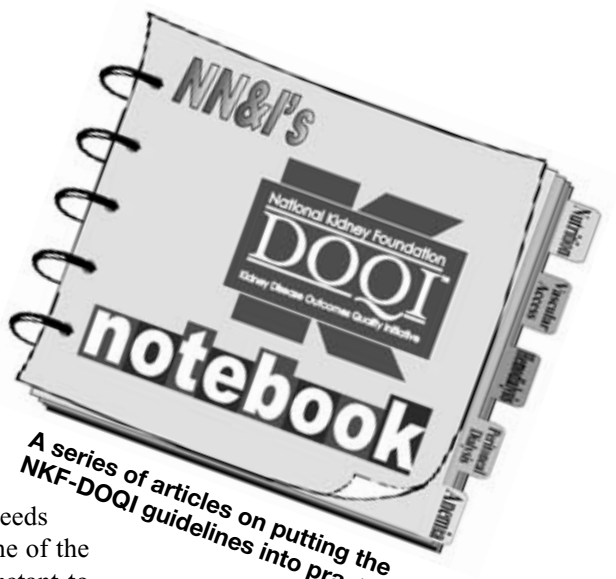
Improving URRs in the Dialysis Unit



A series of articles on putting the NKF-DOQI guidelines into practice.

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Tri-Counties Dialysis Center in Decatur, Ind., is a freestanding, for-profit hemodialysis facility operated by Everest Healthcare Services. The facility opened in the spring of 1996. The patient population consists primarily of elderly patients who live in the surrounding countryside and small towns of northeastern Indiana. The facility population has been steadily increasing; at the present time, the center serves 40 patients.

Through continuous quality improvement (CQI) initiatives, Tri-Counties has shown some significant gains in patient outcomes. The facility was awarded the "Sustaining Member Award" from The Renal Network for outstanding patient outcomes in 1997, 1998, and 1999.

The dialysis clinic has paid particular attention to urea reduction ratios as a measure of improving outcomes. In fiscal year 2000, 97% of URRs among the patient population were greater than 65, and 83% were greater than 70. These numbers have been consistent despite the fact that most of the patients suffer from multiple medical problems and are older than age 65. Sixty percent of Tri-Counties' patients are over the age of 65.

As noted above, the center has an aggressive CQI program. Monthly CQI meetings tend to focus on quality goals such as URRs, hemoglobin levels, albumin levels, etc. The meetings involve the unit management team (nurse manager, social worker, and dietitian) and line staff. The team reviews on-going venous pressure studies, monthly multidisciplinary lab tests, and places an emphasis on staff and patient education.

Improvements in URRs can be tied to several important initiatives:

• A recent CQI project focusing on adequacy of dialysis revealed that some staff members needed clarification regarding blood pump speeds and their impact on URR. Some of the newer staff members were reluctant to increase blood pump speeds on those patients with heart disease. Staff members were encouraged to safely maintain a high blood pump speed within parameters set by the nephrologist. In addition, several area nursing homes were educated on the proper care and development of recently implanted fistulas and grafts.

• Strict attention is given to reuse practices, as evidenced by a 35.22% reuse average for fiscal year 2000. All dialyzers are cleaned with peroxide before processing. Those that remain pink are then pre-cleaned on the Rena-tron. Heparin dosage is evaluated on those patients with a reuse average of less than 25.

• The implementation of a tandem dialysis protocol has made a significant impact on URRs. Tandem dialysis is initiated on all patients who are compliant with treatment (i.e. dialyze for their prescribed time three times per week), have a permanent access, and have been on dialysis for more than four hours and fifteen minutes with a less than optimal URR (≤65).

Charts 1 and 2 document the impact of tandem dialysis on two Tri-Counties patients. Prior to the initiation of tandem dialysis, Patient A had an average URR of 69. He was dialyzing for five hours in order to maintain an adequate URR. On tandem dialysis, the patient's URR has averaged 75.25 and his dialysis time has been decreased to four hours and 30 minutes. Patient B had much the same experience. In September 2000, Patient B had URRs of 60 and 67. In October, Patient B started tandem dialysis, and his URR increased to 75. Consequently, his time on the machine was reduced by 15 minutes.

• The venous pressure studies are done to track the patency of the patients' grafts and fistulas. Pressures are monitored each treatment by initiating dialysis at a 200 ml/min pump speed. If the arterial and venous pressures are greater than 108 mm/Hg, the patient's chart is flagged and pressures are checked each run. The possible causes of increased venous pressure include poor needle placement, access problems such as stenosis or an underdeveloped fistula, and low pump speed. If pressures continue to be out of range for at least three consecutive treatments, the patient is referred for a fistulogram per standing physician order. For those patients whose pressures are in range, monitoring occurs once per week. Unexpected drops in URR alert the staff to check venous pressures more frequently. This often leads to a fistulogram referral as well. As a result of the study, the URR average has increased as well as the longevity of accesses.

