Modality choice
Perceptions about renal replacement therapy among nephrology professionals

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Abstract
Usage of renal replacement modalities available for the treatment of end stage renal disease varies widely between countries, indicating that non-medical factors contribute to the choice of therapy. In the United States, 93% of the patients are treated with in-center hemodialysis (HD), about 7% undergo peritoneal dialysis (PD) and less than 1% are on home HD.

In comparison, a Northern California-based nonprofit dialysis provider with home dialysis centers throughout the United States has achieved a home therapy penetration of 22%, the highest proportion of home therapies among U.S. dialysis providers. To better understand the perceptions about the various modality choices among caretakers (nephrologists and nurses) in this organization a short questionnaire was used. We examined the hypothetical setting of the caretakers being in the patient role.

More than 90% of the nephrology professionals chose a home therapy as initial treatment option with close to equal distribution between PD and home HD. This pattern persisted for maintenance therapy with home HD being the preferred modality. Nephrologists’ and nurses’ perception of who makes modality decisions varied profoundly.

Introduction
Among nephrology professionals worldwide, peritoneal dialysis (PD) is considered the best initial therapy, and more frequent home/self-care dialysis the best long-term therapy for patients suffering from ESRD. This assessment is in stark contrast to the current distribution of modalities, with at least 85% of patients being treated with in-center HD and only an estimated 15% undergoing home therapies globally.

Widespread, easy availability of center HD, limited access to home therapies, lack of understanding of home therapies, increasing age and co-morbidities affecting medical suitability among incident patients, and patient motivation are among the reasons considered responsible for the low utilization of home therapies in recent years. Educational efforts have been shown to increase the likelihood of patients choosing self-care modalities, and have therefore gained more attention in recent years.

In 2003, WellBound was started as a subsidiary of Satellite Healthcare, a non-profit dialysis provider headquartered in Northern California. The aim of WellBound was to educate patients with chronic kidney disease Stage 3-5 with option classes and to introduce all modality choices, including PD, home HD, center HD, and transplantation. Over the last seven years, a total of 18 centers were established throughout the United States caring for approximately 1,000 patients. This group represents 22% of the patients company-wide and the highest proportion of home therapies among U.S. dialysis providers. Of these patients, 81.3% undergo PD and the remaining 18.7% are on home HD.

Since the home dialysis centers are freestanding and often geographically separated from an in-center dialysis unit, staff from one type of center may not be familiar with the other. In addition, referring physicians may either be associated with both modalities or exclusively have patients in either the in-center or home center.

A pattern of referring “believers in home therapies” appeared to emerge over time, with some professionals being strong supporters of home therapies and others continuing mainly conventional center therapies despite the convenient availability to all modalities. In addition, awareness and knowledge

When asked what they would choose as initial renal replacement therapy (RRT) while awaiting a transplant, 50% of the MDs chose home HD, either short daily or nocturnal, closely followed by 43% choosing PD. Similar results were found for nurses with 45% choosing home HD and 44% PD.

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of staff working in the in-center dialysis setting regarding alternative home therapies appeared to be limited.

To better understand the process involved in modality choices and the perceptions of the various modalities among the caretakers and employees of Satellite Healthcare working in different facilities and positions, we examined their attitudes and opinions by questionnaire.

**Methods**

In the Fall of 2009, a 10-item questionnaire generated through a Survey Monkey tool was sent via email to the company distribution list, which included all referring physicians to both the in-center and home facilities, all nurses, dietitians, social workers and patient care technicians (with e-mail access), as well as all headquarter employees. The list totaled 844 addressees, including 187 nephrologists and 299 nurses.

The questionnaire contained a personal hypothetical case study, asking the respondents to pick their personal modality choice if he/she was suffering from ESRD. Respondents were asked to name an initial renal replacement therapy for themselves and a long-term therapy in case transplantation was not an option. The reasons for the choices were evaluated with multiple-choice answers. In addition, a clinical assessment of what percentage of patients with ESRD was considered to be capable of doing either PD or Home HD was requested in an open question format with respondents being allowed to enter the percentage estimated.

Finally, perceptions regarding who makes and who should make the decision about modality choices were examined.

**Results**

A total of 323 individuals responded to the questionnaire, resulting in a 38% response rate. The respondents were comprised of 145 clinical professionals (nephrologists and nurses), 61 ancillary staff (dietitians and social workers), 20 patient care technicians and 94 administrative employees. Three respondents did not disclose their job classification.

