In-Center Self-Care Hemodialysis: An Idea Whose Time Has Come?

What spurred your interest in Outset Medical?

Most of my medical device career has been in spent in areas of healthcare that have experienced rapid, technology-driven change. In cardiology, for example, it’s not unusual to see several groundbreaking new devices enter the market in the same year. What hit me right away about dialysis was the inverse. The paucity of new technologies was striking. Being new to it, I thought, ‘Well, is new technology needed? Maybe there are no unmet needs that can be solved by technology.’ Those questions were quickly answered by learning more about the clear need for cost reduction and improvement of the patient experience.

We see an exciting opportunity for technology to help solve important problems within dialysis care provided in clinics, in hospitals, in homes, and in extended care facilities.

In this issue, Kidney News interviewed Leslie Trigg, President and CEO, Outset Medical, about the company’s focus on in-center, self-care hemodialysis.

What are the benefits of in-center self-care to patients?

Patients who have experienced in-center self-care using Tablo have talked about feeling more in control and having a greater sense of confidence and worth. One patient noted, “It makes me feel proud to walk in the dialysis clinic and set up Tablo all on my own, with other patients watching.”

In terms of control, the ability of a patient to understand and resolve alarms without waiting for a technician to help is a big deal to people. A patient once told me: “Nobody cares more about me, than me.” Having the ability to respond immediately to physical symptoms you might be feeling (such as cramping or headaches) and having the knowledge of how to do that, aided by automating technology, is empowering.

Not waiting for technician help during treatments is a part of a larger benefit—reducing wait time in the clinic overall. Based on analysis of treatments completed on Tablo, we found that for the vast majority of individuals, it takes 10 to 15 minutes. Because patients are in control of how quickly they get set up and are ready to begin treatment, there’s obviously an opportunity to minimize wait times both getting on and getting off dialysis. Each patient is only responsible for herself, compared with a patient care technician who is responsible for getting four patients on and four patients off dialysis.

In the future, we intend to study whether in-center self-care results in fewer hospitalization days for patients. A number of studies performed outside of dialysis in asthma, diabetes, and hypertension demonstrate that higher patient engagement, also known as patient activation, results in fewer hospitalization and ER visits, and lower costs (1).

In a recent interview, you mentioned that shifting from full in-center dialysis to in-center self-care can be compared somewhat to the shift from full-service to self-service gas stations. What corollaries can be drawn?

Another analogy drawn from consumer life is the self-checkout lines in retail stores. When first introduced, consumer resistance in early adopter stores like Home Depot was high. And initially, it was less efficient for retailers because the workflow was different and behavior change was needed, not only among consumers, but among the retailer’s own staff too. Over time, as learning occurred and the workflow was optimized, self-checkout became normative to the point that retailers like Amazon Go have introduced stores that only offer self-checkout, and everyone is comfortable with it.

We expect a similar experience for clinics implementing in-center self-care. At first, it’s new and it feels uncomfortable, particularly within a service model that hasn’t changed much over the past 50 years. Patients, clinic staff, and physicians all need to think a little differently about their respective roles. Efficiency gains aren’t obvious because the operational workflow is different and isn’t fully optimized. Yet for clinics with an innovative mindset, they see the opportunity to push through frustrations and unexpected challenges in order to get to the upside—a new model of care that both reduces costs and dramatically improves the patient’s experience.

What are the benefits of in-center self-care emerging in the literature?

An article by Dr. Edward Jones and colleagues in Nephrology News & Issues describes his clinic’s long-term experience with in-center self-care. Clinical outcomes for in-center self-care patients were compared to conventional hemodialysis patients treated within the same provider network within the same geographic area, using a propensity-score methodology. The data showed that in-center self-care patients had fewer hospitalization events (0.82 vs. 1.7 per patient year; p=0.008) as well as fewer missed treatments (1.1% vs. 3.8% of all treatments; p <0.05), and a lower mortality rate (0.02 vs. 0.07 per patient year; p=0.005).

With tangible clinical benefits of in-center self-care emerging in the literature, the question then becomes what changes are needed to expand access to a greater number of patients. This is where we believe Tablo can help.

By designing a friendly “consumer version” of a dialysis machine, we had several goals in mind: 1) remove the intimidation factor; 2) simplify and expedite setup; and 3) reduce nuisance alarms such that patients could remain independent throughout the treatment. These design goals are
embedded in Tablo. Easier, automated technology means a large percentage of the dialysis population is now capable of setting up and managing the treatment on their own.

**What is a key challenge to in-center self-care, and how is Outset aiming to shift the curve and address it?**

One of the understandable question marks about in-center self-care in concept is training. Home hemodialysis training consumes several weeks and dozens of hours to educate just one patient. So naturally, when you are now talking about training dozens of patients for self-care inside a given clinic, concerns emerge about how much staff time it will consume to educate them all.

