Nephrologists' Reported Attitudes About Factors Influencing Recommendations to Initiate or Withdraw Dialysis^{1,2}

Jean L. Holley,^3 Charles J. Foulks, and Alvin H. Moss

J.L. Holley, Renal-Electrolyte Division, University of Pittsburgh, 11431 Presbyterian University Hospital, Pittsburgh, PA
C.J. Foulks, Texas A & M University College of Medicine and Scott & White Hospital, Temple, TX
A.H. Moss, West Virginia University, Morgantown, WV (J. Am. Soc. Nephrol. 1991; 1:1284-1288)

ABSTRACT

A nationwide survey of nephrologists was performed to learn which patient factors and characteristics of nephrology fellowship training they reported as influencing their decisions to start or stop dialysis. One hundred seventy-four of 482 responses were received. Most respondents were men in private practice living in large communities (41% in communities over 1,000,000 population). Most had completed a 2-yr fellowship (88%) at a medical school hospital (75%). Few (9%) received formal instruction in medical ethics during fellowship training, and only one quarter had informally discussed life-sustaining treatments during training. Neurological status was the most, and age the least, important patient factor reported to influence decisions to start or stop dialysis. No respondent demographic factors correlated with ranking of patient factors in decisions to initiate or forego dialysis. Family wishes and preexisting medical conditions were significantly more important considerations in initiating than in stopping dialysis. Insights about the factors practicing nephrologists reportedly weigh most heavily in making the difficult decisions to withhold or withdraw dialysis are provided by this study. Additional study of the actual practices of nephrologists in decisions to initiate or withdraw dialysis and the factors influencing those decisions are needed. Formal instruction in these and other ethical problems confronting nephrologists should perhaps be included in fellowship programs.

Key Words: Medical ethics, dialysis, life-sustaining treatment

Little is known about how nephrologists decide to initiate or withdraw dialysis. We surveyed a random sample of practicing nephrologists to learn which patient factors and characteristics of nephrology fellowship training influenced physician decisions to start or stop dialysis. We also assessed the exposure to formal and informal instruction in medical ethics which occurred during nephrology subspecialty training and evaluated how such exposure influenced nephrologists' decisions.

METHODS

A three-part questionnaire (see Appendix) was sent to 500 nephrologists randomly selected from the mailing list of the American Society of Nephrology. The first part of the questionnaire elicited demographic information. In the second portion of the questionnaire, respondents ranked five patient factors in order of importance (1, most important; 5, least important) in decisions to initiate and terminate chronic dialysis. The third part of the questionnaire was a series of cases scored by a linear analogue scale (1,2) on which respondents marked their degree of comfort or discomfort (very uncomfortable, 0; very comfortable, 10) with decisions to stop dialysis in hypothetical clinical circumstances in which limited clinical information was provided (see Appendix).

A random number generator (Statgraphics; Statistical Graphics Corp., Rockville, MD) selected the physicians to receive the questionnaire. Both M.D.s and D.O.s were included. Those in fellowship training were excluded. One hundred twelve nephrologists replied to the first mailing. Six weeks after the initial mailing of 500 questionnaires, the surveys returned because of inadequate address (N = 10) and refusal to participate (N = 7) were subtracted from the initial list and a second mailing (N = 371) was performed. Sixty-two responses were received from the second

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^{3} Correspondence to Dr. J.L. Holley, Renal-Electrolyte Division, University of Pittsburgh, 11431 Presbyterian University Hospital, Pittsburgh, PA 15213.

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mailing. Eight questionnaires from the second mailing were returned for insufficient address and eight for refusal to participate. The overall response rate was 36% (174 of 482). First and second mailing responses were analyzed separately. The distribution curves and the means from the first and second mailings were compared by the Kolmogorov-Smirnov two-sample test and the Student’s t test, respectively. Neither was different, so responses from the first and second mailings were combined for analysis.

The study was approved by the West Virginia University Institutional Review Board for the Protection of Human Subjects. Statistical analysis was performed by using the computer-based program Statgraphics 3.0 (Statistical Graphics Corp.). Nominal data were compared by using the chi-square analysis. Ordinal data were compared by using the Mann-Whitney U test for independent groups. Linear regression analysis models were constructed where appropriate. Where regression analysis could not be performed, rank correlation analysis using Kendall’s tau where +1.0 represented perfect agreement and −1.0 perfect disagreement was used. Unless otherwise stated, data are presented as mean ± SE. Significance was accepted as P < 0.05.

