

Burden of Psychiatric Illness in Patients with ESKD

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Although outcomes are slowly improving for patients with ESKD receiving maintenance dialysis, they continue to be notable for exceptionally high rates of hospitalization and mortality (1). Adults receiving maintenance dialysis continue to experience approximately two hospital admissions and 12 hospitalized days per year (1). Also, after hospital discharge, they have more than a one in three chance of being readmitted within the following 30 days (1). Moreover, survival at 5 years after initiating dialysis is 52% for those receiving peritoneal dialysis and 42% for those receiving hemodialysis (1). In the pursuit of ways to improve these dismal outcomes, substantial attention has historically been paid to cardiovascular disease risk factor reduction, whereas only more recently has the role of psychiatric illness come into focus. Although psychiatric illness encompasses a wide spectrum of disorders ranging from depression to dementia, most prior studies of patients with ESKD receiving maintenance dialysis focused exclusively on a single psychiatric condition among elderly patients. Depression, illicit substance abuse, and dementia are especially noted to be much more common in patients on maintenance dialysis than the general population and associated with higher mortality (2–4). However, a comprehensive characterization of psychiatric conditions among patients on dialysis across the continuum of age and their relationship to clinical outcomes has heretofore remained poorly described.

In this issue of *CJASN*, Kimmel *et al.* (5) report on the burden of hospitalizations involving psychiatric illness and their effect on mortality among patients of all ages with ESKD receiving maintenance dialysis. The authors had two primary objectives. First, they sought to characterize the frequency, nature, and secular trends of hospitalizations involving psychiatric illnesses for patients with treated ESKD (dialysis or transplant). Second, they examined the relationship between such hospitalizations and all-cause mortality after hospital discharge. Leveraging data from the US Renal Data System, the authors pursued these objectives *via* a retrospective cohort study of patients who initiated treatment for ESKD from 1996 to 2013 in the United States. All hospitalizations were examined for the 1-year period after dialysis initiation for ESKD or Medicare enrollment for dialysis for ESKD, whichever came last, to afford complete capture of hospitalizations. Using primary and secondary International Classification of Diseases, Ninth Revision (ICD-9)

codes from Medicare inpatient claims, the authors examined hospitalizations involving a wide spectrum of psychiatric illnesses, including depression, anxiety, substance abuse disorders, psychotic disorders, and dementia. Among adults receiving dialysis, they evaluated the relationship between hospitalizations involving psychiatric illnesses during this 1-year period and subsequent overall mortality after this 1-year period.

Because of the national sample and extended period of observation, the authors assembled a very large cohort that afforded examinations within important age groups, including 9196 children (≤ 21 years old), 398,418 adults (22–64 years old), and 626,344 adults (≥ 65 years old). Not unexpectedly, the authors found that a majority of patients experienced at least one hospitalization during their first year of treatment for ESKD, ranging from 64% of children to 72% of elderly adults. Although the percentages of adults (2%) and children (1%) having a hospitalization for a primary psychiatric illness (*i.e.*, primary diagnosis) were small, the absolute number of patients was large, including >9000 elderly adults. However, the percentage of patients having a hospitalization involving a psychiatric illness (primary and secondary diagnoses combined) ranged from 16% of children to 27% of adults. Moreover, from the beginning to the end of the 17-year study period, more than a doubling in the percentage of patients across all ages having a hospitalization involving a psychiatric illness was observed. Important differences existed in the nature of primary psychiatric illness hospitalizations by age. Whereas depression and affective disorders were the leading cause among children and adults, dementias and organic disorders were the most common for elderly adults. During an average follow-up of nearly 3 years, there was a graduated increase in mortality rate, which increased from 237 deaths per 1000 person-years among patients hospitalized without psychiatric diagnoses to 252 deaths per 1000 person-years among those hospitalized with secondary psychiatric diagnoses to 275 deaths per 1000 person-years among those hospitalized with primary psychiatric diagnoses. Accounting for many important sociodemographic and clinical factors, the authors observed a significant higher risk of death for adults associated with hospitalizations involving primary or secondary psychiatric diagnoses (30% and 10%, respectively) compared with hospitalizations without psychiatric diagnoses.

