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Geriatric CKD: Value-Based Nephrology



Each nephrologist in the United States is now participating in a value-based purchasing (VBP) plan. Nephrology patients, particularly geriatric individuals with advanced CKD or ESRD represent the bulk of our current and future VBP-based decision-making. Therefore, nephrologists must become more adept at value-based decision-making, and these decisions must align with the values of patients.

The “Medicare Hospital Spending by Claim” Web page details comparative average hospital spending during a specified interval of performance for a Medicare Spending Per Beneficiary (MSPB) episode.¹ The episode includes Medicare Parts A and B claims paid for the period beginning 3 days before a hospitalization and up to 30 days post-discharge. More specifically, a hospital’s MSPB amount is determined by dividing the hospital’s average MSPB by the national median MSPB amount for the nearly 3000 participating US hospitals. A hospital’s MSPB amount represents its average price-standardized, risk-adjusted spending for an MSPB episode. The price-standardization normalizes payments by removing the effects of geographic differences in payments and add-on payments for indirect medical education and disproportionate share hospitals. There is variation in the “spend” per hospital, which is measured by diagnoses-related group reimbursement, and part of the variation is attributable to size (and therefore risk) of the CKD and ESRD populations cared for by a particular institution. Risk stratification and adjustment for age uses the hierarchical condition categories and ESRD status. Since an MSPB episode is a patient-level event, adjustments are essentially case-mix adjusted and are not included for all episodes collectively.

Because the MSPB measure is part of a VBP program, it is evaluated based on results, not goals.² Namely, achievement and improvement points are earned to offset the 1.75% standard penalty fee imposed by the VBP program within the fabric of the Centers for Medicare and Medicaid Services (CMS). Established in 2010 by the Affordable Care Act, the VBP program was applied to payments beginning in fiscal year 2013; incentive payments to participating hospitals are based on performance on each measure and improvement on measures compared to baseline status. The approved measures and dimensions are grouped by specific domains of qual-

ity (Tables 1-3).² Although ESRD is case-mix adjusted, there are no explicit clinical processes of care measures for ESRD. Arguably, the clinical process of care domain and patient experience of care domain encompass what is important to the ESRD patient (Table 1). One may argue that the nephrologist and the patient should determine what is most important to the patient. However, there is no performance measure or quality metric for decision-making. Consequently, there should be some latitude regarding ESRD metrics such as mortality ratios because patient choice may be in direct opposition to metric performance. One example would be an incident maintenance hemodialysis patient with a hemodialysis catheter older than 90 days who chooses not to undergo vascular access surgery and subsequently develops a fatal central line-associated bloodstream infection. The death negatively impacts the standardized mortality ratio of the hemodialysis unit. In this case, patient self-determinism abridges CMS’ call for an abolition of dialysis catheters, and the value-based hospital is penalized for it. CMS would argue that the outcome domain for mortality of ESRD patients remains exceedingly high. This patient’s catheter-related death would be simply considered a failure on the nephrologist’s part by CMS. Notably, there have been impressive reductions in first- and second-year death rates of, respectively, 14% and 16%, between 2003 and 2009.³ These improvements were driven by reduced mortality from infections and cardiovascular disease. Hemodialysis catheter rates increased during this period, following implementation of the Fistula First Breakthrough Initiative.⁴ ESRD-related death from infections has decreased remarkably over the last 2 decades, but mortality attributable to other causes has worsened since 1999. Moreover, disturbingly high rates of all-cause mortality persist in the early months of renal replacement therapy (RRT) in the ESRD population, particularly among the elderly. Succinctly, death in the dialyzed is 10-fold greater than for similarly aged Medicare patients sans CKD. The worry is that invoking

Table 1. Applicable Domains, Fiscal Year (FY) 2013 to 2015

FY	Applicable Domains
2013	Clinical process of care Patient experience of care
2014	Clinical process of care Patient experience of care Outcome
2015	Clinical process of care Patient experience of care Outcome Efficiency

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patient-centeredness may affect value-based purchasing in a perverse and negative way. On a population basis in a value-based environment, one would argue that dialysis of the elderly represents an unfavorably very high cost per patient.

