The Ethics of Offering Dialysis for AKI to the Older Patient: Time to Re-Evaluate?

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Abstract
Older patients are more susceptible to AKI. In the elderly, AKI has been associated with increased morbidity and mortality, and it is a significant risk factor for CKD and dialysis-dependent ESRD. There are now accumulating data that the start of dialysis for some older patients is associated with poor outcomes, such as high treatment intensity, suffering, and limited life prolongation, which occur at the expense of dignity and quality of life. The biomedicalization of aging is a relatively recent field of ethical inquiry with two directly relevant features to decisions about starting dialysis for older patients with AKI: (1) the routinization of geriatric clinical interventions, such as dialysis, which results in the overshadowing of patient choice, and (2) the transformation of the technological imperative into the moral imperative. A major consequence of the biomedicalization of aging is that societal expectations about standard medical care have resulted in the relatively unquestioned provision of dialysis for AKI to older patients. This paper calls for nephrologists to re-examine the data and their attitudes to offering dialysis to older patients with AKI, especially those patients with underlying CKD and significant comorbidities. Shared decision-making and the reinforcement of the right of the patient to make a choice need to slow down the otherwise ineluctable routinization of starting old and very sick patients on dialysis. In the process of shared decision-making, nephrologists should not automatically recommend dialysis for older patients; in those patients who can be predicted to do poorly, recommending against dialysis upholds the Hippocratic maxim to be of benefit and do no harm. This paper challenges the automatic transformation of the technological imperative into the moral imperative for older patients with AKI and points to the need for a re-evaluation of dialysis ethics in this population.


Introduction
Older patients are the fastest growing age group of the general population, and AKI is highest in those patients greater than 65 years of age (1). The numbers of patients ages >60 years in Western Europe and the United States are projected to rise from 231 million in 2000 to 395 million in 2050 (2). The incidence of AKI in the elderly varies according to the population studied, but multiple studies have shown that the elderly are more susceptible to the development of AKI than younger patients (3–6). Feest et al. (3) reported a 3- to 8-fold progressive age-dependent increase in the frequency of development of community-acquired AKI in patients older than 60 years of age. In a metropolitan hospital in Beijing, the reported incidence of AKI was found to be 2.76% in patients ages 65–80 years and 14.8% in patients greater than 80 years old (7).

The etiology for the increased incidence of AKI in the elderly population is multifactorial. Elderly patients are predisposed to AKI because of anatomic and physiologic changes of the aging kidney, an increased burden of comorbidities affecting kidney function, more frequent exposure to medications and interventions that are nephrotoxic or alter kidney hemodynamics, and alterations in drug metabolism and clearance with aging (8). A recent meta-analysis revealed that 31% of older patients failed to recover renal function after an episode of AKI compared with 26% of younger patients (9).

Accumulating evidence also indicates that AKI is a significant risk factor for CKD and dialysis dependence in the elderly. Ishani et al. (10) found that the hazard ratio for developing ESRD was 13.0 (95% confidence interval, 10.6 to 16.0) for Medicare beneficiaries ages 67 years and older with AKI but not CKD and 41.2 (95% confidence interval, 34.6 to 49.1) for patients with CKD who developed AKI compared with patients without AKI or CKD. Ishani et al. (10) also noted that older patients with CKD and superimposed AKI are at significantly increased risk of mortality (64% were dead at 2 years) (10). They noted what they called a “striking multiplicative effect” of the interaction between CKD and AKI on the development of ESRD (10).

