

Peritoneal Dialysis Policy, Reimbursement, and Prevalence

Progress in peritoneal dialysis utilization is accompanied by unintended consequences.

BY JACK WORK, MD

When patients with end-stage renal disease (ESRD) are provided with an informed choice of renal replacement modality, approximately 40% of patients choose peritoneal dialysis (PD). Indeed, there are multiple factors favoring PD, including an initial survival advantage over hemodialysis, better preservation of residual renal function, better short- and long-term renal transplant outcomes, and improved quality of life. In addition, PD as a renal replacement therapy costs approximately \$20,000 less per year than in-center hemodialysis.^{1,2}

PREVALENCE AND INCENTIVES

Until recently in the United States, < 10% of prevalent patients use PD for renal replacement therapy. Even though the United States ESRD population grew by over 33% between 2001 and 2008, most of this growth was due to an increase in the in-center hemodialysis population, with only a little over 1% of the growth due to an increase in PD patients. In 2008, only 6.9% of prevalent dialysis patients were using PD as renal replacement therapy. This may be surprising given the three Medicare ESRD incentives to increase home dialysis: (1) new uninsured but Medicare-eligible patients are not covered by Medicare until 90 days after initiating in-center hemodialysis treatment, whereas this waiting period is waived for home dialysis; (2) there is an incentive to the patient's nephrologist, who receives a Medicare payment for training the home dialysis patient; and (3) the nephrologist receives an equivalent Medicare payment for seeing the home dialysis patient once per month as for two or three in-center hemodialysis patient encounters. Unfortunately, these incentives have not resulted in an increased utilization of home dialysis modalities in the United States.³

The failure of these incentives has been attributed to several factors. A primary factor appears to be related to a dialysis unit reimbursement model that favored profitability based on the use of injectable medications (ie, erythropoietin) in the in-center dialysis units. Another factor is the failure of the nephrology community, both in adequately training nephrology fellows regarding home dialysis therapies and in educating patients regarding the available dialysis modality choices.³ Beginning in 2011, the prospective payment system, in part, addressed these issues by establishing the "bundle," which significantly changed the financial incentives for dialysis, particularly home therapies. This new reimbursement strategy incentivized dialysis providers to place more patients on PD. In addition, the new conditions of coverage mandated a new educational requirement that renal replacement modality education be documented for all patients.

Coinciding with these incentives, Dr. John Burkart developed the concept of an "ESRD life plan," with patients having a choice in their preferred renal replacement modality so as to optimize patient outcomes.⁴ This concept specified that "planned transitions and sequencing therapies including peritoneal dialysis as a first modality to minimize hemodialysis access-related infections and preserve residual renal function with a planned transition to hemodialysis or transplant would optimize survival." This approach has now evolved into "PD first," clearly a reference to the Fistula First Breakthrough Initiative launched by the Centers for Medicare & Medicaid Services in 2003.

The bundle replaced separately payable items including injectable medications. As a result, for a patient starting in-center hemodialysis who is eligible for Medicare and without other insurance coverage, the

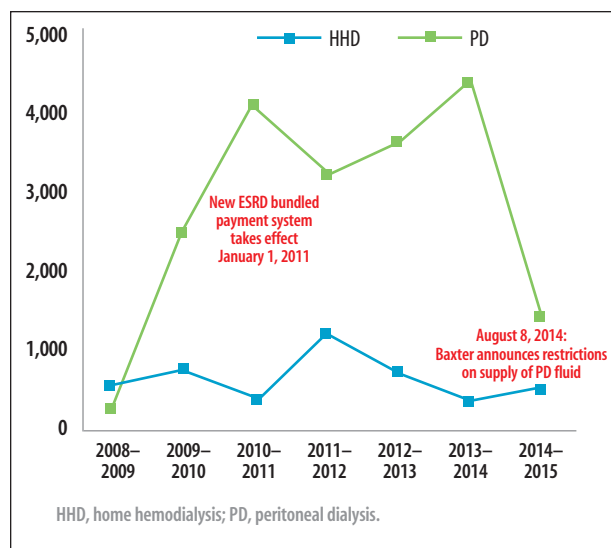


Figure 1. Unintended precipitous decline of PD patients caused by Baxter rationing of PD fluid. Reprinted from Neumann ME. Growth slows for peritoneal dialysis from 2014 to 2015. *Nephrology News and Issues*. Available at <http://www.nephrologynews.com>.

first 90 days remained unpaid. The same patient starting a home dialysis program is covered from the first day of dialysis, including payment for catheter placement costs. For patients undergoing dialysis at home, the difference is an additional \$8,000 paid to the facility and \$1,300 more to the nephrologist compared to in-center treatment.⁵ As a result of these prospective payment system changes, all of the major dialysis providers have had significant growth in home dialysis, particularly PD.

