Exploring Barriers and Potential Solutions in Home Dialysis: An NKF-KDOQI Conference Outcomes Report

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Home dialysis therapy, including home hemodialysis and peritoneal dialysis, is underused as a modality for the treatment of chronic kidney failure. The National Kidney Foundation–Kidney Disease Outcomes Quality Initiative sponsored a home dialysis conference in late 2017 that was designed to identify the barriers to starting and maintaining patients on home dialysis therapy. Clinical, operational, policy, and societal barriers were identified that need to be overcome to ensure that dialysis patients have the freedom to choose their treatment modality. Education of patients and patient partners, as well as health care providers, about home dialysis therapy, if offered at all, is often provided in a cursory manner. Lack of exposure to home dialysis therapies perpetuates a lack of familiarity and thus a hesitancy to refer patients to home dialysis therapies. Patient and care partner support, both psychosocial and financial, is also critical to minimize the risk for burnout leading to dropout from a home dialysis modality. Thus, the facilitation of home dialysis therapy will require a systematic change in chronic kidney disease education and the approach to dialysis therapy initiation, the creation of additional incentives for performing home dialysis, and breakthroughs to simplify the performance of home dialysis modalities. The home dialysis work group plans to develop strategies to overcome these barriers to home dialysis therapy, which will be presented at a follow-up home dialysis conference.

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Introduction

Home dialysis therapy, including peritoneal dialysis (PD) and home hemodialysis (HHD), are underused dialysis modalities in the United States. On the occasion of the 20th anniversary of its launch, NKF-KDOQI (National Kidney Foundation–Kidney Disease Outcomes Quality Initiative) sponsored a 2-day controversies conference on home dialysis. A select group of stakeholders chosen from health care professionals, government, patients, care partners, and industry were invited to participate in a morning lecture series followed by breakout sessions during the afternoon and following morning. The conference program was structured to help determine barriers to home dialysis therapy regarding both initiating home dialysis therapy and retention in the home dialysis program, as well as identifying potential solutions to those barriers. In this report, we review the major barriers, facilitators, and potential solutions to home dialysis therapy initiation and maintenance discussed at the conference, both during question and answer periods following presentations and during the 3 breakout group sessions.

The Clinical Advantages of Home Dialysis

As compared to in-center hemodialysis (HD), PD has been shown to have at least equivalent and in some studies improved outcomes, is less expensive to deliver, provides more patient autonomy,[1] and is associated with preservation of residual kidney function and enhanced quality of life.[2] Similarly, HHD is an established treatment option with several clinical benefits. Compared to in-center HD, frequent HHD is associated with improvements in blood pressure control, regression of left ventricular hypertrophy, normalization of phosphate control, better kidney disease–related quality of life, shorter recovery time from dialysis treatments, and improved pregnancy outcomes.[3] Moreover, with more frequent therapies, both PD and HHD eliminate the prolonged 2-day interdialytic gap that can adversely affect patient outcomes.[4]

Barriers Leading to Underutilization of Home Dialysis

Overview

Despite noteworthy benefits of home dialysis, its utilization rate has remained unacceptably low in the United States (<2% for HHD and <10% for PD), far below that of other industrialized nations.[1,5] In an attempt to understand the low adoption of home therapies, we have broadly classified home dialysis barriers into clinical, operational, economic, and patient-related factors[6] (Box 1).

Provider Knowledge

By and large, US nephrologists lack exposure to home therapies and have multiple misconceptions regarding this therapy. Most nephrologists believe that HHD is too complicated and burdensome for the majority of patients with kidney failure,[7,8] and some nephrologists are not comfortable writing PD prescriptions.[9] In addition, nephrologists tend to believe that patients with obesity cannot do PD due to difficulties meeting adequacy standards. Also, given that diabetic nephropathy is the leading cause of kidney disease in the United States, physicians may have misgivings about placing diabetic patients on PD therapy given the metabolic consequences of having glucose as the osmotic agent. This impression persists