The implications of these findings are that AKI should not be viewed as a self-limited disease in older patients from which most will eventually recover but, rather, a significant risk factor for long-term morbidity, prolonged hospitalization, and mortality (8). Two recent studies of Medicare beneficiaries ages 67 years or older have examined the circumstances under which older patients initiate dialysis (11,12). Most initiated chronic dialysis in the inpatient setting, with the proportion increasing significantly from 62.7% for patients ages 67–74 years old to 68.2% for
patients $\geq 85$ years old (11). The patients were classified into five levels of intensity of care, with the highest level being those patients who had longer than a 2-week hospital stay and received at least one intensive procedure, such as cardiopulmonary resuscitation, mechanical ventilation, or a feeding tube. Patients who received a higher level of intensity of care were more likely to be older and have nonresolving tubular necrosis as the cause of their ESRD. Patients who received higher levels of intensity of care at dialysis initiation had more limited survival, with the highest level of intensity of care patients averaging a survival of only 0.7 years. In patients $\geq 85$ years old who received the highest intensity of care, the median survival was only 5 months, with approximately 2 of the 5 months spent in the hospital (11). Wong et al. (11) observed that, in a sizable number of patients, the decision to start dialysis was reached during severe acute illness in which other intensive procedures were also being used. Wong et al. (11) state that their findings argue for stronger efforts to situate discussions about dialysis initiation with older patients within a process of advance care planning to address treatment preferences with regard to not only dialysis but other intensive procedures that may be associated with it in the hospital setting, such as mechanical ventilation, tube feeding, and use of vasopressors (11).

In a second study examining the timing of dialysis initiation in patients with a mean age of 76.7 years, AKI was noted to be more common in early initiators of dialysis (12). Early dialysis initiation (in those patients with an eGFR $\leq 10$ ml/min per 1.73 m$^2$) was associated with more frequent congestive heart failure (CHF) admissions and total hospital days as well as greater risk for all-cause, cardiovascular, and infectious mortality than later initiation. Crews et al. (12) stated that consideration of factors, such as AKI, frequent hospitalizations, and CHF exacerbations, are especially important for older adults, because they suffer a greater burden of comorbid illness compared with younger patients, often progress to ESRD after episodes of AKI, and may be more likely to initiate dialysis under emergent inpatient circumstances. Like Wong et al. (11) in the previously cited study, Crews et al. (12) note that early initiation of dialysis may be associated with more harm than benefit and that improved efforts to engage older patients in shared decision-making about dialysis initiation are important to patient-centered care, because well-informed older adults with kidney failure may choose to forgo dialysis (12).

One additional recent study provides data that suggest that dialysis for AKI for frail older patients may cause more harm than good. The study found that the initiation of dialysis for AKI in patients with a serum creatinine below 3.8 mg/dl was associated with greater mortality than in patients who did not undergo dialysis. Wilson et al. (13) speculated that serum creatinine was functioning as a marker for muscle mass and that those patients with a low serum creatinine in the study may have been frail. Frailty is known to increase with age in dialysis patients, and in one study, three quarters of dialysis patients over the age of 60 years were frail (14). Taken together, these findings seem to indicate that, in certain frail older patients, initiation of dialysis for AKI is harmful rather than beneficial (13).

Dialysis initiation in the elderly patient with AKI not only has an impact on overall prognosis in terms of survival and long-term dialysis, but it also likely leads to a marked decline in quality of life. In the Veterans Affairs/National Institutes of Health Acute Renal Failure Trial Network study, which looked at intensive versus less intensive RRT for 1124 critically ill patients with AKI in a younger population with a mean age of 59.7 years, slightly over one-half of the patients were alive at day 60, and only 16% were discharged to their previous living situation (home) without requiring dialysis by day 60 (15). The investigators noted that the health-related quality-of-life score was very low in the cohort of 60-day survivors of AKI and that one-quarter of the respondents rated their quality of life as consistent with that of death (16). In the context of growing evidence about the high morbidity and mortality of many older patients initiating dialysis for AKI, especially those patients with underlying CKD, this paper presents two cases to provide a framework for decision making about dialysis initiation in older patients and raise the question of whether a more concerted effort at shared decision-making should precede dialysis initiation in older patients with AKI who can be predicted to have a poor prognosis.

**Case 1: Elderly Man with AKI Superimposed on Stage IV CKD and Major Comorbidities**
A 90-year-old widower with a history of CKD stage IV (serum creatinine = 2.5), hypertension, diabetes, CHF (ejection fraction of 25%), moderate aortic stenosis, ileostomy (status post segment of partial bowel resection caused by ischemia), and advanced dementia presented to the emergency department with AKI and hyperkalemia (BUN/creatinine of 120/4.9 and potassium of 7.2 mEq/dl). Serum albumin was 2.5 g/dl. The patient resided in a nursing home and was wheelchair-bound. He was unable to perform basic activities of daily living. He recently had been noted to have increased ileostomy output and decreased oral intake. The patient lacked decision-making capacity and had not completed an advance directive. His only child, a son, was appointed the health care surrogate.

