

Hidden Costs of Conversion from Peritoneal Dialysis to Hemodialysis

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Introduction

Between 2008 and 2018, the census of patients performing home dialysis in the United States increased from 33,551 to 68,986 (source: United States Renal Data System).

From a statistical perspective, a growing census of patients performing peritoneal dialysis (PD) will likely lead to a growing number of patients transitioning from PD to hemodialysis (HD) each year.

Surprisingly, there are very few published data about the epidemiology of the transition from PD to HD, a tumultuous period for patients and their families.

Improved understanding of the transition can guide initiatives aimed at smoother or even earlier transitions from PD to HD, thereby lowering rates of hospitalization and related health care expenditures, as well as helping patients to maintain their lifestyle with home dialysis—if patients choose to transition from PD to home HD.

We analyzed registry data to assess clinical and economic outcomes before and after the transition from PD to HD.

Methods

We analyzed United States Renal Data System data to identify patients aged ≥12 years who were newly diagnosed with end stage kidney disease (ESKD) in 2001-2017, initiated PD during the first year of ESKD, and discontinued PD in 2009-2018.

Among the subgroup of patients who converted to HD and carried Medicare coverage, we estimated monthly rates of hospital admissions and days, emergency department encounters, and Medicare Parts A and B costs during the 12 months before and after conversion from PD to HD.

Among all patients who discontinued PD and converted to HD, we estimated the incidence of home HD initiation, kidney transplantation, and death after conversion to in-facility HD.

Results

The study cohort included 124,213 patients whose reason for discontinuation of PD was conversion to HD (55%), death (27%), or kidney transplantation (18%).

Rates of hospital admissions (days) per 100 months were 21 (176) in the third-to-last month of PD, 31 (307) in the second-to-last month, and 72 (849) in the last month, before receding to 32 (245) in the first month of HD.

Months ^a	Hospital admissions (n per 100 mo)	Hospital days (n per 100 mo)	ED encounters (n per 100 mo)	Total cost of care (\$ per mo)
-6	13.1	85.0	11.8	\$5,549
-5	15.1	101.1	13.0	\$6,149
-4	17.5	129.1	13.8	\$6,946
-3	20.7	176.3	14.9	\$8,319
-2	31.0	306.8	17.2	\$11,312
-1	72.1	848.7	20.2	\$20,701
+1	31.6	245.2	23.3	\$13,302
+2	23.7	203.0	18.1	\$9,832
+3	21.2	166.4	16.9	\$9,043
+4	19.8	151.8	16.6	\$8,282
+5	18.2	136.0	15.9	\$7,821
+6	17.8	127.4	15.2	\$7,672

^a Months before (-) or after (+) conversion to hemodialysis

During the final months of PD, monthly rates of hospitalization due to PD catheter complications increased sharply, widely outpacing more modest increases in the rates of hospitalization due to cardiovascular disease, peritonitis, and non-infection-related complications of the digestive system, as displayed in Figure 1 (right).

The cumulative incidence of home HD initiation and kidney transplantation was only 3.0% and 7.2%, respectively, at 24 months, as displayed in Figure 2 (right). Cumulative mortality was 17.1% and 25.8% at 12 and 24 months, respectively

Conclusions

The transition from PD to HD is characterized by high rates of both acute care encounters and health care expenditures.

Our study demonstrates that there are two clear opportunities for quality improvement during the transition:

- Reducing the rate of acute care counters, particularly hospital admissions, and the related total cost of care
- Encouraging ongoing utilization of home dialysis, via either an immediate transition to HHD or a resumption of PD

Figure 1: Rates of cause-specific hospital admissions before and after conversion from peritoneal dialysis to hemodialysis, among patients with Medicare coverage

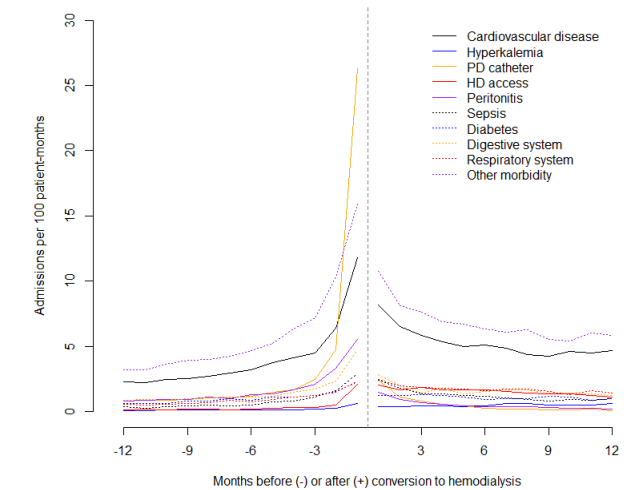


Figure 2: Cumulative incidence of peritoneal dialysis resumption, home hemodialysis initiation, death, and kidney transplantation, among patients whose reason for discontinuation of peritoneal dialysis was conversion to in-facility hemodialysis

