Completion of peritoneal dialysis treatments following discharge is associated with reduced rates of cumulative hospitalizations

Eric Weinhandl, PhD, MS[1-3]; Mihran Naljayan, MD, MHA[1,2,4]; Bernie del Rosario, MD[1,2]; Michelle Cassin, RN, CPDN[1,2]; Francesca Tentori, MD, MS[1,2]; Steven M. Brunelli, MD, MSCE[1,2]

[1]DaVita Inc., Denver, CO; [2]DaVita Patient Safety Organization, Denver, CO; [3]Department of Pharmaceutical Care and Health Systems, University of Minnesota, Minneapolis, MN; [4]Division of Nephrology and Hypertension, Louisiana State University Health Sciences Center, New Orleans, LA

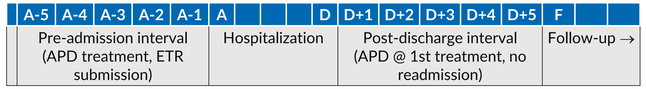
Introduction and Objective

- Resumption of dialysis after hospital discharge is important for all end-stage kidney disease (ESKD) patients.
- There is little evidence of clinical outcomes following resumption of peritoneal dialysis (PD) treatments following discharge.
- In this study, we wanted to test whether treatment adherence, as measured from electronic treatment records (ETRs), is associated with rates of transfer to hemodialysis and cumulative hospitalizations in automated PD (APD) patients.

Methods

- Electronic health records were used to identify adult (20-100 years) ESKD patients who started PD training (N=18,892) between April 2022 and March 2025 at a large kidney care organization and were then hospitalized and discharged to home.
- We followed them for up to a year to the earliest of transfer to hemodialysis, death, kidney transplant, recovery of kidney function, transfer out, or end of study (November 30, 2025).
- Outcomes included transfer to hemodialysis and cumulative hospitalizations.
- Adherence to prescribed treatment was defined by percentage of prescribed treatments that were completed within 5 days of discharge (Figure 1).

Figure 1: Study Schematic



A: date of Admission; D: date of Discharge; F: start of follow-up

- Outcome window started on day 6 post discharge and continued for up to 12 months.
- Transfer to hemodialysis associations were derived from Cox proportional hazards regression models adjusted for demographic factors.
- Cumulative hospitalization comparisons (incidence rate ratios) were estimated using a generalized linear mixed model with a Poisson distribution and adjusted for covariates.

Results

Table 1: Flow Chart of Patient Inclusion

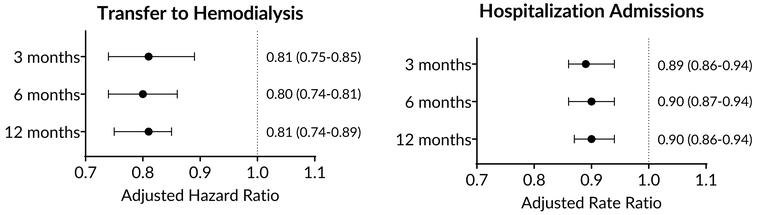
Condition	Hospitalizations (N)
Hospital admission during the study interval	56,382
Admission ≥1 month after initiation of PD training	53,897
No readmission during the 5 days following discharge	41,361
≥1 APD treatment during the 5 days preceding admission	38,514
≥1 ETR during the 5 days preceding admission	20,992
Non-missing pre-admission covariate data	20,423
Treating with APD after discharge	18,892

Table 2: Patient Characteristics by adherence status

	Non-adherent	Adherent
Patients, N	8,381	10,511
Age, years, mean (SD)	58.7 (15.9)	61.7 (15.6)
Male sex (%)	54.0%	55.6%
Duration of ESKD, years, mean (SD)	2.3 (2.9)	2.3 (2.8)
Duration of PD, months, mean (SD)	17.6 (16.4)	18.3 (17.2)
Prescribed number of treatment days, mean (SD)	6.8 (0.6)	6.8 (0.6)
Cumulative PD fill volume, mL/day, mean (SD)	10,477 (3,245)	10,824 (3,225)

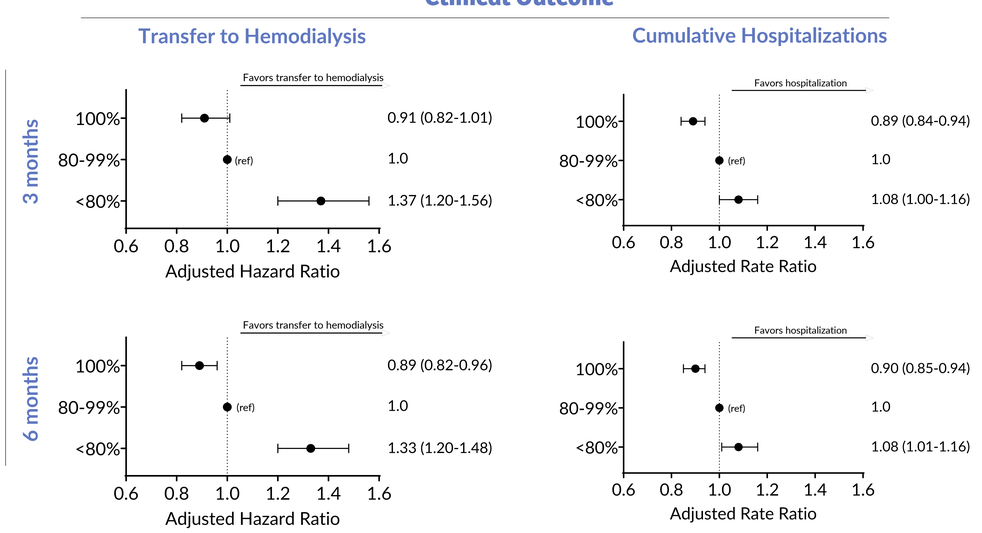
Adherent patients were slightly older (61.7 yrs vs. 58.7 yrs) and had been on PD longer (18.3 months vs. 17.6 months) (Table 2).

Figure 2: Relative rates of outcomes with 3, 6, or 12 months of follow-up



Among patients with ≥2 confirmed ETRs after discharge, completion of all prescribed treatments during the first 5 days after discharge is associated with lower rates of transfer to hemodialysis [0.81 (0.74-0.89)] and cumulative hospitalizations [0.89 (0.86-0.94)] as early as 3 months following hospitalization (Figure 2).

Figure 3: Sensitivity analysis – outcome rates by percentage of adherence



In a sensitivity analysis of patients with ≥2 confirmed treatments after discharge, those with 100% adherence to scheduled treatments experienced lower rates of transfer to hemodialysis [0.89 (0.82, 0.96)] and cumulative hospitalizations [0.90 (0.85, 0.94)] at 6 months follow up (Figure 3).

Conclusions

Treatment adherence following hospitalization is associated with lower rates of hospitalization and transfer to hemodialysis in PD patients.

Limitations

- Limited availability of ETR data during the study interval.
- Possibility of unmeasured confounding in patients with extremely low adherence.
- Ambiguity about treatment intentions immediately after discharge necessitated deduction of intentions from actual treatments.

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Correspondence: Eric.Weinhandl@davita.com. Presented at ASN Annual Meeting 2026 Kidney Week, Denver, Colorado

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