Box 1. Barriers to Home Dialysis

- Clinical
  - Misconceptions regarding therapy
  - Lack of competence in prescribing home dialysis
- Operational
  - Lack of infrastructure
  - Lack of training of health care staff (physicians, nurses, technicians, dietitians, social workers)
- Economic disincentives to prescribe home dialysis therapies
  - Financial costs to patients and family members for training, including transportation and loss of income
  - Financial cost to patients of home modifications and need for space for storage of materials
  - Lack of adequate housing
  - Physician maximum per-patient per-month payment is lower compared to in-center hemodialysis
- Patient and caregiver related
  - Lack of adequate education about home dialysis modalities
    - May not be provided at all
    - May be done only once
    - May not be appropriate for patient's literacy level or not provided in patient's native language
    - May not be done until after patient starts in-center hemodialysis
    - May not be provided to caregivers
  - Psychological, including lack of confidence, fear of self-cannulation, fear of catastrophic event
  - Caregiver burnout

despite data showing similar to improved outcomes on PD versus HD therapy for patients with diabetes mellitus. In a recent survey of nephrology graduates in the United States, <20% of responders felt competent in the care of both PD and HHD patients.[10] In contrast to those in Canada, Australia, or New Zealand, US nephrology trainees have minimal educational exposure to any form of home dialysis.[11] Most nephrologists who have been practicing for more than 10 years have little interest in prescribing HHD.[9] The lack of adequately trained US nephrologists represents a significant barrier to any home dialysis implementation plan.

Infrastructure

To implement home dialysis, adequate infrastructure and nurse training are critical determinants. In most parts of the United States, obtaining PD access is an arduous process relative to a seamless transition to in-center HD. Many hospitals in the United States do not offer PD for inpatients given the ongoing costs of maintaining adequately trained staff and the low prevalence of PD therapy. In addition, surgical residents in the United States have little exposure to PD catheter placement.[12] Moving forward, enhanced PD access training and appropriate educational exposure for practicing and training nephrologists will be needed to increase the low prevalence rate of this modality in the United States.

Economic Factors

The bundled payment system implemented in 2011 appears to have had a modest effect on the use of PD and has shown that economic incentives can change the use of home modalities.[5] Although the incentives have aligned in favor of home dialysis on the treatment provision side, physician billing is still weighted toward in-center HD over home dialysis in the United States. Also, the business model underlying in-center HD units, which have proliferated, centers around maintaining full occupancy of in-center HD stations. Studies have shown inverse correlations between the number of in-center HD stations and the use of PD and HHD.[13,14]

Financial concerns and limitations in the home setup can cause stress and burden to home dialysis patients and their families. There may be costs associated with time off work for training, transportation to training visits, or modifications made in the home.[15] Patient attendees at the conference believed that reimbursement for travel and more flexible training schedules could reduce financial barriers. Patients also reported being burdened by the space required in the home for the dialysis machine and supplies. Innovation in machine design (smaller machines) and more frequent delivery of supplies (less space needed for storage) may help on these fronts.

Patient Education

Most US-based patient attendees thought that they had not been educated about home dialysis therapies. In addition, a substantial proportion of patients may face inadequate housing or lack of family support. Psychological barriers such as lack of confidence, fear of self-cannulation, and fear of a catastrophic event have also been shown to be significant barriers toward HHD adoption.[16] For unclear reasons, multiple studies have shown that African Americans and Hispanics, who have a high rate of chronic kidney failure, are much less likely to use PD when compared with their counterparts.[17,18]

Burden of therapy for both patients and care partners is a key barrier to the growth of home dialysis,[19,20] and open communication about this topic is paramount. Even after successful HHD training, psychosocial barriers may account for up to 16% to 20% of all technique failures.[15] Importantly, most US-based home dialysis patient attendees expressed a preference to have a care partner. Concern for caregiver burden and burnouts are equally important patient-related barriers to greater implementation of home therapies in the United States.