A dialysis patient who is aged 65 years or older has twice the mortality than a general population patient who has either diabetes, cancer, congestive heart failure, stroke, or acute myocardial infarction. Why are only 51% of dialysis patients and 82% of those undergoing pre-emptive kidney transplantation alive just 3 years after the initiation of ESRD therapy? The answer has been hiding in the open. Since 2005, the 3 most cited papers of "Advances in Chronic Kidney Disease" in order are "The prevalence of symptoms in end-stage renal disease: a systematic review" by Murtagh, and colleagues in 2005,⁵ "Progression in chronic kidney disease" by Eddy in 2005,⁶ and "Cognitive impairment in the aging dialysis and chronic kidney disease populations: an occult burden" by Murray and colleagues in 2008.⁷ A re-reading of these articles along with "Cardiorenal syndrome in critical care: the acute cardiorenal and renocardiac syndromes" by Cruz in 2013⁸ serves as a backdrop of this issue of Geriatric Nephrology by Guest Editor, Samir Patel. In this issue, a theme emerges: those with progressive CKD often have subtle symptoms, including cognitive dysfunction and depression, unrecognized by many health-care providers. Acute kidney injury compounds this scenario in which elderly patients with advanced CKD or who already are on maintenance dialysis treatments become increasingly and perilously frail, especially those with evolving cardiac dysfunction: systolic, diastolic, and/or arrhythmogenic.

Another reason for premature death during RRT is found in Pareto's principle, the so-called "80-20 rule," where 80% of a problem results from just 20% of the mediators of the problem. In ESRD, the probability density function is not exactly 80 to 20, but mortality is greater than it should be simply because nephrologists and/or patients have chosen the "dialysis option" instead of the "no dialysis option" for a variety of reasons.⁹ Some examples include the following: (1) the patient has a serious disease, particularly in the critical care setting, and, if the patient is dialyzed, the patient will "pull through"; (2) the patient is offered a menu of options for pre-end-of-life-care that includes dialysis, but the patient and/or family are not informed that dialysis is likely

Table 2. Clinical Process of Care Measures, Fiscal Year (FY) 2013 to 2015

Measure ID	Measure Description
AMI-7a	Fibrinolytic therapy received within 30 min of hospital arrival
AMI-8a	Primary PCI received within 90 min of hospital arrival
HF-1	Discharge instructions
PN-3b	Blood cultures performed in the emergency department before initial antibiotic received in hospital
PN-6	Initial antibiotic selection for community-acquired pneumonia in immunocompetent patients
SCIP-Inf-1	Prophylactic antibiotic received within 1 h before surgical incision
SCIP-Inf-2	Prophylactic antibiotic selection for surgical patients
SCIP-Inf-3	Prophylactic antibiotics discontinued within 24 h after surgery end time
SCIP-Inf-4	Cardiac surgery patients with controlled 6:00 a.m. postoperative serum glucose
SCIP-Inf-9 (for FY 2014 – 2015 only)	Urinary catheter removal on postoperative day 1 or postoperative day 2
SCIP-Card-2	Surgery patients on a beta-blocker before arrival who received a beta-blocker during the perioperative period
SCIP-VTE-1 (for FY 2013-2014 only)	Surgery patients with recommended venous thromboembolism prophylaxis ordered
SCIP-VTE-2	Surgery patients who received appropriate venous thromboembolism prophylaxis within 24 h before surgery to 24 h after surgery

Abbreviations: AMI, acute myocardial infarction; HF, heart failure; PCI, percutaneous coronary intervention; PN, pneumonia; SCIP, Surgical Care Improvement Project; VTE, venous thromboembolism.

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permanent; (3) the patient and/or family will "never give up hope"; (4) the nephrologist is discomfited by being the last care provider to "pull the plug"; (5) familial, social, and/or religious reasons; and (6) financial reasons (possibly immoral). Any of these 6 reasons may obscure more important discussions that better reflect patients' wishes, including symptoms, quality-of-life, and end-of-life preparation.

Regardless of the reason, our value-based imperative is that we must do better. Otherwise, health-care costs from ESRD will continue to escalate from their presently disproportionate level of 7% of the greater than half-billion dollars of total Medicare expenditures. Overall, the goal is delivery of value-based care, that equates with care of value to the patient. The financial reward is the corollary of the delivery of such care, not the driver.

