
Fistula First Breakthrough Initiative Technical Expert Panel Recommendations Report

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(Note: The Appendices may appear out of order in the narrative of the document).

Introduction

The overarching purpose of the Fistula First Breakthrough Initiative (FFBI) contract for 2008 – 2009 is to “assist all 18 ESRD Networks in building upon the vascular access quality improvement activities of the ESRD Network Statement of Work to advance the development, implementation, monitoring, and marketing of the FFBI.” The ultimate goal of the FFBI is to reach a prevalent arteriovenous fistula (AV fistula) rate of 66% nationally. Of primary importance in accomplishing this objective is the development and implementation of a national strategic plan. This national plan is to be developed by conducting a thorough Root Cause Analysis (RCA) performed by a core RCA team and through the convening and gathering of input from a Technical Expert Panel (TEP).

This report describes the TEP meeting, the materials on which the TEP based its work, its deliberations and discussions in the form of Strategy Recommendation Worksheets, and its product -- a prioritized list of strategy recommendations, which have been integrated into the current FFBI strategies in the form of a strategy grid prepared as a tool for further deliberations and refinement.

The contractor, Mid-Atlantic Renal Coalition, was guided in organizing the TEP meeting by the contractual Statement of Work, which called for convening a Technical Expert Panel (TEP). In conjunction with the core RCA team, the TEP was “to assess the findings of the Core RCA team and provide input into the FFBI strategic plan and to refine the current FFBI strategies to ensure that FFBI AV fistula rate improvements will be sustainable and that continued improvements will be facilitated over the next year and longer.”

Background: Fistula First Breakthrough Initiative

As part of the ESRD Network Statement of Work beginning July 2003, CMS, the ESRD Networks and key provider representatives jointly recommended adoption of a National Vascular Access Improvement Initiative (NVAII). The primary goal of this continuous quality improvement (CQI) project was to increase the appropriate use of ArterioVenous Fistula (AV fistula) for Hemodialysis access and to reach or exceed the NKF-KDOQI practice guidelines of 50% in incident and 40% in prevalent patients. AV fistulas have been promoted as the best form of hemodialysis Vascular Access based on their superior patency, low complication and procedure rates, and subsequent low overall cost. CMS committed to a system-wide improvement project on vascular access over the course of the three-year ESRD Network contract, starting July 2003 and ending in June 2006. Because of these efforts, by August of 2005, the national prevalence AV fistula rate was 40%, reaching the prevalence goal 10 months early.

The focus of the original NVAII was to address clinical and organizational improvements that would lead to use of AV fistulas. ESRD Networks, dialysis providers, medical specialists, hospitals and clinics, all share the responsibility for improving dialysis care by increasing appropriate and successful AV fistula placement. The ESRD Networks played a major role in catalyzing change, creating efficient ways to share knowledge and resources, and building strong alliances with the facilities and medical professionals in their regions.

Identification and development of 11 major change concepts were provided in 2003 by a multi-disciplinary Working Group with representation from the following groups: ESRD Network Executive Directors and Quality Improvement Directors, corporate and independent dialysis providers, nephrologists (including interventional nephrologists), nephrology nurses, vascular surgeons, interventional radiologists, patients, CMS project leaders and quality improvement staff, and the Institute for Healthcare Improvement. The change concept document focuses on changes that can be made immediately, to give all suitable hemodialysis patients the opportunity to receive an AV fistula. Because of the early success, this initiative became known as the Fistula First Breakthrough Initiative (FFBI). As part of the initiative, the FFBI Coalition was formed and is still active today.

The FFBI Coalition working group identified two (2) main approaches to increasing AV fistula use:

- Clinical and organizational changes that can be adapted and applied locally to improve AV fistula prevalence and success.
- System changes that must be implemented at a national level. These will require national leadership from CMS and should be expected to take longer to accomplish.

Many within the ESRD community pointed out the need for system-level policy changes to encourage more AV fistula placement. These included reimbursement for AV fistulas at a higher rate than AV grafts or catheters, and reimbursement for vessel mapping for new AV fistulas. CMS committed to reviewing these issues carefully for appropriate changes. As a result, in January 2005, a reimbursement policy for vessel mapping was instituted through a new government code (G0365). In addition, until recently, there was a financial disincentive for the placement of AV fistulas over AV grafts but the 2009 Relative Value Unit (RVU) adjustments corrected this inequity by a 31% increase over 2008 rates.

FFBI provided leadership to the Renal Community in vascular access management for hemodialysis patients. Many of the FFBI Coalition work groups assisted in the development of educational materials, tools to track outcomes, and the current 11 Change Concepts that are a clearly outlined process that helped to achieve the CMS Clinical Performance Measure (CPM) targets. The FFBI brought vascular access to the forefront of hemodialysis care, has become internationally known, and is a household term in most dialysis communities. The FFBI is an exemplary example of a system-wide collaborative effort that has resulted in a higher number of incident and prevalent AV fistulas.

In the most recent 2006 guideline update, KDOQI recommends a prevalent functional AV fistula placement rate of greater than 65%. In addition, the current CMS goal is to have 66% of prevalent patients using an AV fistula. As of April 2009 the national average of AV fistula's has increased to 52.3%.

On February 27, 2009, the FFBI contract was awarded to ESRD Network 5, Mid-Atlantic Renal Coalition (MARC), with the overarching goal of assisting the Networks in the accomplishment of the CMS prevalent AV fistula goal.

Methods: Technical Expert Panel Meeting Process

The Technical Expert Panel (TEP) met in Phoenix, Arizona on June 4 & 5, 2009. The membership consisted of 19 renal community professionals of varied backgrounds and perspectives who are Subject Matter Experts (SME). A short biographical sketch of each of the TEP members is attached as Appendix E. The TEP was charged with the development of interventional strategies to address the latent root causes that were identified by the RCA team and that will need to be overcome in order to move the national AV fistula utilization rate to 66% in prevalent hemodialysis patients. The TEP meeting agenda is attached as Appendix A.

Prior to the TEP meeting, all participants were mailed a meeting manual for their review. The manual included the following meeting materials:

- Agenda
- History of FFBI
- Draft Root Cause Analysis Report, including lists of root causes under the three failure modes, referenced to the existing Change Concepts, and grouped into six categories – i.e., those related to: Knowledge, Perceptions and Skills; Patient and Family; Systems Issues; Reimbursement; Chronic Kidney Disease, Stages III – IV; Clinical Decisions; and Political Considerations
- Current Change Concepts
- PowerPoint presentation, “Fistula First Breakthrough Initiative Technical Expert Panel, Fistula First – A New Beginning,”
- Technical Expert Panel Listing with short biographical sketches for members of the TEP and additional contributors
- Technical Expert Panel Group Assignments
- TEP Strategy Recommendation Worksheet and Definitions to be used in conjunction with the Worksheet,
- An Education Article on Complexity

Each of these items, with the exception of the complexity article, and the Draft Root Cause Analysis Report is included in the Appendices. Upon receipt of the meeting manual and prior to their arrival at the meeting, TEP team members were able to familiarize themselves with the root causes identified by the RCA team and with the meeting expectation.

In accordance with the FFBI contract, an expert facilitator, William McClellan, MD, MPH, was engaged to lead the TEP. The RCA facilitator met with MARC to recommend a format for the Strategy Recommendation Worksheets used by the TEP. This worksheet format was then shared with other members of the planning group, as was a proposed meeting agenda, list of TEP members, assignments of TEP members to workgroups, the draft RCA report, and other resources. With input from the planning group, the number of workgroups was reduced from the originally planned five (5) to three (3) in order to assure that a sufficient range of expertise was available in every workgroup to address assigned root causes. The agenda was modified during the planning process and further adjusted during the course of the TEP meeting to accommodate needs as they arose.

Dr. McClellan convened the Technical Expert Panel with a presentation that described the TEP charter (“Develop interventional strategies to address identified root causes in order to move the national AV fistula rate to 66% in prevalent hemodialysis patients”, structure of the breakout work groups, tasks for each of days one and two, and use of the Strategy Recommendation Worksheets. Dr. McClellan instructed the participants to discuss barriers in their breakout groups, develop strategies to address barriers or groups of barriers, and prioritize and identify the top five (5) strategies. This was to occur on Day one (1). On Day two (2), groups were instructed to report on the top five (5) solutions to root causes that they identified, which would be followed by general discussion and multi-voting to produce a list of prioritized strategies. Dr. McClellan’s presentation slides are included in Appendix D.

As part of the Statement of Work, the responsibility of the contractor was to ensure the TEP addressed the following:

Review the findings from the Root Cause Analysis

Prior to the TEP meeting, all members were provided with a copy of the Draft RCA report and a listing of the 139 root causes categorized under the three failure modes. The TEP members were asked to review these documents in preparation of the TEP meeting. The full decision tree with the 139 latent root causes was displayed, for easy reference, across one wall of the meeting area throughout the duration of the TEP meeting. Additionally, all members were walked through the RCA logic tree when they arrived at the TEP meeting so they would have a better understanding of the RCA process and under which branch of the logic tree the specific root causes fell. These root causes were discussed both formally and informally, as members consulted the display or reviewed lists of root causes during their breakout sessions.

During the TEP meeting, Robert Latino, the RCA facilitator, described the process pursued by the core RCA team to identify the latent root causes of the failure to achieve a 66% AV fistula rate for prevalent patients. The definition of loss pursued in this analysis was, “any event or condition affecting the placement of an access other than an AV fistula.” The process included, preliminarily, a Failure Modes and Effects Analysis to identify key points in the general process flow where the patient can most be influenced about placement alternatives, followed by a ranking of the identified opportunity points. This, in turn, was followed by the root cause analysis during which the participants drilled down to develop an understanding of the specific rationales for the placement decision-making process. The result was the logic tree displayed on the wall of the TEP meeting room. The identified root causes were understood to be hypotheses about how the failure to achieve a 66% prevalent AV fistula rate occurs. These hypotheses were subjected to verification following the RCA through literature review, which was included with the draft RCA report in the TEP meeting manual. Mr. Latino’s presentation slides are included in Appendix I. To verify root causes identified during the RCA, a literature search was performed by the FFBI staff. The complete verification log and bibliography are included in the RCA report.

Additionally, two members of the core RCA team, Ms. Linda DuVal and Dr. Chester Fox, described the participants, process and results of the RCA. During their presentation, they advised the TEP that they might wish to consider the current Change Concepts developed during the initiation of the FFBI. These Change Concepts were included in the TEP meeting manual, for easy reference. Among the challenges for the TEP are considering whether existing change

concepts are in need of revision, require fuller implementation or need augmentation with additional relevant change concepts. Ms. DuVal and Dr. Fox's presentation slides are in Appendix J.

Identify baseline practice protocols

Dr. Spergel, the FFBI clinical consultant, discussed the history of CMS and the renal community's efforts to improve the AV fistula rate for prevalent hemodialysis patients, chronicling its beginning as the National Vascular Access Improvement Initiative (NVAII) from 2003 through 2006 and its emergence as the A-V Fistula First Breakthrough Initiative in 2006 and continuing through the present. He reviewed the 11 existing Change Concepts and described the Fistula First implementation challenge of educating and modifying practice in multiple disciplines – i.e., nephrologist, surgeon, dialysis staff, interventionalist, and primary care physician. He noted that prevalent AV fistula rates increased from 32% in 2003 to 51.6% in 2008, while catheter rates among prevalent patients remained flat at 26%. The History of the FFBI is attached as Appendix B. Dr. Spergel's presentation slides are included in Appendix H.

As Dr. Spergel discussed in his presentation, the current FFBI Change Concepts provide a roadmap to facilities, ESRD Networks and the renal community to assist with increasing the AV fistula utilization rates. These concepts are responsible for effecting system changes in the following areas:

- Vascular access surgeon behavior (increased training on AV fistula placement)
- Reimbursement (G code for vessel mapping and revised Relative Value Unit (RVU) for AV fistula placement)
- ESRD Network and dialysis facility vascular access focused QI projects
- Development of a Fistula First Dashboard
- Development and distribution of feedback reports

The implementation and continued use of the current Change Concepts has attributed to moving the AV fistula rates from 32% in 2003 to 52.3% in April 2009. The change in practice patterns that produced these improvements can be credited to the efforts of many organizations and individuals augmented by the FFBI Change Concepts. The current CMS goal, based upon achievable practice, is a prevalent AV fistula utilization rate of 66%. This goal requires the identification of additional opportunities for improvement. The current Change Concepts are attached as Appendix C.

Address perceived obstacles with physicians, surgeons, and dialysis facility clinicians

Dr. McClellan assembled the TEP meeting participants into their three breakout groups. He reminded them of their charge and instructed them to begin examining the root causes assigned to their respective groups and developing strategies for root causes or bundles of root causes. Group I was assigned 54 root causes dealing with Knowledge, Perceptions and Skills. Group II was assigned 59 root causes dealing with CKD, Clinical Decisions, Systems, Reimbursement and Political/Other considerations. Group III was assigned 26 root causes dealing with the Patient and Family. Please refer to Appendix F for the work group memberships and assigned root causes. Each group had an assigned facilitator and an FFBI staff member to serve as scribe. Each group also included a member of the core RCA team.

During the breakout sessions, each group discussed the root causes identified by the RCA core team that were assigned to their specific groups. Many of the root causes identified specific obstacles and perceptions that are rooted in the physicians, surgeons, and dialysis facility systems. As part of their responsibilities, each group was to discuss how these system level obstacles and barriers could be overcome as they developed recommendations for new strategies to be included in a new strategic plan.

Develop/model best practices and Design a new FFBI Strategic Plan

As part of the TEP meeting, Ms. Rebecca Steinfield, a consultant with the Institute for Healthcare Improvement (IHI) presented “Executing Large-Scale Improvement in Health Care Quality and Safety, The “Fistula First” Example.” She reviewed the 11 Fistula First Change Concepts, the spread strategies that have been used to date, and the results that have been achieved. In conclusion, she offered some ways in which the TEP members might approach their charge to develop interventional strategies that will address identified root causes and move the national AV fistula rate to 66% in prevalent hemodialysis patients. Ms. Steinfield’s presentation slides are included in Appendix K.

To assist the TEP members, a Strategy Recommendation worksheet was developed by the FFBI staff for use during the meeting. The worksheets were used to document the discussions and ideas that were occurring in each of the group sessions. These worksheets kept the group focused on addressing the following as they were developing strategy recommendations. Group instructions included, if time permitted, to recommend specific tactics for each strategy and determine the person(s) or group(s) that would be responsible to help with implementation of the tactics and strategies. The Strategy Recommendation worksheet is included as Appendix G.

- What Root Cause(s) are being addressed
- What are the recommended strategies that will change behavior
- What are the potential metric(s) to measure success
- What are the desired outcomes
- How much impact will the strategy have on the root cause
- How much effort is involved in implementing the strategy
- What are the cost factors associated with implementation
- How much time will it take to implement the strategy

During the group discussions, members identified geographic areas that were doing well with their AV fistula utilization rates. Discussion of what those high performing areas were doing differently to achieve success occurred. Group members identified some of those examples and more discussion occurred as to how to incorporate them into the strategies and tactics they were developing.

During the group sessions, current Change Concept review and discussion occurred. The TEP members felt the Change Concepts have served the community well. They also knew it was part of their responsibility during this meeting to determine current relevance and recommend revisions for inclusion if needed. Table-2 documents recommendations for enhancement to several Change Concepts.

As the work groups continued their development of interventional strategies, Bob Latino, the RCA facilitator, Rebecca Steinfield from IHI and Jefferson Rowland, CMS Project Officer floated and provided guidance and clarification to each of the groups as needed. The groups completed their first day tasks and had many notes and Strategy Recommendation worksheets as products of that work.

On the second day, each group reported the strategies they had developed to the larger group. Through a “round robin” process, each group brought one strategy forward and described it, discussed the potential metrics they had identified and any assessments they had of the potential impact, effort, cost and time for implementation. This reporting process continued until all strategies had been presented and explained. Once the reporting was complete, all TEP participants were provided an opportunity to offer additional ideas that may have been missed, and the group was allowed time to comment on these additional ideas. The facilitator opened the floor for additional discussions on strategies that the participants believed might not have been covered by any of the workgroups. A strategy for buttonhole cannulation was brought forward and was termed an “orphan” to recognize it had not been previously developed by any workgroup. Each of the three (3) workgroups presented their strategies for the TEP’s discussion and consideration. There were 17 strategies presented which the TEP grouped into categories for voting purposes.

Multi-voting was carried out by giving each participant five (5) votes to cast in the service of selecting the most important strategies. Each participant was allowed to vote for the strategies that represented the highest priority to recommend to CMS. This process allowed the strategies to be prioritized based on the number of votes each strategy received. The result was a prioritized list of strategy recommendations. Table-1 presents the prioritized strategies as agreed upon by the TEP with the number of strategies presented, the number of votes received and which system the strategy would impact.

Following the TEP meeting, the FFBI staff reviewed the extensive notes taken during the meeting and the Strategy Recommendation worksheets. Staff mapped each of the strategies back to the root causes to check for gaps. Staff also prepared a grid, which linked the TEP recommended strategies to existing Change Concepts. All of this documentation can be found in Table-2.

Results

During the course of the meeting, the TEP members identified 17 strategies. A number of these strategies were duplicates and some were multi-dimensional, therefore, the TEP brought forward ten strategies for inclusion into the new strategic plan.

The strategies reflect the priorities based upon what the members considered to be achievable and what would have the greatest opportunity to impact the improvement in AV fistula utilization rates. The strategies are listed in priority order identifying those to be worked on first as agreed upon by the TEP members. The tactics listed in the operational table reflect those that are actionable according to the TEP. Additionally, The TEP gave consideration to time constraints related to the FFBI contract and resource availability. The narrative discussion of

strategies is intended to be an overview and provide examples of possible operational tactics. The TEP identified the priority areas during the meeting, and were provided an additional opportunity to review the TEP recommendations draft report via email. Communication among the TEP allowed for group discussion and consensus. They were asked to re-evaluate their priorities based on the report and upon further reflection; most of the TEP members modified their priority list.