Summary

There are several potential barriers toward the implementation of home dialysis, including clinical, operational, economic, and patient-related determinants. Despite significant potential clinical benefits, home dialysis represents <12% of all renal replacement therapy provided in the United States.[21] Innovations and significant systems changes are therefore warranted.[22]

Patient and Physician Education Regarding Home Dialysis

Overview

Comprehensive predialysis education regarding renal replacement modalities has been shown to increase the prevalence of home dialysis.[23] However, implementing these programs remains a challenge, especially for smaller centers. A substantial number of patients report that they were never presented with dialysis modality options until dialysis therapy initiation, and a majority was never told about home dialysis options.[24] Patients' knowledge about renal replacement options is limited, and their comprehension of the advantages and disadvantages of dialysis is inadequate.[25] Often, in addition to medical outcomes, potential home dialysis patients are interested in quality-of-life issues, such as well-being, control of care, safety, flexibility in schedule, and dependence on care partners.[26-28] Studies that examined factors that affect patient decision making regarding dialysis modality use questionnaires and thus limit the possible answers or thoughts that patients might consider important. Our group was fortunate to have extensive and open-ended discussions on how patients obtain relevant information to make an informed decision regarding dialysis modality. The rest of this section summarizes the group's impressions and suggestions for improvement in patient education (Box 2). Any reference to "patient" is meant to include their partners and significant others who participate in decision making.

Timing of Patient Education

Modality education needs to be "early and often" to provide patients with enough information and contemplative time to make a life-changing decision. There are many potential educators, opportunities, locations, and tools that can be used to make the patient's educational experience fit this goal. Regardless of chronic kidney disease (CKD) status, specifically pre– or post–dialysis therapy initiation, patients deserve sufficient time during a scheduled appointment in a quiet and private setting to have a meaningful conversation. Moreover, follow-up individual education sessions are necessary to confirm that patients are confident with their decisions. Venues should not be limited to a physician office or dialysis facility and should also include a setting for hospitalized patients.

Physician Education

Physicians have a predominant role in patient education and decision making and require comprehensive knowledge of the benefits, harms, and positives and negatives of home dialysis therapy. They also must be able to suggest solutions and strategies to address any patient-perceived negative aspects of home dialysis. The physician needs to recognize that patients have fears, concerns, and life values that merit being recognized and validated. Physician-directed education should be provided in the context of a comprehensive CKD management program. Physicians need mandated all-inclusive education during fellowship training.[29] After completion of fellowship

Box 2. Research Recommendations

- Operational
  - Develop seamless process for placement of PD catheters
  - Develop training programs for placement of PD catheters
  - Develop means for providing PD in the inpatient setting
- Education
  - Development of training programs for health care staff
    - Web-based interactive case scenarios
    - Build confidence in writing home dialysis prescriptions
    - Build confidence in handling complications of home dialysis therapy
  - Develop mentorship program with established home dialysis programs either in person or using telehealth through Project ECHO–like models
  - Development of education programs for patients and caregivers
    - When and how often to offer education
    - What content do patients and caregivers want in these presentations
    - What format for education is preferred by patients and caregivers
    - Develop mentorship programs with current home dialysis patients
- Psychosocial
  - Systematically question patients/partners about how and what we should be teaching them
  - Develop and test value-based assessment tools to assist in informed decision making
  - Develop appropriate screens for mental illness, including depression before and after starting home dialysis
  - Determine the pros and cons of offering home dialysis training during nonwork hours
  - Determine the effects of reimbursement for travel (for home dialysis training) and in-home modifications on uptake of home dialysis modalities
  - Determine the potential benefits of respite care, including patient and technique survival, patient and caregiver well-being
  - Determine an optimal frequency and duration of respite care
  - Determine the effect of paying care partners on patient outcomes, caregiver burnout, and financial concerns
- Technological
  - Develop use of telehealth to monitor home dialysis patients
  - Use of telehealth for the provision of mental health services
  - Redesign of home dialysis machines to make them more user friendly
  - Use of ultrasound to assist with self-cannulation
  - Development of devices to generate PD dialysate on demand

Abbreviations: ECHO, Extension for Community Healthcare Outcomes; PD, peritoneal dialysis.

training, there needs to be more robust opportunities for physician education, such as conferences, online education programs, or published content. Given that the discussion regarding dialysis therapy options should be comprehensive and consistent, a discussion guide to assist the physician could be an indispensable tool.

The development of web-based interactive simulation-based programs to enhance fellowship training in home therapies is needed to ensure that all nephrologists enter practice with a clear understanding of the benefits of home therapies, as well as knowledge for how to prescribe these treatments and assess patients. Furthermore, innovative strategies such as videoconference-assisted mentoring by home dialysis experts, such as was pioneered by Project ECHO (Extension for Community Healthcare Outcomes), might assist in physician comfort and training.[30]

Dialysis Team Education

Nonphysician health care workers (eg, dietitian, social worker, nurse, dialysis facility administrator, and patient care technician) need at least a basic knowledge of home therapies to provide more occasions for education. At a minimum, a consistent message regarding the value of home therapies should be provided. Each dialysis facility should have a designated nurse manager for home dialysis education who will be an expert educator and facilitator to make sure that every patient receives the education that he or she needs.

Patient Education Programs

Online portals and current home dialysis patients are significant potential resources for patients. However, because information on the internet is not always reliable, we recommend that a readily accessible list of vetted websites be developed for patients interested in home dialysis therapy. Furthermore, we envision the development of web-based education programs that could be produced and accessible to all clinics that provide patient education regarding dialysis modalities, with a focus on the benefits of home therapies. Such programs would be developed for broad literacy levels, could be interactive and incorporate games and avatars to enhance the learning experience, and would be accessible at home and at any time. Focus groups of patients and their care teams could inform the development of such educational material. Patients involved in the work group unanimously agreed that such educational programs would be well received and could address the hurried and inconsistent education that is often present around the time of decision making. There is a need for increased patient accessibility to the internet in the dialysis unit, physician office, or ideally in the home. A program to develop patient-to-patient peer mentorship, as well as web-based resources for patients to discuss their dialysis experience, would be invaluable.

Patient and Caregiver Psychosocial Barriers and Solutions

Overview

There are many patient- and care partner–related psychosocial barriers to the growth of home dialysis therapy. First, it is important to define what we mean by care partner because there is a spectrum of support provided by a patient's network. A care partner could be someone living in a household in which home dialysis is taking place, but providing only emotional support. Alternatively, the care partner could provide all the dialysis services and other care, but not live there.

A number of patient and care partner challenges were identified by themselves and health care provider observers (Box 3). Sociologic and psychological support systems need to support patients, as well as address changing roles, the nature of the previous (predialysis) relationship, and the potential loss of freedom for both parties. Patients and care partners referred to this adjustment as a potential grieving process. We offer a number of suggestions to address these issues (Box 2). First, it is important to recognize the need and value of a patient-centered approach, including ensuring that the patient and partner feel listened to, and that a cohesive support team exists for them. Care should be individualized, and use of value-based assessment tools may be helpful. A forum in which patients and care partners can provide input to the dialysis organization, including future actions and policies, should be established.

Fear of Kidney Failure Diagnosis

Many patients and families are coping with a new diagnosis of chronic kidney failure and are experiencing fear and denial while also trying to learn and make decisions about dialysis modality choices. Studies have shown that in countries with lower uptake of home dialysis therapy and among patients with less education about home dialysis, fear and anxiety are more pronounced.[31] Increasing public awareness of home dialysis therapy may allow patients and caregivers to feel less stigma associated with a kidney failure diagnosis. Normalizing home dialysis therapy could reduce social isolation and emotional stress for patients and care partners.