RESULTS

Table 1 shows the demographic data of the respondents (all respondents did not answer all demographic questions; therefore, the denominators vary among questions). Most were men in private practice. Most lived in communities of over 1,000,000 population (48 of 116; 41%) followed by those in communities over 100,000 (29 of 116; 25%). Only 9% lived in communities with populations less than 50,000. Time spent in patient care was primarily divided among hospitalized chronic dialysis patients (39%), hospitalized nonchronic dialysis patients (34%), patients hospitalized in an intensive care unit (29%), outpatients on chronic dialysis (30%), and nonrenal outpatients (21%).

Table 2 illustrates the characteristics of the fellowship training of the respondents. Most completed a 2-yr fellowship at a medical school hospital. Few (9%) received formal instruction in medical ethics. Only one quarter had informally discussed life-sustaining treatments during their subspecialty training. During fellowship, the mean time spent in clinical training was 1.6 ± 0.2 yr, 1.1 ± 0.1 yr in research training and 0.75 ± 0.6 yr on dialysis rotations.

The ranking of factors influencing the nephrologists’ perception of patient appropriateness for initiating dialysis are shown in Table 3. Neurological functional status was reported as the most important factor and patient age the least important factor. The factors were ranked in the same order in decisions to stop dialysis (Table 3). Functional status was ranked above preexisting medical conditions as a factor reported to influence decisions to stop dialysis; the order was reversed when initiating dialysis was considered. Family wishes and preexisting medical conditions were reported as significantly more important considerations in initiating than stopping dialysis (Table 3).

The only demographic factor or characteristic of fellowship training which correlated with nephrologists’ perceived patient appropriateness for initiating dialysis was family wishes which correlated negatively with a prior ethics course (tau = −0.739, P < 0.05). No other demographic factor or characteristic of fellowship training correlated with nephrologists’ ranking of factors for initiating or withdrawing dialysis.

Attitudes regarding the hypothetical cases scored by using the linear analogue scale are shown in Table 4. Nephrologists were most comfortable with a family’s request to discontinue dialysis in a patient with Alzheimer’s disease. Respondents were significantly less comfortable with requests to stop dialysis in otherwise healthy patients.

### Table 1. Respondent demographics (N = 174)

<table>
<thead>
<tr>
<th>Age (yr)</th>
<th>44 ± 0.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (male/female)</td>
<td>160/14</td>
</tr>
<tr>
<td>Yr after training</td>
<td>12 ± 0.7</td>
</tr>
<tr>
<td>Current practice</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>65% (81/125)</td>
</tr>
<tr>
<td>Academic</td>
<td>31% (39/125)</td>
</tr>
<tr>
<td>Other</td>
<td>4% (5/125)</td>
</tr>
</tbody>
</table>

### Table 2. Characteristics of fellowship training

<table>
<thead>
<tr>
<th>Length</th>
<th>67% (76/114)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 yr</td>
<td>21% (24/114)</td>
</tr>
<tr>
<td>Other</td>
<td>12% (14/114)</td>
</tr>
<tr>
<td>Affiliation</td>
<td></td>
</tr>
<tr>
<td>Medical School</td>
<td>75% (97/129)</td>
</tr>
<tr>
<td>Private Hospital with medical school association</td>
<td>10% (13/129)</td>
</tr>
<tr>
<td>Armed Forces</td>
<td>12% (15/129)</td>
</tr>
<tr>
<td>Private Hospital without medical school association</td>
<td>3% (4/129)</td>
</tr>
<tr>
<td>Formal instruction in ethics</td>
<td>9% (16/174)</td>
</tr>
<tr>
<td>Discussed life-sustaining treatments during fellowship</td>
<td>26% (46/174)</td>
</tr>
</tbody>
</table>

* Denominators vary depending upon the number of respondents completing specific questions.
TABLE 3. Ranking of patient factors in decisions to initiate or stop chronic dialysis

<table>
<thead>
<tr>
<th>Factor</th>
<th>Initiate Dialysis Score</th>
<th>Rank</th>
<th>Stop Dialysis Score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurological Functional Status</td>
<td>1.5 ± 0(^a)</td>
<td>1</td>
<td>1.5 ± 0.4 (^a)</td>
<td>1</td>
</tr>
<tr>
<td>Physical Functional Status</td>
<td>2.1 ± 0.1 (^a)</td>
<td>2-3</td>
<td>2.1 ± 0.1 (^a)</td>
<td>2</td>
</tr>
<tr>
<td>Preexisting Medical Condition</td>
<td>2.1 ± 0.1 (^a,b)</td>
<td>2-3</td>
<td>2.5 ± 0.1 (^a,b)</td>
<td>3-4</td>
</tr>
<tr>
<td>Family Wishes</td>
<td>2.9 ± 0.1 (^a,b)</td>
<td>2-3</td>
<td>2.5 ± 0.1 (^a,b)</td>
<td>3-4</td>
</tr>
<tr>
<td>Age</td>
<td>3.9 ± 0.1</td>
<td>5</td>
<td>4.1 ± 0.1</td>
<td>5</td>
</tr>
</tbody>
</table>

\(^a\) P < 0.05 compared with next lower rank.
\(^b\) P < 0.05 initiate dialysis versus stop dialysis.

