

Transitional dialysis care units: A new approach to increase home dialysis modality uptake and patient outcomes

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Abstract

Home hemodialysis (HHD) and peritoneal dialysis (PD) are associated with better clinical outcomes, lower hospitalization rates, and improved quality of life compared with conventional in-center hemodialysis. However, <12% of patients requiring dialysis therapy use HHD or PD in the United States, even though over 90% of nephrologists would choose home-based dialysis modalities for themselves. Inadequate patient education and decision-making support are key barriers to patients choosing home-based therapy. Likewise, there are key challenges for dialysis providers, including development and optimal delivery of education materials, appropriate staffing, and training. The Satellite Healthcare Optimal Transitions (OT) Program was developed to provide education and decision support to patients during the transitional period. OT provides in-depth education in all dialysis modalities at the start of dialysis over a flexible time period (1-4 weeks, adapted for various learning curves) to allow for time to physical stabilization, self-care training, and modality choice based on each patient's individual life motivations, goals, and environments. OT may provide value to patients and providers by providing comprehensive support for dialysis modality selection, resulting in increased patient confidence to execute home dialysis with the potential for improved patient outcomes, and reduced hospitalizations.

1 | CURRENT STATE OF DIALYSIS MODALITIES IN THE UNITED STATES AND THE LOW RATE OF HOME DIALYSIS UPTAKE

There are three main dialysis modality options for patients with chronic kidney disease (CKD): in-center hemodialysis (CHD), home hemodialysis (HHD), and peritoneal dialysis (PD). HHD and PD have been associated with equivalent or better clinical outcomes and lower hospitalization rates compared with CHD.¹⁻⁶ Several studies show patient benefit from more frequent hemodialysis.⁷⁻¹¹ PD outcomes over the first 3 years of dialysis therapy are superior to those of CHD.¹² Home-based dialysis can allow for more freedom for patients to make their own lifestyle choices, especially as it relates to employment, hobbies, and family time, improving quality of life.¹³⁻¹⁷ Several

studies have reported that 90% or more of nephrologists and other dialysis health care providers would select home therapies for themselves if they required dialysis.^{18,19} In a survey of 656 patients who recently initiated dialysis, more patients receiving PD rated their dialysis care as "excellent" compared with patients receiving CHD—a finding which remained significant after adjusting for demographic factors and health status.²⁰

Despite the potential advantages of home-based modalities and the proportion of eligible patients, only 12% of prevalent dialysis patients in the United States use PD or HHD according to the 2016 USRDS Annual Data Report (ADR).²¹ This is a stark shift from the 40% of HHD penetrance in 1973, albeit these rates were prior to the Federal-funded ESRD program.²² After reaching a nadir in 2007, use of home dialysis in the United States has increased in recent years; PD and HHD rates were 72% and 120% higher in 2014 than

in 2007, respectively.²³ Furthermore, in a prospective study evaluating both medical and psychosocial eligibility for various renal replacement therapies, over 75% of patients were deemed eligible for PD.²⁴ However, home dialysis rates are still low overall, and it is noteworthy that in an international comparison from the 2016 USRDS ADR, home dialysis rates in other countries are substantially higher than in the United States (Table 1).²⁵

Several factors may underlie this discrepancy. A primary reason may be a focus on one-time education instead of the comprehensive education required for patients to feel confident and capable of performing home therapies. In a study of 1365 patients beginning maintenance dialysis, 66% and 88% reported not being presented education on chronic PD and HHD, respectively. In a multivariate analysis, the only variables that predicted selection of home PD were presentation of PD as an option and the amount of time spent discussing treatment options.²⁶ Similarly, in a study of maintenance dialysis patients, only 20% reported that their doctor asked them about their preference for dialysis modality, and 67% reported that they felt they had no choice.²⁷ Thus, many patients are unprepared to make informed decisions. Notably, in a small randomized study that assessed the impact of a two-phase patient-centered educational intervention on selection of self-care dialysis, significantly more patients in the educational intervention arm selected PD, home, or self-care hemodialysis modalities compared with the group that received standard care and education.²⁸

The most significant patient barrier is fear of performing dialysis on their own, typically due to feeling unqualified and/or worrying about complications or a catastrophic event.^{15,16,18,29} Patients also express concerns regarding treatment process complexity and not wanting to be a burden to their caregivers.^{15,16,18,29} Physician training also represents a key barrier to home therapy adoption. A substantial proportion (>60%) of recent nephrology trainees report receiving little or no training in HHD, with only 16% feeling well trained and competent in the area of HHD.³⁰ In addition, only 56% felt well trained and competent in the care of PD patients.³⁰