Box 3. Patient and Care Partner Psychosocial Barriers

- Patient/partner fear and denial of chronic kidney failure diagnosis
- Anxiety related to making major life decisions
- Depression and other mental illness
- Partner availability at specific time and place
- Strain of being a life partner and care provider
- Stress of a care partner inflicting physical pain on the patient
- Training time burden
- Financial burden
- Medicalization of the home
- Loss of socialization for patient and partner
- Burden of therapy/burnout

Mental Illness

Many patients may also have depression[32] or other mental illness, which may be unrecognized, that can hinder patients' ability to learn and perform home dialysis. Assessing for mental illness and providing treatment as needed is important to allow the best chance of success on home dialysis therapy. Psychological interventions have been shown to enhance self-efficacy among patients with cancer[33]; potentially, therefore, treating depression could increase the confidence of patients with CKD and potentially reduce modality discontinuation.

Care Partners

Some patients do not have live-in care partners and are dependent on someone traveling to assist them. Alternatively, care partners can be so strained as to not succeed as both a good life partner and a care provider/supporter. Care partners can experience changing identities, altered power dynamics within the relationship, (co)dependency, cognition deficits, and external stresses (eg, reduction of work time and pay). Understanding these issues starts with the establishment of predialysis education programs for partners and patients together because recognizing potential relationship changes that have occurred or may occur makes it easier to bring them to attention later with less reluctance or embarrassment.

Ongoing support of the patient–care partner dyad and recognizing changes in it are of vital importance. Social workers, technicians, nurses, and physicians should be trained to recognize these problems, directly address those that they are competent to handle, and learn when to refer to specialists. Workshops dealing with sensitivity training, how to ask the right questions, and how to identify the need for respite have been effective in palliative care and oncology. Having an empowerment conversation at several levels, but most importantly at the physician level, is also of benefit.

For the care team clinicians, it is critical to make sure that the entire team has participated in the strategy and approach to the patient–care partner dyad. Also vital is recognizing that there may be other integral participants beyond the dyad. Ideally the goals would be shared, but at the very least need to be compatible. Clinicians should emphasize the team-based nature of care and should ensure that patients understand each member's role.

Burden of Training

The burden of training time on patients and partners is underappreciated and accentuates the difference between PD and HD therapy. Not only does PD allow dialysis without a partner, but its training time is much shorter. HD may involve the additional burden on the partner of inducing physical pain (eg, needle puncture).

There can also be a financial burden associated with time off work for training, travel to the training center, and any adjustments that must be made in the home to accommodate home dialysis therapy. To facilitate the uptake of home dialysis therapy, mechanisms for financial assistance should be created, such as stipends for paid helpers and reimbursement for travel to training or for home improvements needed to accommodate home dialysis therapy. There should be training times that are during nonwork hours for those who need it.

Medical Supplies and Equipment

Many patients (and care partners if they also live with the patient) can be hesitant to have medical equipment in the home, which can be particularly difficult if they have a small living space and the dialysis machine or supplies are in primary living spaces. Coordinating more frequent delivery of supplies or other changes may be helpful for patients with limited storage capacity in the home. Designing dialysis machines with a smaller footprint and with a simple user interface may also be of benefit.

Loss of Socialization

Both patients and care partners sometimes experience a loss of socialization. Patients may feel isolated at home and feel constrained by the time it takes for setup and organization of dialysis therapy in the home. Care partners may also feel social isolation as they devote more and more personal time to their patient's illness. These issues can be mitigated by establishing peer support for patients and care partners. This goal can be achieved in a variety of ways, but could include formal support groups, one-on-one pairings, or internet-based resources. Peer mentoring has been successful in other chronic disease models.[31,34] "Home patient" programs, or support networks run within dialysis organizations that arrange social activities, may also be useful.

Burden of Therapy and "Burnout"

Burden of therapy, or burnout, is a major problem for both patients and care partners. Furthermore, while the patient is going to dialyze one way or another, the partner is voluntarily giving up time and energy, which are finite. Patients may feel guilty about burdening their care partner with this responsibility. Every home dialysis program should have respite policies and procedures. Questions to consider when developing this policy include whether it is mandatory and whether there is a procedure in place to evaluate patients and care partners, together and separately, at certain intervals to assess their coping and satisfaction. The use of assisted dialysis in the home should be explored further, either as respite or a more permanent option, because this may allow patients who otherwise cannot or would not choose to use home dialysis to do so.[35]

Informed Risks

Finally, conference attendees discussed the importance of allowing patients and care partners to take informed risks.