The strategies as agreed upon by the TEP in priority order are:

- Nephrologist Accountability for Vascular Access - The TEP recommends the Nephrologist, who is responsible for vascular access care of the CKD patient as they progress to CKD Stage 5, take the lead and be accountable for ensuring the patient receives the appropriate care.
- Pay for Performance – The TEP recommends financial performance incentives be considered to promote safe, patient-centered, timely, and equitable vascular access care for all CKD patients.
- Partnering and Community Education - The CMS goal of 66% AV fistula utilization in prevalent hemodialysis patients cannot be achieved exclusively by one organization. This goal can only be achieved by building upon existing relationships and by identifying and engaging new partners, each of whom brings a variety of expertise, resources, and motivation to the effort.
- Assure Data Flow - Data play a central and enabling role in improving the prevalent AV fistula rate. Providing feedback is essential to change practice patterns to improve the AV fistula rate and cannot be done without current and accurate data.
- AV Fistula at Hospital Discharge - The TEP recommends collaborating with hospitals to ensure vessel mapping is done and/or AV fistulas placed during the patients hospital stay. If this does not occur, ensuring the patients discharge plan includes vessel mapping and a surgical referral for AV fistula placement.
- Intervention Guidelines - To provide patients with the best possible care, the TEP recommends guidelines for interventionalists. These guidelines would include, appropriate procedures for vessel mapping, proper techniques to handle any abnormality leading to delayed maturation and, as new techniques are available, interventionalists must update their skills to enable them to provide the best care possible for CKD patients.
- Promoting Secondary AV Fistulas – The TEP recommends enhancement to Change Concept 6 to include secondary AV fistulas for patients AV graft and catheters. Development of a QAPI module for implementation at the facility level to promote physical examination of those patients will assist facilities to be compliant with the new Conditions for Coverage.

- Promoting Self-Management - The TEP recommends promoting patient self-management through the stages of CKD. An educated patient will make better decisions regarding vascular access placement.
- Standards for Surgeons - To provide patients with the best possible care, the TEP recommends vascular access placement and monitoring for maturation standards for surgeons. New modules in surgical training and fellowship programs on AV fistula placement and monitoring need development and inclusion in these programs.
- Buttonhole Cannulation – The TEP recommends promotion of buttonhole cannulation. Advantages of buttonhole cannulation include, prolonged AV fistula lifespan, reduced pain to the patient during cannulation, reduced bleeding, infiltrates, and infections. Buttonhole cannulation also promotes self-care and self-dialysis.

The FFBI Staff reviewed the current change concepts and the new TEP recommendations. In mapping the strategies in Table-2 back to the original root causes, the FFBI staff found many of the recommend strategies could be incorporated into the current Change Concepts. The Change Concepts could be easily updated to include these new strategies and tactics. A crosswalk of this mapping is attached as Appendix M.

Summary

The Technical Expert Panel Team utilized a collaborative approach to develop interventional strategies to address the 139 systemic root causes identified by the Root Cause Analysis Core Team in April; associated with failure to achieve a 66% prevalent AV fistula rate. A concerted effort was made to afford all participants an opportunity to provide information and input into the strategies developed. Multi-voting allowed the strategies to be prioritized based on the number of votes each strategy received. The top three prioritized strategies include nephrology accountability for vascular access, pay for performance, and partnering and community education.

In analyzing the RCA and TEP processes, the RCA team identified the surgeon system as the major barrier affecting AV fistula placement through three (3) modes; decision to place other than an AV fistula, inability to use AV fistula once placed and failure to construct a secondary AV fistula. Conversely, the TEP identified the nephrologist system as the major system that in their opinion would have the biggest impact on prevalent AV fistula utilization rates. While the vascular access surgeon has episodic responsibility of the CKD patient, the nephrologist manages the CKD patient who is progressing to renal failure, and as such is responsible for the care provided to that patient once dialysis is initiated. As the leader of the interdisciplinary dialysis team, the nephrologist is responsible for assuring that patients are prepared for dialysis, which prescriptions are appropriate, and that quality outcomes are achieved. The nephrologist is the professional who coordinates patient care and initiates referral for other required medical services. This role requires leadership, coordination of care transitions, and guidance of all technical aspects associated with vascular access placement and maintenance. By recommending that the nephrologist system take the lead, as the initiator of all care for the CKD

patient, the strategies brought forward will address the root causes and have a profound effect on the prevalent AV fistula utilization rates.

Next Steps

Mr. Jefferson Rowland, the FFBI project officer, and Ms. Rebecca Steinfield discussed next steps in the TEP meeting. Mr. Rowland described the process that will be used to bring forward a new national strategy with input from the TEP. Ms. Steinfield described a model IHI recommends for execution of change. Ms. Steinfield cautioned the group to keep the design simple, and observable. Ms. Steinfield's presentation slides are included in Appendix L.

The Technical Expert Panel recommendations via this document are being provided to CMS for review and comment. Upon completion of this internal review and comment period, this report will then be shared with the TEP members to allow them an opportunity to review, comment and provide feedback for further refinement. After this review is complete and all parties have had an opportunity to provide feedback and input, the FFBI team will begin work on a new national Strategic Plan that will incorporate all of the work done by the RCA Core Team and the Technical Expert Panel. This newly developed plan will become the roadmap that will be used to move the national AV fistula utilization rate to 66% in prevalent hemodialysis patients.

Table-1: TEP Strategy Recommendations in Priority Order

Priority Number	Topic Grouping Title	Number of Strategies Presented	Votes Received	Impact on What System
1	Nephrologist Accountability for Vascular Access	3	17	Nephrologist
2	Pay for Performance	1	17	Health Policy
3	Partnering and Community Education	7	14	Community Education
4	Assure Data Flow	1	10	Outcomes
5	AV fistula at Hospital Discharge	1	9	Hospitals
6	Interventional Guidelines	1	9	Interventionalist
7	Promoting Secondary AV fistula	1	9	Clinical Practice
8	Promoting Self Management	1	7	Patient
9	Standards for Surgeons	1	6	Surgeon
10	Buttonhole Cannulation	1	4	Clinical Practice

TABLE-2: TEP STRATEGIC RECOMMENDATIONS, INTEGRATED WITH CURRENT CHANGE CONCEPTS

Ref. #	Strategies	Tactics	Person/Group Responsible	Metrics
Foundation: Current Change Concepts				
1	Change Concept #1 Routine CQI review of vascular access	• Coordinate with Networks to design a QAPI for vascular access, which can be shared, with facilities for compliance with Conditions for Coverage. • <i>Coordinate with Office of Survey & Certification to assure understanding of interpretative guidelines for patient plan of care and medical director responsibilities.</i> • Develop tracking tool for facilities to track non-AV fistula access placement and failures. • <i>Assure availability of relevant vascular access clinical measures and standardized reports in CROWNWeb</i>	• Networks • State Survey Agencies • CMS	▪ # deficiencies cited by SSAs on VA QAPI
2	Change Concept #2 Timely referral to nephrologist	• Develop and conduct an educational awareness campaign that promotes a 30 – 20 – 10 theme ○ PCP should refer to nephrologist when GF R is 30 ○ Nephrologist should refer for vessel mapping and fistula placement when GFR is 20 ○ Patient should start dialysis when GFR is 10 ▪ Develop an educational component (either DVD, CD, or web based program) that will address each of these levels and which can be addressed to family members (in addition to patients) ▪ Develop or refine the recommendations that can be shared with PCPs on when to refer (possible check list for patients in CKD stages II & III) ▪ A longer-term strategy may be the development of	▪ Networks/PAC's ▪ QIOs ▪ Dialysis Organizations ▪ Renal Professional Ass. ▪ PCP Associations ▪ AAKP ▪ NKF ▪ AKF ▪ Renal Support Network	▪ # of materials distributed ▪ # journal articles and presentations made ▪ # of individuals attending training programs ▪ Development and use of pre/post tests ▪ # of patients referred as measured on the 2728

Ref. #	Strategies	Tactics	Person/Group Responsible	Metrics
		new “G” codes to incentivize providers and allow them to be reimbursed for their educational & prevention activities (MIPPA model). ▪ This strategy requires the development of a marketing campaign and the deployment of multiple partners (including the professional associations, NKF and pharmaceuticals) and needs to be a continuous effort to assure sustainability. ▪ Develop an educational campaign for the various stakeholder groups that will incorporate the professional societies, presentation at national association meetings and publications in professional journals. The campaign should involve organizations outside the normal circle of renal related associations such as Am Diabetic Association, Am Hosp Association, AMA, American Health Association. The “Wal-Mart” model should be explored. Insurers and private payer groups should be incorporated and educational efforts by these groups should be leveraged. ▪ Engage patient organizations in the dissemination of the educational materials developed through their educational committees.		
3	Change Concept #3 Early referral to surgeon for “AV fistula only” evaluation and timely placement	• Request that the Society of Vascular Surgeons establish a standard setting body that would review credentialing requirements, technical expertise, education, educational materials, mentoring and oversight of outcomes. • Promote standards for surgeons performing vascular access procedures	• FFBI Workgroup • Networks • QIOSC	
4	Change Concept #4 Surgeon selection based on best	• Generate feedback reports for surgeons with data on AV fistula, AVG and catheter placement with comparisons to state, Network and national rates.	• FFBI Coalition • Networks	

Ref. #	Strategies	Tactics	Person/Group Responsible	Metrics
	outcomes, willingness, and ability to provide access services	Develop tracking mechanism for dialysis facilities to evaluate AV fistulas that fail to mature.		
5	Change Concept #5 Full range of appropriate surgical approaches to AV fistula evaluation and placement	<i>Finalize work of the Vessel Mapping Subcommittee that includes paper on Preoperative Vascular Mapping for Fistula Creation</i> - Identify additional tools/resources that can be incorporated into the Change Concept - Obtain endorsement from appropriate professional associations - Disseminate through the Networks, QIOs and on the website - Expand Change Concept #5 to include guideline/protocols on dialysis access mapping	FFBI Coalition Vessel Mapping Subcommittee	
6	Change Concept #6 Secondary AV fistula placement in patients with AV grafts	- Appoint workgroup to examine tools currently in place for Change Concept #6 to assess whether additional tools and resources have been developed at the Network or facility level that should be incorporated. - Develop newsletter articles to promote the value of “sleeves up” that Networks can use in their communications with facilities. Collect success stories that show the value of this approach. - Develop a QAPI for implementation at the facility level which will promote examination and which will assist facilities in compliance with Conditions for Coverage.	- FFBI Coalition - ESRD Networks	
7	Change Concept #7 AV fistula placement in patients with catheters where indicated	- Partner with Fresenius Medical Care (Catheter last program) and DaVita (Cathaway program) to promote the conversion of catheters to AV fistulas <i>Revise new patient orientation package material on vascular access to include graphic depiction of catheter, AV fistula and AVG</i>	- Networks - LDOs	▪
8	Change Concept #8	- Buttonhole cannulation (needs development) <i>Leverage Conditions for Coverage requiring</i>	FFBI Workgroup	▪

Ref. #	Strategies	Tactics	Person/Group Responsible	Metrics
	Cannulation training for AV fistula	<i>technician certification to develop CEU module on cannulation</i>	• Networks • NANT	
9	Change Concept #9 Monitoring and maintenance to ensure adequate access function	• Develop and distributed educational guidelines on early recognition and treatment of failure to mature (FTM) to include AV fistula monitoring and surveillance. • <i>Conduct survey of Network facilities to determine current protocols and identify best practices</i> • Support strategy #4 to help facilities with a surgeon tracking tool and empowers them to initiate early discussions with surgeons and support of strategy #5 (standard vessel mapping) and which promotes timely intervention for last AV fistula failure and aggressive salvage • Assure that facilities understand failure to mature issues	• FFBI Workgroup ▪ Networks ▪ CKD QIO's	▪
10	Change Concept #10 Education for care givers and patients	▪ <i>Coordinate with ANNA, NANT, NRAA to develop CEU educational modules</i> • Work through American Society of Nephrology (ASN) to provide a breakout session during ASN week on technical aspects to include: ○ Vessel mapping ○ Talking with patients who are reluctant to have AV fistula placed or convert to AV fistula ○ Establishing relationships with primary care physicians (PCPs) and communicating guidelines on when PCPs should refer patients for nephrology consult ▪ Expand - nephrologists and dialysis facility staff training to include better understanding of various aspects of vascular access management, including discussions with patients/family members	• FFBI Coalition Workgroup • RPA • ASN • ANNA • NRAA • NANT	• % nephrologist who attend session • 6 month post evaluation to determine % who modified practice patterns as a result of information provided

Ref. #	Strategies	Tactics	Person/Group Responsible	Metrics
11	Change Concept #11 Outcomes feedback to guide practice	- Working with CMS (through either CrownWeb or SIMS) and dialysis providers, assure that Networks and others requiring data have a continuous flow of current, accurate and timely data for analysis purposes as well as feedback reporting to the provider community. This may involve identification of required data elements and coordination with emerging systems and development of new partnerships to explore data sources currently under-utilized. - Working with QIOs and the Medicare claims database, develop mechanism include the availability of surgeon data. - Develop tracking tool that dialysis providers can use to track surgeon performance, including maturation rate.	- FFBI Coalition - ESRD Networks - CMS	
Nephrologist Accountability for Vascular Access				
12	Impact Nephrology training programs – long term strategy	- Identify at least two nephrology fellowship-training programs to work with to determine the need for additional knowledge modules for the physician who specifically intends to practice in the dialysis setting. - Determine if this could serve as a pilot program. This could also include modules on quality improvement, leadership and medical director responsibilities under Conditions for Coverage	- FFBI Coalition - RPA - Association of American Medical Colleges (AAMC) - American Board of Internal Medicine (ABIM)	Number of Fellowship programs with Vascular Access Modules in Curriculum
Pay for Performance				
13	Encourage CMS to provide incentives for patients and providers to obtain AV fistula	Implement a demonstration project with several Networks and QIOs to pilot a pay for performance (P4P) initiative that would also incorporate aspects of the physician quality reporting initiative (PQRI).	- CMS - Networks - Dialysis Organizations	2728 database – number of patients starting dialysis with AV

Ref. #	Strategies	Tactics	Person/Group Responsible	Metrics
		- Incentives would be provided for patients who present to dialysis with a <u>working</u> fistula and would acknowledge the time and effort required to make this possible at the patient, surgeon, primary care physician and nephrology level. - The Coalition should develop the “business case” to present to CMS showing the cost benefit of this approach. While this would be an initially expensive undertaking, over time the costs would be recaptured in savings to the program. - A marketing approach to this should be developed which should include patients “stories.”		fistula
Partnering & Community Education				
14	Update inventory of educational materials that are available to patients and families in the community and on the FFBI Website	- Partner with NKDEP (NIH) to inventory their educational materials and provide link to NKDEP from FFBI Website - Review educational materials on the FFBI website for: - Content - Current relevance - Education level (Literacy – ease of understanding) - Provide materials in several languages - Broaden dissemination of educational materials to include: - Primary care offices - Hospitals (both discharge planners and Emergency Departments) - Case Managers (Hospital and Insurance Co.) - Urgent Care Centers - Public health facilities - Certified Diabetes Educators	FFBI Coordinating Center	

Ref. #	Strategies	Tactics	Person/Group Responsible	Metrics
		• CKD Programs • Diabetes support groups • Laboratories (Vessel Preservation) • Develop tools to educate on the proper vessel mapping protocol		
15	Develop and launch a community education program around the theme of “Know Your GFR and What it Means” (message should be convenient and culturally sensitive and could incorporate the previous “30 -20-10 theme	• Link CKD education with diabetes education programs throughout the country. Solicit NKDEP to develop collaboration with the American Association of Diabetes Educators and piggyback on other initiatives such as American Heart Association, American Diabetes Association, NKF, AARP; Industry (Baxter and Abbott); Faith-based community; and Wal-Mart. • Coordinate with NKDEP to put together a package of educational materials on CKD and dialysis developed by NKDEP and by the NIDDK Kidney and Urologic Diseases Information Clearinghouse that could be used by Fistula First. • Expand the National Kidney Foundation’s KEEP program • Link with Community based health fairs	• QIOs (to reach broad medical community) • Networks (to reach nephrology community) • NKF • Community Collaborative (e.g., RWJ)	• How many programs add CKD • Physician behavior pre- and post-implementation • number of tests - measure through claims where community education programs are in place
16	Increase patient and family education on vascular access prior to ESRD	• Leverage MIPPA to educate CKD patients • Influence and help develop content for the six (6) reimbursed CKD education sessions • Potential rebranding of Vascular Access • Fistula First, Catheter Last	• FFBI Coalition • CKD QIO’s • ESRD Networks • NKF • AAKP • ANNA	• Claims data for educational sessions matched to 2728 for initial access type
17	Promote appropriate CKD care and follow-up through mandatory reporting of GFR	• Appoint a taskforce to work with AACC (American Association of Clinical Chemistry) to promote NKF policy and require laboratories to report GFRs < 60 in standard format. This should be national standard and should include appropriate educational guidance for the various levels (30–20–10).	• Identified laboratories and associated professional organizations (AACC); • NKDEP	• # states that implement requirements • % of laboratories that add GFR reporting