TABLE 1 International comparison of home dialysis rates (PD + HHD)

| Country | Home dialysis rate (%) |
|--------------------------|------------------------|
| Hong Kong | 75 |
| New Zealand | 49 |
| Jalisco Region of Mexico | 47 |
| Thailand | 30 |
| Australia | 30 |
| Denmark | 27 |
| Finland | 25 |
| Sweden | 25 |
| Canada | 24 |
| United Kingdom | 18 |
| United States | 12 |

Postfellowship training and higher self-assessments of preparedness have been associated with a higher likelihood of treating patients with PD.¹⁹ In Australia and New Zealand, two countries with much higher rates of home dialysis use than the United States, all nephrology trainees are required to be trained fully on both HHD and PD.³¹

The Centers for Medicare & Medicaid Services (CMS) Conditions of Coverage were updated in 2008 to include a requirement that patient care plans must include education regarding home dialysis,³² and while many dialysis providers have created educational materials to meet these guidelines, there remain concerns that these programs are not getting to the patients or sufficient for patients to make informed decisions.³³ A few programs have emerged in the United States that have successfully created transitional programs to fully educate patients and provide high-quality assistance in the transition to home-based dialysis.

2 | UNMET NEEDS

The current delivery model in the United States focuses on dialysis therapy itself, whereas in a value-based healthcare system, a patient-centered, comprehensive approach is required. This approach aims to medically stabilize patients and optimize their dialysis treatments, especially during the heightened risk period of the first 90 days, which has been associated with poor outcomes. Several key unmet needs must be addressed in developing a successful program to engage and educate patients regarding their choices for dialysis modality and to empower patients to transition into a home-based setting.

Mr. G is a 72-year-old man with chronic kidney disease stage V due to diabetic kidney disease. He has congestive heart failure and is fluid overloaded requiring the initiation of dialysis. He has a mature AVF and he is undecided on whether he wants to dialyze at home or in-center.

2.1 | Medical stabilization and optimization—first 90 days

Based on USRDS data, nearly 40% of patients have received no meaningful pre-ESRD care. This results in more significant anemia, higher central venous catheter (CVC) rates, lack of modality option education and overall increased mortality and morbidity compared with those with extensive pre-ESRD care. Moreover, even in patients with pre-ESRD care, there may be an unexpected late acceleration in the loss of kidney function, which increases the risk of starting dialysis with a CVC.³⁴ For patients who are recently diagnosed with dialysis-dependent chronic renal failure, the current treatment model of thrice weekly hemodialysis may be inadequate to provide stabilization.

2.2 | Psychosocial challenges

Upon being diagnosed with renal failure, patients can experience significant emotional and psychosocial challenges. Psychosocial challenges include depression; anxiety; confusion; fear; adjustment to the diagnosis; medical complications; pain; diminished quality of life; body image concerns; employment, financial, and other economic concerns; loss of independence; concerns about social support, family support, and marital issues.³⁵⁻³⁹ In addition, patients struggle with these challenges while coping with, and adjusting to, the physical stressors of their disease. Clinics should address patient psychosocial challenges; however, many lack the staff, time, and skill sets to develop a comprehensive understanding and customized life plan, aligned with the goals of each patient. In a cross-sectional study of 4800 US hemodialysis centers, the average registered nurse (RN) to patient ratio was 8.5 per 100 patients and the average patient care technician (PCT) to patient ratio was 9.7 per 100 patients.⁴⁰ Adequate social worker support is also an issue, with 0.84 social workers per facility. The growing emphasis on documentation leaves less and less time for meaningful patient interactions. Adequate consideration of dialysis center staffing to enable a more comprehensive patient care model is not often prioritized, and can lead to suboptimal care.⁴¹ In addition, a lack of resources can lead to suboptimal education and consideration of modality choice.

As Mr. G was recently diagnosed and fluid overloaded, he was not in the optimal state to make a dialysis modality choice that would consider, and align with, his life situation and goals.

2.3 | Uninformed of options

The observation that patients are largely uninformed about treatment modality options probably accounts for the finding that only ~8% of new (incident) patients use home dialysis.²³ Dialysis health-care professionals report that lack of patient education is one of the primary obstacles to HHD and PD.¹⁸ With over 2/3 of patients either not being presented with or not remembering education regarding treatment modalities,²⁶ better educational materials and methods are needed.

