Home Dialysis Training for Fellows: Privilege or Necessity?

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There is a great discrepancy between the modality that nephrologists would choose if they themselves were to start dialysis and the reality of the current dialysis situation in the United States. In a 2010 survey reported by Merighi et al., 629 practicing US nephrologists were asked “If your kidneys failed and there was a 5-year wait for a transplant, which type of dialysis would you choose?” Only 6% chose in-center hemodialysis (HD); by contrast, of the prevalent dialysis population in that same year, 92% were receiving in-center HD. One would be pressed to find another situation for which there is such a stark difference between physicians’ and patients’ choices. This suggests that nephrologists are aware of benefits associated with home dialysis and would choose home dialysis for themselves, but other factors, both medical and nonmedical, have an important role in determining the dialysis modality that patients receive. Patient factors include co-morbid conditions, psychosocial and financial barriers, and patient and partner education about home dialysis. Provider factors, as noted in a recent NKF-KDOQI conference outcomes report, include a lack of education and perceived competence in prescribing home dialysis.

This should come as little surprise. Although the number of kidney replacement therapy (KRT) patients in the United States continues to grow, increasing from 304,420 in 1996 to 726,331 in 2016, KRT modality choice continues to be lopsided, with 87.5% of incident patients with kidney failure in 2016 receiving HD, 9.7% receiving peritoneal dialysis (PD), and only 2.8% receiving a kidney transplant. Of patients who initiated HD, only 2% started with home HD (HHD), whereas an overwhelming 98% started with in-center dialysis. Among prevalent dialysis patients, numbers are similar, with 87.6% receiving in-center HD; 1.8%, HHD; and 10.1%, PD. This low prevalence leads to a lack of exposure to home therapies among US nephrologists, thereby reducing expertise and comfort in prescribing and caring for home dialysis patients.

A survey of self-perceived competency for graduating nephrology fellows was conducted from 2004 to 2008. Although only 20% of respondents reported “little or no training” or “some training but not enough to feel competent” when asked about in-center HD, a staggering 84.2% and 44.4% gave a similar response for HHD and PD, respectively. Given this limited confidence among recently trained nephrologists, it is not surprising that nephrologists are less likely to refer patients to a home KRT modality than in-center HD.

One way to tackle this issue would be through the Accreditation Council for Graduate Medical Education (ACGME), in cooperation with the American Society of Nephrology (ASN) and fellowship program directors, mandating home dialysis training as a core requirement of nephrology fellowship training, similar to the existing requirement for kidney transplant exposure during fellowship training.

Current home dialysis training varies across fellowship programs. In some, fellows are assigned the patient panel of a particular attending and follow up those patients throughout their training years. Although longitudinal follow-up of home dialysis patients provides fellows with valuable learning experiences, it can be difficult and challenging to balance both the comprehensive monthly and home dialysis–related issue visits with assigned inpatient responsibilities. Another model has a subset of attendings running the home dialysis unit with fellows rotating in the unit during their assigned home dialysis weeks, the drawback of which is lack of longitudinal follow-up. However, it provides fellows with the opportunity to focus on the patients who frequent the clinic during those assigned weeks and exposure to the outpatient management of acute dialysis-related issues.

We propose that nephrology fellowship programs that do not have available home dialysis programs could develop relationships with a facility that provides maintenance home dialysis. This would provide needed clinical exposure, with the goal of intensifying home dialysis education for nephrology fellows during their training years. An intensive
month-long exposure to PD and HHD along with an ongoing continuity home dialysis clinic is one way to achieve this. Through these efforts, graduating fellows would be specifically trained in both PD and HHD and could help initiate or expand existing home dialysis programs, both private and academic.

Despite the issues that the field of nephrology has recently faced in terms of recruiting trainees, nephrology fellowship training has expanded into geriatrics, palliative care, onco-nephrology, and critical care. Given the large numbers of patients with kidney failure who could benefit from home dialysis and the current emphasis of Centers for Medicare & Medicaid Services (CMS) on promoting home therapies, it is critical to expand home dialysis training for nephrology fellows.

Moreover, programs currently affiliated with relatively large home dialysis units could choose to offer fellows an additional year of home dialysis fellowship. To our knowledge, there are very few programs in the United States that provide this option. A home dialysis fellowship would provide fellows the opportunity to learn about equipment- and facility-specific issues, infectious and noninfectious complications, and the business of running a dialysis facility, including quality assurance and performance improvement (QAPI), CMS Conditions for Coverage, and the ESRD Network structure. Fellows would also have the opportunity to see patients on a regular basis during both their monthly comprehensive visits and clinic visits that are related to acute dialysis-related issues and complications, providing them with extensive exposure to exit-site infections, peritonitis, and catheter-related problems, among others. Box 1 illustrates some pros and cons of an additional year of home dialysis fellowship training. Funding is an important aspect to consider because an extra year would be in a non–ACGME-accredited program. Each institution would have to develop its own approach which would likely vary between programs, essentially the same situation as in kidney transplant and other sub-specialty training programs in nephrology.