PD GROWTH AND CONSEQUENCES

Information regarding the growth in PD does not come from the US Renal Data System because there is a 2-year delay in reported data, meaning that the 2013 US Renal Data System Annual Data Report actually reported data regarding incident and prevalent patients through December 2011. However, *Nephrology News and Issues* has been surveying the 10 largest dialysis providers in the United States for over 21 years, and based on self-reported data, the percent growth in PD patients for the three largest dialysis providers was between 24% and 31% from 2009 to 2013; five of the 10 largest dialysis providers reported a 15% to 68% increase in PD patients. This increase translates into nearly 10,000 new prevalent PD patients within 3 years.

Unfortunately, this increase in patients has also translated into an unintended consequence: Baxter Healthcare, the largest provider of PD solutions in the United States, announced that its sole United States manufacturing plant

for PD solutions could not keep up with the unprecedented demand for product.⁶ Moreover, Baxter said that it would have to ration the available production, thereby substantially limiting the number of new patients that it could provide with PD solution.⁶ Fresenius Medical Care, the largest provider of dialysis services and the only other United States manufacturer of PD solution, had little reserve PD solution supply, but the company signed a short-term agreement with Baxter to distribute its reserve solution to new patients. The plummet in growth in PD brought on by this solution shortage is illustrated in Figure 1.⁶

The PD solution shortage crisis has limited the growth of new PD patients, at least in the short term. But, this has also lead to innovation to address this situation, such as incremental PD, which reduces the patient's initial fluid needs. Perhaps the greatest potential innovation will be the development of a method to eliminate the need for bags of PD fluid, which could prevent future solution shortages, cut the costs of shipping heavy solution bags, and allow for individualized patient solution prescriptions for better volume control. NxStage Medical, Inc. currently has such an approach in development.⁷

CONCLUSION

In order to continue the growth in home dialysis therapies in the United States, we must also do more to change the nephrology community culture so that patients begin to look at home therapies as a benefit, not a burden. Nephrologists should not view home therapies as a potential medical risk, but as empowerment for the patient. Perhaps the incentives, along with the unintended consequences that revealed current limitations in supply chains, will promote additional innovations in PD. ■

1. Heaf J, Løkkegaard H, Madsen M. Initial survival of advantage of peritoneal dialysis relative to hemodialysis. *Nephrol Dial Transplant*. 2002;17:112–117.
2. Korevaar J, Feith GW, Dekker FW, et al. Effect of starting with hemodialysis compared with peritoneal dialysis in patients new on dialysis treatment: a randomized controlled trial. *Kid Int*. 2003;64:2222–2228.
3. Rivara M, R Mehrotra. The changing landscape of home dialysis in the United States. *Curr Opin Nephrol Hypertens*. 2014;23:586–591.
4. Burkart J, Piraino B, Kaldas H, et al. Why is the evidence favoring hemodialysis over peritoneal dialysis misleading? *Semin Dial*. 2007;20:200–202.
5. Golper TA. The possible impact of the US prospective payment system ("bundle") on the growth of peritoneal dialysis. *Perit Dial Int*. 2013;33:596–598.
6. Neumann ME. Growth slows for peritoneal dialysis from 2014 to 2015. *Nephrology News and Issues*. August 13, 2015. <http://www.nephrologynews.com/growth-slows-peritoneal-dialysis-from-2014-to-2015>. Accessed June 1, 2016.
7. Schreiber M. The PD directive: can it be a long-term therapy? *Nephrol News Issues*. 2015;29:22–26.

Jack Work, MD

Professor of Medicine, Emeritus, Nephrology
Emory University
Atlanta, Georgia
jwork1@emory.edu
Disclosures: None.