Ref. #	Strategies	Tactics	Person/Group Responsible	Metrics
		- The Laboratory Working Group reviewed serum creatinine measurement and developed recommendations for reporting estimated GFR and to standardize and improve creatinine measurement. The current variability in serum creatinine measurement renders all estimating equations for GFR, including the MDRD study equation, less accurate in the normal and slightly elevated range of serum creatinine concentrations (<133 $\mu\text{mol/L}$, <1.5 mg/dl) which are most important for detecting chronic kidney disease (<60 ml/min/1.73 m²). Standardizing calibration of creatinine results to an isotope dilution mass spectrometry reference measurement procedure requires coordination by method manufacturers and clinical laboratories to use the correct MDRD equation to calculate GFR and to communicate associated clinical issues to clinical providers and pharmacists. - Explore current practice among some insurance companies to provide “notification” letters to beneficiaries when certain triggers are identified. - An examination of the states currently requiring GFR lab reporting should be made and the issues that organizations who currently object to should be addressed.	CMS	% of labs that provide educational information to beneficiaries when triggered
18	Promote vessel mapping and vessel preservation (See strategy #5)	- Develop an educational campaign to assure appropriate vessel mapping and vessel preservation that would require development of standard protocols for vessel mapping (See #5). - Campaign should incorporate the concept that each patient will receive a bracelet upon completion of vessel mapping to be worn as a reminder to health care workers that vein/vessel preservation is	- FFBI Coalition - CKD QIO's - ESRD Networks	# bracelets distributed

Ref. #	Strategies	Tactics	Person/Group Responsible	Metrics
		essential in this CKD patients and that PICC lines should be avoided at all costs. (approximate cost / bracelet = \$0.135)		
19	Engage hospitals in vessel preservation and vascular access education for patients (See strategy #5& 18)	Develop and implement a protocol template to include: ▪ Vascular access planning ▪ Diagnosis of CKD (III – V) during hospitalization and referral to nephrologist ▪ Use Fistula First white paper recommendations for vessel preservation and which would provide education for patients/clinicians and which would recommend that ▪ Vessel Mapping be completed during hospitalization and that an AV fistula be placed or that there be a written plan to be placed prior to discharge If AV fistula not placed during stay, appointment with surgeon made as part of discharge plan ▪ Develop toolkit for hospitals that will help them comply with their quality improvement projects and address patient safety ▪ Develop discharge plan for emergent starts (i.e., vascular access plan) ▪ Change message discussions regarding catheters to stress that catheters are a temporary access	• FFBI Coalition • CKD QIO's • ESRD Networks	• 2728 database – number of patients starting dialysis with AV fistula
AV fistula @ Hospital Discharge				
20	Assure that when dialysis is initially initiated in the hospital that suitable patients have a plan of care for an AV fistula upon discharge	• Develop and implement a template of a care map to include vascular access planning (CKD IV referral to nephrologist) • Use Fistula First white paper recommendations for vessel preservation education for patients/clinicians • Toolkit will have hospitals comply with quality improvement projects address patient safety. Assure that hospital administration understands	• FFBI Coalition • CKD QIO's • ESRD Networks	• Measurement administrative data for referrals for surgical placement?

Ref. #	Strategies	Tactics	Person/Group Responsible	Metrics
		requirements for non-reimbursement of patients who return due to infections and how this relates to discharging a patient with a catheter. Emergent starts (no such thing as a permanent catheter) discharge plan – AV fistula placed or plan to be placed.		
Interventional Guidelines				
21	Promote guideline development for interventionalists	Solicit statement from American Society of Diagnostic and Interventional Nephrology in support of K-DOQI guidelines or the development of their own guidelines.	- FFBI Coalition - ESRD Networks	Publication of Interventionalist Guidelines
Promote Self Management				
22	Promote patient self management in CKD and ESRD	- Work through Network Patient Advisory Committees to identify AV fistula patients who participate in self-management at the facility. Self management would include such things as: - Patient cleans access - Self cannulation - Examination of access (look, listen, feel) - Understanding of numbers (clinical lab values) - Understanding of monitoring and interventional tools that are available - Fistulagrams - What the facility is using to monitor vascular access - Record oral interviews with identified patients to collect their stories and post to the FFBI website and make tapes available to dialysis facility educators.	- FFBI Workgroup - CKD QIO's - ESRD Networks	2728 database – number of patients starting dialysis with AV fistula

** Items in italics included by the FFBI Team for consideration by the TEP*

Appendix A: TEP Meeting Agenda

Agenda Day 1 Thursday, June 4, 2009

7:00 - 8:00	Continental Breakfast	Apache/Navajo Foyer
8:00 - 8:15	Welcome and Introductions <i>William McClellan, MD</i>	Apache & Navajo
8:15 - 8:30	History of FFBI <i>Lawrence Spergel, MD</i>	
8:30 - 9:00	Overview of RCA Process <i>Robert Latino, CEO</i>	
9:00 - 10:00	General Discussion of RCA Findings <i>Linda Duval, BSN, RN and Chester Fox, MD</i>	
10:00 - 10:15	Break	Apache/Navajo Foyer
10:15 - 11:00	Model for Change <i>Rebecca Steinfield</i>	Apache & Navajo
11:00 - 11:30	Workgroup Expectations & Charge <i>William McClellan, MD</i>	
11:30 - 12:30	Initial Workgroup Session	
12:30 - 1:15	Lunch	Pueblo
1:15 - 1:30	General Discussion of Workgroup Progress <i>Facilitated by: William McClellan, MD</i>	Apache & Navajo
1:30 - 2:45	Resume Workgroup Session	
2:45 - 3:00	Break	Apache/Navajo Foyer
3:00 - 6:00	Resume Workgroup Session	
6:45	Dinner	

Agenda Day 2

Friday, June 5, 2009

7:00 - 8:00	Continental Breakfast	Apache/Navajo Foyer
8:00 - 11:00 1	Workgroup Reports, Discussion & Multi-voting/Prioritization <i>Facilitated by: William McClellan, MD</i>	Apache & Navajo
1:00 - 11:15	Break	Apache/Navajo Foyer
11:15 - 12:30	Spreading These Good Ideas <i>Rebecca Steinfield</i>	Apache & Navajo
12:30 - 1:30	Lunch	Pueblo
1:30 - 3:00	Next Steps <i>Facilitated by: William McClellan, MD</i>	Apache & Navajo

Appendix B: History of the Fistula First Breakthrough Initiative



History of the Fistula First Project (FFBI)

As part of the ESRD Network Statement of Work beginning July 2003, CMS, the ESRD Networks and key provider representatives jointly recommended adoption of a National Vascular Access Improvement Initiative (NVAII). The primary goal of this continuous quality improvement (CQI) project was to increase the appropriate use of ArterioVenous Fistula (AV fistula) for Hemodialysis access and to reach or exceed the NKF-KDOQI practice guidelines of 50% in incident and 40% in prevalent patients. AV fistulas have been promoted as the best form of Hemodialysis Vascular Access on the basis of their superior patency, low complication and procedure rates, and subsequent low overall cost. CMS committed to a system-wide improvement project on vascular access over the course of the three-year ESRD Network contract, starting July 2003 and ending in June 2006. Because of these efforts, by August of 2005, the national prevalence AV fistula rate was 40%, reaching the prevalence goal 10 months early.

The focus of the original NVAII was to address clinical and organizational improvements that would lead to use of AV fistulas. ESRD Networks, dialysis providers, medical specialists, hospitals and clinics, all share the responsibility for improving dialysis care by increasing appropriate and successful AV fistula placement. The ESRD Networks played a major role in catalyzing change, creating efficient ways to share knowledge and resources, and building strong alliances with the facilities and medical professionals in their regions.

Identification and development of 11 major change concepts was provided by a multi-disciplinary Working Group with representation from the following groups: ESRD Network Executive Directors and Quality Improvement Directors, corporate and independent dialysis providers, nephrologists (including interventional nephrologists), nephrology nurses, vascular surgeons, interventional radiologists, patients, CMS project leaders and quality improvement staff, and the Institute for Healthcare Improvement. The change concept document focuses on changes that can be made immediately, to give all suitable hemodialysis patients the opportunity to receive an AV fistula. Because of the early success, this initiative became known as the Fistula First Breakthrough Initiative (FFBI). As part of the initiative, the FFBI Coalition was formed and is still active today.

The working group identified two main approaches to increasing AV fistula use:

- Clinical and organizational changes that can be adapted and applied locally to improve AV fistula prevalence and success.
- System changes that must be implemented at a national level. These will require national leadership from CMS and should be expected to take longer to accomplish.

Many within the ESRD community pointed out the need for system-level policy changes to encourage more AV fistula placement. These included reimbursement for AV fistulas at a higher rate than AV grafts or catheters, and reimbursement for vessel mapping for new AV fistulas. CMS committed to reviewing these issues carefully for appropriate changes. As a result, in January 2005, a reimbursement policy for vessel mapping was instituted through a new government code (G0365). In addition, until recently there was a financial disincentive for the placement of AV fistulas

over grafts but the 2009, Relative Value Unit (RVU) adjustments corrected this inequity by a 31% increase over 2008 rates.

FFBI provided motivation and support in the form of educational materials, tools to track outcomes, and a clearly outlined process through the 11 Change Concepts to achieve the CMS Clinical Performance Measure (CPM) targets. The FFBI brought vascular access to the forefront of Hemodialysis care and has become internationally known and is a household term in most dialysis communities. The FFBI is an exemplary system-wide CQI project that has resulted in a higher number of incident and prevalent AV fistulas. It has provided resource materials, tools and education, such as cannulation training and surgical education, to improve access care.

In the most recent 2006 guideline update, KDOQI recommends a **prevalent functional AV fistula placement rate of greater than 65%**. **In addition, the current** CMS goal is to have 66% of prevalent patients using an AV fistula by 2009. As of March 2009 the national average of AV fistula's has increased to 52.0%.

In March 2009, the FFBI contract was awarded to Network 5 – Mid Atlantic Renal Coalition (MARC). The FFBI staff per the Statement of Work is charged with:

- Conducting a thorough analysis of the current process for ArterioVenous Fistula (AV fistula) placement
- Assessing the current weaknesses and barriers of AV fistula placement
- Examining the patient, physician, dialysis facility and other healthcare entities that impact AV fistula placement
- Development and implementation of a strategic plan that will move the AV fistula rate to 66%

Appendix C: Fistula First Change Concepts



Fistula First Change Package

Clinical and organizational recommendations based on best practices for increasing AV fistula use and improving hemodialysis patient outcome

1	Routine CQI review of vascular access
	- Designate staff member in dialysis facility responsible for vascular access CQI (RN if feasible but can be any renal care professional). Incorporate vascular access into facility-based CQI process. - Assemble multi-disciplinary vascular access CQI team in facility or hospital. - Minimally: Medical Director and VA CQI Coordinator. - Ideally: Representatives of all disciplines, including access surgeons and interventionalists. - Investigate and track all non-AV fistula access placements and AV fistula failures.
2	Timely referral to nephrologist
	- Primary care physicians utilize pre-ESRD/CKD referral criteria to ensure timely referral of patients to nephrologists, ideally prior to Stage 4 CKD. - Establish meaningful criteria for PCPs who may not perform GFR or creatinine clearance testing (i.e. serum creatinine criteria, conversion formula for GFR) - Nephrologist documents AV fistula plan for all patients expected to require renal replacement therapy, regardless of RRT being considered. - Designated nephrology staff person educates patient and family on benefits of AV fistula and to protect vessels, when possible using bracelet as reminder.
3	Early referral to surgeon for “AV fistula only” evaluation and timely placement
	- Nephrologist/skilled nurse performs appropriate evaluation and physical exam prior to surgery referral. - Nephrologist refers for vessel mapping where feasible, ideally prior to surgery referral. - Nephrologist refers patients to surgeons for “AV fistula only” evaluation, no later than Stage 4 CKD (GFR<30). Surgery scheduled with sufficient lead-time for AV fistula maturation. - Nephrologist defines AV fistula expectations to surgeon, including vessel mapping. - If pre-ESRD placement of AV fistula does not occur, nephrologist ensures that patient receives AV fistula evaluation and placement (if feasible) at the time of initial hospitalization for temporary access (e.g. catheter).
4	Surgeon selection based on best outcomes, willingness, and ability to provide access services
	- Nephrologists communicate expectations to surgeons regarding AV fistula placement and training in current AV fistula surgical techniques, based on K/DOQI Guidelines and best practices. - Nephrologists refer to surgeons willing and able to meet AV fistula expectations based on K/DOQI and best practices. - Surgeons are continuously evaluated on frequency, quality, and patency of access placements. Data collection and outcomes tracking ideally initiated and reported at the dialysis center as part of ongoing CQI process, and can be aggregated at the Network level.
5	Full range of appropriate surgical approaches to AV fistula evaluation and placement
	- Surgeons utilize current techniques for AV fistula placement including vein transpositions. - Surgeons ensure mapping is performed for any patient candidate not deemed suitable for AV fistula based solely on physical exam.
6	Secondary AV fistula placement in patients with AV grafts

- Nephrologists evaluate every AV graft patient for possible secondary AV fistula, including mapping as indicated, and document plan in patient's record.
- Dialysis facility staff and/or rounding nephrologists examine outflow vein of all forearm graft patients ("sleeves up") during dialysis treatments (minimum frequency=monthly) to identify patients who may have suitable upper outflow vein for elective secondary AV fistula conversion in upper arm. Inform nephrologist and surgeon of need to evaluate identified outflow vein for AV fistula conversion.
- Nephrologist refers to surgeon for evaluation/placement of secondary AV fistula before failure of AVG.

7 AV fistula placement in patients with catheters where indicated

- Regardless of prior access (e.g. AV graft), nephrologists and surgeons evaluate all catheter patients as soon as possible for AV fistula, including mapping as indicated.
- Facility implements protocol to track all catheter patients for early removal of catheter.
- Nephrologists make every effort not to admit patients to clinic with "catheter only"

8 Cannulation training for AV fistulas

- Facility identifies and uses best cannulators and best teaching tools (e.g., videos) to teach AV fistula cannulation to all appropriate dialysis staff.
- Dialysis staff uses specific protocol for initial dialysis treatments with new AV fistulas and assigns the most skilled staff to such patients.
- Facility offers option of self-cannulation to patients who are interested and able.

9 Monitoring and maintenance to ensure adequate access function

- Nephrologists and surgeons conduct post-operative physical evaluation of AV fistulas in 4 weeks to detect early signs of failure and refer for diagnostic study and remedial intervention as indicated.
- Facilities adopt standard procedures for monitoring, surveillance, and timely referral for the failing AV fistula.
- Nephrologists, interventional radiologists, and surgeons adopt standard criteria, and a plan for each patient, to determine the appropriate extent of intervention on an existing access before evaluating and mapping for an AV fistula.

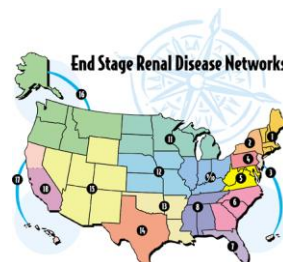
10 Education for care givers and patients

- Routine facility staff in-servicing and education program in vascular access.
- Continuing education for all caregivers to include periodic in-services by nephrologists, surgeons, and interventionalists.
- Facilities educate patients to improve quality of care and outcomes (e.g., prepping puncture sites, applying proper pressure at needle sites without clamps, AV fistula brochures, etc.).

11 Outcomes feedback to guide practice

- Networks work with dialysis providers to provide specific outcomes feedback to all decision-makers, including incident and prevalent rates of AV fistula, AVG, and catheter use.
- Review data monthly or quarterly in facility staff meetings. Discuss and evaluate data trended over time for incident and prevalent rates of AV fistula, AVG, and catheter use. Track and disseminate all vascular access-related outcomes.

For further information, contact your ESRD Network. A complete listing of ESRD Networks can be found at: <http://www.esrdnetworks.org/>. *Fistula First* is an initiative of the Centers for Medicare and Medicaid Services and the Department of Health and Human Services. Project assistance provided by the Institute for Healthcare Improvement.