2.4 | Premature decision making

Patients may need more time to make an informed decision than they are usually provided with. At the time of renal failure diagnosis, patients are often quite ill and trying to process a wealth of complicated information. The news of requiring dialysis therapy as a life-sustaining requirement is a life-changing event whose impact on patient and families cannot be overemphasized. In addition, because approximately 50% of patients “crash” into dialysis, many are not informed or well enough to make decisions, often

suffering from poor health, fluid overload, and/or decreased mental capacity. Mehrotra and colleagues reported that, when asked how much time in total was spent discussing treatment options, 65% of patients reported an hour or less.²⁶ These factors can lead patients to feel pressured to make a decision, as evidenced by the nearly 70% of patients reporting that they felt they had no choice.²⁷

2.5 | Fear

Surveys of both physicians and patients have found that fear of performing dialysis on their own is a key challenge in considering home-based dialysis.^{16,18,29} Fears include: catastrophic complications (eg, infection); being disconnected from medical staff and lack of quality care; needles and self-cannulation; dependence on home health providers; and social isolation of dialyzing at home.^{16,29,42} For example, in a study of 316 in-center dialysis patients, 35% of incident, and 60% of prevalent, patients reported that fear of complications, self needling, and/or feeling incapable of performing dialysis at home prohibited their pursuit of a home dialysis option.⁴³

Initially, Mr. G. was hesitant to choose a home dialysis modality because he didn't believe that he could be independent in his treatment due to lack of confidence and fear of performing self-care. Mr. G made attempts to learn self-care, however after several failed attempts at self-cannulation, he was ready to go in-center.

3 | OPTIMAL TRANSITIONS

Optimal transitions (OT) is the name we have given to a transitional dialysis care unit and program that focuses on education and treatment in first 30 days following diagnosis. The unit consists of 2-4 hemodialysis stations using a home dialysis device, and is staffed by a dedicated RN, and PCT. The goals of the program are to increase the frequency with which patients select home dialysis, improve their quality of life and outcomes, and reduce their hospital readmission rates especially in the first 90 days. The four tenants of the OT program, which were developed to address the key unmet needs, are as follows: Life Plan, Education, Stabilization, and Self-Care.

3.1 | Life plan

A dedicated staff, referred as the CREW, representing Continuity, Reliability, Empowerment, and Wellness for the OT program focuses on understanding the patient and assisting in making the best dialysis modality decision for each individual patient based on their life situation (Figure 1). The program allows for a flexible time period of 1-4 weeks to allow patients the time to be educated, consider their options, discuss with their families and support structure, and make

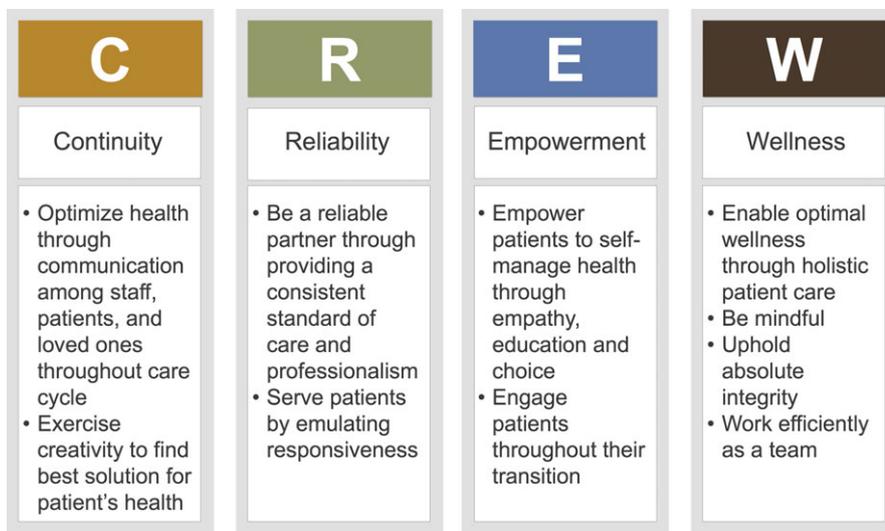


FIGURE 1 Optimal transitions CREW staff values

the best choice based on their motivations and goals (Figure 2). The OT CREW also discusses advanced care planning as part of the treatment plan rather than only when end of life appears imminent. It is important to note that enthusiasm and buy-in from CREW members, especially from the medical director and nurse manager, is vital for success of such a program.

