Reducing Avoidable Rehospitalization in ESRD: A Shared Accountability

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The issue of rehospitalization captured the attention of hospitals and other health care providers when the Readmission Reduction Program was implemented on October 1, 2012, as authorized under Section 3025 of the Affordable Care Act.1 This program was based on a study of rehospitalization rates by Jencks et al.,2 which highlighted inadequate care coordination by hospitals in Medicare patient hospital discharges, resulting in an approximately 20% readmission rate within 30 days of discharge. The Readmission Reduction Program established a Medicare diagnosis-related group (DRG) payment reduction for hospitals that exceeded the adjusted national average readmission rate for three diagnoses: acute myocardial infarction, congestive heart failure, and pneumonia. For fiscal year 2013, the potential reduction was up to 2% of the following year’s total DRG payments, and a further reduction of up to 3% of total DRG payments in fiscal year 2014.

Application of the high readmission penalty specifically to the dialysis population has also been proposed, based on the high rate of readmission noted by Jencks et al.2 and data reported by the US Renal Data System showing an overall rehospitalization rate for patients with ESRD of 34% within 30 days of discharge.3 This 70% higher rate of hospital readmission brought readmissions of the dialysis population into consideration for a quality metric of the Quality Improvement Program, which can affect up to 2% of the Prospective Payment System for dialysis.1

The study by Erickson et al.4 in this issue of JASN highlights the potential relationship between the rate of readmission of dialysis patients and the frequency of face-to-face health care provider (physician and/or advanced practitioner) visits at the dialysis facility in the month after hospital discharge. The mean number of provider–patient interactions among patients who were rehospitalized or died within 30 days of a hospital discharge was $2.1 \pm 1.6$ episodes, significantly below the frequency of $3.3 \pm 1.2$ episodes among patients who were not rehospitalized and did not die within 30 days of discharge. Among patients who were not rehospitalized, close to 65% were seen $\geq 4$ times during those 30 days compared with 32.4% of rehospitalized patients. Instrumental variable regression analysis estimated that one additional provider visit (compared with the average of $2.8 \pm 1.5$ provider visits per month) may reduce the probability of rehospitalization by an absolute difference of 3.5%, or a relative reduction of 9.7% in the rate of rehospitalization. The authors further highlight the resulting economic health care benefits of an additional provider visit in the 30 days after hospitalization, which they estimate conservatively to be $>$240 million in aggregate cost savings to Medicare funds.

It is evident that the increased frequency of nephrologist visits to the dialysis unit can be optimized with essential information from the discharging hospital, and timing of the additional visit based on the physician’s rounding schedule can be optimized by coordination with the discharge event. However, the association noted by Erickson et al.4 should be considered in any plan to reduce rehospitalizations in the dialysis population.

Maximizing the benefit of increased physician visits to dialysis patients after a hospitalization requires that critical information be transferred from the discharging hospital to the dialysis unit. Many hospitals have been reluctant to share the needed information with outside entities (e.g., dialysis facilities) because of concerns about Health Insurance Portability and Accountability Act privacy laws and lack of specific requirements for information transfer. The US Centers for Medicare and Medicaid Services (CMS) recently clarified in its interpretive guidelines for the new Conditions of Participation for hospitals that “the hospital must take steps to ensure that patients receive appropriate post-hospital care...”5 The guidelines clearly list dialysis centers among the specific outpatient facilities that hospitals are obligated to communicate with when a patient is discharged.5 These new Conditions of Participation should improve dialysis provider access to the required clinical information to promote care coordination between the hospital and the dialysis unit and allow for improved care and reduced risk of rehospitalization.

Other critical elements of the relationship between the frequency of the provider visits and rates of rehospitalization in dialysis patients are the timing of the visit (in relationship to the date of hospital discharge) and the focus of provider–patient interactions during the visit. A subanalysis of the 30-day readmission of hemodialysis patients regarding the relative frequency...
of rehospitalizations within those 30 days indicates that the highest rates of readmission occur within the first 7 days (36%) and gradually decline with subsequent days after the initial hospitalization. Thus, it would be logical to assume that the greatest benefit of provider visits may result from visits occurring within the first few days after hospital discharge. This conclusion is supported by the work of Erickson et al., because provider visits are generally planned and spaced at similar intervals (i.e., an average of four visits per month generally indicates one visit every week), and 3.3±1.2 visits in 30 days (which resulted in 9.7% fewer readmissions) indicates that a substantial number of patients receive a health care (nephrologist or advanced nurse practitioner) visit within a week of hospital discharge.

The specific diagnosis that triggered the initial hospitalization should also help dictate the required follow-up care and specific transfer information. For example, hospitalizations for congestive heart failure require information from the hospital or the attending nephrologist on a patient’s new dry weight and, importantly, any medication changes. Hospitalizations for infection of a dialysis catheter require information on blood culture results, follow-up antibiotics, and whether the catheter was removed and replaced. Similarly, for peritoneal dialysis patients, infection management details would be helpful, particularly in the case of peritonitis or catheter tunnel infections.