Appendix D: Technical Expert Panel, Fistula First – A New Beginning



Charter

Develop interventional strategies to address identified root causes in order to move the national AVF rate to 66% in prevalent hemodialysis patients

Breakout Groups

- Breakout into 3 groups to address categories of identified root causes
- Each group has a
 - Facilitator
 - Member of the RCA team
 - Staff to serve as scribe

Break-out Groups

- Group I (54 root causes)
 - Knowledge, Perceptions, Skills
- Group II (59 root causes)
 - CKD
 - Clinical Decisions
 - Systems
 - Reimbursement
 - Political/Other
- Group III (26 root causes)
 - Patient/Family

Day 1

- Discuss barriers in breakout groups
- Develop strategies to address barriers or groups of barriers
- Prioritize and identify top 5 strategies

Day 2

- Groups report on top 5 barriers to be listed for group review
- General discussion if necessary
- Multi-voting to prioritize strategies
- Identify top strategies for development and implementation

TEP STRATEGY RECOMMENDATION WORKSHEET

AIM

66% of prevalent hemodialysis patients should be dialyzing with an AVF by _____

- ☐ KPS
- ☐ Policy/Strategy
- ☐ System
- ☐ Reimbursement
- ☐ Data
- ☐ Clinical Decision
- ☐ Political

Latent Root Cause(s)						Ref #
Interventional Strategies						
What will change behavior?						
Potential Metric(s)						
Implementation						
Outcomes						
Impact / Effort						
	Low		High			
Impact	1	2	3	4	5	
Effort	1	2	3	4	5	
Cost & Time						
Cost	\$	\$	\$	\$	\$	
Estimated Time for Implementation						
☐ Short ≤ 6 mos ☐ Medium 7 – 12 mos ☐ Long > 12 mos						

Definition Interventional Strategy

- A Plan to achieve an aim that is consciously and systematically pursued and obtained over time

Hypothetical Example

RCA Ref # 30 – Surgeon does not have AVF expertise
During 2010, the Society for Vascular Surgery
will 2 offer hands-on training sessions in AVF
placement

Characteristics of a Strategy

- Time-bound
- Specifies: Who, What, When, How
- Uses clear and precise language
- Is feasible and achievable

Characteristics of a Strategy

- Time-bound
- Specifies: Who, What, When, How
- Uses clear and precise language
- Is feasible and achievable

Existing Measures

Monthly data by facility & Network for incident and prevalent hemodialysis patients

- AVF only
- AVG only
- AVG with AVF
- Catheters < 90 days
- Catheters $\geq$ 90 days
- Catheters with AVF
- Catheters with AVG

Definition Metrics

- A metric is the measurement of a particular characteristic of a program's performance or efficiency

Hypothetical Example

Implementation Metric – Number of surgeons attending training sessions

Outcome metric – Increase in AVFs placed by trained surgeons

Definition Impact

- The effect or impression of one thing on another
- Low-Impact
 - Will have little or no effect on the outcome or goal
- High-Impact
 - Will have a great deal of effect on the outcome or goal

Definition Effort

(by change agent)

- The use of physical or mental energy to do something
- Implies a conscious attempt to achieve a particular end
- High-Effort
 - Will take a great deal of time, energy and resources to have an impact on the outcome or goal
- Low-Effort
 - Will take little time, energy and resources to have an impact on the outcome or goal

Definition Cost

(to change agent)

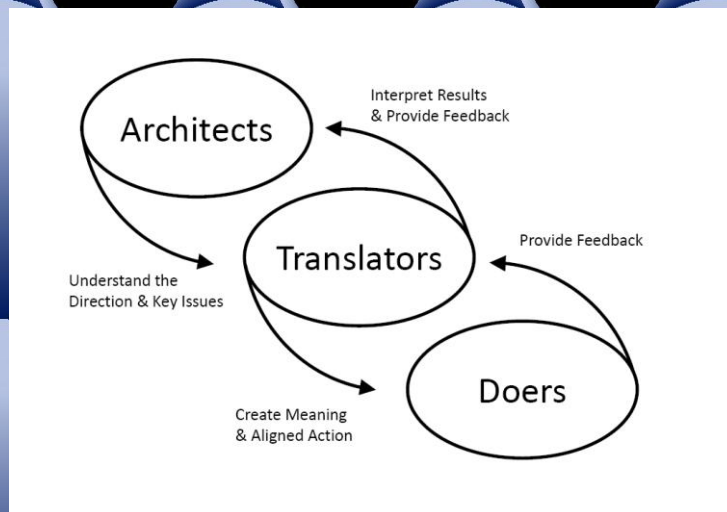
- \$
 - Will take very little financial resources to accomplish/complete
- \$\$
 - Will take a moderate amount of financial resources to accomplish/complete
- \$\$\$
 - Will take a great deal of financial resources to accomplish/complete

Definition Time

- Short < 6 months
 - Will take less than 6 months to start seeing a change in outcomes
- Medium 7 – 12 Months
 - Will take anywhere from 7 to 12 months to see a change in outcomes
- Long > 12
 - Will take a year or longer to see a change in outcomes

QUESTIONS ?

Next Steps



Appendix E: Technical Expert Panel Listing

Organization	Area of Expertise	Member
Emory University <i>TEP Meeting Facilitator</i>	Nephrology, Medical Director	William McClellan, MD, MPH Emory University Rollins School of Public Health 1518 Clifton Rd. Atlanta, GA 30322 404-727-6976 FAX: 678-527-3430 wmcclel@sph.emory.edu
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Fresenius Medical Care	Nephrology,	Ray Hakim, MD Senior Executive Vice President 750 Old Hickory Blvd., Ste. 230 Brentwood, TN 37027 615-345-5500 raymond.hakimmd@fmc-na.com
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National Kidney Foundation	Nephrology Chief Medical Officer,	Joe Vassalotti, MD, FASN Chief Medical Officer National Kidney Foundation

Organization	Area of Expertise	Member
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Renal Advantage Inc.	Chief Operation Officer	Dean M. Weiland Chief Operating Officer Renal Advantage Inc. 115 East Park Drive Suite 300 Brentwood, TN 37027 (615) 507-3303 direct (615) 207-6550 cell deanweiland@renaladvantage.com
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ESRD Network of New England	Network Executive Director, Network Organization, Forum EDAC	Jenny Kitsen Executive Director ESRD Network of New England, Inc. 30 Hazel Terrace Woodbridge, CT 06525 203-387-9332 jkitsen@nw1.esrd.net

Organization	Area of Expertise	Member
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FFBI Coordinating Center	FFBI Project Coordinator	Brandy Vinson Project Coordinator 1527 Huguenot Road Midlothian, VA 23113 804-794-5824 bvinson@nw5.esrd.net
Mid-Atlantic Renal Coalition	FFBI Statistician, Quality Improvement	Janet Lynch, PhD, CPHQ Deputy Director 1527 Huguenot Road Midlothian, VA 23113 804-794-3757 jlynch@nw5.esrd.net
Mid-Atlantic Renal Coalition	MARC Team Member	Nancy Armistead, MPA Executive Director 1527 Huguenot Road Midlothian, VA 23113 804-794-3757 narmistead@nw5.esrd.net

Organization	Area of Expertise	Member
Center for Medicare & Medicaid Services	CMS FFBI Government Task Leader	Mary Teresa Casey Division of Quality Improvement Policy for Chronic and Ambulatory Care, Quality Improvement Group Office of Clinical Standards and Quality Centers for Medicare & Medicaid Services 7500 Security Boulevard Baltimore, Maryland 21244-1850 410-786-7215 mary.casey@cms.hhs.gov
Center for Medicare & Medicaid Services	CMS Project Officer	JR (Jefferson) Rowland, M.Sc., COTR Epidemiologist, Contract Officer Technical Representative DHHS/CMS/OCSQ/DQI JFK Building, Government Center, Room 2325 Boston, Massachusetts 02203 617-565-1329 Jefferson.rowland@cms.hhs.gov
Reliability Center, Inc.	Root Cause Analysis Facilitator	Robert Latino, CEO Reliability Center, Inc. PO Box 1421 Hopewell, Virginia 23860 804-458-0645 blatino@reliability.com
Institute for Healthcare Improvement	IHI Consultant	Rebecca Morse Steinfield Institute for Healthcare Improvement 20 University Rd, 7 th Floor Cambridge, Massachusetts 02138 617-301-4285 rsteinfield@ihi.org

Appendix F: Technical Expert Panel Group Assignments

Group 1

(54 Root Causes)

Knowledge, Perceptions & Skills

Shu-Cheng Chen, MS

Staff: Nancy Armistead, MPA

Jan Deane, RN, CNN

Chester Fox, MD **

Linda Francisco, MD, FACP

Victoria Kumar, MD

Lawrence Spergel, MD, FACS **

Group 2

(59 Root Causes)

System

CKD III – IV

Reimbursement

Clinical Decisions

Political Considerations

Linda Duval, BSN, RN **

Staff: Janet Lynch, PhD, CPHQ

Laura Gamba, BA, CBA

Raymond Hakim, MD

Janet Holland, RN, CNN

William Jennings, MD, MPH

Michael Lawless, MD

Dean Weiland

Group 3

(26 Root Causes)

Patient and Family

Jenny Kitsen

Staff: Brandy Vinson

Richard Knight

Andrew Narva, MD

Val Riley, RN, BS **

Joe Vassalotti, MD, FASN

Assisting All Groups

Robert Latino

William McClellan, MD

Jefferson Rowland

Rebecca Steinfield

** RCA Members

Appendix G: TEP Strategy Recommendation Worksheet & Worksheet Definitions

TEP STRATEGY RECOMMENDATION WORKSHEET

AIM

66% of prevalent hemodialysis patients should be dialyzing with an AV fistula by _____

- ☐ KPS
- ☐ Pt/Family
- ☐ System
- ☐ Reimbursement
- ☐ CKD
- ☐ Clinical Decision
- ☐ Political

Latent Root Cause(s)					
Strategies					
Potential Metric(s)					
Impact / Effort					
Impact	1	2	3	4	5
Effort	1	2	3	4	5
Cost & Time					
Cost	\$	\$\$	\$\$\$		
Estimated Time for Implementation					
☐ Short ≤ 6 months ☐ Medium 7 – 12 months ☐ Long > 12 months					

Ref #

DEFINITIONS

Interventional Strategy	A Plan to achieve an aim that is consciously and systematically pursued and obtained over time Characteristics of a Strategy • Time-bound • Specifies: Who, What, When, How • Uses clear and precise language • Is feasible and achievable
Metrics	• A metric is the measurement of a particular characteristic of a program's performance or efficiency • Implementation Metric – Number of surgeons attending training sessions • Outcome metric – Increase in AV fistulas placed by trained surgeons
Impact	• The effect or impression of one thing on another ○ Low-Impact -- Will have little or no effect on the outcome or goal ○ High-Impact -- Will have a great deal of effect on the outcome or goal
Effort (by change agent)	• The use of physical or mental energy to do something. • Implies a conscious attempt to achieve a particular end ○ High-Effort -- Will take a great deal of time, energy and resources to have an impact on the outcome or goal ○ Low-Effort -- Will take little time, energy and resources to have an impact on the outcome or goal
Cost	• \$ -- Will take very little financial resources to accomplish/complete • \$\$ -- Will take a moderate amount of financial resources to accomplish/complete • \$\$\$ -- Will take a great deal of financial resources to accomplish/complete
Time	• Short < 6 months -- Will take less than 6 months to start seeing a change in outcomes • Medium 7 – 12 Months -- Will take anywhere from 7 to 12 months to see a change in outcomes • Long > 12 -- Will take a year or longer to see a change in outcomes

Appendix H: The A-V Fistula First Breakthrough Initiative (FFBI)



FistulaFirst

The A-V **Fistula First**
Breakthrough Initiative (FFBI)

Lawrence M. Spergel, MD, FACS
Clinical Consultant, **FFBI**
Director, Dialysis Management Medical Group
San Francisco, California



FistulaFirst

- Goal is to ensure that all HD patients have the opportunity to be evaluated for a fistula first , and to receive an AVF where feasible and not medically contra-indicated.
- Goal = 66% prevalence of functioning AVFs
- Additional Goal to reduce Catheter use & abuse



The National Vascular Access Improvement Initiative (NVAII)

2003-2006



2006

Fistula First Breakthrough Initiative (FFBI) 2006-2009

Sponsored by the Centers for Medicare and Medicaid Services



FistulaFirst

Common Misconceptions

1. “**Fistula First**” is intended to mean that everyone on *hemodialysis* should have an AVF
2. Increasing AVFs will cause an increase in catheters

FistulaFirst

11 key Change Concepts*

1. Routine CQI review of vascular access
2. Timely referral to nephrologist
3. Early referral to surgeon for “AVF only”
4. Surgeon selection
5. Full range of appropriate surgical approaches
6. Secondary AVFs in AVG patients
7. AVF evaluation/placement in catheter patients
8. Cannulation training
9. Monitoring and Maintenance
10. Continuing education
11. Outcomes feedback

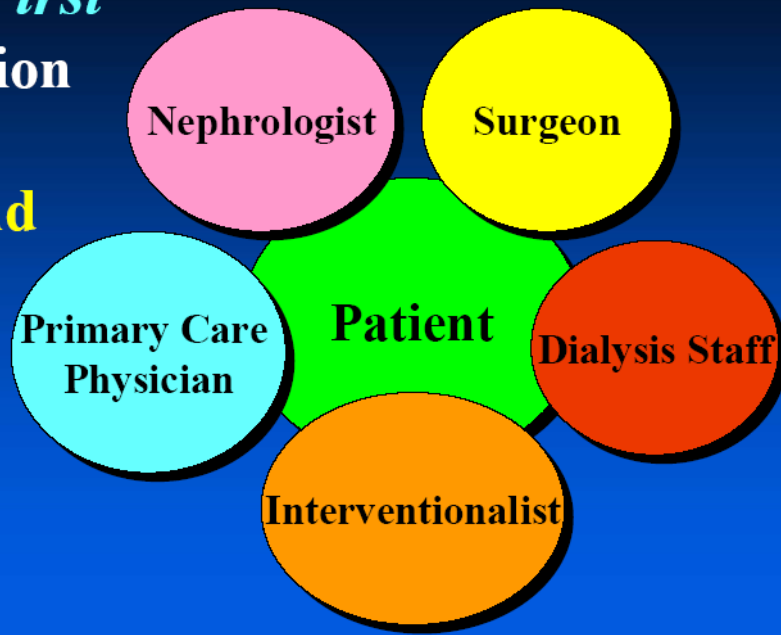
* A Change Concept is an approach to change proven to be successful, which is intended to stimulate specific strategies relevant to implementation of that Change Concept.

We've come a long way!

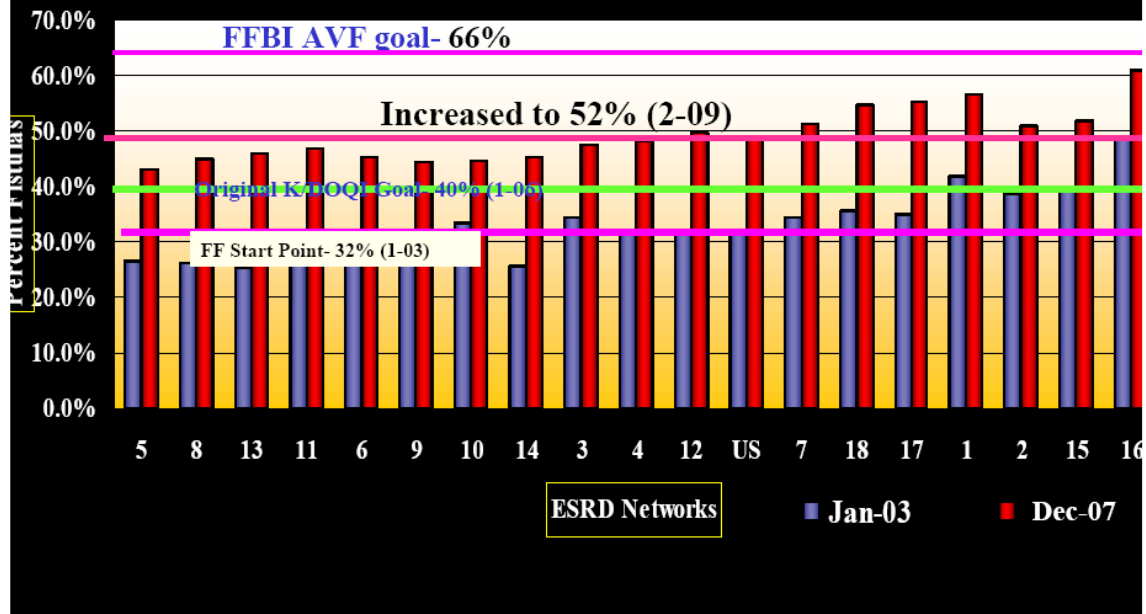


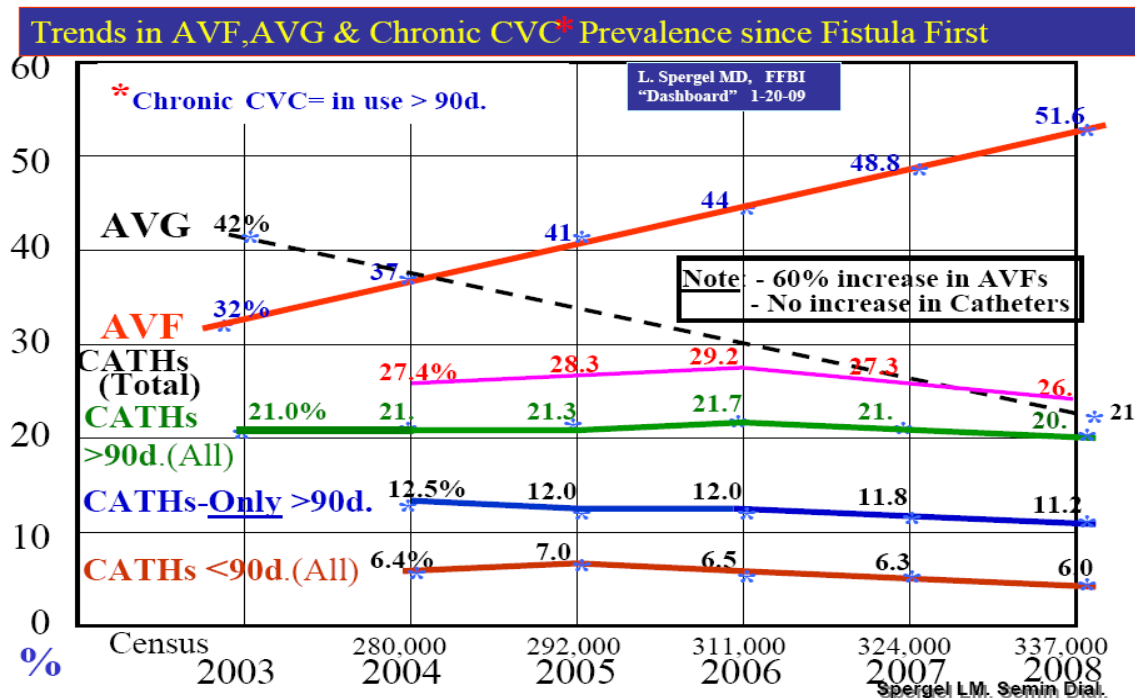
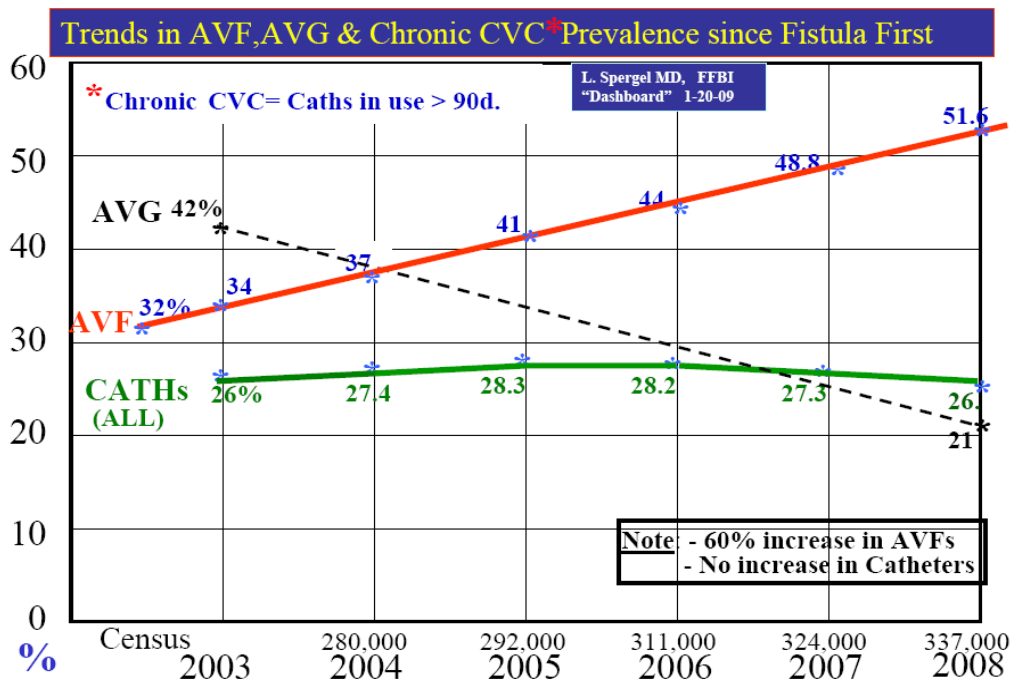
- WE HAVE NOT ONLY PROVIDED NEW BENCHMARKS AND TARGETS FOR A NEW STANDARD OF CARE FOR OUR ESRD PATIENTS & VASCULAR ACCESS...BUT
- HAVE ALSO PROVIDED THE TOOLS AND RESOURCES TO REACH THOSE NEW STANDARDS OF CARE BENCHMARKS