Renal physicians must play a role in finding solutions to this financially unsustainable model of care by doing less

Table 3. Outcome Measures, Fiscal Year (FY) 2014 to 2015

Measure ID	Measure Description
MORT-30-AMI	Acute myocardial infarction (AMI) 30-d mortality rate
MORT-30-HF	Heart failure (HF) 30-d mortality rate
MORT-30-PN	Pneumonia (PN) 30-day mortality rate
AHRQ PSI-90 composite (for FY 2015 only)	Complication/patient safety for selected indicators (composite)
CLABSI (for FY 2015 only)	Central line-associated blood stream infection

Abbreviations: MORT-30-PN, Pneumonia (PN) 30-Day Mortality Rate; MORT-30-AMI, Acute Myocardial Infarction (AMI) 30-Day Mortality Rate; MORT-30-HF, Heart failure (HF) 30-Day Mortality Rate; CLABSI, central line associated blood stream infections; AHRQ PSI-90, Agency for Healthcare Research and Quality, Primary Safety Indicators #90.

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and more. Because ESRD patients experience greater cardiovascular morbidity and mortality, it would be prudent to initiate quality improvement programs with potential impact for CKD patients with known cardiovascular disease and before ESRD. First, kidney doctors must partner better with heart doctors for patients with cardiorenal or renocardiac syndromes. Although the cardiorenal syndrome classification of Ronco is nosologically pleasing,¹⁰ the most important process of care is a collaboration between the cardiologist and nephrologist, particularly regarding decisions involving anti-renin-angiotensin-aldosterone therapies, diuretics, anticoagulation, and more recently dialytic therapy of heart failure with left ventricular assist devices.

Patients who will not survive well on dialysis should not be offered the opportunity to engage in a therapy dangerous to them. Data from McIntyre¹¹ have demonstrated substantial coronary circulatory compromise in patients undergoing dialysis by cardiac positron emission tomographic imaging. The coronary ischemia is often completely asymptomatic, that is, until it becomes symptomatic. It is already acknowledged that there is an increased frequency of heart failure, heart attacks, and strokes in ESRD, and the degree of myocardial “stunning” that takes place during hemodialysis is, in a word, stunning, and fosters further cardiac deterioration functionally and histologically. Similar findings occur in the brain during dialysis. For ESRD patients with known cardiovascular disease, perhaps, a cooled dialysate may prevent further heart and brain damage. The option of peritoneal dialysis is certainly a good one and less costly in the long run, financially and probably medically, due to avoidance of hemodialysis-induced myocardial stunning. Home-based hemodialysis, with its lesser but more frequent ultrafiltration volumes may abbreviate myocardial stunning, too, and deserves consideration.

Atrial fibrillation and venous thromboembolism occur more frequently in advanced CKD patients and ESRD patients than in the general population per data from the

Chronic Renal Insufficiency Cohort study^{12,13} and Dialysis Outcomes and Practice Patterns Study.¹⁴ Anticoagulation has not proven convincingly prophylactic in the United States, and prospective trials are lacking in terms of a protective effect of anticoagulation on the reduction of either heart-related outcomes or strokes in ESRD patients¹⁵; however, the Swedish Web-System for Enhancement and Development of Evidence-Based Care in Heart Disease Evaluated According to Recommended Therapies analysis,¹⁶ which studied the influence of CKD on warfarin therapy for atrial fibrillation, is decidedly in favor of anticoagulation in CKD and ESRD patients. The percentage of time in the therapeutic range for Swedish patients is astoundingly high at 80% or better, too, and similar benefits may be derived in US patients given equal target attainment. Overall, decisions to implement oral anticoagulation therapy in geriatric CKD patients must be made only after comprehensive evaluation of clinical context, particularly when depression or cognitive dysfunction is manifest.¹⁷

We have only just begun to recognize the influence of frailty,¹⁸ depression, and cognitive dysfunction on the morbidity and mortality of older ESRD patients. Any of these factors may be additionally aggravated by disrupted sleep, a common malady of ESRD patients, and to bad effect.¹⁹

There is no single solution or set of rules that defines who to dialyze and which can be applied to geriatric patients. Preferably, a mortality risk stratification process should be applied individually to each patient before devising and implementing a care plan.²⁰ When several of the aforementioned comorbidities are combined, it may be the greater part of valor to withdraw dialysis or not initiate it. This is a conversation that the nephrologist should initiate with the patient earlier than later, or too late. Some patients and/or their families may be affronted by the notion of not offering all life-sustaining modalities. However, gentle, well-intentioned conversations underscoring the balance between quality of life and lifespan must be brought forth. Unfortunately, this is neither done well nor comfortably by all nephrologists, as the bulk of nephrologists have learned these skills informally and by trial and error. Early training in this area must be an imperative for all nephrology trainees so that competency in this vital communication skill can be obtained by completion of nephrology fellowship training. A University of Pittsburgh program, NephroTalk is an ongoing educational initiative that can improve the communication skills and finesse required for these difficult patient-provider interactions and enhance patient-centered kidney care.²¹ NephroTalk complements the VitalTalk program that begins similar conversations in intensive care units.