The impact of the venous pressure study is demonstrated in Chart 3. As the patient's venous pressure rose, her URR fell. The patient could only maintain a blood pump speed of 390-440 ml/minute. The patient refused to have a fistulogram performed until her URR had fallen to 66. The fistulogram showed four areas of stenosis that were too severe to angioplasty. Consequently, the patient had to undergo a revision of her access.

• Lab reviews are held monthly and include the rounding physician, nurse

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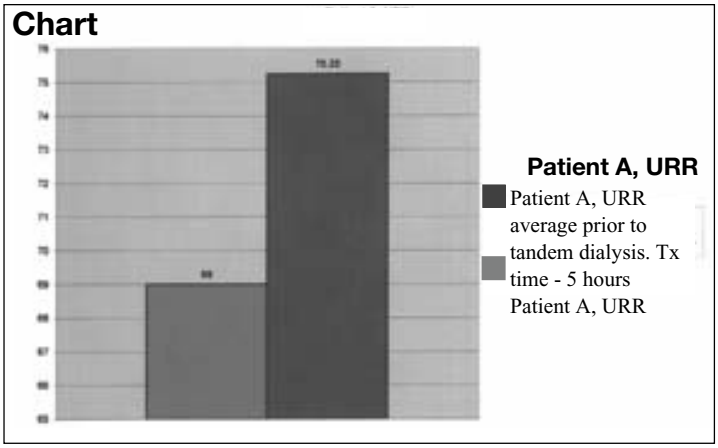
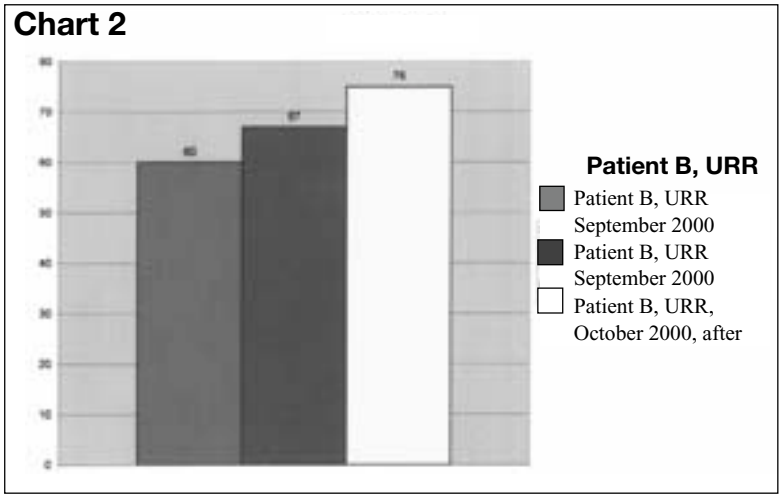


man-ager, dietitian, and social worker. The physician often orders a fistulogram if a gradual decline in URR is noted. This multidisciplinary approach has been found to be of great benefit. The various disciplines are able to work together to solve problems and locate resources for those patients whose labs are less than optimal. For example, the nurse is able to clue the physician in on current health issues affecting lab values. The dietitian offers insight about the patients' eating habits and difficulties. The social worker can help identify psychosocial problems related to the patients' labs.

Few problems have been encountered as a result of the above protocols. For the most part, patients and staff have readily accepted them. Tri-Counties Dialysis Center has a relatively small staff that is actively involved in all aspects of patient care. The line staff looks at quality indicator goals very closely, and takes great pride in the center's excellent level of quality.

The problems that are encountered are probably the same ones seen in most dialysis centers. Many patients are reluctant to have a permanent access placed. Patients become irritated when their time is increased due to a low URR. Patients sometimes have difficulty appreciating that their scheduled dialysis time may be affected by the time increases of their fellow patients.