The *FistulaFirst*
Implementation
Challenge:
Educating and
Modifying
Practice in
Multiple
Disciplines



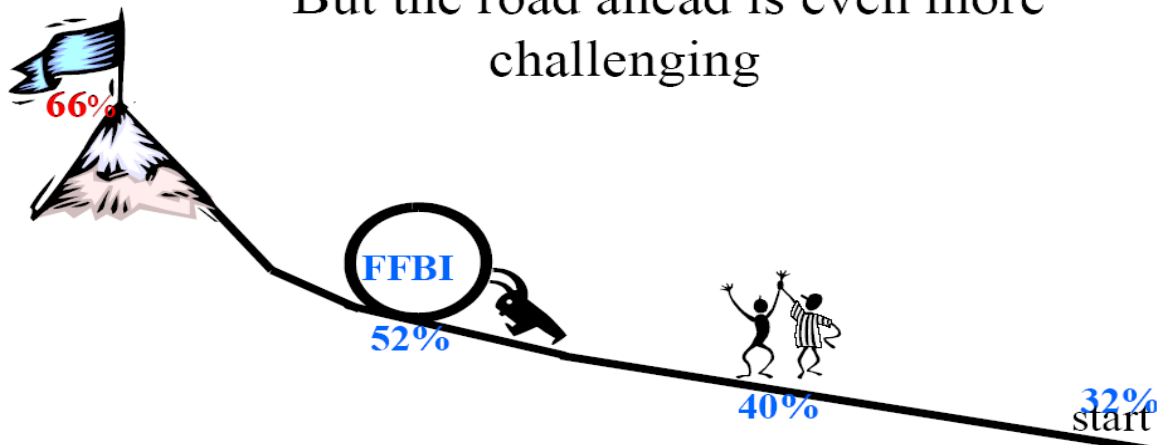
Improvement in Prevalent AVF Rates
since FF--by ESRD Network





We've come a long way!

But the road ahead is even more
challenging



For questions related to the
FistulaFirst initiative, please contact
your local ESRD Network at:

<http://www.esrdnetworks.org/>

AND

visit the **FistulaFirst** Website:

FistulaFirst.org

Appendix I: PROACT® RCA Process Overview



Reliability Center Inc.
Doing RCA Right!™

Technical Expert Panel (TEP) PROACT® RCA Process Overview

June 4, 2009



arteriovenous
FISTULA FIRST
AVF — The first choice for hemodialysis

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Reliability Center Inc.
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Defined Purpose of RCA Team

- Gap: 66.0% vs 51.9% (January 2009)
- Objective: To identify specific root causes that make up the “gap”
- Deliverables: Relate FMEA/RCA findings and conclusions to the TEP Team for their review. TEP will be responsible for formulating recommendations to counter identified root causes.

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Tactics Applied

- **FMEA:** Identified key points in the general process flow where the patient was most able to be influenced about placement alternatives available (Failure Modes & Effects Analysis)
- **RANKINGS:** Straight line averaging of team member rankings in the FMEA were employed; focus was on team consensus for team rankings
- **RCA:** Took identified key points in the process flow and drilled down to understand the specific rationales about the placement decision-making process (Root Cause Analysis)
- **LOGIC TREE TOOL:** Used PROACT Logic Tree which is a Cause-And-Effect RCA Approach
- **VERIFICATION:** Ensured all hypotheses supported by hard data for presentation to TEP.

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Basic FMEA

Identifying and Quantifying the
Greatest Opportunities



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Basic Failure Modes & Effects Analysis (FMEA)

FMEA is a procedure by which each potential (anticipated) failure mode in a system is analyzed to determine the result or its effect on the system, and to classify each potential failure mode according to severity.

**Norbert S. Jagodzinski
Rochester Institute of Technology (RIT)**

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Basic FMEA Process Steps

- Establish Definition of Failure in the Process Flow
- Define Weighing Criteria (Probability and Severity Ratings)
- Define Current Process Flow
- Develop Spreadsheet to Facilitate Process

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Definition of Loss

**Any event or condition affecting the placement
of an access other than an AVF**



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PROBABILITY CRITERIA

(Opportunity Points in the Process to Affect AV Decision)

- **Frequent (4)**
 - High likelihood to affect AV placement decision at this point in process (75% >)
- **Occasional (3)**
 - Probably will affect AV placement decision at this point in process (50% - 74%)
- **Uncommon (2)**
 - Possibly will affect AV placement decision at this point in process (25% - 49%)
- **Remote (1)**
 - Unlikely to affect AV placement decision at this point in process (1% - 24%)

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SEVERITY/IMPACT CRITERIA

(Ability to Sway Decision During Opportunity)

– Definitive Influence (10)

- Decision point in process definitely influences decision to use placement of an access other than an AVF

– High Influence (7)

- Decision point in process greatly influences decision to use placement of an access other than an AVF

– Moderate Influence (4)

- Decision point in process influences decision to be inconclusive about type of access placement

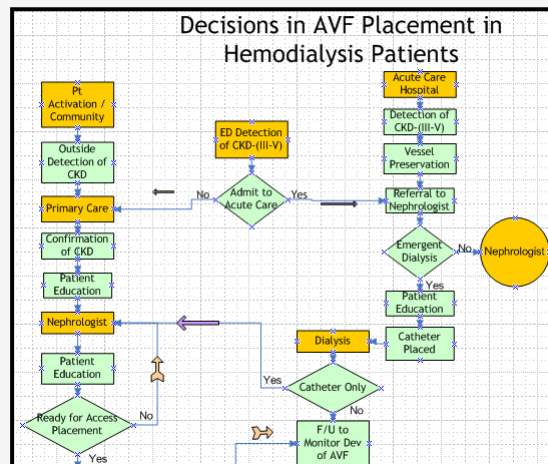
– Minor Influence (1)

- Decision point in process does not greatly influence decision about access placement

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Process Flow Diagram Developed (Partial View)



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The FFBI RCA Team Spreadsheet

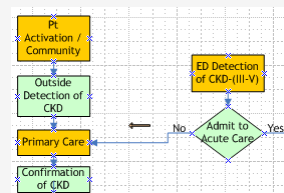
Sub System	Event	Mode	Prob. (P)	Severity/ Impact (S)	Rank # (R = P x S)

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Filling In The Blanks...

Definition of Loss: Any event or condition affecting the placement of an access other than an AVF



Sub System	Event	Mode	Prob. (P)	Severity/ Impact (S)	Rank # (R = P x S)

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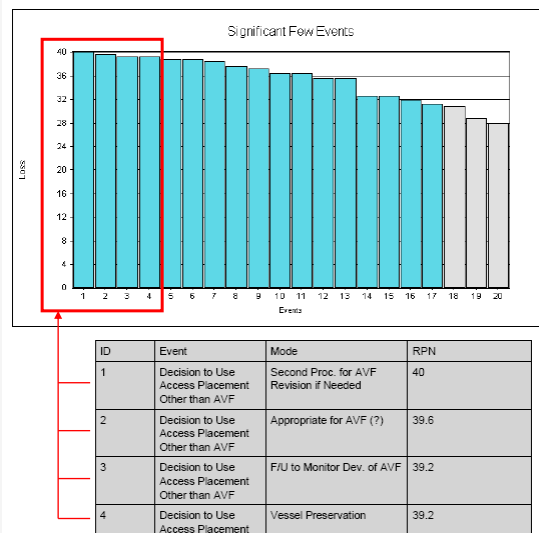
Subject Matter Expert Rankings

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Mid-Atlantic Renal Coalition FFBI RCA - Team Meeting																
2	April 16 - 17, 2009																
3	Boston, MA																
4																	
5	Legend:																
6	P = Probability																
7	S = Severity (Impact)																
8	Team Member Individual Rankings																
					Dr. Lawrence Spergel	Dr. Jerry Jackson	Ms. Linda Duval	Dr. Chester Fox	Ms. Val Riley	Consensus Team Ranking	Total RPN						
9	PFD Order	Sub-System	Event	Mode	P	S	P	S	P	S	P	S	P	S	P	S	
10	01	Primary Care	Decision to Use Access Placement Other Than AVF	Detection of CKD	4.0	7.0	4.0	7.0	4.0	7.0	4.0	7.0	4.0	7.0	4.0	7.0	28.00
11	02	Primary Care	Decision to Use Access Placement Other Than AVF	Patient Education	4.0	7.0	3.0	8.0	3.0	7.0	3.0	9.0	3.0	6.0	3.2	7.4	23.68
12	03	Primary Care	Decision to Use Access Placement Other Than AVF	Referral to Nephrologist	4.0	8.0	4.0	9.0	4.0	8.0	4.0	10.0	4.0	8.0	4.0	9.4	37.60

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Determine the "Significant Few"



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What Was Next?

LEAP

Basic FMEA



PROACT

**Root Cause
Analysis (RCA)**



Higher AVF Placement Rates

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PROACT® RCA

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**Insanity is when we do the same thing
over and over again and expect a
different result.**

- Albert Einstein

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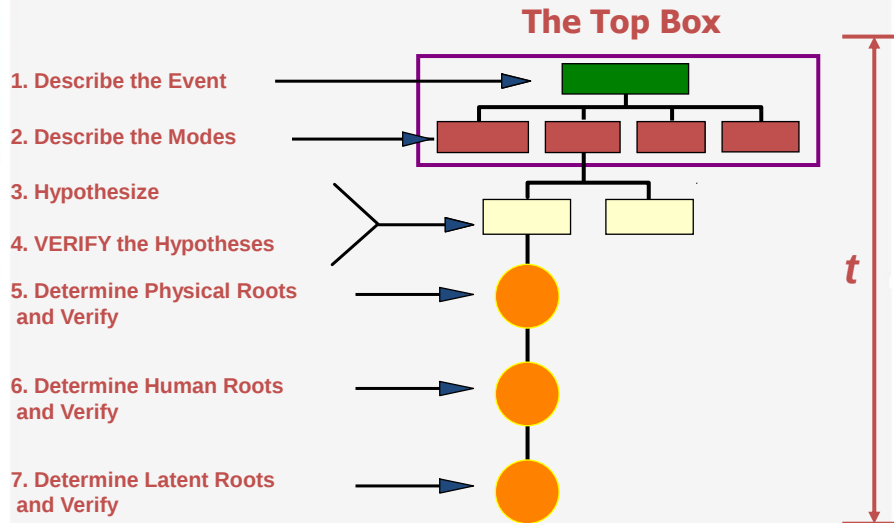
Is This Insane?



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The Basic Logic Tree Construction

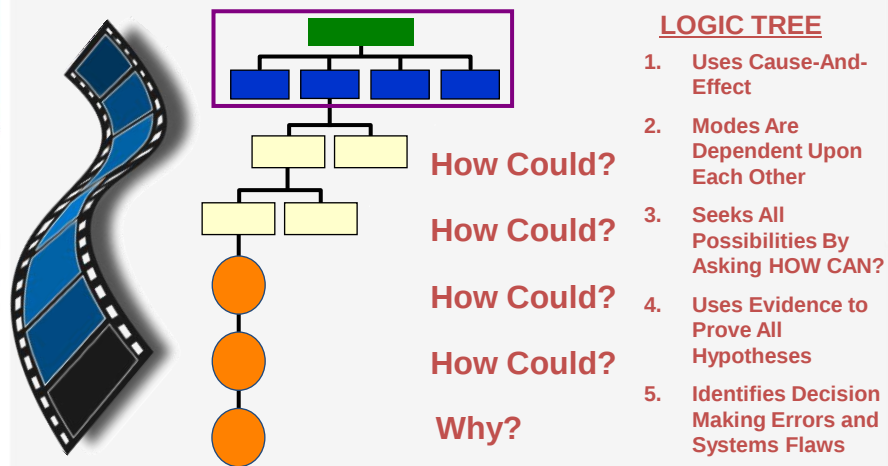


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Cause-And- Effect Approach

The PROACT® Logic Tree



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The Top Box

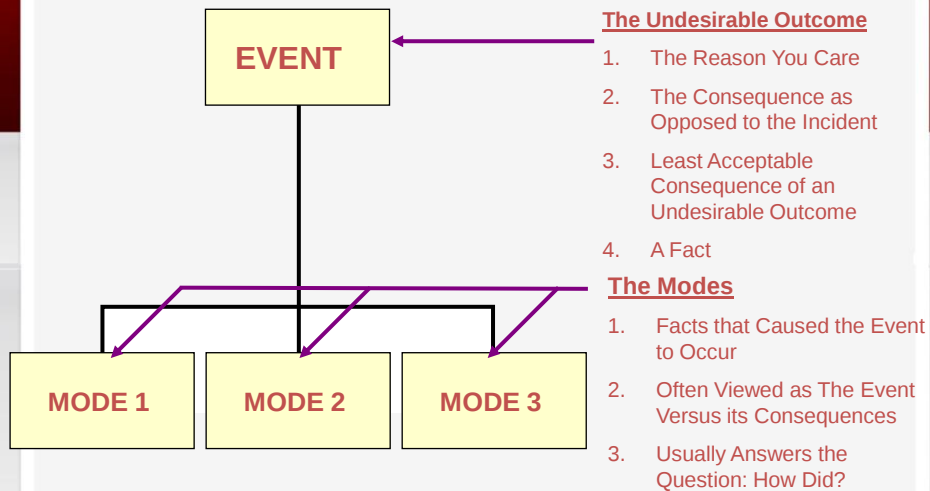
The Undesirable Outcome Description

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The Top Box

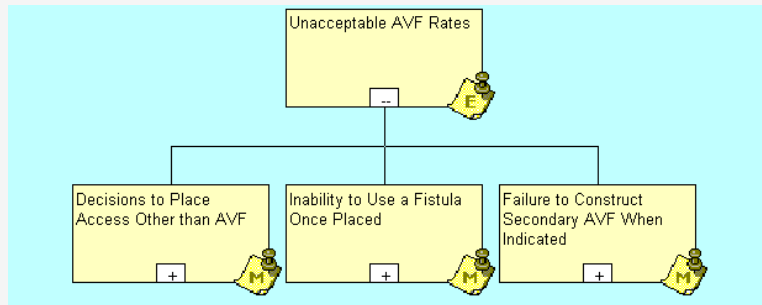
The Undesirable Outcome Description



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Top Box – As Defined by RCA Team



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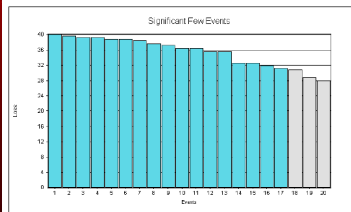


The Body of The Logic Tree

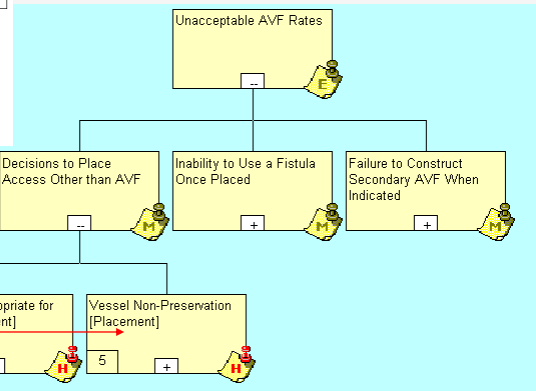
Adding Hypotheses

- Continually Ask: “**HOW COULD** the Previous Event (Block) Have Occurred?”
- Try to Use as Few Hypothesis Blocks as Possible Fostering More Broad Thinking
- At Each Level in the Logic Tree, Be **BROAD and ALL-INCLUSIVE** as to the Answers to the HOW COULD? Question
- Verify All Hypotheses with Hard Data (Facts)
- Identify All Root Causes
 - Physical
 - Human
 - Latent or Organizational Systems

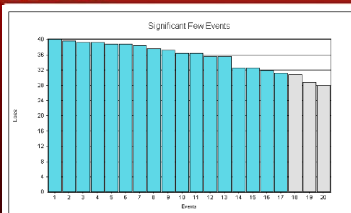
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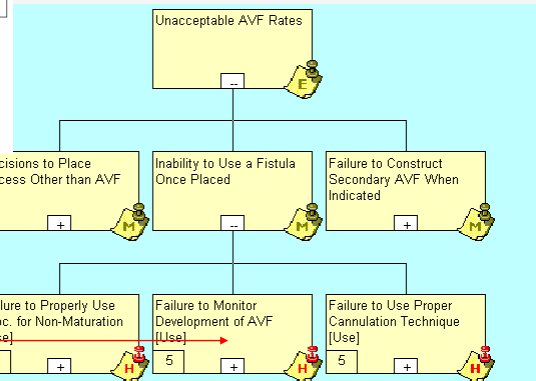
ID	Event	Mode	RPN
1	Decision to Use Access Placement Other than AVF	Second Proc. for AVF Revision if Needed	40
2	Decision to Use Access Placement Other than AVF	Appropriate for AVF (?)	39.6
3	Decision to Use Access Placement Other than AVF	FIU to Monitor Dev. of AVF	39.2
4	Decision to Use Access Placement	Vessel Preservation	39.2



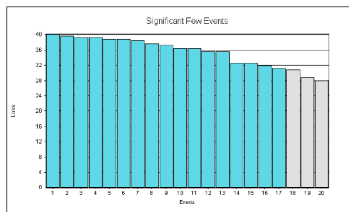
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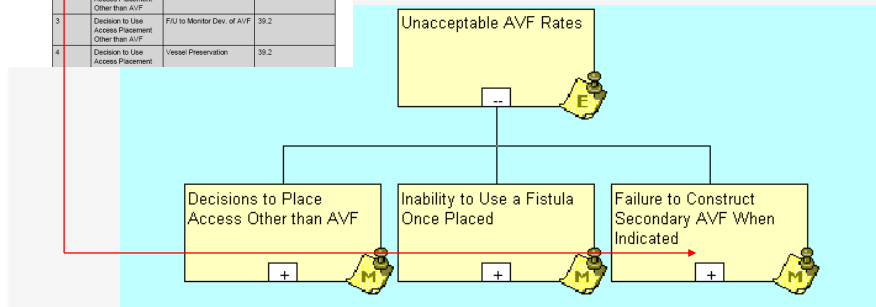
ID	Event	Mode	RPN
1	Decision to Use Access Placement Other than AVF	Second Proc. for AVF Revision if Needed	40
2	Decision to Use Access Placement Other than AVF	Appropriate for AVF (?)	39.6
3	Decision to Use Access Placement Other than AVF	FIU to Monitor Dev. of AVF	39.2
4	Decision to Use Access Placement	Vessel Preservation	39.2



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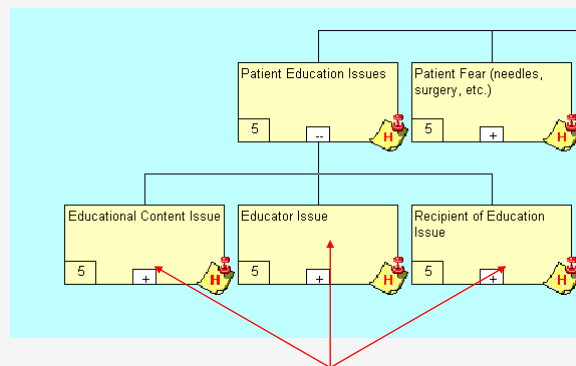
ID	Event	Mode	RPN
1	Decision to Use Access Placement Other than AVF	Second Proc. for AVF Revision if Needed	40
2	Decision to Use Access Placement Other than AVF	Appropriate for AVF (?)	39.6
3	Decision to Use Access Placement Other than AVF	FAU to Monitor Dev. of AVF	39.2
4	Decision to Use Access Placement	Vessel Preservation	39.2



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Broad and All-Inclusive Example

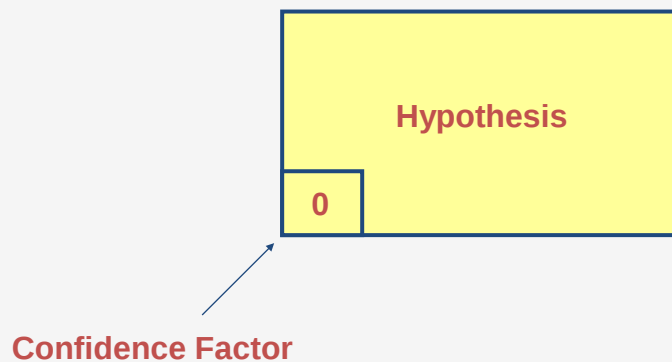


Education "System"

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Possibility vs. Facts



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Hypothesis Confidence Factor Scale Used (Strength of Evidence)

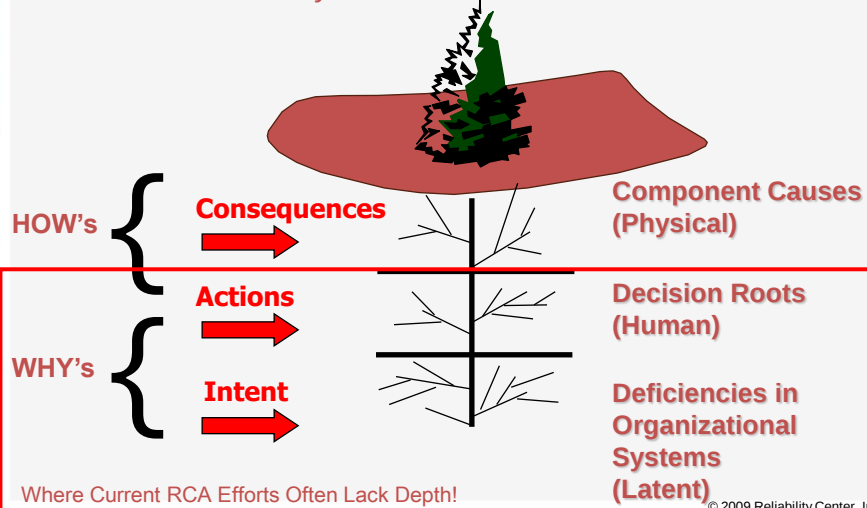
- 5 = Absolutely True**
- 4 = High Probability of Being True**
- 3 = Moderate Probability of Being True**
- 2 = Low Probability of Being True**
- 1 = Very Low Probability of Being True**
- 0 = Absolutely Not True**

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Identify All Root Causes

Physical, Human and Latent



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Root Cause Analysis Verification Log

Hypothesis	Verification Method	Completion Date	Who is Responsible	Outcome

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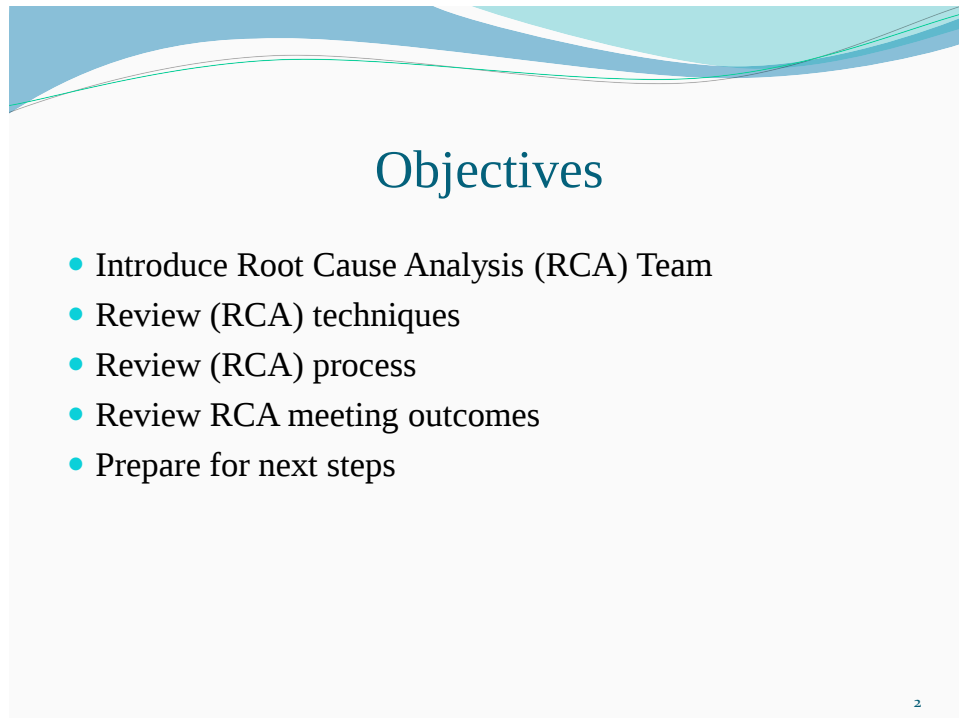
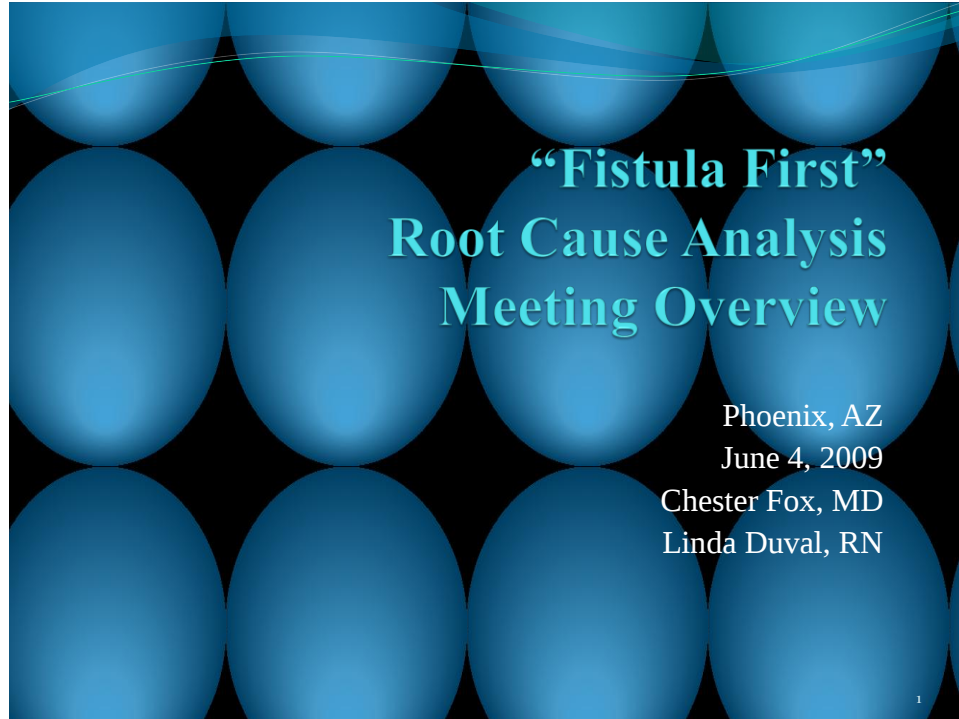


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**Now for the General Discussion
by Linda Duval, BSN, RN and Chester
Fox, MD**

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Appendix J: “Fistula First” Root Cause Analysis Meeting Overview



Root Cause Analysis Team Members

Core Team Members:

- Lawrence Spergel, MD, FACS, Vascular Access Surgeon
- Jerry Jackson, MD, Nephrologist
- Linda Duval, BSN, RN, Network QID
- Chester Fox, MD, Primary Care Physician
- Valerie Riley, RN, BS, FFBI Project Manager

3

Root Cause Analysis Team Members (Cont)

Also Assisting:

- Rebecca Morse Steinfield, Consultant, IHI
- Jefferson Rowland, M.Sc., COTR, CMS FFBI Project Officer,
- Nancy Armistead, MPA, Executive Director Network 5
- Janet Lynch, PhD CPHQ, Deputy Director Network 5 and FFBI Biostatistician

4

Root Cause Analysis Techniques

- Cause and effect analysis is a technique that organizes the analyst's knowledge into a cause and effect chain
- For every effect, there is a cause
- There is a fairly long chain of relationship between the cause and its effect
- In theory, if the lowest cause on the chain is removed, the problem will not re-appear

5

Root Cause Analysis Techniques (Cont)

- Root Cause is a variability reduction methodology for problem solving and problem avoidance
- Root cause mindset...
 - Transforms an old culture that reacts to problems to a new culture that solves problems before they escalate; and
 - Thus, creates a **cost effective** variability reduction and **risk avoidance** mindset
 - Proactive thinking vs. reactive thinking

6

Root Cause Analysis Process

- The structured process included an initial Failure Modes and Effects Analysis (FMEA)...
 - To quantify the areas with the greatest opportunity for improvement within the current placement decision-making paths through which patients pass as they move toward hemodialysis
- A high level flow diagram was used by the team in its FMEA
- For this analysis the following definition was utilized:
 - Any event or condition affecting the placement of an access other than an AVF

7

Root Cause Analysis Process (Cont)

- Team members voted as to...
 - HOW much of an opportunity exists to engage the patient at each step in the process flow? And, when the opportunity arises...
 - HOW much confidence is there that the patient's decision can be swayed to use the AVF?
- Every step in the process flow diagram was discussed and each member polled for their ranking of Probability and Severity
- Straight-line averaging was used to arrive at a team ranking
 - Total of all votes divided by number of voters

8

Root Cause Analysis Process (Cont)

- The goal was to arrive at a Rank Prioritization Number
 - Probability X Severity = Rank Prioritization Number (RPN)
- The RPNs were then totaled and the list was sorted in descending order.
- The Significant Few opportunities were those that represented 80% or greater of the total opportunities identified in the FMEA
- The top opportunities for influencing the patient's decision to use AVF in the current process flow were displayed graphically

9

Root Cause Analysis Process (Cont)

- As a result of the FMEA, the team identified four (4) primary opportunity points
- FOUR POINTS:
 - **Determining appropriateness of patient for AVF;**
 - **Vessel preservation;**
 - **Follow-up to monitor development of AVF; and**
 - **Second procedure for AVF revision, if needed**
- These were the points in the flow diagram at which the team judged there to be the highest probability of engaging the patient in decision-making related to vascular access and swaying the patient toward the use of an AVF

10

Root Cause Analysis Outcome

- It was the consensus of the team that while numerous other opportunities were identified, the overwhelming majority would be captured in the four areas identified.
- This reasoning was based on an understanding that many identified opportunities are subordinate to these four and would be addressed during the course of the RCA.
- The RCA drilled down to identify 139 root causes
- The result was a Logic Tree that exceeded 250 blocks
- Each block in the Logic Tree represents a hypothesis regarding either “how” or “why” a preceding block was able to occur

11

Root Cause Analysis Outcome (Cont)

- Root Causes (139) Were Identified:
 - Decision to Place Other Than AVF
 - Patient Refusal
 - Physician Decision
 - Vessel Non-Preservation
 - Inability to Use Once Placed
 - Failure to Mature
 - Failure to Monitor
 - Cannulation Issues
 - Failure to Construct Secondary AVF
 - Patient Issues (e.g., refusal)
 - Physician Resistance

13

Grouping of Root Causes

- The 139 Root Causes were placed into Sub-Categories based on commonalities by the FFBI Office
- These Sub-Categories are:
 - Knowledge, Skills and Perception – Deals with education, skill development and perceptions
 - Example: *Educator is not culturally competent and cannot communicate with the patient regarding AVF placement*
 - Patient & Family – Deals with patient & family issues
 - Example: *Patient has health literacy issues and does not understand the advantages of AVF placement*

14

Moving from Root Cause to Recommendations > > >

16

Next Steps

- While the RCA team identified 139 Root Causes, this does not equate to the need for 139 strategies from the Technical Expert Panel (TEP)
- Many identified causes contributed to numerous logic paths affecting decision-making
- If the TEP deems it appropriate, perhaps only a single comprehensive strategy may address several root causes

17

Next Steps (Cont)

- As it brings forward strategies, the TEP may also wish to consider the existing Change Concepts developed during the initiation of the FFBI
- In developing a new Strategic Plan for Fistula First, a challenge for the TEP will be to
 - Consider whether existing change concepts are in need of revision;
 - Require fuller implementation; or
 - Need augmentation with additional relevant change concepts

18

Appendix K: Executing Large-Scale Improvement in Health Care Quality and Safety The “Fistula First” Example



Executing Large-Scale Improvement in Health Care Quality and Safety The “Fistula First” Example

*Rebecca Steinfield, MA
Improvement Advisor
Institute for Healthcare Improvement
rsteinfield@ihi.org*

IHI Background

- Founded by Dr. Donald Berwick and colleagues
- Grew out of National Demonstration Project on Quality Improvement in Health Care (NDP)
- First National Forum was the NDP Summit
- Incorporated in 1991
- From 4 employees to now 120
- Office in Cambridge, Massachusetts
- Remote employees in many other locations
- Work in North America, Europe, and Africa



IHI Staff



Why We Exist

*“Between the health care we have
and the care we could have lies
not just a gap, but a chasm.”*

- Institute of Medicine, Crossing the Quality Chasm, 2001



Why We Exist

This is the result of systems and processes
not adequately designed for the need.

*“Every system is perfectly designed to get
exactly the results it gets.”*

-Paul Batalden, MD



Our Blueprint: the IOM's Six Aims

- *Safe* – no needless deaths
- *Effective* – no needless pain or suffering
- *Patient-Centered* – no helplessness in those served or serving
- *Timely* – no unwanted waiting
- *Efficient* – no waste
- *Equitable* – for all



IHI Is Here To...