An integral component of any home dialysis fellowship should be patient and care partner education, including on chronic kidney disease and kidney failure management. This would include all options for managing kidney failure including KRT modalities and comprehensive conservative care options and would emphasize communication skills that span health literacy levels. It is also important for fellows to work closely and build camaraderie with the nurses, surgeons, interventional radiologists/nephrologists, nutritionists, social workers, dialysis educators and coordinators, and ancillary support staff of these programs to understand their roles in successfully providing the highest quality of care for patients.

Changing the landscape of kidney failure management requires much more than just increasing the number of nephrologists who are either well trained or specialize in home dialysis; systemic changes must be undertaken too.

### Box 1. Pros and Cons of an Additional Year of Home Dialysis Fellowship Training

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<th>Pros</th>
<th>Cons</th>
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<td>- Increasing fellow exposure to home dialysis and related complications</td>
<td>- Funding required</td>
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<td>- Increasing the number of fellowship graduates who are highly skilled in home dialysis</td>
<td>- Large home dialysis program–affiliated fellowships required to provide trainees with adequate exposure</td>
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<td>- Opportunity for graduating fellows to help start and expand home dialysis programs</td>
<td>- Existing difficulty recruiting fellows to nephrology or for third year of training</td>
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An example of a large-scale expansion in PD use was achieved by Kaiser Permanente of Northern California. The incidence of PD in their KRT population increased from 15.2% in 2008 to 33.8% in 2018. The main components of their intervention were patient and family education, health care professional and organizational education, operational system-level improvements, and monitoring and continuous quality improvement. This included enrolling all patients with chronic kidney disease in educational programs, scheduling meetings with clinic staff for patients considering PD to have their questions answered, providing additional in-depth training in patient education for dialysis nurse case managers, and launching the regional Kaiser Permanente “PD University” program to increase awareness amongst health care professionals. They also adopted a PD-first approach for patients beginning dialysis and adopted an urgent-start PD program. Of note, 80.3% of the patients who initiated PD remained on it 1 year later. However, there may be variations in modality survival as demonstrated by the study by McGill et al., which showed that after a median follow-up of 21.6 months, 84.2% of incident PD patients had either switched to HD, received a kidney transplant, or died.

Expanding home dialysis training to include innovative research and projects in home dialysis therapies will not only provide valuable clinical data, but also may help in addressing the concerns and preconceived biases that some medical professionals in other fields may have against home dialysis modalities, including misconceptions about patients with certain comorbid conditions such as obesity and diabetes. Academic institutions have long been leaders in producing nephrology fellows who are eager to take part in said projects, which has the potential to help promote home dialysis even further.

For practicing nephrologists, several educational courses are available for those interested in expanding their
knowledge of both PD and HHD. These include the comprehensive PD curriculum from the North American Chapter of the International Society for Peritoneal Dialysis (ISPD), ASN’s Virtual Mentor Dialysis Curriculum, and ISPD’s Home Dialysis University.8

Finally, given the increasing costs incurred by the Medicare program in caring for the KRT population, there is an incentive to increase the number of patients undertaking home dialysis. In 2015, total Medicare spending on KRT patients was $33.8 billion, 3 ~0.9% of the total government budget for that year. By our calculation, had 30% of the prevalent KRT patients in 2016 been treated with PD rather than HD (in-center HD, in-center self-HD, and HHD), Medicare spending on their outpatient dialysis treatments alone may have been ~$150 million less. Given that Medicare spending on vascular and peritoneal accesses dramatically differs ($487,402,887 and $3,432,850, respectively, in 2016),3 assuming that patients’ initial dialysis modality is successful, this represents $1,064 per prevalent HD patient per year and only $67 per prevalent PD patient per year. Of course, we know that long-term success is not ensured because McGill et al7 found that ~41.2% of incident PD patients between 2008 and 2011 had transferred to HD. Still, given the cost realities, it comes as little surprise that the recent executive order titled “Advancing American Kidney Health Initiative” includes as 1 of its 3 broad goals that 80% of new American KRT patients are treated by home dialysis or transplantation by 2025. Although we may not reach the target, that is most certainly a step in the right direction.

In conclusion, the proposed mandatory ESRD Treatment Choices model for expanding home dialysis necessitates that our nephrologists be adequately trained in both PD and HHD. This requires expansion in home dialysis education, either through enhanced exposure in current clinical nephrology training or the addition of home dialysis subspecialty fellowships. A change in the culture and perception of home dialysis must start from within and the best way to accomplish this would be to give the future generation of nephrologists the option of not only learning more about but also becoming expert in the provision of home dialysis.

References