Medication reconciliation after hospital discharge is critically needed, because it crosses all aspects of care. ESRD patients are prescribed an average of 11–12 medications and take an average of 17–25 doses per day, and thus experience a high rate of medication-related problems (MRPs). MRPs are particularly acute at the time of hospital discharge, because that process often involves changes to the prehospitalization prescribed medications. The involvement of pharmacists has been shown to not only identify actual and potential MRPs, but to reduce rehospitalizations and lengths of stay of dialysis patients.2,8

In another common scenario, the ESRD patient is admitted for an infectious cause or sepsis, receives appropriate intravenous antibiotics after positive wound or blood cultures, and is discharged as soon as clinical symptoms improve, with the presumption that the same antibiotic regimen can be continued in the dialysis unit. Unfortunately, in many cases, the information about the specific intravenous antibiotic is not transmitted to the dialysis facility in time for the facility to order the antibiotics. The patient then resumes his or her outpatient dialysis but does not receive the critical antibiotic until at least one or two dialysis treatments have occurred, and is thus disposed for recurrence of the infection (and possible antibiotic resistance) and rehospitalization. Furthermore, many of the antibiotics used to treat infections in dialysis patients, such as quinolones and macrolides, may affect Q-T interval prolongation and could affect sudden death. These issues have received little or no attention,5 but they also make the case for more intensive pharmacy interventions for patient safety.

Another issue that could be addressed with early posthospital discharge care relates to nutritional deterioration of a patient’s status in the hospital as a result of multiple diagnostic and therapeutic interventions. The frailty and precarious nutritional status of dialysis patients is well known, and hospitalizations add to that burden. The prescription of oral nutritional supplements as early as possible after the patient returns to the dialysis unit appears to significantly reduce mortality rates and hospitalization rates, as shown by three large recently published studies; although those studies did not address 30-day rehospitalization specifically, it is reasonable to assume that such an intervention may also favor a reduction in rehospitalizations.9–11

In summary, additional interventions and services by the health care team that can lead to reduced rehospitalization include the following: prompt hospital discharge communication from the hospital attending nephrologist to the outpatient dialysis unit; prompt evaluation of the patient by the nephrology provider in the dialysis unit within the timeframe of no more than two dialysis procedures (i.e., in less than 5 days after hospital discharge); blood tests to evaluate biochemical status after discharge, particularly tests that can be optimized (albumin, hemoglobin, phosphorus, white blood cells, parathyroid hormone); and importantly, an objective assessment of dry weight by a crit-line, bioimpedance, or lung ultrasound. Effective communication is essential between the hospital and the dialysis provider regarding medications (particularly antibiotics) that need to be continued in the dialysis facility. Finally, one or more episodes of medication reconciliation facilitated by a knowledgeable pharmacist should occur in the dialysis facility after each rehospitalization.

Reducing the high rates of rehospitalization in ESRD patients is clearly in the best interests of patients and in the financial interests of dialysis facilities providing maintenance dialysis services, as well as the hospitals to which patients are occasionally admitted to receive acute services. The shared accountability of the hospitals and particularly the dialysis facilities in reducing the high rate of 30-day readmissions for dialysis patients will be highlighted by the proposed regulations by CMS, which have already been approved by the National Quality Forum, in its upcoming Quality Incentive Program for Dialysis Facilities.12

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REFERENCES


See related article, “Physician Visits and 30-Day Hospital Readmissions in Patients Receiving Hemodialysis,” on pages 2079–2087.

Mind the Gap

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There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don’t know. But there are also unknown unknowns. There are things we don’t know we don’t know.

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Donald Rumsfeld, February 2002 US Department of Defense News Briefing

The gap in clinical outcomes between all forms of kidney transplantation and the putative best forms of dialysis is large. This gap is made even more evident in the report by Tennankore et al. in this issue of JASN,1 in which all categories of transplantation (expanded criteria deceased donor, standard criteria deceased donor, and living donor) outcomes were compared with intensive home hemodialysis (IHHD) of at least 16 hours per week. Rigorous matching and analytics were used and we cannot fault the authors’ methods or conclusions. Thus, we are left explaining such outcome differences between the “least good” transplant strategy (expanded pool deceased donors) and the “best” dialysis strategy (IHHD). We must “mind this gap.”

The authors are not transplant specialists; however, we are surrounded by such specialists, and we agree that when transplantation is available, it is the most desirable and preferred form of kidney replacement therapy. Obviously, the scarcity of organs and the ineligibility of some patients leave us with the need to replace kidney function with dialysis. Perhaps IHHD, the comparator to transplantation in the study by Tennankore et al., is not the best form of dialysis.

If case mix–adjusted peritoneal dialysis and standard hemodialysis outcomes are similar as evidence suggests,2 then the question becomes whether more intensive hemodialysis, which includes IHHD, is superior to standard hemodialysis. The Hemodialysis (HEMO) trial was unable to show that its version of more intense dialysis (per-session delivered Kt/V of 1.53 versus 1.16) was superior to standard dialysis.3 However, the HEMO trial was only three sessions per week. The non–randomized Following Rehabilitation, Economics, and Everyday-Dialysis Outcome Measurements trial suggested that more frequent hemodialysis (five or six sessions per week) might be superior.4 The randomized Frequent Hemodialysis Network (FHN) trial5 was designed to compare in-center thrice-weekly hemodialysis to six in-center sessions per week without a major difference in total dose and is further discussed below. However, we cared for two FHN trial patients randomized to six sessions per week, and both patients claimed to have felt better but both reverted back to their thrice-weekly in-center schedule at the end of the trial. The patients attributed this decision to the “hassle” of frequent in-center hemodialysis. Had this trial compared home hemodialysis three times per week versus six times per week, perhaps the hassle would have been less influential in the patients’ decision to reduce the frequency of their sessions back to thrice weekly. In addition to the tedium, there is evidence of more vascular access (VA) problems with more frequent hemodialysis.6 Therefore, why dialyze more frequently?

Mortality is increased on the first day back after the long interdialytic interval of the weekend,7 which fueled the suggestion that more frequent treatments with narrower shifts in