- Improve the lives of patients, the health of communities, and the joy of the health care workforce
- Accelerate health care improvement by translating innovative ideas into practical results that are truly meaningful to patients

→ Close the Quality Gap as fast as possible



We Do This By...

- Building the **Will** for Change
- Cultivate Promising Improvement **Ideas**
- Putting those ideas into action through effective **Execution**

“Improvement of any system requires will, ideas and execution.”

- Tom Nolan, PhD



Durable Lessons On Large-Scale Improvement

- The power of trying something remarkable (provocation and optimism)
- The value of simplicity (e.g., interventions)
- The value of a vibrant network (a “shared map and narrative” for acceleration and teaching improvement)
- The value of trust (ecosystems not hierarchies)
- The value of asking and responsiveness
- The value of celebration and recognition
- Profound respect for practical value, logistics (“Amateurs discuss strategy...”) and isolated actions

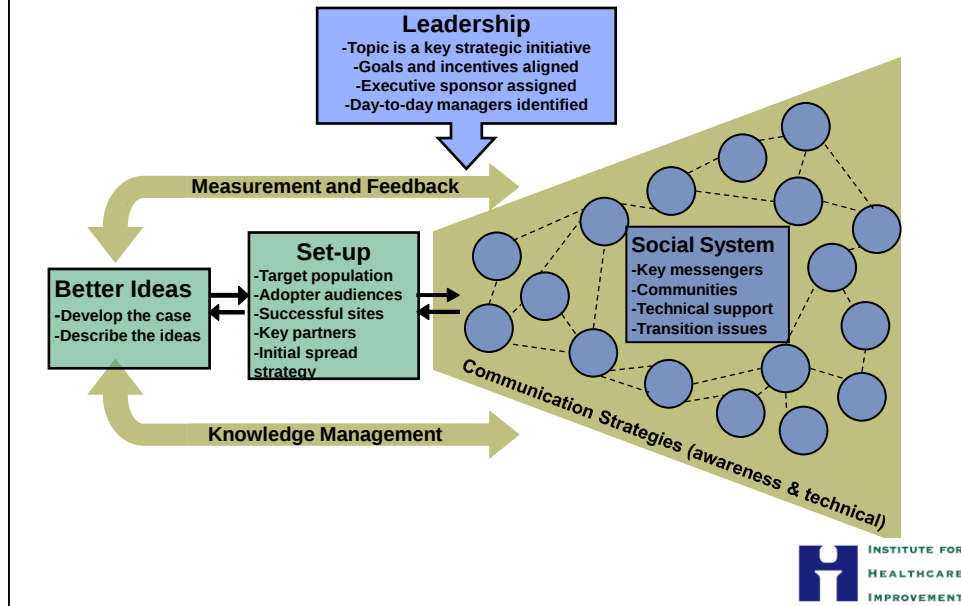


What Are We Talking About When We Say “Spread” or “Dissemination?”

- The science of taking a local improvement (intervention, idea, process) and actively disseminating it across a system
- There are many possible definitions for “a system” (e.g. a hospital, a group of hospitals, a region, a country)



A Framework for Spread



Some Key Theory on Spread

Everett Rogers

—Adopter categories

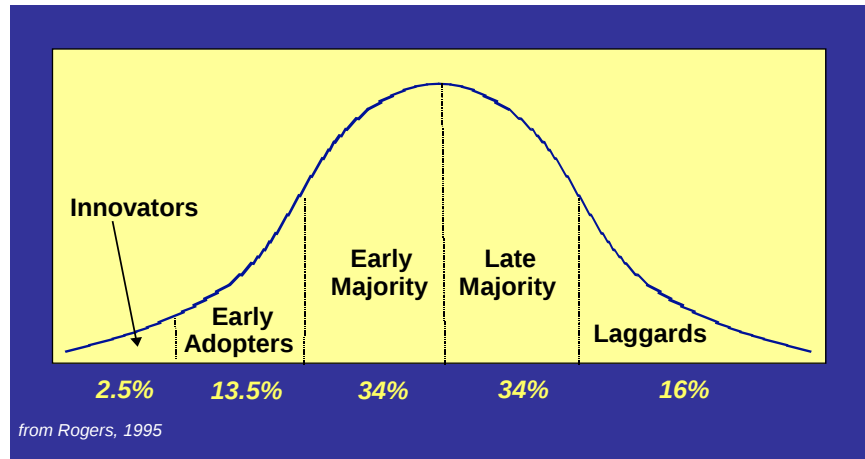
James Prochaska

—Stages of Change Model

Albert Bandura

—Social Cognitive Theory

Adopter Categorization



Matching Activities to Key Adopter Categories

Early adopters

- Search for successful sites (“found pilots”)
- Create pull through communication - change agents need a plan for sites that come forward
- Focus on influencers as messengers
- Invest resources initially with the early adopters
- Make the work of early adopters observable

Early majority

- Allow for peer-to-peer contact with early adopters
- Communicate local successes

Late majority

- Peer pressure is necessary
- Communicate adoption of the changes is inevitable



Attributes of Innovation

- Relative advantage
- Compatibility
- Complexity
- Trialability
- Observability

from E. Rogers, 1995



Prochaska's Stages of Change

- Pre-contemplation
 - Contemplation
 - Decision/Preparation
 - **Action
 - Maintenance
- 
- A vertical black arrow points downwards from the top of the list to the bottom, indicating the sequential nature of the stages.



Matching Activities to Stages of Change

Pre-contemplation

- Share patient stories
- Feedback data on performance compared to peers

Contemplation

- Share case studies
- Align incentives
- FAQ about the topic
- Overview changes (The “what”)
- Listen (What justifies current behavior?) and connect

Decision/preparation

- Some detail on the changes with ideas on getting
- Self-assessment and goal setting (behavior changes, performance)
- Plan of action and timeline
- Peer-to-peer communication (The “how to”)

Action

- Ideas on testing
- Feedback on progress (rewards and recognition)
- Access to tools and resources
- Access to technical support



A Principle of Social Cognitive Theory

People will have a greater tendency to make the decision to change behavior if they believe:

- The goal is worthwhile (affect a problem)
- The changes proposed will achieve the goal
- They can successfully make the changes



Promoting Adoptive Behavior: Moving to Action

“Persuasion is not enough..... After adopters understand the new ways, they must be provided with the necessary guidance and ample opportunity to perfect the modeled activities under circumstances where they need not fear making mistakes.”

Albert Bandura



What we did the first time around!



FistulaFirst

11 key Change Concepts*

1. Routine CQI review of vascular access
2. Timely referral to nephrologist
3. Early referral to surgeon for “AVF only”
4. Surgeon selection
5. Full range of appropriate surgical approaches
6. Secondary AVFs in AVG patients
7. AVF evaluation/placement in catheter patients
8. Cannulation training
9. Monitoring and Maintenance
10. Continuing education
11. Outcomes feedback

*

A Change Concept is an approach to change proven to be successful, which is intended to stimulate specific strategies relevant to implementation of that Change Concept.

FistulaFirst: “Spread” Strategies

- Website
- Network Outreach
 - Fistula First newsletters
 - Data/Outcomes feedback to facilities
 - Education:
 - ✓ Surgeon/Interventionalist outreach
 - ✓ Conferences/Presentations
 - ✓ Cannulation training
 - On-site and off-site mentoring & assistance
- National Leadership Group

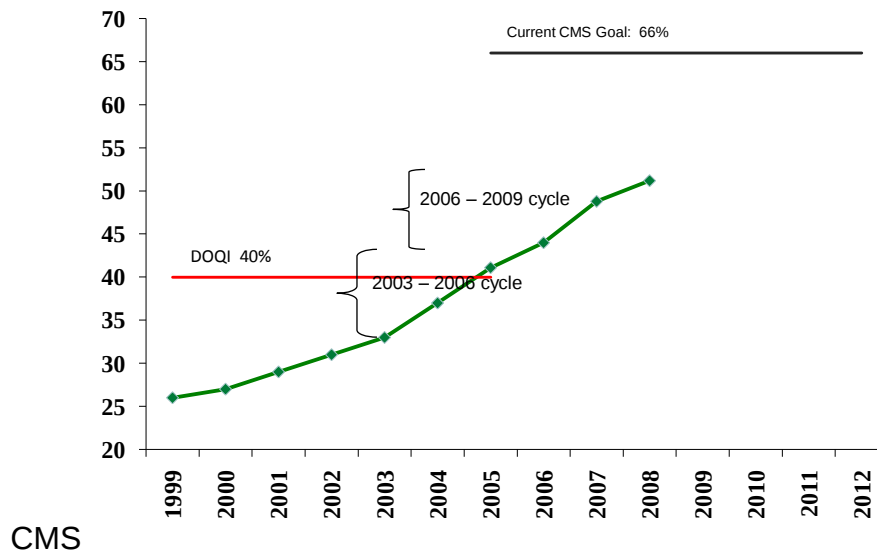


FistulaFirst: “Spread” Strategies

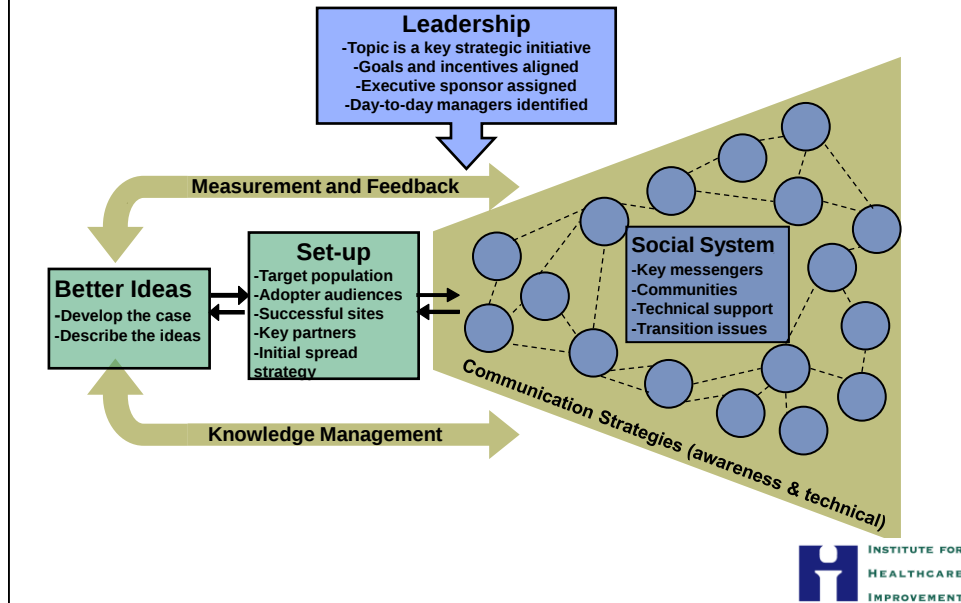
- Articles in peer reviewed journals and a series in a trade journal
- Presentations at national meetings
- Booths at major conferences
- Video & Powerpoint DVD for surgeons
- Written endorsements from providers & industry
- Collaboration with K/DOQI



U.S. Increase in Fistula Use in Prevalent Patients



A Framework for Spread



Charge: Develop interventional strategies to address identified root causes in order to move the national AVF rate to 66% in prevalent hemodialysis patients

Here are some ways you could approach this charge:

1. What new ideas for changes do we need to surface?
2. What strategies will drive system change and thus the sustainability of the changes?
3. What strategies will make the changes more attractive to adopters?
4. What performance measures and systems for feedback on process and progress should be adopted?
5. What strategies will drive meaningful communication and distributed learning across the system?

References

- Attewell, P. Technology Diffusion and Organizational Learning, *Organizational Science*, February, 1992
- Bandura A. *Social Foundations of Thought and Action*. Englewood Cliffs, N.J.: Prentice Hall, Inc. 1986.
- Barabasi AL. *Linked: How Everything is Connected to Everything Else and What It Means*. New York, NY: Plume Books; 2003.
- Berwick DM. Disseminating innovations in health care. *Journal of the American Medical Association*. 2003;289(15):1969-1975.
- Berwick DM, Calkins DR, McCannon CJ, Hackbarth AD. The 100,000 Lives Campaign: Setting a goal and a deadline for improving health care quality. *Journal of the American Medical Association*. Jan 2006;295(3):324-327.
- Brown J., Duguid P. *The Social Life of Information*. Boston: Harvard Business School Press, 2000.
- Cool et al. Diffusion of Information Within Organizations: Electronic Switching in the Bell System, 1971 – 1982, *Organization Science*, Vol.8, No. 5, September - October 1997.
- Dixon, N. *Common Knowledge*. Boston: Harvard Business School Press, 2000.
- Fraser S. Spreading good practice; how to prepare the ground, *Health Management*, June 2000.
- Gladwell, M. *The Tipping Point*. Boston: Little, Brown and Company, 2000.
- Granovetter M. Strength of weak ties. *Am J Social*. 1973; 78:1360-1380.
- Improvement leader's guide to sustainability and spread*. NHS Modernisation Agency. Ipswich, England: Ancient House Printing Group; 2002.
- Kreitner, R. and Kinicki, A. *Organizational Behavior (2nd ed.)* Homewood, IL: Irwin, 1978.



References

- Langley J, Nolan K, Nolan T, Norman, C, Provost L. *The Improvement Guide*. San Francisco: Jossey-Bass 1996.
- Lomas J, Enkin M, Anderson G. Opinion Leaders vs Audit and Feedback to Implement Practice Guidelines. *JAMA*, Vol. 265(17); May 1, 1991, pg. 2202-2207.
- Massoud MR, Nielsen GA, Nolan K, Schall MW, Sevin C. *A Framework for Spread*. Cambridge, Massachusetts: Institute for Healthcare Improvement; 2006
- McCannon CJ, Schall MW, Calkins DR, Nazem AG. Saving 100,000 lives in US hospitals. *BMJ*. 2006 Jun 3; 332 (7553):1328-30. Myers, D.G. *Social Psychology (3rd ed.)* New York: McGraw-Hill, 1990.
- McCannon CJ, Berwick DM, Massoud MR. The Science of Large-Scale Change in Global Health. *JAMA*, October 24/31, 2007; 298: 1937 - 1939.
- Prochaska J., Norcross J., Diclemente C. In Search of How People Change, *American Psychologist*, September, 1992.
- Rogers E. *Diffusion of Innovations*. New York: The Free Press, 1995.
- Wenger E. *Communities of Practice*. Cambridge, UK: Cambridge University Press, 1998.
- World Health Organization (HTM/EIP) and Institute for Healthcare Improvement. *An Approach to Rapid Scale-up Using HIV/AIDS Treatment and Care As An Example*. Geneva: WHO; 2004.



Forces of Note in Matters of Quality and Safety (Complex Dynamics)

- Consumers
- Caregivers
- Payers
- Corporate America
- The Legal Community
- The Research Community
- Information Technology
- Globalization of Healthcare





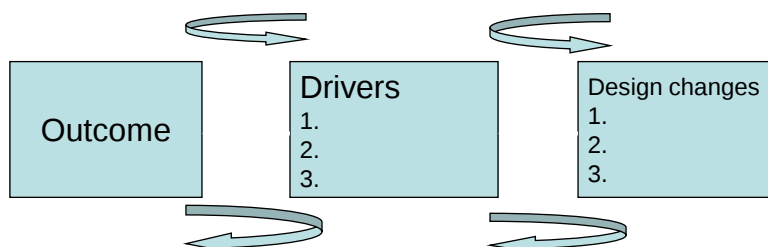
Driver Diagrams: Moving Theory to Action

Objectives

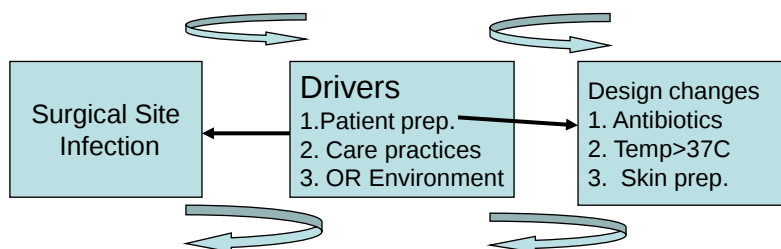
- Demonstrate a Driver Diagram



The “Driver” Model

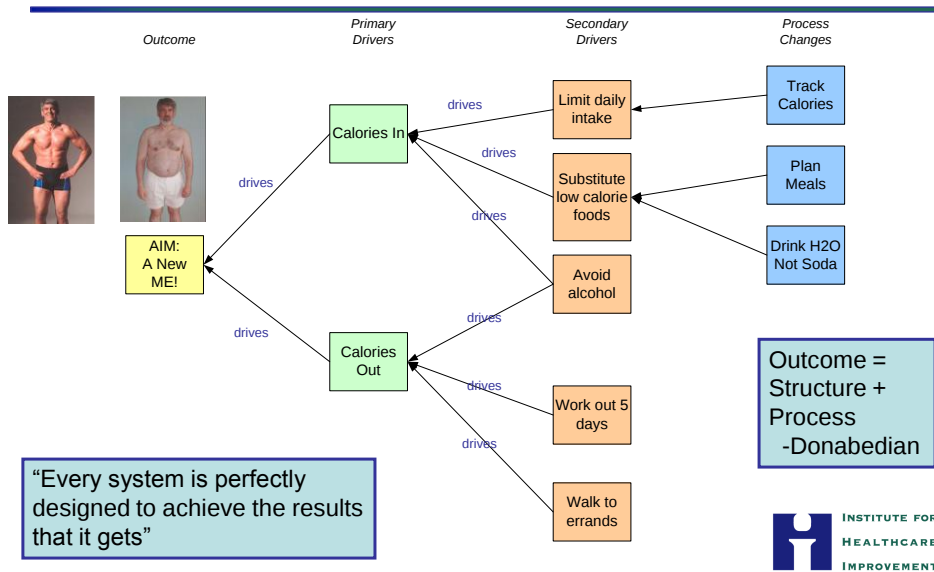


The “Driver” Model for Surgical Site Infection

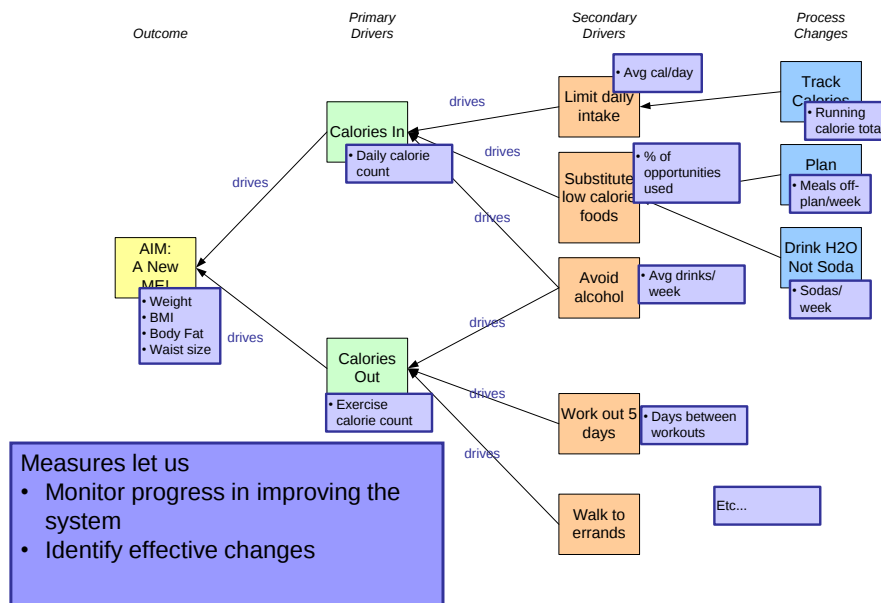


What Changes Can We Make?

