nephrologist leadership role in minimizing dialysis graft thrombosis**

- Familiarize themselves with and implement applicable NKF-K/DOQI™ guidelines.
- Refer pre-ESRD patients for timely permanent access placement (preferably fistula).
- Implement graft stenosis monitoring and intervention protocols.
- Participate in and support staff vascular access stenosis monitoring education initiatives.
- Establish collaborative relationships with interventionalists and surgeon's offices that facilitate nurse directed referrals.
- Require the collection of vascular access thrombosis data and reporting in QM.
- Encourage patient education initiatives to teach patients to self-monitor their venous pressure during dialysis and their access blood flow on non-dialysis days.

## **Nurse/Technician leadership role in minimizing dialysis graft thrombosis**

- Familiarize themselves with and implement applicable NKF-K/DOQI™ guidelines.
- Educate pre-ESRD patients about importance of permanent access (preferably fistula).
- Implement graft stenosis monitoring and intervention protocols.
- Collect vascular access thrombosis data and report in QM.
- Encourage patient education initiatives to teach patients to self-monitor their venous pressure during dialysis and their access blood flow on non-dialysis days.
- Make prompt referral to interventionalist or surgeon for stenosis, recirculation or unexplained decrease in Kt/V.
- Complete a vascular access history/complication form for interventionalist or surgeon when making referrals.
- Encourage patients to hold own sites.
- Rotate needle sites.

## **Surgeon/Interventionalist leadership role in minimizing dialysis graft thrombosis**

- Familiarize themselves with and implement applicable NKF-K/DOQI™ guidelines.
- Educate patients about the importance of permanent access (preferably fistula).
- Work collaboratively with nephrologist with goal of placing permanent access.
- Utilize pre-surgical vein mapping to maximize access outcomes.
- Act as resource for vascular access education for dialysis facility staff and participate in quality improvement projects.
- Provide dialysis facility with findings, procedures and recommendations for access care in writing.
- Evaluate for a AVF placement each time a AVG thrombosis episode occurs.

# ESRD Network of Texas Resources

**The ESRD Network has developed a number of vascular access related resources to assist dialysis professionals with their vascular access management education and quality management programs. To order, please contact the ESRD Network office to request a Vascular Access Resources order form.**

## **Vascular Access for Hemodialysis New Patient Education Video**

Price \$20.00 each (Price Includes tax and shipping-Contact the Network Office for Order Form)

Developed by the Consumer Committee of the Southeastern Kidney Council and the ESRD Network of Texas. The 15-minute video discusses the different types of vascular access, the advantages and disadvantages of each, and how to care for each type. The information presented in the video is consistent with current best practice recommendations and guidelines. Each video includes both the 15-minute English and Spanish version. The video is appropriate for new and current patients and staff orientation. All Texas dialysis facilities have been previously provided with a single copy.

## **Facility Vascular Access Activity Log - Free of Charge\***

**The Facility Vascular Access Activity Log is designed to report aggregate vascular access and thrombosis data. The tool is composed of two charts.**

Chart 1 collects number and percent of patients monthly by access type. Chart 2 collects number and percent of vascular access complications monthly. Both charts will provide Quality Management Committees the opportunity to monitor positive or negative trends in vascular access outcomes. The log is also available on a disk in Excel format.

## **Patient Vascular Access History Record-Free of Charge**

The Patient Vascular Access History Record is designed to report patient specific vascular access information. The chart tool, printed on card stock, can be used to document vascular access procedures, dates, catheter type, graft materials, access complications and additional information. The tool can be used as a vascular access history record that allows for simplified review of a patient's vascular access history.

## **Patient Venous Pressure Monitoring Record -Free of Charge**

The Patient Venous Pressure Monitoring Record is designed to document and trend venous pressures each treatment. The tool includes the NKF-DOQI™ recommended venous pressure monitoring procedures.

## **Catheter Indications Checklist -Free of Charge**

The Checklist of Indications for Continued Hemodialysis Catheter Use was developed by the MRB and Network staff to assist facility staff in the evaluation of hemodialysis catheter placement and utilization.

## **Vascular Access Referral Form -Free of Charge \***

The Vascular Access Referral Form, a standardized form designed to improve two-way communication between dialysis facilities and vascular access interventionalists/surgeons, documents patient-specific vascular access concerns. The Vascular Access Referral Form was adapted from forms previously developed by Dr. Larry Spergel and DaVita.

## **Protect Your Lifeline Patient Education Brochure -Free of Charge**

A patient education tool that encourages patients to participate in vascular access monitoring. The brochure explains graft stenosis, the reasons for graft stenosis and what the patients can do to help facility staff monitor their graft or fistula for stenosis. A Venous Pressure Tracking Form is included with each brochure.

## **Graft Thrombosis Calculation Worksheet \* - Free of Charge**

The worksheet displays how a facility can calculate a graft thrombosis rate in episodes per patient-per year for individual patients and facility.

\* These facility forms, available on disk, can be personalized for your facility upon request.

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