In October 2016, Mr. G was presented with the opportunity to join the Satellite Healthcare Optimal Transitions program. Although cautious, Mr. G was provided information that, in the Optimal Transitions Program, there is trained and dedicated staff to educate him, provide him with hands-on experience, and help him prepare to go home. In addition, Mr. G was reassured that joining the Optimal Transitions program does not restrict his options, and that he has the option to choose in-center dialysis if that is the best choice for his life plan.

3.2 | Education

OT provides in-depth education on all modalities to improve and maximize informed decision making. Patients receive individualized

education from a dedicated OT program nurse and PCT(s), and participate in a series of educational discussions that cover the benefits and needs of each dialysis modality. The educational sessions were designed to be discussion-based, allowing patients to ask questions most relevant to their personal situation. While patients are deciding on a dialysis modality, repeated education on each modality as well as hands-on self-care across multiple modalities are presented. Education and self-care are fully customized to the individual patient's needs. Finally, an important feature of OT is that the CREW is trained to provide a focused approach to each patient's individual life situation.

3.3 | Stabilization

To make sure that patients feel well enough to make informed decisions regarding their dialysis modality, the stabilization period allows for patients to receive dialysis treatment 5 days a week for a target of 1-4 weeks. We believe this optimizes staff-patient contact and accelerates the resolution of uremic symptoms and volume overload and increases the psychosocial support needed during this critical time for patient and their families. The stabilization duration is individualized depending on a patient's health condition, and it takes anywhere from 3 days to 2 weeks for a patient to feel better.

| Course | Description | Goal | Time |
|---------------------------------------|--|-------------------------------------|-----------|
| Engagement and Empowerment | Understand and leverage patient & family goals, motivations, and support network to create individualized patient plan | Personalized Life Plan | ≤4 weeks |
| Treatment Initiation and Optimization | Provide daily hemodialysis and stabilize the patient | Patient Stabilized | 1-2 weeks |
| All Modality Education and Choice | Educate on all modalities, and provide second-level education on modalities of interest | Patient/Family Chooses Modality | 1-2 weeks |
| Self Care and Management | Patient experiences 1-2 modalities of choice and is introduced to self care and management | Patient Experiences Chosen Modality | 2-3 weeks |
| Optimal Transition | Coordinate with In Center and Wellbound staff to transition patient with a higher touch of care | Transition to Wellbound | 1-2 weeks |

FIGURE 2 Optimal transitions program course descriptions, goals, and time lengths

3.4 | Self-care

During the Self-Care phase, patients receive hands-on experience with different dialysis modalities. Providing self-care opportunities using the HHD and PD machines can alleviate fears, enabling and motivating patients to choose home modalities. An additional downstream benefit is that patients can become advocates for themselves, encouraging other patients with motivation to consider home-based treatment.

In December 2016, Mr. G graduated from the program, and is now a strong advocate for Optimal Transitions. Choosing home hemodialysis has allowed Mr. G to live a fuller life with his family, due to a flexible schedule and increased quality time with his loved ones.

4 | METRICS

As a new program, a number of metrics have been developed to assess the success of the OT program. These include: (1) increasing the proportion of patients who choose a home-based therapy after completion of the program (>30% of patients select a home-based therapy); (2) increasing quality of life (eg., the proportion of patients that are working); (3) reducing hospital admission and readmission rates (measured over 90 days and 1 year on dialysis); (4) increasing the proportion of patients educated on all three modality choices; (5) increasing the proportion of patients with an individualized dialysis plan; and (6) increasing the rate of kidney transplantation.

5 | CONCLUSION

The reasons why few dialysis patients in the United States use home-based dialysis modalities despite their numerous benefits include psychosocial challenges, lack of education on treatment options, premature decision making, fear, and lack of access to all modalities. A transitional dialysis care unit can help solve these challenges by providing patients with a life plan, education, stabilization, and self-care to improve outcomes and increase home dialysis penetration. Development of a program like Optimal Transitions includes several key challenges. First, operations must be developed and standardized for patient screening criteria, educational courses, and patient intake. Second, processes and strategies must be developed to encourage patients and create a sense of accomplishment. Finally, a dedicated staff must be hired or developed and staffing ratios determined to allow for individualized patient focus. The global impact of implementation of a comprehensive dialysis modality selection program such as OT may be significant for patients, including better clinical outcomes, lower hospitalization rates, improved continuity of employment and quality of life, and decreased health-care costs.

CONFLICT OF INTEREST

Dr. José A. Morfín, Dr. Alex Yang, Elizabeth Wang, and Dr. Brigitte Schiller are either consultants to or employees of Satellite Healthcare.

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