One participant shared an anecdote about struggling to offer short daily HD treatment to a 44-kg child whose peritoneum was damaged and who lived an hour from the closest in-center HD unit. NxStage home dialysis equipment is not approved for pediatric use (US Food and Drug Administration approval never having been sought), but because the center had a 50-kg adult successfully using NxStage equipment, the family was willing to sign a waiver of liability.

Technological Interventions

Advances in technology hold great promise in helping address barriers for initiating and supporting home dialysis therapies. The specific barriers for which technology may be most influential include education of patients regarding renal replacement therapy modalities (covered in a prior section), education of nephrology trainees to better understand home dialysis therapies (covered in a prior section), removal of concerns of isolation and stress involved in self-care, ensuring high-quality dialysis with oversight by an experienced care team, and removing operational and logistical barriers to home dialysis (such as aiding patients in self-cannulation and decreasing the room required for supply storage). In many respects, we view technological solutions as enablers that maximize patient potential while ensuring the safety and high quality of the therapy (Box 2).

For many patients, the thought of performing dialysis at home is daunting due to concerns regarding psychosocial isolation, fear, insecurities about complications and safety, and lack of easy to access help and support.[22,36] Telehealth, encompassing telemedicine and remote patient monitoring, has the ability to provide 2-way communication (including video capability) and monitoring of treatment parameters. This lets patients access their care team when problems or questions arise and also gives the care team vital information on the status of the therapy.[37] These technologies can provide a safety net allowing patients to have questions answered, concerns addressed, and feelings of isolation potentially alleviated. Data have shown that patients are accepting of these technologies,[38] and our work group concurred with this. These same technologies can be used to provide on-demand assistance and retraining of patients, as well as provide quality assurance data for home centers. However, it is important to realize that not all patients will be accepting of remote monitoring and some may find it overly intrusive. Furthermore, all telehealth solutions will have to be compliant with privacy regulations.

Certain barriers to home dialysis therapies may also be surpassed by technological advances, including redesign of home dialysis machines (both for HD and PD) that simplify the process with easier-to-understand interfaces and alarms, as well as lead to smaller and quieter machines, tools such as portable ultrasound that aid the ability of patients to self-cannulate, equipment to produce large quantities of PD dialysate on demand with the opportunity to save space used to store supplies, the ability of home centers to remotely change dialysis prescriptions in response to treatment data to ensure high-quality outcomes and avoid complications such as volume overload, and the possibility of substituting remotely performed visits for in-person visits to the dialysis center, thus alleviating transportation issues and costs. Patient attendees were particularly interested in aids to make self-cannulation less burdensome and scary.

Recognizing that technological advances should be considered as enabling features that promote home dialysis therapy, one of the major advances may be the development of care pathways that can be easily accessed through the electronic medical record, allowing clinicians, when selecting home therapies for their patients, to activate a pathway with a "click of the mouse." Such a system would allow easy initiation of home dialysis therapy with implementation of education, access placement, and coordinated care without the need for multiple telephone calls and excessive time demands.

Public Policy Barriers

Constructing an optimal health care policy to benefit home dialysis patients requires a systems approach by addressing policy barriers along the CKD continuum and considering clinical outcomes, patient experience, and overall costs. Several dialysis organizations are developing strategies to reduce treatment failures and costs by focusing on the most vulnerable patients who require more individual patient-directed care. Additionally, dialysis providers are increasingly developing methods to mine their databases to identify predictors of patient risk for hospitalization, modality failure, and poor outcomes.