This case illustrates an elderly patient with underlying advanced CKD who presents with AKI. There is no age cutoff limiting the nephrologist from offering dialysis to older patients. Age alone should not be a contraindication to dialysis, because many older patients with AKI will recover kidney function and do well (4). However, knowing that increased age and underlying CKD lead to an increased propensity for AKI nonrecovery and CKD progression to ESRD, this much higher likelihood of ESRD should be factored into the decision-making process of whether dialysis for AKI should or should not be offered (Table 1). This patient is not a good candidate for long-term dialysis because of his comorbidities and poor functional and nutritional status. His estimated survival if he were to start dialysis would be 2% at 6 months and 0% at 12 months (17). Aside from the integrated prognostic model prediction of survival, research on nursing home residents starting dialysis shows that they do particularly poorly, with most patients dying in the first 1 year (58%) and only 13% maintaining their predialysis functional level (18).

Thus, these facts lead to the conclusion that this patient is highly unlikely to benefit from dialysis for AKI, and the
nephrologist should not offer it. His advanced CHF and moderate aortic stenosis increase his risk of cardiac and hemodynamic decompensation and inability to tolerate aggressive dialysis for purposes of volume overload. His advanced dementia raises concerns about whether he will be able to cooperate with the dialysis process and sit for 4 hours three times a week on a hemodialysis machine without dislodging his dialysis needles or causing a disturbance in the dialysis unit. Together, the presence of these comorbidities would seem to limit the capability of the nephrologist and dialysis staff to safely perform dialysis.

Furthermore, the invasive procedure required to place a dialysis catheter to prepare the patient for dialysis may itself cause pain and suffering.

In resisting the temptation to offer dialysis, the nephrologist must confront the biomedicalization of aging that has shaped societal expectations about standard medical care and resulted in the unexplored provision of dialysis for AKI in older patients. The provision of clinical interventions to geriatric patients has become routine, and this routinization has led to the expectation that nephrologists should provide dialysis (19). Nephrologists report that they feel obligated to do so (20). The technological imperative—if dialysis can be done, it must be done—has influenced the practice of medicine and become a moral imperative (19,20). The enormously persuasive recommendations of specialists that life-extending treatments, such as cardiac procedures and dialysis, should be started led 95% of older dialysis patients to conclude that they did not have a choice about dialysis initiation (21).

The best possible care that the nephrologist can offer this patient is medical management for his AKI and treatment of his symptoms to make him comfortable. Because the patient lacks decision-making capacity, the nephrologist is legally required to make decisions about the patient’s treatment with his health care surrogate. Palliative care consultation can assist the nephrologist in two ways: (1) to communicate this plan of care to the patient’s son so that he understands why dialysis is not being offered, and (2) to provide optimal symptom management for a patient whose kidney disease precludes the use of renally excreted drugs, such as morphine (22).

Case 2: Elderly Man with AKI but No Other Major Comorbidities

A 77-year-old widower with well controlled hypertension and a 30-pack/yr smoking history but no other major comorbidities and baseline normal kidney function presented to the emergency department with AKI (BUN/creatinine of 122/6.6). He had a severe acidosis (pH of 7.21 and lactic acid of 8.1) with septic shock (BP of 80/45 and white blood cell count of 24,000 with left shift) and oliguria. His urine sediment contained muddy brown casts. His chest x-ray revealed bilateral pneumonia, and he was intubated, sedated, and placed on mechanical ventilation for respiratory failure. Before admission, he lived alone and was able to perform activities of daily living independently. He had named his sister as his medical power-of-attorney representative. He told her he would want treatment to keep him alive except if he were dying. He did not want to suffer the way that his wife did with a prolonged painful death from cancer.