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The strengths of this study are its large national sample, inclusion of pediatric patients, and long period of study that afforded examination of secular trends in hospitalizations involving psychiatric illness. As the authors acknowledge, a few important limitations need to be kept in mind when interpreting these findings. First, identification of hospitalizations involving psychiatric illnesses was reliant exclusively on inpatient ICD-9 coding; therefore, it is dependent on the accuracy of clinical diagnosis, documentation, and administrative coding practices. It is important to recognize that uremic symptoms and complications of ESKD may overlap with somatic symptoms of certain psychiatric conditions, which may lead to errors in diagnosis. As the authors highlight, a recent systematic analysis found substantial variability in validity of ICD-9 coding for psychiatric illness, with accuracy being best for psychotic disorders and worse for anxiety and substance abuse disorders (6). Second, changes in ICD coding rules during this study affect its findings. In 2010, the number of allowed ICD-9 secondary diagnosis codes increased from nine to 25, which allowed for more hospital diagnoses, and it seems to account for much of the observed increase in hospitalizations involving psychiatric illness. Third, the authors were not able to account for all important factors that are known to affect mortality among patients with ESKD, such as medications and dialysis treatment characteristics; therefore, their observations are subject to residual confounding and bias.

This study underscores the substantial growing burden of psychiatric illness among patients with ESKD. In fact, because only inpatient diagnoses were captured in this study, the true prevalence of psychiatric conditions is certainly greater. It also alerts clinicians about the diversity in psychiatric conditions that commonly afflict their patients of different ages. The characterization of psychiatric conditions in pediatric patients is especially novel and significant. Although children with ESKD receiving maintenance dialysis have an approximately 50-year decrease in life expectancy compared with those in the general population, the number of adult patients who survived with ESKD since childhood continues to increase and now exceeds 15,000 in the United States (1). Therefore, it is ever more incumbent on adult interdisciplinary dialysis care teams to be knowledgeable about neurocognitive impairment and psychiatric conditions in their young adult patients (7).

The observation that hospitalizations involving psychiatric illness herald disproportionate decreases in subsequent survival highlights the importance of this aspect of ESKD care. However, several questions remain unanswered. First, it is not clear if the presence and strength of this relationship depend on the particular psychiatric illness. Second, the pathways that underlie this relationship are not known. Perhaps the most thoroughly examined psychiatric illnesses' relationship with mortality has been depression. Depression has been hypothesized to contribute to increased mortality in a variety of ways, including negatively affecting dialysis treatment adherence, immunologic and stress responses, nutritional status, and medication compliance (8). Additional exploration and scrutiny of mechanisms by which psychiatric conditions affect survival are needed in subsequent rigorous studies.

The care of patients with ESKD and psychiatric conditions remains exceptionally challenging. First, in contrast to the ongoing growth in the ESKD population, interest in nephrology training continues to wane. Hence, dialysis patient caseloads per nephrologist will certainly increase; therefore, nephrologists will have less time and attention available for the effective management of psychiatric illness. Second, the diversity and severity of psychiatric illness among patients with ESKD necessitate the involvement of mental health professionals. Although changes to the care model for maintenance dialysis have been examined and shown to be associated with improvements in quality of life (9), patients with ESKD continue to have fragmented and poorly coordinated care that hinders effective management of their complex multimorbidity, including psychiatric illness. Third, although clinical trials demonstrated efficacy for pharmacologic and nonpharmacologic therapies for psychiatric conditions, such as depression, the acceptance of such treatments by patients with ESKD remains an important barrier that needs to be overcome (10).

The Centers for Medicare and Medicaid Services recently added measures to the Quality Incentive Program (QIP) focusing on psychologic health and wellbeing. Although these measures are an important first step, much more is needed. Current QIP measures require only reporting on certain aspects of psychologic health (*e.g.*, depression screening and pain assessment). To significantly drive improvement, these measures must rather assess the efficacy of depression and pain management. Moreover, additional measures capturing anxiety and alcohol/substance abuse as well as cognitive dysfunction are needed to comprehensively address psychiatric illness among patients with ESKD.

In summary, the findings by Kimmel *et al.* (5) remind the nephrology community of the daunting task that confronts us, namely how to successfully manage psychiatric illness in patients with ESKD. To achieve meaningful progress for this high-risk population, it will be necessary to improve the understanding of the causes of psychiatric illness, the engagement of health professionals with psychiatric expertise, and the implementation of effective treatment strategies that are acceptable to patients.

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