Most of what patients have to learn about Tablo revolves around getting comfortable with a tablet since Tablo’s setup is guided by illustrations and videos displayed on a large touch-screen. Teaching people how to interact with a tablet using a paper training binder didn’t make much sense to us, especially because it would require lots of staff time. Instead, we developed a proprietary training app that patients work on independently while they are dialyzing (on any machine) and before they start self-care. The gameified content approach keeps the experience entertaining while also measuring the patient’s cognitive abilities through comprehensive quizzes along the way. With independent learning, Tablo self-care training becomes scalable without staffing becoming a bottleneck.

**Tell us more about the dropout rates from home hemodialysis (HHD) and how Outset’s system can help.**

Before we talk about dropout, let’s discuss patient adoption. The home hemodialysis needle has not moved much in years, hovering around 1.5% penetration. Why? Our attention has been on identifying the barriers to adoption and determining how Tablo can help on the front end. Some of the concerns patients wrestle with during decision-making include a daunting amount of HHD training time, fear of cannulation, and the prospect of having to dialyze more frequently than in-center. We decided to attack the training barrier by developing a self-guided patient training app that results in total training time measured in hours, not weeks and months. In terms of the treatment frequency barrier, Tablo offers flexibility. Patients can continue dialyzing five or six times a week, but they also can dialyze three times per week or every other day if desired and clinically appropriate. We see an opportunity to expand HHD penetration, particularly with a technology that helps eliminate the barriers.

In terms of retention, studies and market research on home hemodialysis consistently indicate that the high dropout rate is fueled by a number of factors such as having to do dialysis more frequently than in-center, having to spend significant time making the dialysate in advance of treatment, having to store supplies, and other frustrations that lead to patient and caregiver burnout. Tablo helps address these pain points for patients by, for example, automatically purifying water and producing dialysate on-demand while the patient is dialyzing, and by automating much of the setup, so that it is faster for the patient to get started. These features offer patients more flexibility when they dialyze. The simplicity of the steps is aimed at minimizing the hassle factor that often leads to frustration and burnout, and, it is hoped, will make home hemodialysis more manageable and sustainable for patients over time.

**Do you foresee people who start with a system like yours in-center ultimately being able to move to HHD?**

It’s certainly possible that in-center self-care ultimately might serve as a “bridge to home” for some patients. It gives people a stepping stone to independence without immediately throwing them in the deep end of the pool. For many patients though, the ability to have more flexibility and control over their treatment, but in the clinic setting where they don’t need a care partner and they don’t have to self-cannulate, is going to be a desirable long-term option.

**Talk about the data aspect of Tablo, both with regard to providing feedback to clinicians on clinical outcomes and to the patient, who’d like to know how they are doing.**

Tablo has the ability to wirelessly transmit data from Tablo and from Tablo. After each treatment, the flowsheet can be sent up to the Cloud and pulled down directly into a provider’s EMR. By sending treatment data automatically, and directly (vs. a tablet-based solution), patients don’t have to get involved with it, thereby saving time and avoiding complexity.

Going the other way, the patient’s prescription can be sent wirelessly from the provider’s EMR directly to the Tablo on which the patient is dialyzing. Two-way transmission also allows us to wirelessly update content and provide software updates with new features and functions.

Providing treatment data to patients is in our future and something we believe offers tremendous value, particularly in concert with in-center self-care. Drawing again on the diabetes space, we’ve seen how powerful it is for patients to have immediate access to their glucose levels, for example, and the ability to use that data to make smart food and lifestyle choices in the moment. We view a similar opportunity for dialysis patients who, to date, have not had access to much data.

**What is next in your rollout? How do plan to scale up?**

For the foreseeable future, we’re going to pursue a thoughtful, methodical pace to our expansion. We’re very cognizant of the inherent challenges that come with introducing both a new device and a new modality of care all at the same time. There’s a lot to learn all around in order to reach the point where there is broad muscle memory around how to effectively implement in-center self-care. The most important goals for us to reach near-term are to ensure that patients enjoy their experience on Tablo and their experience with self-care, and that physicians and clinical staff see patients feeling well and perhaps, even better, than on traditional care.

**References**


Before becoming Outset Medical’s president and CEO, Leslie Trigg served as an Executive-in-Residence at Weisberg Pincus. Prior to that she was executive vice president at Luminis, a cardiovascular medical device company acquired by CR Bard, and before joining Luminis, Leslie served as chief business officer of AccessClosure, a vascular closure company acquired by Cardinal Health. Earlier in her career, she held senior leadership positions at FoxHollow Technologies, Cytyc Corporation, and AccessClosure. In addition to her role at Outset she is a board member of Cardiovascular Systems, Inc.