Case 2 describes an older man without severe comorbidities. He presents with AKI and septic shock. Table 1, which is adapted from the clinical practice guideline Shared Decision Making in the Appropriate Initiation of and Withdrawal from Dialysis (2nd edition), involves reviewing the patient’s overall medical condition and his prior expressed preferences for medical treatment to determine if dialysis is medically indicated and something that he would want (23). Three-quarters of dialysis patients report that they would prefer to live a shorter period of time as opposed to as long as possible to avoid pain, suffering, and being kept alive on breathing machines (24). The fact that the patient had normal kidney function before this acute insult increases his chances of renal recovery. However, as previously noted, there is a sizeable percentage of older patients with AKI who develop ESRD (8–10). Thus, the possibility of ESRD and the need for long-term dialysis should be presented in the decision-making process.

Because the patient is sedated and lacks decision-making capacity, the nephrologist needs to talk to the patient’s legally designated decision-maker, his sister, to reach decisions about the appropriate treatment for the patient. Based on the patient’s conversations with her, the sister believes that the patient would accept mechanical ventilation and dialysis unless it was known that they were just

<table>
<thead>
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<th>Table 1. Evaluating the older patient with AKI for dialysis</th>
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<td>Questions to Consider</td>
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<td>(1) What is the age of the patient?</td>
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<td>(2) What are the patient’s comorbidities?</td>
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<td>(3) What is the patient-specific estimate of prognosis?</td>
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<td>What is the likelihood that the patient will survive the hospitalization, even with dialysis?</td>
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<td>(4) What is the patient’s functional status? To what extent is the patient able to perform activities of daily living? Does the patient reside in a nursing home?</td>
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<td>(5) What is the patient’s nutritional status?</td>
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<td>(6) Does the patient have decision-making capacity? If not, has the patient completed advance directives? Who is his/her designated decision maker? Did he/she express his/her preferences for medical treatment in the future?</td>
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<td>(7) Does the patient want to live as long as possible regardless of the pain and suffering or would the patient prefer to live a shorter period of time to avoid pain, suffering, and being kept alive on machines (24)?</td>
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<td>(8) Is the patient at increased risk of dialysis-related complications? Will the patient be able to cooperate with the dialysis process and will performing dialysis be safe for the patient and the support staff?</td>
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<td>(9) Is a time-limited trial of dialysis appropriate to determine with better clarity if the patient will tolerate dialysis and if the patient’s overall wellbeing will improve?</td>
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<td>(10) What is the probability of dialysis becoming permanent? If it becomes permanent, is the patient a long-term dialysis candidate?</td>
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Modified from references 23 and 24, with permission.
prolonging his dying. If need be, the sister thinks that the patient would agree to long-term dialysis for ESRD were it to develop. Because of the uncertainty of the patient’s course and the patient’s expressed wishes, a time-limited trial of dialysis of 1–2 weeks would be indicated to enable the treating team, including the nephrologist, to determine if the patient would make a meaningful recovery from the pneumonia, respiratory failure, septic shock, and AKI (23). Possible parameters to monitor to determine if the trial of dialysis therapy has been a success include: the patient regains decision-making capacity, extubation and removal from mechanical ventilation, transfer from the intensive care unit, and active participation in physical and occupational therapy. If, after 2 weeks, the patient remained in multiple organ system failure and was deteriorating, then the physicians would be warranted in concluding that the patient had a very poor prognosis and that the trial of dialysis had not accomplished the goals that were established before its initiation based on the patient’s preferences as stated by his sister. Such a time-limited trial would also benefit the family. In one study of dialysis patients and their surrogates, three-quarters of surrogates viewed a time-limited trial of dialysis positively if they were uncertain about patient recovery; they reported wanting to know that the patient would not recover before stopping it (24). In this case, the patient’s hemodynamics are not presented, but assuming that the patient is in shock, continuous RRT might be a better form of treatment for his AKI rather than intermittent hemodialysis (9). Nephrologists are not ethically obligated to offer continuous RRT or intermittent hemodialysis to older patients with AKI if they believe the harms of treatment outweigh the benefits (23).