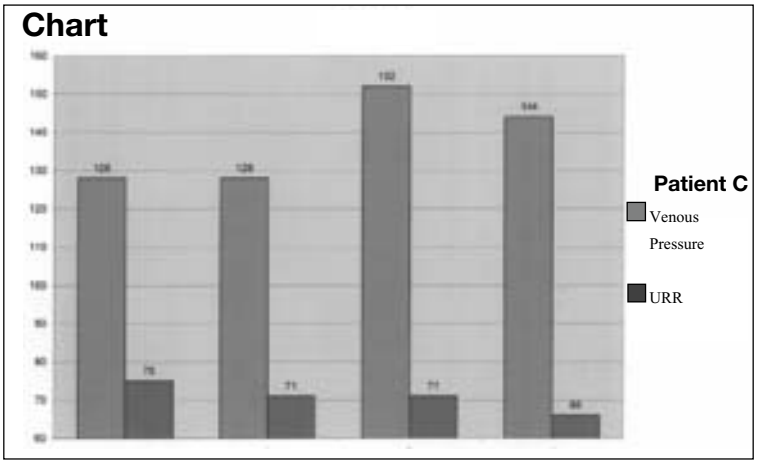
Patient resistance is best combated by education with an emphasis placed on the clear correlation between URR and mortality and morbidity. The venous pressure study is not difficult to implement, but requires the dedication of the staff. The staff is trained to initiate dialysis at a 200-pump speed and to immediately document pressures. A staff member is assigned to check pressures and record them on a flow sheet to ensure appropriate follow through. The same staff member is responsible for arranging fistulograms and documenting the results for future reference. Rich Penrose, facility biomedical technician, trained the staff in tandem dialysis procedures and set-up. Staff members readily learned the new procedures, and the patients were eager to try anything that might possibly reduce their time on the machine.



Tri-Counties strives to comply with all Dialysis Outcomes Quality Initiative (DOQI) guidelines, but places special emphasis on several. The Hemodialysis Guideline #4 states that the dialysis care team should deliver an average URR of 65%. However, our unit strives for an average URR of 70% and, as the data demonstrates, we have been quite successful. In compliance with Guideline #6, URRs are done at least monthly. However, if a lab result appears suspicious, more frequent URRs are measured. Our weekly venous pressure studies outlined in this article help us intervene when grafts or fistulas appear inadequate. This follows DOQI guidelines #17 and #18 pertaining to vascular access. Epogen, iron and Zemplar protocols have been established to keep the unit in compliance with DOQI Anemia guidelines.

Conclusion

The facility's success can be attributed to the commitment and dedication of the patient care staff. The patients deserve a great deal of credit also, as they rarely miss dialysis. The facility had only eight no-shows for fiscal year 2000. In addition, patient family members are closely involved in and interested in the care of their loved ones. With this level of commitment, Tri-Counties expects to see improvements in patient outcomes continue.



K/DOQI Updates 2000 Published

The National Kidney Foundation (NKF) marked a milestone with the publication of its Kidney Disease Outcomes Quality Initiative (K/DOQI) Updates 2000 as a supplement to the *American Journal of Kidney Diseases* in January. A thorough review of new literature revealed very little evidence that warranted changes in the original guidelines, which cover hemodialysis adequacy, peritoneal dialysis adequacy, management of vascular access, and management of anemia.

"It was agreed from the beginning that the DOQI guidelines would be maintained as a living, evolving document, with periodic reviews of the literature and revisions," says Garabed Eknoyan, MD, who has co-chaired the DOQI and K/DOQI efforts with Nathan Levin, MD. "Any set of guidelines begins to be outdated the moment it is published, as new data in the field become available." This was the rationale behind the recently-released update, which included a structured analysis of 85 key scientific articles published since the original DOQI literature review ended in April 1996.

Changes to the original guidelines varied according to the topic. In the area of hemodialysis adequacy, there was no evidence to suggest inclusion of new guidelines or deletion of any of the original guideline statements. Only one statement was modified.

No additions were made to the peritoneal dialysis guidelines, although there were two major changes involving nutritional indications for renal replacement therapy and dialysis dose targets. In the area of vascular access, a limited number of significant changes were made to the guidelines, including stronger recommendations of transposed brachiobasilic vein fistulas and intra-access flow monitoring as preferred techniques. Management of anemia represented the largest body of additional evidence. Thirty-seven articles presented new data that either augmented or modified the original guidelines, particularly in the area of iron management.

"The K/DOQI 2000 Updates are a testament to the great work done by the original DOQI work groups. That few changes needed to be made proved the strength and solidness of the original work. There were very few fundamental changes," Levin noted.

The update process was led by the chairs of the four original DOQI work groups: hemodialysis, William Owen, Jr., MD (chair), Jimmy Roberts, MD (vice-chair); peritoneal dialysis, Thomas Golper, MD (chair), David Churchill, MD (vice-chair); vascular access, Steve Schwab, MD (chair), Anatole Besarab, MD (vice-chair); anemia, Joseph Eshbach, MD (chair), Peter DeOreo, MD (vice-chair) and the methodologic support of Earl Steinberg, MD, MPH.

The guidelines were subjected to a three-stage review process. They were presented to the NKF-DOQI Steering Committee, followed by the K/DOQI Advisory Board, along with experts in the field and, finally, the general public.

As with the original guidelines, Amgen Inc. was founding and principal sponsor of the 2000 Updates.

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