An Integrated Peritoneal Dialysis/Home Hemodialysis “Home-First" Vision: A Call to Action for an Integrated Home Dialysis—First System

By Annie-Claire Nadeau-Fredette and David W. Johnson

Traditionally, PD has been the most common form of home dialysis, accounting for 11 percent of the world’s total dialysis population and ranging between 2 percent and 74 percent of dialysis patients in different countries. PD offers several significant advantages compared with hemodialysis, including possibly enhanced survival in the first few years, better preservation of residual kidney function, greater suitability to incremental (progressive) dialysis, delayed need for fistula surgery, reduced erythropoietin requirements, reduced blood transfusion requirements, decreased risk of blood-borne infections, and higher levels of patient satisfaction with treatment. PD also delivers a more continuous form of dialysis and, by its home modality nature, helps to better maintain patient autonomy. Balanced against these advantages, a main limitation of PD is that many patients are unable to continue with the treatment after 2 or 3 years, often because of cause of infection (peritonitis), catheter-related problems, or inadequate removal of wastes or fluid. Given that PD is an excellent first dialysis modality because of its benefits and possibly early survival advantage, the classic integrated dialysis model (also known as the PD-first model) was proposed some years ago. According to this model, to achieve the best possible outcomes, patients would start dialysis with PD and then transfer to CHD when PD was no longer possible or no longer the best option for the patient. For example, a new dialysis patient would stay with PD for a few years and then switch to CHD when clearance or infection became an issue. Although interesting, this classic integrated dialysis model completely overlooked the important option of HHD.

Home HD can be performed according to a variety of regimens, including short daily (2.5 to 3 hours, five or more times per week), long (more than 5.5 hours, three to four times per week or long frequent [more than 5.5 hours, five or more times per week]). Independently of the chosen regimen, HHD provides high-quality dialysis and is more cost-effective than CHD. On top of the general advantages of home dialysis, such as independence and better quality and length of life, HHD has been shown to be associated with improved heart structure and function, blood pressure, and blood chemistry (including phosphate control). However, despite these clear advantages of HHD, the prevalent belief among kidney specialists that HHD is superior to CHD, and the growing interest in HHD as a remedy upon remedy failed to prove effective, to be safe, or to give value for money, greater scientific rigor was demanded of medical intervention. With statistical methods improving in parallel, “proof by clinical trial” emerged.

We therefore propose a new integrated home dialysis model that should be the new paradigm of home-based dialysis. Since the home-first model, a patient would begin dialysis with PD and then be referred to HHD once PD is no longer suitable. Hence, CHD would be considered only as a last resort, once both PD and HHD have been unsuccessful, or if these modalities are not suitable for the patient. As stated before, PD is an excellent first dialysis modality for patients with ESRD. Transition from PD to HHD takes advantage of the significant patient benefits that accrue from both dialysis modalities and potentially avoids the appreciable lifestyle upheaval and deterioration in functional status that not infrequently accompanies the transfer to CHD. Moreover, the ability of PD patients to understand dialysis principles and to manage their own treatments puts them one step ahead for a successful HHD training experience. Given that only a small number of patients will quit PD because of failure to cope with home-based self-care treatments, we propose that a substantial proportion of patients in whom PD is unsuccessful could be transferred to HHD programs. To date, small studies have evaluated the feasibility and outcome of such a transition. However, even in centers with a specific interest in home-based dialysis, only a small proportion of patients completing PD therapy transferred directly to HHD. Although the more complicated HHD training can also limit the transition from PD to HHD, we believe that further evaluation and promotion of the integrated home dialysis model can significantly increase the overall capture for home dialysis modalities and improve patients’ care, quality of life, and outcomes. It is time to rethink our dialysis model to implement a home-first vision.

Home Hemodialysis: Do We Need More Randomized Controlled Data?

By John W. M. Agar

When snake oil salesmen peddled their cure-alls, an undefended populace fell prey to the “best story,” the “best sell,” and the “most persuasive line.” Then, as remedy upon remedy failed to prove effective, to be safe, or to give value for money, greater scientific rigor was demanded of medical intervention. With statistical methods improving in parallel, “proof by clinical trial” emerged.

Trials of a single intervention—an active drug against a placebo, two active drugs head to head—are relatively simple to design and blind, the latter preferably applying to both investigators and subjects. If well designed and conducted, these trials commonly yield a useful and reliable answer.

Conversely, when multiple conflicting, competing, and differing factors exist in both trial arms—especially if these have an impact beyond the subject alone and affect the behavioral patterns, finances, and lifestyle of an entire family or community—the outcome and interpretation becomes impossible. This has been a core “insurmountable” for the recent attempts to conduct randomized control trials (RCTs) of home versus conventional hemodialysis.

Although the RCT is commonly regarded as the gold standard trial method—and so it is for assessing single or even multiple but controllable interventions—RCT design, subject selection, and trial conduct are crucial. An RCT that poses the wrong question, recruits insufficient subjects, lacks adequate statistical power, selects the wrong end points, or inappropriately selects surrogate outcomes may grievously mislead or misdirect.

Many believe that the two “landmark” RCTs in hemodialysis, the National Cooperative Dialysis Study (NCDS) (1) and the HEMO study (2), both inadvertently led to misinterpretations that fundamentally changed the course of dialysis by seriously impeding the very thing an RCT is supposed to ensure: improvement in outcomes. This has been most evident in the United States, where for 2 or 3 decades the blight of Kt/V urea, and gross inadequacies in dialysis duration that flowed from these RCTs, have directly diminished both patient