DISCUSSION

The broad criteria used for initiating most medical therapies are medical benefit and patient willingness to undergo the therapy (3). There is an attempt to define "medical benefit" generally only when resources are limited. In the case of dialysis, when financial resources were no longer limited after passage of public law 92-603, and because renal failure is fatal and dialysis will, at least in the short term, prolong life, dialysis was assumed to be beneficial (4). Little data about the reported attitudes of nephrologists concerning selection criteria for starting and stopping dialysis exist. Our results suggest that nephrologists perceive dialysis as less beneficial in patients with certain conditions.

Nephrologists listed neurological functional status as the most important factor influencing decisions to initiate dialysis (Table 3). They also made distinctions on the basis of physical functional status, preexisting condition, age, and family wishes. Two earlier studies from the United Kingdom (5,6) and one from the United States (7) identified factors which might influence nephrologists not to initiate dialysis.

In one of these studies, mental illness, associated diseases, age, and poor home facilities influenced rejection of patients for dialysis (5). Although the 25 dialysis units surveyed in the study of Parsons and Locke did not use rejection criteria uniformly, some patient factors were consistently more important than others. In the second United Kingdom study, non-nephrologist consultant physicians in the United Kingdom rejected more patients for chronic dialysis than did nephrologists (6). Despite differences among physician groups in mean rejections, the pattern of rejection was similar in all groups, suggesting the criteria applied to selection did not derive from specialist knowledge (6). Qualitative and quantitative prognosis, psychologic stability, and age have been noted in the third study to become more important selection criteria when dialysis resources are limited (7). Although the instruments were different, it is clear from these early studies and our data that physicians report that they apply selection criteria to patients beginning chronic dialysis.

Only one other study has examined factors which influence nephrologists to recommend withdrawal of dialysis (8). In this study of 118 nephrologists in New England, the following five factors were most likely to cause the nephrologists to discuss withdrawal of dialysis: terminal illness, patient quality of life, multisystem complications, critical illness, and age. The top three factors we identified in our slightly larger nationwide sample of nephrologists are similar to those noted by Singer (8). Neurological and physical functional status cited in our study directly impact on the patient quality of life factor described in Singer’s study. The preexisting medical conditions category in our study is similar to the multisystem complications and critical illness from the Singer study. Unfortunately, we are not able to discern how the respondents to our questions perceived the definition and timing of pre-existing medical conditions. Such conditions, if assumed to have occurred after the initiation of dialysis, would be expected to be more important criteria for stopping dialysis than for initiating it. Our questionnaire, however, did not directly address this issue, and interpretation is therefore impossible. Considering our studies and those of Singer, however, there seems to be significant agreement among nephrologists on the factors reportedly influencing them to recommend withdrawal of dialysis. The chronic dialysis population is growing and increasingly composed of older patients with more medical illnesses (9). A better understanding of the benefits of chronic dialysis may help nephrologists to develop appropriate patient selection criteria. Clearly, neurological function is a definable criterion.

Some have argued that despite the accessibility of...
dialysis under the Medicare-funded end-stage renal disease program, exclusionary criteria for dialysis exist in the United States (10). Age has been cited as the primary negative selection factor; Kjellstrand suggests that patients over 60 years of age have only a 20 to 30% chance of younger patients to receive dialysis (11). In our study, age was ranked below neurological status, medical conditions, and physical disabilities, suggesting that it may be considered but is of less importance than other factors in considerations to initiate or withdraw dialysis.

The only difference between the ranking of factors for stopping versus starting dialysis was that less importance was placed on the wishes of the family when considering withdrawal of dialysis. Family wishes parallel physician decisions to stop dialysis in incompetent patients (12). Previous studies have documented that physicians, patients, and families consider neurological impairment an important factor influencing the decision to withdraw dialysis.

Dialysis and transplant patients agreed with dialysis unit staff members when considering discontinuing dialysis in a demented patient; a minority in each group (18%) would continue dialysis regardless of the condition of the patient (13). When dialysis patients were asked their preferences about cardiopulmonary resuscitation and stopping dialysis under a variety of hypothetical clinical situations, permanent neurologic dysfunction was a determining factor in all situations (14). In most studies of withdrawal of dialysis, neurological dysfunction such as cerebral vascular accident or dementia was the most common medical condition leading to patient or family decisions to discontinue dialysis (15, 16). There is thus a remarkable consistency in the acceptance of withdrawal of dialysis in the face of neurological dysfunction by patients, their families, and health care providers. Our study confirmed this finding and, additionally, showed that neurological status claimed to be an important factor in physician decisions to initiate dialysis.