Understanding the System for Weight Loss

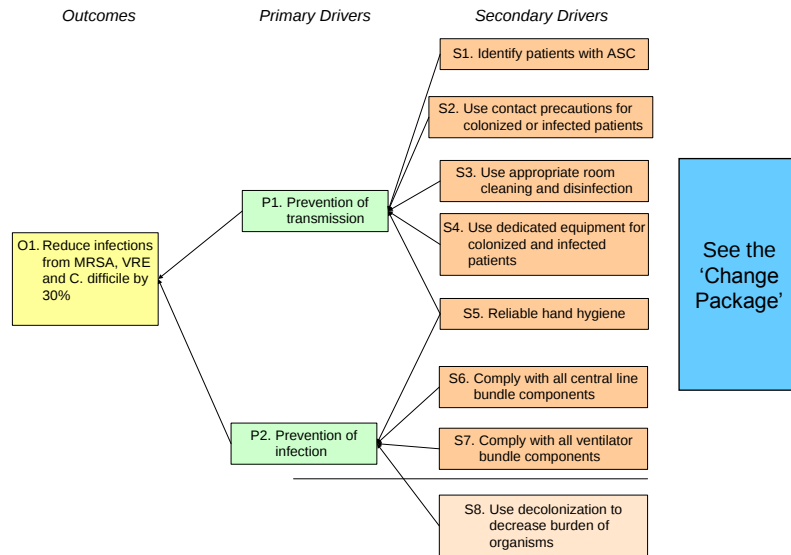


How Will We Know We Are Improving?



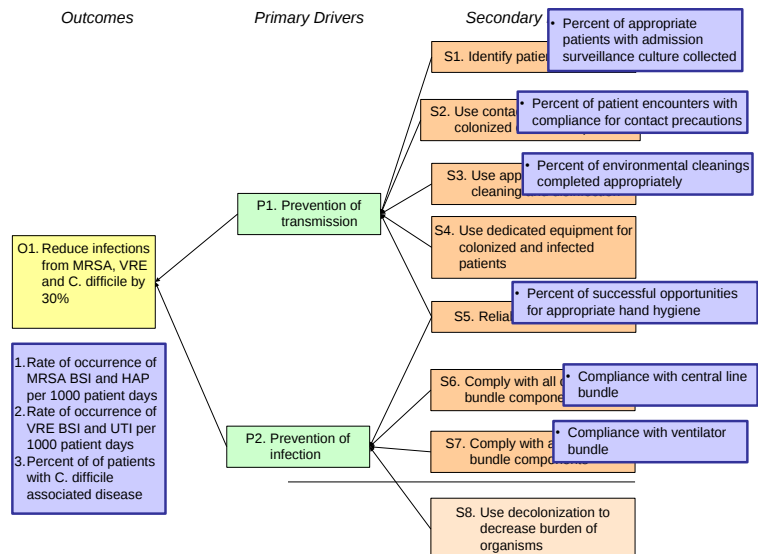
What Changes Can We Make?

Understanding the System for Reducing Hospital Acquired Infections



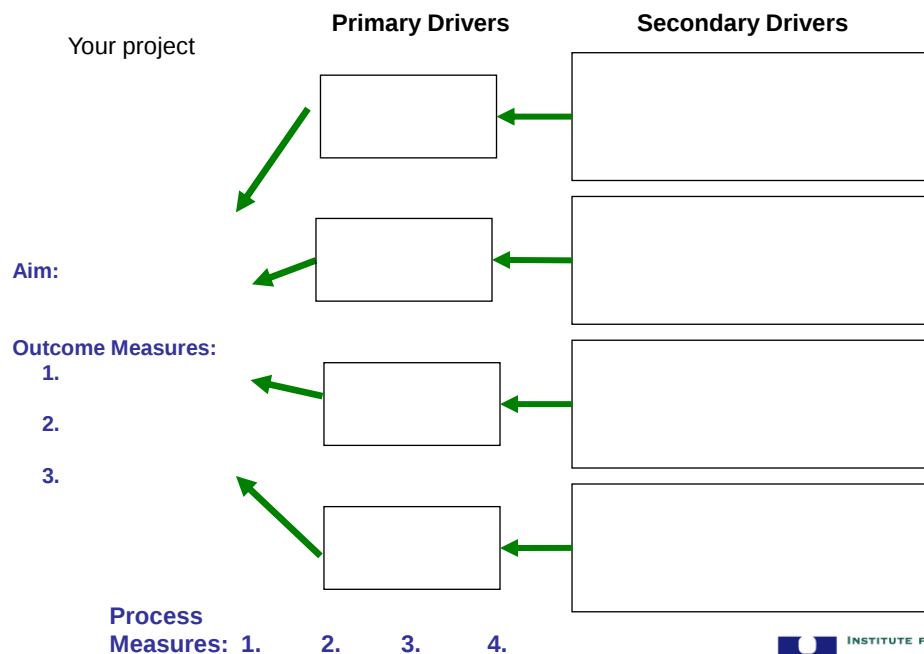
How Will We Know We Are Improving?

Understanding the System for Reducing Hospital Acquired Infections with Measures



Driver Diagrams: Theory of Changes That Get Results

- Think about how you might organize your project
- What might be the major categories of change?
- Can you use the generic change concepts to help organize changes
- What are the categories?
- How would you use the driver diagram to organize your work



Appendix M: TEP Meeting Root Cause to Strategies Crosswalk

Root Cause	Decision to Place other than AV fistula	Recommended Strategy from the TEP Strategy Grid																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Patient education content is not provided in all languages														X								
2	Patient is not aware of educational materials that are available														X								
3	Educator does not have time to educate patient										X												
4	Not seen as cost effective to provide proper supervisory oversight of patient education													X									
5	Establishing a patient education training program is not viewed as cost effective													X									
6	It's not viewed as cost effective to make an existing patient training program adequate													X									
7	Educator does not utilize patient education materials that are available										X				X								
8	Educator is not culturally competent, cannot relate to patient														X								
9	Reimbursement structure does not support patient education																X						
10	Patient has inadequate cognitive ability																						
11	Patient has health literacy issue														X								
12	Due to lack of patient education, patient is scared of surgery and/or needles															X							
13	Patient may suffer from mental illness																						
14	Patient is educated on risk of current access (catheter or graft) and is accepting of those risks																						X
15	Patient doesn't believe that the provider is "pro" AV fistula														X								
16	Patient observes poor AV fistula cannulation techniques																						X
17	Patient perceives the AV fistula to be inconvenient compared to other accesses/ won't give up catheter																						X
18	Physician believes patient has short life expectancy																						
19	Physician believes the patient has inadequate vessels for AV fistula										X		X										
20	Physician views a vascular access induced ischemia prevents the use of an AV fistula										X		X										
21	Surgeon prefers AVG because of less post operative clinical care is required				X																		
22	Surgeon believes that reputation is on the line if AV fistula fails				X					X													
23	Surgeon believes that AV fistulas have a negative impact on their schedules				X					X													
24	Surgeon is irritated by calls from other caregivers about AV fistulas				X					X													
25	Surgeon prefers AVG because there are no cannulation issues or problems				X					X													
26	AV fistula cost more and surgeon is not reimbursed for uninsured patients													X									

Root Cause	Decision to Place other than AV fistula	Recommended Strategy from the TEP Strategy Grid																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
27	AV fistula takes more surgical time than an AVG but is reimbursed less													X									
28	Surgeon is not paid for post op time and more time is required for AV fistula													X									
29	Reduced payment for simultaneous procedures													X									
30	Surgeon does not have AV fistula expertise			X																			
31	Surgeon believes that AV fistula is technically harder to learn than AVG			X																			
32	Surgeon doesn't believe that there is enough AV fistula volume to get comfortable with AV fistula creation			X																			
33	There is no surgical competency oversight			X																			
34	Surgeon is not competent because AV fistula is technically harder to learn			X																			
35	AV fistula training is not required during residency for general surgery			X																			
36	Training fails to have sufficient volume to get comfortable with AV fistula creation			X																			
37	Surgeons receive biased information on AVG, manufacturers expanding indications beyond clinical appropriateness				X																		
38	Nephrologist doesn't want to deal with AV fistula problems												X										
39	Nephrologist believes that surgeon does not have experience placing AV fistula												X										
40	Nephrologist believes that AV fistulas don't mature because of the lack of surgical experience creating AV fistulas												X										
41	Nephrologist believes that AV fistulas don't mature because there is inadequate vessel mapping					X																	
42	Nephrologist believes that AV fistulas don't mature because inappropriate clinical decisions were made due to inadequate vessel selection					X																	
43	Nephrologist believes that AV fistulas don't mature because there is a failure of monitoring and surveillance									X													
44	Nephrologist chooses surgeon based on reasons other than expertise				X							X											
45	Nephrologist lack of education on vascular access for sub groups (obese, elderly, etc.)												X										
46	Nephrologist receives biased information on AVG and catheters, manufacturers expanding indications beyond clinical appropriateness												X										

Root Cause	Decision to Place other than AV fistula	Recommended Strategy from the TEP Strategy Grid																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
47	Nephrologist unwilling to talk to pre-ESRD patients about their resistance to AV fistula												X										
48	Nephrologist cannot identify when patient will have to start dialysis, creating a delayed decision by the patient		X																				
49	Nephrologist cannot convey the importance for AV fistula to the ESRD patient		X																				
50	Nephrologist has to initiate patient on dialysis (urgent) before the patient has made a decision to get an AV fistula		X																				
51	Nephrologists believes patient has acute renal failure																						
52	Nephrologist unwilling to talk to prevalent ESRD patients about their resistance to AV fistula												X										
53	Patient education content is not provided in all languages														X								
54	Nephrologist is not aware of educational materials that are available		X												X								
55	Educator is time pressured, covering a large geographic area		X																				
56	Not seen as cost effective to provide proper supervisory oversight of staff education													X									
57	Establishing a staff education training program is not viewed as cost effective													X									
58	It's not viewed as cost effective to make an existing staff training program adequate													X									
59	Reimbursement structure does not support staff education													X									
60	Educator does not utilize patient education materials that are available														X								
61	Educator is not culturally competent, cannot relate to patient															X							
62	Patient has inadequate cognitive ability																						
63	Patient has health literacy issue														X								
64	Family influences patient not to get AV fistula because of lack of education																						X
65	Due to lack of patient education, patient is scared of surgery and/or needles														X								X
66	Patient fears needles because of comorbid mental illnesses																						
67	Patient is educated on risk of current access (catheter or graft) and is accepting of those risks																						X
68	Patient doesn't feel that the provider is "pro" AV fistula																						X
69	Patient observes poor AV fistula cannulation techniques																						X
70	Patient perceives the AV fistula to be inconvenient compared to other accesses																						X

Root Cause	Decision to Place other than AV fistula	Recommended Strategy from the TEP Strategy Grid																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
71	Patient has proxy who refuses AV fistula																						X
72	Adequate cannulation training process of staff not viewed as cost effective by organization													X									
74	Pressure for fast turnover, faster to turnover catheter patients than AV fistula patients							X															
75	Pressure for fast turnover, faster to turnover catheter patients than AV fistula patients helps reduce labor costs							X															
76	Lack of RN education due to organizations focus on short term profits														X								
77	Lack of RN education because of pressure to reduce labor cost														X								
78	Lack of tech education due to organizations focus on short term profits														X								
79	Lack of tech education because of pressure to reduce labor costs														X								
80	Interventionalist doesn't perceive advantage of AV fistula due to failure to properly utilize vessel mapping																					X	
81	Interventionalists failure to follow KDOQI because they don't see the advantage of AV fistula																					X	
82	Interventionalist doesn't refer to surgeon as the KDOQI guidelines suggest																					X	
83	Interventionalist believes that there is an economic disincentive to refer to surgeons if they were to follow the KDOQI guidelines																					X	
84	Interventionalist lacks knowledge on Fistula First guidelines and doesn't see the advantage of AV fistula																					X	
85	Interventionalist doesn't refer to surgeon as the Fistula First guidelines suggest																					X	
86	Interventionalist believes that there is an economic disincentive to refer to surgeons if they were to follow Fistula First guidelines																					X	
87	Failure to educate non-nephrologist on acute care setting on vessel preservation with detection of CKD III-V															X		X	X	X			
88	Failure to educate non-nephrologist in outpatient setting on vessel preservation with detection of CKD III-V															X		X	X	X			
89	The lack of an adequate computer flagging system there is a failure to detect CKD III-V																	X			X		
91	Failure to educate patients on vessel preservation														X				X				X
92	Over utilization of PICC lines																		X	X	X		
93	Failure to educate PCPs on vascular access/vessel preservation		X													X							
94	Failure to influence on vascular access/vessel preservation		X													X							
95	Failure for nephrology to approve all PICC lines with GFR < 45															X							

Root Cause	Inability to Use Once Placed	Recommended Strategy from the TEP Strategy Grid																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
96	Fail to use endovascular procedures																					X	
97	Fail to surgically revise when indicated		X																			X	
98	Not viewed as cost effective to the organization													X									
99	Patient lacks transportation to get to surgeon																						
100	Patient and surgeon scheduling conflicts																						
101	No surgical follow up appointment made									X													
102	Patient refuses to go to surgeon																						X
103	Organizational Focus on Short Term Profits - Productivity Mentality													X									
104	Organizational Pressure to reduce labor costs													X									
105	Educator is time pressured, covering a large geographic area													X									
106	Educator is not culturally competent and cannot communicate with pt														X								
107	No provision for self-cannulation training available								X														X
108	Teaching Skills of Educator lacking due to not being viewed as cost effective													X									
109	Adequate training process of educator viewed by organization as not cost effective													X									
110	Establishing a training program for educators is not viewed as cost effective													X									
111	Scarce human resource available due to current reimbursement structure													X									
112	Educator fails to use available resources														X								
113	Lack of organizational ownership and commitment to cannulation credentialing								X														
114	Lack of organizational oversight to cannulation credentialing								X														
	Failure to Construct Secondary AV fistula																						
115	Patient satisfied with graft/catheter and accepting risk																X						X
116	Patients medical comorbid medical conditions interfere with placement																						
117	Family/support systems influences patient to not have AV fistula placed														X								X
118	Comorbid mental conditions limit patients ability to understand and consent																						

Root Cause	Failure to Construct Secondary AV fistula	Recommended Strategy from the TEP Strategy Grid																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
119	Patient lacks cognitive ability to make decision and proxy refuses AV fistula placement																						X
120	Previous bad experience with AV fistula - Mental Barrier																						X
121	Lack of education related to AV fistula placement			X																			
122	Lack of access to surgeon who performs AV fistula placement																						
123	Lack of protocol for secondary AV fistula placement						X																
124	Surgeon not competent to perform AV fistula placement due to lack of surgical volume			X																			
125	Surgeon not competent to perform AV fistula placement due to lack of surgical competency oversight			X																			
126	Education and training limited because of lack of surgical volume			X																			
127	AV fistula education and training not part of General Surgery residency requirements			X																			
128	Lack of surgeon in area to perform AV fistula placement																						
129	Inability to overcome business self interest																						
130	Lack of education and training related to FF																						X
131	Lack of awareness of protocol for AV fistula placement																					X	
132	AV fistula education and training not part of General Surgery residency requirements			X																			
133	Surgeon not competent to perform AV fistula placement due to lack of surgical competency oversight			X																			
134	Surgeon not competent to perform AV fistula placement due to lack of surgical volume			X																			
135	Education and training limited because of lack of surgical volume			X																			
136	Lack of awareness of protocol for AV fistula placement			X																			
137	Unwilling to apply protocol related to perceived risk of losing functioning graft			X																			
138	Surgeon unavailable in area to place AV fistula																						
139	Unwilling to apply protocol related to complacency and procrastination			X																			