If the patient’s overall clinical condition continues to deteriorate, despite maximal medical management, and he is deemed to be imminently dying, then to respect his wishes, a palliative care consultation should be obtained, the patient should be made comfortable, and the mechanical ventilation and dialysis should be stopped.

If the patient recovers from the multiorgan system failure, including AKI, he should be followed by a nephrologist after discharge because he is at risk of developing CKD in the future (8,10).

Discussion
The biomedical model of health care has gained ascendancy in the practice of medicine. One sign of this ascendancy is the biomedicalization of aging, which has led to the routinization of clinical interventions for older patients. As a consequence, societal expectations about standard medical care have resulted in the relatively unquestioned provision of dialysis for AKI to older patients (19). Standard practice replaces choice. Research has revealed that patients with kidney failure initiated dialysis without realizing that there was a decision to be made or that they had a choice about whether they wanted to start dialysis (21,25). Nephrologists and other physicians have been influenced by the technological imperative, which became a moral imperative to treat with dialysis. Physicians may claim that it is morally unjustified not to offer dialysis to any patient with an indication for it. Patients are put on a train of aggressive interventions that is difficult to stop. The goals of medicine to cure and prolong life are in conflict with the goals to minimize suffering and maximize quality of life. Because of the difficulty of saying no to medical interventions, such as dialysis, in later life, older patients are increasingly subjected to it, and the outcomes are neither extended life prolongation nor enhanced quality of life (19). One particular example is patients discharged to long-term acute care hospitals after hospitalizations, where dialysis was initiated for AKI. Most such patients were readmitted to acute care hospitals, required nursing home placement, or died. Less than one third returned home, and older age was significantly associated with lower odds of returning home (26).

Shared decision making and the reinforcement of the right of the patient to make a choice need to slow down the otherwise ineluctable routinization of starting old and very sick patients (such as case 1) on dialysis who, because of their comorbidities, can be predicted to do poorly. For older patients with severe chronic illness and limited life expectancy, they need to be given the opportunity to determine their treatment goals before dialysis is started. Respect for patient autonomy requires that the treatment that patients receive is aligned with their preferences. Maximizing survival may be one of several competing patient goals. Other possible goals that may take priority for some patients include preserving dignity, optimizing comfort, and maintaining quality of life (11). As part of shared decision making with regard to dialysis initiation in the hospital, depending on their overall medical condition, older patients should be informed of the possibility of a prolonged hospitalization, the use of one or more intensive procedures in addition to dialysis, and limited life expectancy.

The approach suggested in this paper is particularly important in the setting of critical illness in an intensive care unit. The vast majority of patients with AKI will have multiple medical problems in addition to kidney failure (23). Shared decision making is more complex and necessitates an interdisciplinary approach, including nephrologists, intensivists, and other specialties consulting on the case. Without consensus among these physicians and the patient on the overall goals of treatment, patients with AKI might receive discordant treatment, either forgoing dialysis while receiving multiple other forms of life support or requesting dialysis but refusing other life support necessary to keep a patient with multiorgan system failure alive.

This paper calls for nephrologists to re-examine the data and their attitudes to offering dialysis to older patients with AKI, especially those patients with underlying CKD and significant comorbidities. In the process of shared decision-making, nephrologists should not automatically recommend dialysis for older patients; in those patients who can be predicted to do poorly, recommending against dialysis upholds the Hippocratic maxim to be of benefit and do no harm. Although there is not yet an integrated prognostic model for AKI with a strong C statistic (like there is for ESRD) (27), there is accumulating evidence with regard to high-intensity health care, deterioration in quality of life, and limited survival in certain older patients with AKI who are started on dialysis. The nephrology community can use this evidence to better inform older patients with AKI and their families in the decision-making process before starting dialysis (25). This paper challenges the
automatic transformation of the technological imperative into the moral imperative for older patients with AKI and points to the need for a re-evaluation of dialysis ethics in this population. It also highlights the need for additional investigation to identify the variables and develop a prognostic model that can more accurately predict outcomes for older patients with AKI with and without dialysis.

Disclosures

None.

References


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