Truly, we must attempt to head off the health-care intensification that occurs during initiation of chronic dialysis in older, sicker geriatric patients with limited lifespans and which is often futile.²⁰ Many patients with more advanced CKD and/or cardiac disease will develop an episode of insufficiently resolving acute kidney injury and begin a rapid decline in health with death as the end point after only 6 to 9 months. Punctuation of the

futility of this scenario comes in the form of inappropriate resuscitative measures. To avoid these patient-harming circumstances, advanced directives are necessary. In Germany, Driehorst and Keller²² found that structured interviewing of 200 patients admitted to a nephrology floor led to the authoring of an advanced directive in 26% of participants. However, more patients elected to forgo cardiopulmonary resuscitation than dialytic therapy. A greater age of the patient was the variable of greatest impact in this investigation. In a Spanish questionnaire study of 135 chronically dialyzing participants, age (71.2 vs 62.2 years) was significantly associated with denial of cardiopulmonary resuscitation, ventilator use, tube feedings, or dialysis in the case of coma or persistent vegetative state, severe dementia, or terminal illness. Overall, 48% of participants denied these therapies. Thus, structured questioning and interviewing of maintenance dialysis patients regarding advanced directives is not only patient-centered but may also avoid the unnecessary prolongation of life.

The Affordable Care Act has placed nephrologists in a value-based clinical world, “again.” The implementation of CMS’ Prospective Payment System did so first. To adroitly, effectively, and efficiently execute clinical processes of care in a cost-conscious manner, difficult conversations and decisions must be made regarding the treatment of geriatric patients with advanced CKD and those already in receipt of RRT. This is not a rationing of care but rather rational care. Quality of life counts, and Smith and colleagues²³ delineated this in their prospective UK cohort of 36 high-risk and highly dependent patients with kidney failure. Initiation of dialysis vs palliative care was not statistically different in terms of median survival. Importantly, 65% of patients who underwent dialysis died in-hospital vs 27% in palliatively treated patients, thereby establishing validation to what had previously been only suspicion. However, this study was of small size and has not been replicated (or attempted) in the United States. Here, following the lead of the Coalition for Supportive Care of Kidney Patients established by Alvin W. Moss, we find “like-minded people who care deeply about the quality of compassionate, supportive care for kidney patients” and whose stated goal is to “create culture change that transforms the treatment of persons with kidney disease, putting every patient at the center and integrating palliative principles and practices throughout the care continuum.” For the less well-initiated, excellent guidance on how to proceed on the palliative path has been rendered by Grubbs and colleagues²⁴ and the Renal Physicians Association.²⁵ Both serve as processing frameworks for ESRD patients who, after meaningful conversations with their nephrologist, choose palliative care over RRT.

The nephrology community that cares for patients who may require RRT must remain mindful of their patients’ wishes and inform them of all options and then, the best ones. Payers must appreciate that this is substantive, non-procedural work of which payment is far less than the enterprise of an initiation of RRT that may not end well. To this end, on October 30, 2015, CMS established Medicare coverage for 2 Current Procedural Terminol-

ogy codes for advance care planning, effective for use for services provided on or after January 1, 2016—a Pyrrhic victory. Notably, it has taken decades to unconvince ourselves that patients with advanced cognitive dysfunction or dementia should have feeding tubes implanted,²⁶ and the same is true for patients who are not improving their quality of life with RRT. In summary, care of the geriatric CKD patient requires more than the average skills of the nephrologist. Time and timing are of the essence for this vulnerable population. Becoming a value-based nephrologist requires artfulness in the application of “soft skills” as much as an appreciation of an evidence-based approach. For those who wish to undertake the care of geriatric CKD patients, there is opportunity to enhance their overall patient experience. Heed the words of Cohen and colleagues: “The field of nephrology is shifting from an exclusive focus on increasing survival to one that provides greater attention to quality of life. There is an opportunity to integrate many of the advances of palliative medicine into the comprehensive treatment of these patients.”²⁷

“It was a good death.”

—J.H.

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