As the studies on withdrawal of dialysis have shown, nephrologists will inevitably be faced with decisions to initiate and stop dialysis (15–17). Nephrology training programs need to address these issues and provide a framework for dealing with these clinical situations.

Few of our respondents (9%) had participated in a formal ethics course. This finding may reflect the period during which our respondents trained (the average number of years posttraining was 12), when instruction in medical ethics was not a formal part of medical school, residency, or fellowship training. In our study, those with training in ethics placed less importance on the wishes of the family in decisions to stop dialysis. Although this correlation (tau = −0.74, P < 0.05) was the only one found, small numbers (16 of 174 respondents had formal training in ethics) make conclusions difficult. Despite the number of ethical issues inherent in the practice of nephrology, only 26% of nephrologists reported even informal discussion of such issues during training. The direct influence of formal ethics training on the practice of nephrologists could not be assessed by this study. Given the increasing number of patients withdrawing from dialysis (15,16), however, some discussion of these issues during fellowship training seems reasonable.

Because most nephrologists who received the study questionnaire did not respond, some caution in interpreting our results is needed. Because the factors influencing nephrologists' decisions to recommend either initiating or withdrawing dialysis identified in our study agree with and extend previous observations, credence is lent to our study's validity. Both our study and several of the previous studies, however, are limited because they employed closed-end questions to identify and rank the factors affecting physician decision making. Nonetheless, our identification of neurological functional status as the factor reported to be the most influential in nephrologists' decisions to stop and forego dialysis provides valuable information to the dialysis community. Further studies examining nephrologists' actual, as opposed to reported, practices are required to validate this finding.

The open discussion of withdrawal of dialysis (15,16) has reawakened consideration of issues about initiating dialysis. As suggested by Kilner (7) and Kjellstrand (11), as long as dialysis resources are treated as if they are unlimited and until physicians are better able to predict which patients will do well with dialysis therapy, liberal acceptance policies for initiating dialysis in conjunction with liberal policies for stopping dialysis seem most reasonable. The findings of this study provide insight about the factors practicing nephrologists claim to weigh most heavily in making the difficult decisions to withhold or to withdraw dialysis.

APPENDIX
Questionnaire
1) Demographic Data
age____
sex____

Years after fellowship training ____Yrs. of fellowship ____
Months of dialysis experience in fellowship ____
Months of clinical experience ____Months of research ____

Did you take an ethics course at any time during your training? Y ____ N ____

Did you discuss, as a formal part of your training, decisions about the initiation or discontinuance of life-sustaining procedures? Y ____ N ____
The hospital I trained in as a renal fellow was:
(circle)
1. University or medical school hospital
2. Private or community hospital associated with a medical school
3. Private or community hospital not associated with a medical school
4. Teaching hospital of the armed forces
5. Veterans Administration or Public Health Service Hosp.

Indicate your practice: Private___University/Academic___
HMO___Government___

Indicate the size of your community: >1,000,000 ___
500,000-1,000,000 ___
100,000-500,000 ___
50,000-100,000 ___
20,000-50,000 ___<20,000 ___

What percent of your time is devoted to:
1. Care of dialysis patients ___
2. Care of hospitalized patients ___
   % of hospitalized patients that are dialysis pts ___
   % of intensive care unit patients ___
3. Care of nondialysis, nontransplant patients ___
4. Care of nonrenal disease patients ___

2) Ranking of factors influencing decisions to initiate and withdraw dialysis
a) What factors influence you in considering a patient for chronic dialysis therapy?
   Please rank in order from 1-5 with 1 being most important.
   ___ age
   ___ preexistent medical condition
   ___ preexistent functional status based on physical disabilities
   ___ preexistent functional status based on neurologic disabilities
   ___ the wishes of the family

Ranking of factors influencing decisions to initiate and withdraw dialysis, continued
b) Which of the following factors influence your decision to discuss discontinuance of dialysis with your patients?
   Please rank in order with 1 being the most important.
   ___ age
   ___ preexistent medical condition
   ___ preexistent functional status based on physical disabilities
   ___ preexistent functional status based on neurologic disabilities
   ___ The family wishes to discuss it

3) Linear Analogue Cases
   Indicate your degree of comfort with the following cases by placing an "X" at the appropriate spot on the line below the case.

1) The family of a dialysis patient with Alzheimer’s disease such that he/she must be fed by others, requests you to discontinue dialysis.

Uncomfortable ___ Comfortable ___

2) A stable, mentally competent 70-year-old chronic dialysis patient requests discontinuance of dialysis, clearly knowing that death will result.

Uncomfortable ___ Comfortable ___

REFERENCES