One potentially impactful strategy for decreasing costs and improving both early and late patient outcomes is to ensure that patients are dialysis ready well in advance of starting on dialysis therapy. Starting prospective dialysis patients on an outpatient dialysis schedule, for which costs are lower, or making use of urgent-start PD programs to avoid the morbidity and mortality associated with central venous catheters could significantly lower total costs and improve outcomes for patients with CKD transitioning to dialysis therapy.

Currently, dialysis organizations face a number of policy barriers that hinder efforts to optimize dialysis treatment results, including the perception that even high-quality observational studies lack credibility, especially for more frequent HHD; gaps in nephrology fellow training in home modalities; lack of a systematic approach to CKD identification, reporting, and optimal risk factor treatment success; lack of commercial or Medicare financial incentives for patients and/or family members performing dialysis at home; and lack of federally funded innovation initiatives focused on lessening home dialysis patient burden. Addressing these barriers is critical to increasing the use of home dialysis to both incident and prevalent patients with kidney failure.

Policies have continued to change to improve the uptake of PD. Specifically, the end-stage kidney disease bundled payment appears to have increased incident PD patients. More recently, the Creating High-Quality Results and Outcomes Necessary to Improve Chronic (CHRONIC) Care Act (passed in January 2018) will allow for expansion of telehealth services for patient on home dialysis therapy to both rural and urban areas and expand originating sites to include the home and dialysis units. However, other policy changes will be necessary to continue to increase home dialysis uptake and improve care. First, the Medicare conditions of payment already require education of patients on all dialysis modalities, including those not offered by the patients' current dialysis unit. Enforcing this requirement is necessary to ensure patient choice. Although the bundled payment system incentivized the provision of home dialysis treatments, physician payments for home dialysis are still lower than that of in-center HD patients for visits that in general take longer than in-center HD visits. Other policy changes would be to change the chronic disease care management codes that allow for reimbursement for remote monitoring to include dialysis patients because this has been shown to reduce readmissions.[39,40] Assisted PD has been used to great effect in Canada; however, barriers exist in operationalizing this program in the United States.

Clearly, the present US infrastructure lacks a uniform approach to CKD management and education. Jurisdictions that mandate CKD dialysis modality education tend to have less center-to-center variability and higher and more sustained rates of home dialysis.[41] Timely and planned initiation of dialysis therapy is necessary to enhance home dialysis therapy adoption. Regional centers of excellence may mitigate potential barriers in PD access, training challenges, and provision of respite care. Additionally, the potential use of mentoring centers may also increase home dialysis exposure to physicians who may lack competency or expertise in the care of such patients. Incentivization may also facilitate uptake of home dialysis. Use of financial payment and/or reimbursement of utility cost could maintain patient technique survival. Alternate funding structures for physicians and health care systems may also allow better continuity of care and allocation of resources to appropriately enhance the adoption of home dialysis. Finally, there is significant potential to innovate in the field of home dialysis. The notion of assisted PD and HHD have been established in different areas with various success.[35,42]

The potential to use telehealth technology to empower patient self-care and facilitate home dialysis monitoring has been started as pockets of innovation and feasibility projects.[43,44] Our ability to interface with our patients and care partners will also need to evolve into a new dynamic clinical relationship in which the use of a virtual ward or other technology may provide the necessary safety net and to avoid overburdening of caregivers.[45] Advancement in dialysis technology will also hopefully increase the usability and intrusiveness of home dialysis.[46,47]

Facilitation of home dialysis therapy will therefore require a systematic change in CKD education,[48-50] approach to dialysis therapy initiation,[50-52] incentivization,[53] and innovation.[35]

Conclusions

Postconference discussions were held with the conference group leaders to identify focus groups that will develop strategies to improve the recruitment and retention of patients on home dialysis modalities. One work group will focus on recruitment and retention barriers in smaller home dialysis programs, while a second group will concentrate on these topics in established home dialysis centers. A third group will focus on strategies to help and assist health care partners, including education on home dialysis modalities that are targeted to care partner concerns. The work product from these focus groups will be presented at a follow-up KDOQI home dialysis controversies conference to be held in late 2018.

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