The results pertaining to the 44 nephrologists (MDs) and 101 nurses (RNs), representative of the clinical caretakers, are presented in this article:

1. **Individual modality choice.** When asked what they would choose as initial renal replacement therapy (RRT) while awaiting a transplant, 50% of the MDs chose Home HD, either short daily or nocturnal, closely followed by 43% choosing PD. Similar results were found for nurses with 45% choosing Home HD and 44% PD. Only 5% of the MDs and 6% of the RNs would start with conventional center HD (see Figure 1). The dominance of home HD was even more profound when asked for a permanent therapy choice in case of not being eligible for a transplant. In this scenario, 66% of the MDs and 49% of the nurses would choose Home HD, followed again by 30% of the MDs and 40% of the RNs choosing PD. Conventional center HD was even more infrequently chosen in this setting (selected by 2% of the MDs and 5% of the RNs). See Figure 2 for a detailed review.

2. **Why choose that therapy?** When asked the reasons for their modality choices, respondents could pick from the following options:
   - I want to be taken care of
   - I want to be in charge
   - I need flexibility
   - The outcomes are better
   - Other (an option to describe other reasons).

The overwhelming reasons selected for

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**Figure 1:** If you were told that you need renal replacement therapy, what form of dialysis would you choose while waiting for a transplant?
their chosen modality were:
- Better outcomes (41%)
- Flexibility (36%)
- Wanting to be in charge of the therapy (14%).

Only 6% responded with wanting to be taken care of, and 3% responded with other reasons, most of which echoed the above-mentioned reasons in a personal way.

3. Outcomes. Additionally, we asked the respondents about their perception of outcomes: Do you think outcomes with the various modalities are equal; better in home HD compared to center HD; better in HD compared to PD; or vice versa. The overwhelming response was ‘better in home HD compared to center HD’ by both nephrologists and nurses.

4. Could more patients be on a home dialysis therapy? The survey asked respondents what percentage of patients did they feel were capable of doing home therapies. More than 62% of the nephrologists (27/43) and 64% of the nurses (58/90) estimated 10% to 30% of patients were able to perform Home HD. More than 60% of the nephrologists (27/43) stated that 20% to 50% of patients were good candidates for PD. Similarly, more than 60% of the nurses (61/91) estimated 20% to 60% of patients were capable of PD.

5. Modality choice: who decides? When asked who makes the decision about modality choices, however, the perception between nephrologists and nurses differed widely. Fifty-seven percent of the nephrologists thought the patient made the decision, while only 19% of the nurses agreed with this. In contrast, 47% of the nurses stated that modality choices were driven by the physician (see Figure 3). However, when asked who they felt should make the decision, agreement prevailed, with the majority of both nephrologists and nurses strongly believing that the patient, or patient and care team, should be the decision makers (see Figure 4).

Discussion
Much controversy and discussion exists around the question of the best dialysis therapy for ESRD patients. There are wide variations in the prevalence of the various modalities, both between and within countries. Non-medical factors including economic limitations and incentives, as well as a lack of medical evidence for superior outcomes, caretakers’ and patients’ knowledge of the individual therapies, and variable access to home therapies have been largely assumed to be responsible for the overwhelming dominance of conventional center HD therapy. A recent international survey among almost 7,000 nephrology professionals revealed that the majority considered PD the best therapy choice for the incident patient, and more frequent HD administered as self-care, preferably in the home setting, as the best choice for long-term therapy. Despite remarkably broad consensus in these opinions worldwide, the distribution of PD and center HD does not align with these perceptions. Only about 7% of U.S. dialysis patients undergo PD, a percentage vastly different from the widely held perception that PD is an optimal therapy for the incident patient. Likewise, the 93% of patients using conventional thrice weekly in-center HD, which is the prevailing therapy for prevalent patients in the United States, stands in contrast to the more than 30% of respondents from a Gambro sponsored survey who consider more frequent home/self-care dialysis as the best long-term therapy. This result is similar to an earlier survey distributed to Canadian nephrologists who favored
Research

self-care therapy for 61% of patients. Furthermore, American nephrologists indicated that 67% of patients should be on HD and 33% on PD in an attempt to maximize survival, wellness, and quality of life in this patient population; again far from the current statistics.

