The elderly patient on dialysis: geriatric considerations

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ABSTRACT

The burgeoning population of older dialysis patients presents opportunities to provide personalized care. The older dialysis population has a high burden of chronic health conditions, decrements in quality of life and a high risk of death. In order to address these challenges, this review will recommend routinely establishing prognosis through the use of prediction instruments and communicating these findings to older patients. The challenges to prognosis in adults with end-stage renal disease (ESRD) include the subjective nature of clinical judgment, application of appropriate prognostic tools and communication of findings to patients and caregivers. There are three reasons why we believe these conversations occur infrequently with the dialysis population. First, there have previously been no clinically practical instruments to identify individuals undergoing maintenance hemodialysis (HD) who are at highest risk for death. Second, nephrologists have not been trained to have conversations about prognosis and end-of-life care. Third, other than hospitalizations and accrual of new diagnoses, there are no natural milestone guidelines in place for patients supported by dialysis. The prognosis can be used in shared decision-making to establish goals of care, limits on dialysis support or parameters for withdrawal from dialysis. As older adults with ESRD benefit from kidney transplantation, prognosis can also be used to determine who should be referred for evaluation by a kidney transplant team. The use of prognosis in older adults may determine approaches to optimize well-being and personalize care among older adults ranging from hospice to kidney transplantation.

Keywords: communication, elderly, geriatrics, hemodialysis, kidney transplantation, prognosis

INTRODUCTION

Patients over the age of 75 have higher incidence rates of end-stage renal disease (ESRD) than younger patients and constitute the fastest growing segment of the ESRD population worldwide [1]. The burgeoning incidence of older dialysis patients has been demonstrated in recent data from the ERA-EDTA registry [2]. Up to one-third of elderly patients with ESRD have four or more chronic health conditions when they reach ESRD [3], and many are not considered candidates for kidney transplantation. Thus, the vast majority of elderly patients with ESRD face the prospect of dialysis therapy for the remainder of their lives. Life expectancy for many patients with ESRD is similar or worse than that associated with common cancers, and HD does not always substantially prolong life among older adults. For example, in two studies, median survival was similar among geriatric patients receiving nondialytic management when compared with elderly patients who started HD after emergency referral or who had coexisting ischemic heart disease [4, 5].

Although dialysis therapy may or may not extend life among older patients with ESRD, it is now increasingly clear that it often fails to restore health and that many patients suffer from distressing symptoms or disability prior to death. Half of all HD patients report having pain that is often inadequately controlled with medication [6, 7]. One-in-five patients have depressive symptoms, and up to one-third have severe cognitive impairment [8, 9]. Among nursing home residents starting HD, Tamura [10] recently found that, within the first year, 58% of the sample died, 29% showed a decrease in functional status and only 13% maintained functional ability. Her discouraging observations have similarly been noted in community-dwelling geriatric patients [11–13]. In the USA, almost 25% of patients choose to discontinue dialysis before death, underscoring the physical and psychological toll of ESRD [1]. In a recent Canadian survey, 60% of a sample said they regretted beginning dialysis, and just over half of the patients indicated they initiated treatment because of the urging of their physician [14]. In sum, only belatedly have nephrologists begun to appreciate the advancing age, substantial prevalence of symptoms, existential suffering and high mortality rates of the elderly ESRD population [15–17].

The aim of this review is to examine the challenges and opportunities to improve care of older adults with ESRD. This
review will advocate for establishing prognosis using prediction instruments and communicating these findings to patients. The challenges to prognosis in older adults with ESRD will be reviewed. There are three reasons why we believe these conversations have occurred so infrequently in the dialysis population. First, there have previously been no reliable instruments to identify individuals undergoing maintenance HD who are at highest risk for death. Second, nephrologists have not been trained to have these conversations [18]. Most of the communication literature has been derived from the care of patients with cancer and calls for the expenditure of considerable time and effort on the part of individual oncologists [19, 20]. Third, the chronicity of ESRD patients obscures milestones in care which could be used to reassess prognosis. Lastly, this report will also determine approaches to optimize well-being among older adults ranging from hospice to kidney transplantation.

**ESRD Patients Desire Prognosis**

Most patients with ESRD are not informed about either the high mortality or morbidity associated with dialysis [21, 22]. This is poignantly illustrated by the title of an article written by the wife of a deceased patient, “I Shouldn’t Have Had to Beg for a Prognosis” [23]. Most ESRD patients want to learn about these issues [24]. *Family Focus*, the patient newspaper previously published by the National Kidney Foundation, conducted a survey of its home subscribers [25]. Respondents (N = 474) were receiving in-center HD, and only 12% reportedly discussed EOL issues with either their physician or social worker, while 58% percent indicated they had never had an EOL discussion with any staff member. Further, participants were asked to rank 16 different topics in order of frequency of discussion with dialysis staff, and EOL was the least likely of all topics to have been broached. In another survey of dialysis patients, fewer than 10% reported having a conversation about any EOL issues with their nephrologist in the previous year, and more than 90% endorsed that none of their physicians had ever discussed how much time they had to live [14]. This deficiency in communication occurs despite evidence suggesting patients want more information on prognosis and EOL care issues. For example, in two studies, 95 and 97% of ESRD patients preferred to be given life-expectancy information—even if their prognosis was poor—and patients specifically wanted their physician to disclose this information without prompting [14, 26].

Presently, nephrologists and dialysis staff infrequently discuss end-of-life (EOL) issues with patients and families, although they repeatedly face difficult determinations about treatment options, including whether to discontinue renal replacement therapies or to consider referral for hospice services [27–29]. Despite national guidelines and an explicit recommendation by the Renal Physicians Association and American Society of Nephrology, patients and their family members or surrogate decision makers are often not provided with available information [30–35]. This may help explain why only one-in-five dying dialysis patients currently receive hospice care—about half of national figures for overall deaths in the United States and one-fourth that of people dying from cancer [36]. According to analyses (see Figure 1) from the United States Renal Data System, these decisions may have important economic ramifications. This figure demonstrates that the costs of care in the last week of life for those that used hospice and withdrew from dialysis was approximately half the cost of those who did neither [16].

**Prognostic Tools for Elderly With ESRD**

There have been reliable instruments developed to identify individuals undergoing maintenance HD who are at highest risk for death [37]. Integrated prognostic models may take into account laboratory values, comorbidities [38–46], changes in comorbidity score over time [40, 44], functional status/fragility, quality of life (QOL) [47, 48] and sometimes either the patient’s or clinician’s prediction of survival [49]. Cohen’s revision of the ‘Surprise Question’ (“Would you be surprised if Mr. Smith died within the next six months?”) is a strong indicator of mortality [50], and when combined with serum albumin, age and two comorbid factors (dementia and peripheral vascular disease) results in a formula that has a high sensitivity and specificity [51]. Application of new prediction tools will help to overcome practitioner uncertainty about prognosis and increase the likelihood of meaningful dialogues between clinicians, patients, and families.

There are a number of assessment tools in geriatrics which may augment prognosis and establish a dialysis phenotype. Swidler has argued that the geriatric assessment tools may be useful in these patients [52]. Common geriatric screening tools include chronologic age, Karnofsky score, activities of daily living, instrumental activities of daily living and self-reported health. Geriatric syndrome screening could be assessed by walking speed, chair rise, frailty testing, cognitive testing, falls assessment, depression screening and nutritional assessment. These measures have been described in the American Society of Nephrology’s 'Improving Dialysis Rounds for the Geriatric Patients’ [http://vimeo.pro.com/askidney/rounds]. Berger and Hedayati have outlined how assessment of comorbidities, functional status and cognitive performance may improve care.
of the older patient with ESRD [53]. While further work is needed to establish how these standard geriatric measures may be used to improve the health and well-being of the older dialysis patient, these instruments may help establish prognosis and help to personalize care.

Integrated prognostic models may take into account a number of factors to establish a risk profile for older patients undergoing dialysis. In addition to patient demographic information and laboratories, the instruments may include comorbidities, changes in comorbidity score over time, functional status/frailty, health-related quality of life (HRQOL) and either the patient’s or clinician’s prediction of survival. In our experience, the use of a clinician’s prediction of survival through the surprise question augments the risk scores. It is our position that the surprise question accounts for severity of illness, permits consideration of more rare chronic health conditions and also assesses social support. It is also useful in that it provides a milestone to assess prognosis and whether interval events have changed the long-term outlook for the patient. It is noteworthy that the integrated prognosis tool has received over 100,000 hits in the past year. Dynamic changes in the patient’s condition, the trajectory of their disease and sentinel events are likely powerful predictors of mortality. A new study demonstrates that a drop in intradialytic BP, intradialytic weight gain, albumin and rising C-reactive protein (CRP) are sentinel event for short-term mortality [54].

Nephrologists have not been trained to convey prognosis to patients and caregivers or have EOL conversations [18]. Training makes a difference and facilitates compassionate honesty [55, 56]. As demonstrated by Schell et al. [57], nephrology fellows report a lack of structured teaching involving initiation of dialysis and palliative care discussions. To illustrate the effectiveness of having formal curriculum for nephrology fellows in regard to discussing matters such as end-of-life care, Schell et al. conducted a study in which fellows attended a workshop called NephroTalk. During the workshop, fellows were trained to deliver bad news and define goals of care for patients who are doing poorly. Only one-third of fellows surveyed reported any structured training in discussing dialysis initiation or withdrawal. After the workshop was completed, 95% of participants reported that the curriculum should be required of all nephrology fellows as they found it helped improve their communication skills with difficult discussions [57].

Several communication guidelines have been published to assist physicians in communicating bad prognostic news to patients [58, 59]. These guidelines assume that medical interactions in which this information is delivered—regardless of the type of medical practice—are composed of three chronologic phases: preparation for disclosing the news, disclosure [60] and the response to the news. In the first phase, staff should prepare by ensuring uninterrupted time, a private location, and by eliciting patients’ previous knowledge of the medical situation and their desire for information. In the second phase involving disclosure of the news, staff should use straightforward language, adjust their pace to match the patient’s and probe for patient comprehension. In the third phase after disclosure, staff should allow for and respond to emotions, provide direct answers to questions and conclude the interview by summarizing and identifying the next steps. As shown in Table 1, Buckman’s SPIKES protocol is perhaps the best known of these guidelines, and it incorporates each of the elements mentioned above [61, 62]. Communication and understanding may be further improved when a written document is provided to patients and their loved ones that they can take home and which states in simple terms the basic information, management options and the treatment team’s ongoing commitment. Guidelines can be supplemented to address ethical and cross-cultural concerns [63, 64], and they can also be improved by recognition that these are not dyadic conversations between doctors and patients, but should include family members and other health care professionals [65].

It is this last point that is central to the third reason for why EOL communications have been rarely undertaken with the dialysis population. Most of the communication literature is derived from the care of patients with cancer and calls for the expenditure of considerable time and effort on the part of individual oncologists [19, 20], but this approach is not feasible for nephrologists. Nephrologists are already saturated with competing clinical responsibilities. They have neither the time nor (often) the inclination to conduct prognostic meetings by themselves. Fortunately, nephrologists deliver HD care with the assistance of a team of health care professionals. We advocate for an interdisciplinary strategy that partners nephrologists with highly trained dialysis social workers or alternatively, dialysis nursing staff, in order to initially promote EOL communication through staff–patient–family conferences [66–68]. A didactic protocol [69–71], laminated cue cards [72, 73] and an informational handout may improve prognostic communication meetings.

With global dialysis costs estimated at exceeding 1 trillion dollars per decade [74], the discussion of prognosis will likely also decrease overuse, which occurs when an appropriate service, in this case HD, continues to be provided under circumstances in which the potential for harm may exceed the possible benefit [75]. Overuse is particularly likely in dialysis patients over the age of 75 who have ischemic heart disease, multiple comorbidities, poor functional status and/or severe malnutrition [76]. As demonstrated by Murtagh et al. [4], patients over the age of 75 who either had high comorbidity scores or had ischemic heart disease lost the survival

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**Table 1. Communicating about serious illness ‘SPIKES’ six-step protocol**

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<tr>
<td>S</td>
<td>Setting</td>
<td>Private room, undisturbed conversation, box of tissues.</td>
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<tr>
<td>P</td>
<td>Perception</td>
<td>What does the patient’s family know? Ask: ‘What is your understanding of your illness?’ and ‘How serious is it?’ Follow the principle: ‘Before you tell, ask.’</td>
</tr>
<tr>
<td>I</td>
<td>Invitation</td>
<td>Ask permission to give information. What do they want to know?</td>
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<tr>
<td>K</td>
<td>Knowledge</td>
<td>Provide information in understandable, layperson language. Avoid medical jargon. Give a warning shot.</td>
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<tr>
<td>E</td>
<td>Empathizing and exploring</td>
<td>Acknowledge emotions and respond with empathy.</td>
</tr>
<tr>
<td>S</td>
<td>Strategy and summary</td>
<td>Make a plan with follow-through. Summarize main areas. Agree on a time for the next meeting.</td>
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advantage gained with dialysis that may be seen in elderly patients who have low comorbidity scores. Comorbidity scores were defined using the system devised by Davies et al. [77] in which a score of 0 indicated no comorbidity, 1 indicated one or two comorbidities and a score of 2 indicated three or more comorbidities. Patients with multiple comorbidities especially those with ischemic heart disease may benefit from conservative kidney management which emphasizes supportive care, managing symptoms such as anemia, and maintaining QOL. The communication of prognosis may also significantly improve the QOL of patients and provide the opportunity for higher quality care—this last measure being defined by the Institute of Medicine as relating to the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge [78].

**Palliative care and hospice for elderly with ESRD**

Communication of prognosis may be an essential ingredient to personalizing treatment plans by either referral for kidney transplant or by the acceptance of life-limiting conditions, completion of advance directives, do-not-resuscitate orders and the delineation of goals of care [79–81]. This is underscored by two recent oncology investigations. A Canadian study demonstrated that patients who talked about approaching death with their physicians were more satisfied with care than those who did not [82]. Patients who discussed dying and whose physicians helped them make preparations with their families were also more likely to have then engaged in other forms of advanced care planning and to have requested a home death. The investigators surveyed patients (N = 440) with cancer or another terminal disease and patients’ family members (N = 160). Only 18% of patients and 30% of families had talked with the doctor about the prognosis, even though more than half of the patients were expected to die within a few months. In another multicenter study, terminally ill cancer patients (N = 603) were interviewed at baseline and followed until death (on average 6 months later) [83]. Costs for ICU and hospital stays, hospice care, and life-sustaining procedures (e.g. mechanical ventilator use and resuscitation) received in the last week of life were aggregated. Only 31% of the sample reported having an EOL discussion with their doctors. After propensity score matching, the mean (SE) aggregate costs of care (in 2008 US dollars) were $1876 ($177) for patients who reported having EOL discussions compared with $2917 ($285) for patients who did not—a cost difference of $1041 (35.7% lower among patients who reported EOL discussions and P = 0.002). Higher medical costs in the final week were associated with more physical distress and with worse overall quality of death, as reported by the caregiver (r = −0.17, P = 0.006) after controlling for age, sex, education status, survival time, race/ethnicity and source of report. There was no survival difference associated with higher health care expenditures, and patients with higher costs had worse quality of death in their final week. These results are consistent with most earlier studies, suggesting that EOL communication between patients and physicians is associated with better outcomes, less expensive medical care and decreased anxiety and depression on the part of the bereaved survivors [84–88]. The bulk of the cost savings associated with palliative care is related to decreasing hospitalizations and especially avoiding admissions to the ICU [89].

**Kidney transplantation for elderly with ESRD**

The number of older patients awaiting kidney transplantation continues to grow. The annual data report from the United States Renal Data System indicates that 75,807 adult patients were awaiting kidney transplantation in 2010, a growth rate of 6% from the previous year [90]. The number of patients older than 65 awaiting transplantation was 17,016 in 2011 compared with 5676 in 2001 [91]. Several studies have shown that elderly patients benefit from kidney transplantation with improvement in both QOL as well as life expectancy [92–94].

Wolfe et al. examined mortality rates between wait-listed dialysis patients and those who received a first cadaveric transplant between 1991 and 1997. Patients who were between the ages of 60–74 had a projected increase in life span of 4 years and a decrease in the long-term risk of death of 61 percent after cadaveric renal transplant compared with wait-listed patients, with a similar distribution of sex, race and cause of ESRD [92]. Rao et al., conducted a similar study examining mortality rates in 5667 patients above the age of 70 who were either wait-listed on dialysis or had received a renal transplant between 1990 and 2004 [93]. The overall adjusted relative risk of death for transplant patients was 41% lower than for the wait-listed patients [93]. At the fourth year, survival of transplant recipients was 66% compared with 51% for wait-listed patients, and subgroup analysis showed a significant transplant survival benefit for the age groups of 70–74 and those over 75 [93]. They also identified a survival benefit in elderly transplant patients who had a diagnosis of hypertension or diabetes as the cause of ESRD, as well as those patients who received expanded criteria donors (ECD) [93]. It has been demonstrated that patients over the age of 65 benefit with ECD transplantation after 2 years on dialysis with improvement in life expectancy when compared with receiving a standard criteria donor or receiving a living donation after 4 years on dialysis [95].

HRQOL also improves in the elderly after kidney transplantation. Elderly patients have been shown to have improved SF-36 scores in all categories compared with wait-listed dialysis patients [96]. Using the Short Form-36 (SF-36) to assess HRQOL, kidney transplant patients have had scores that are not significantly different than that of age- and sex-matched individuals in the general population [94]. In the categories of general health and mental health, kidney transplant patients over the age of 65 had scores that were on average 10 points higher compared with that of the general population with only minor differences in other categories used to assess HRQOL [96]. Thus, transplantation in the elderly provides an improved QOL compared with other forms of renal replacement therapy that is comparable to that of the general population.

The immunosuppression regimen may need to be adjusted in the elderly transplant patient as they are at increased risk of infectious complications post-transplantation. Changes in both innate and adaptive immunity occur as part of the aging process, leading to a more vulnerable immune system [97].
This may lead to higher costs secondary to the need for more health care associated visits/hospitalizations and other costs incurred because of morbidity associated with the infectious complications. Meier-Kriesche [98] assessed the risk associated with mortality from an infection in those patients on the wait-list compared with patients who were postkidney transplant. In elderly patients postkidney transplant, there was an exponential increase in death secondary to infection, whereas this increase was linear in those on the wait-list. Despite the exponential increase, the adjusted death rate secondary to infection for patients on the wait-list was higher (20 per 1000 patients) than that for the elderly postkidney transplant patient (16.7 per 1000 patients) [98]. Even with the overall benefits gained from kidney transplantation in the elderly, older patients are less likely to be placed on the wait-list as they are highly selected [99, 100]. It has been suggested that more uniform measures to assess candidacy for transplantation be developed in the elderly population. In addition to prognosis, several measures that should be taken into consideration include assessing frailty and cognitive impairment [101]. Frailty has been associated with early allograft dysfunction and cognitive impairment can lead to medical nonadherence [102]. Of course, social support also has to be taken into consideration when assessing for whether a patient will adhere to medications and appointment schedules.

Elderly patients, who are placed on the list, may be less likely to receive a living donor transplant. Wu et al. [103] assessed outcomes in the elderly transplant recipient by examining donor and recipient characteristics. They found that baseline comorbidities such as cardiovascular disease or peripheral vascular disease were associated with worse patient and graft survival in patients older than 60, but these outcomes were attenuated if recipients received a kidney from a living donor [103]. Elderly patients benefit from early transplantation as their mortality increases with years on the wait-list. The annual data report from the Scientific Registry of Transplant Recipients indicates that 19.7% of patients older than 65 were on the wait-list for kidney transplantation as of 2011 [91]. This is a vast improvement in the number of adults in this age group that are listed for transplantation compared with 10 years ago. A disparity in access to transplantation for those older adults on dialysis is still present compared with those younger, and pre-emptive listing prior to starting dialysis should be encouraged in patients with an acceptable long-term prognosis and adequate physical and cognitive performance. A difficult ethical issue for the community is balancing the principles of equity versus utility. Elderly recipients will have fewer years of graft survival of a deceased donor kidney, due to their shorter years of life in contrast to younger patients. With a critical shortage of donor kidneys, the debate over the new UNOS proposal for kidney allocation reflects the tension between these ethical principles.

CONCLUSION

In summary, there is a growing number of patients supported by dialysis in older age. The care of these patients can be challenging due to chronic health conditions, family and caregiver expectations, diminished QOL and function and an increased risk of death. One barrier to providing care to the growing population of older adults with kidney failure is the many complex geriatric issues [104]. In order to address the gap in knowledge of geriatric issues for trainees, The American Society of Nephrology with the support of Association of Specialty Professors (ASP) has developed a freely accessible geriatric curriculum for nephrologists http://wwwASN-online.org/education/distancelearning/curricula/geriatrics. Our group and others have also identified a major barrier in the management of dialysis patients—the dearth of communication between staff and patients about prognosis and EOL considerations. Without these conversations, it is impossible to ascertain the treatment preferences of this population. As a result, patients will continue to receive overly demanding and expensive treatments, will rarely be referred for hospice services and will continue to report having unsatisfactory QOL and dying. These patients may also be overlooked for kidney transplantation which may improve their life expectancy and health-related QOL. Integrated prognostic tools may be used to identify HD patients with poor short-term survival. The communication of prognosis may provide the opportunity to establish goals of care and consider alternative approaches such as kidney transplant. Further work is needed to characterize how the prognosis information should be used in clinical practice to improve outcomes for patients and caregivers. In addition, refinements to prognostic tools to not only assess risk of death, but also risk of disability and poor QOL would provide patients and providers the information needed to personalize care.

CONFLICT OF INTEREST

The results presented in this paper have not been published previously in whole or part, except in abstract format. The authors report no conflicts of interest.

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FULL REVIEW

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