In our survey among the 145 physicians and nurses, home therapies were primarily chosen in both the incident and the long-term prevalent situation without hope for a transplant. Around 90% of the nurses and physician respondents chose home HD or PD when starting RRT, with an almost equal distribution. When facing the long-term therapy, home HD was perceived the better choice by both nephrologists and nurses.

The shift to home HD was more profound on the nephrologists’ side with 16% more switching to home HD when a transplant is not an option while nurses only increased slightly from 45% to 49%, suggesting that PD and home HD are felt to be valid alternative therapies in both the incident and prevalent situation. Eleven percent of center HD choices made by both the nephrologists and nurses when starting RRT decreased further to only 7% as the long-term solution. These results are aligned with previously published data, suggesting that professionals would rarely choose center HD as their modality.

Such a difference of choices between RRT for nephrology professionals and the reality distribution may easily be explained by the assumption that professionals are less likely to be overwhelmed with training and maintenance of a self-therapy administered at home. However, the majority of professionals estimated 10% to 30% of patients are capable of performing home HD. A similar result emerged for PD, with 60% of the nephrologists assessing 20% to 50% of the patients capable of undergoing PD. Nurses estimated even higher numbers of 20% to 60% of patients being good candidates for PD. This estimate is consistent with recently published data from a prospective study in several North American nephrology practices where in fact 78% of patients were found to be medically and psychosocially eligible for PD.

A frequent argument in the discussion among health care providers is the degree of education required to achieve good outcome, based on the notion that self-care is more demanding and challenging and requires a great deal of sophistication. A recent study, however, indicated that this argument is weak, as PD outcomes in Brazil were found completely independent of the degree of education (unpublished data by R. Pecolts, MD, in Brazil).

The idea that dedicated home therapy centers now have easy access to home modalities has been successfully established. While the discrepancy between perception and reality has decreased, it remains considerable. What reasons might explain this imbalance? If the professionals repeatedly assess PD as the best choice for initiation of RRT, choose overwhelmingly home HD for long-term modality, and assess a larger number of patients being medically and psychosocially capable of undergoing these therapies, it is important to explore other potentially modifiable barriers. A recent study from Canada identified several physical barriers, including decreased strength to lift PD bags, decreased dexterity and vision, as well as cognitive barriers such as language, history of non-compliance, psychiatric conditions, and dementia/poor memory. It is conceivable that underestimating such conditions may contribute to a more optimistic assessment in a survey. Furthermore, this study found that family support resulted in an increased PD utilization for incident patients consistently across

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**Figure 3: Who do you think makes the decision about modality?**

<table>
<thead>
<tr>
<th>Nephrologists</th>
<th>Nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physician</strong></td>
<td>16%</td>
</tr>
<tr>
<td><strong>Patient</strong></td>
<td>18%</td>
</tr>
<tr>
<td><strong>Care team</strong></td>
<td>6%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>57%</td>
</tr>
<tr>
<td><strong>Don't know</strong></td>
<td>1%</td>
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</tbody>
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the subgroups with the above-mentioned barriers, as well as in situations where assistance for home therapy was in place.

It should be readily accepted that the impact of self-care/home therapy on patient and family cannot be underestimated. At the same time it has also been shown in different countries that approximately half of well-informed patients will choose a home therapy\textsuperscript{19,23} which after exclusion of patients with absolute contraindications in the range of 17 and 28%,\textsuperscript{13} should result in about 30 to 40% of home therapy among incident patients, a percentage not reached either in the United States nor even in our setting at Satellite Healthcare. Furthermore, research done in a satellite unit in Belgium demonstrated that, if provided with a pre-Dialysis Education Program at an early stage of CKD (stage 4), 58% of the patients chose to start on self-care RRT modalities (31% on PD, 16% on self-care center HD, and 9% opted for Home HD).\textsuperscript{22}

In places such as Hong Kong where a "PD-first" policy exists, consistently excellent results are achieved with 80% of ESRD patients on PD,\textsuperscript{13} confirming that more extensive use of PD or home therapies in general is realistic.

Health care reform and its emphasis on affordable quality care, stressing a renewed focus on home modalities, provides an opportunity to overcome the difference between perception and reality with respect to renal replacement modalities. Indeed, the forthcoming payment bundle as outlined thus far may hold good news by presenting itself as the missing link to bringing perception of best practice in dialysis therapies and reality closer aligned. \textsuperscript{11}

References: