



Association of Connected Cyclus Use with Rate of Transition from Peritoneal Dialysis to In-Center Hemodialysis

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Introduction

- Patient attrition from home dialysis is an ongoing challenge, sometimes attributable to the difficulty of assessing prescription adherence in real time.
- There is an increasing use of remote monitoring platforms in healthcare, including the use of internet-connected automatic peritoneal dialysis cyclers, that may assist with home therapy retention.¹

Objective

We aimed to assess whether the use of an internet-connected automatic peritoneal dialysis cycler (CC), which transmits treatment data to the dialysis provider on a daily basis, was associated with lower rate of transition to in-center hemodialysis (ICHHD).

Methods

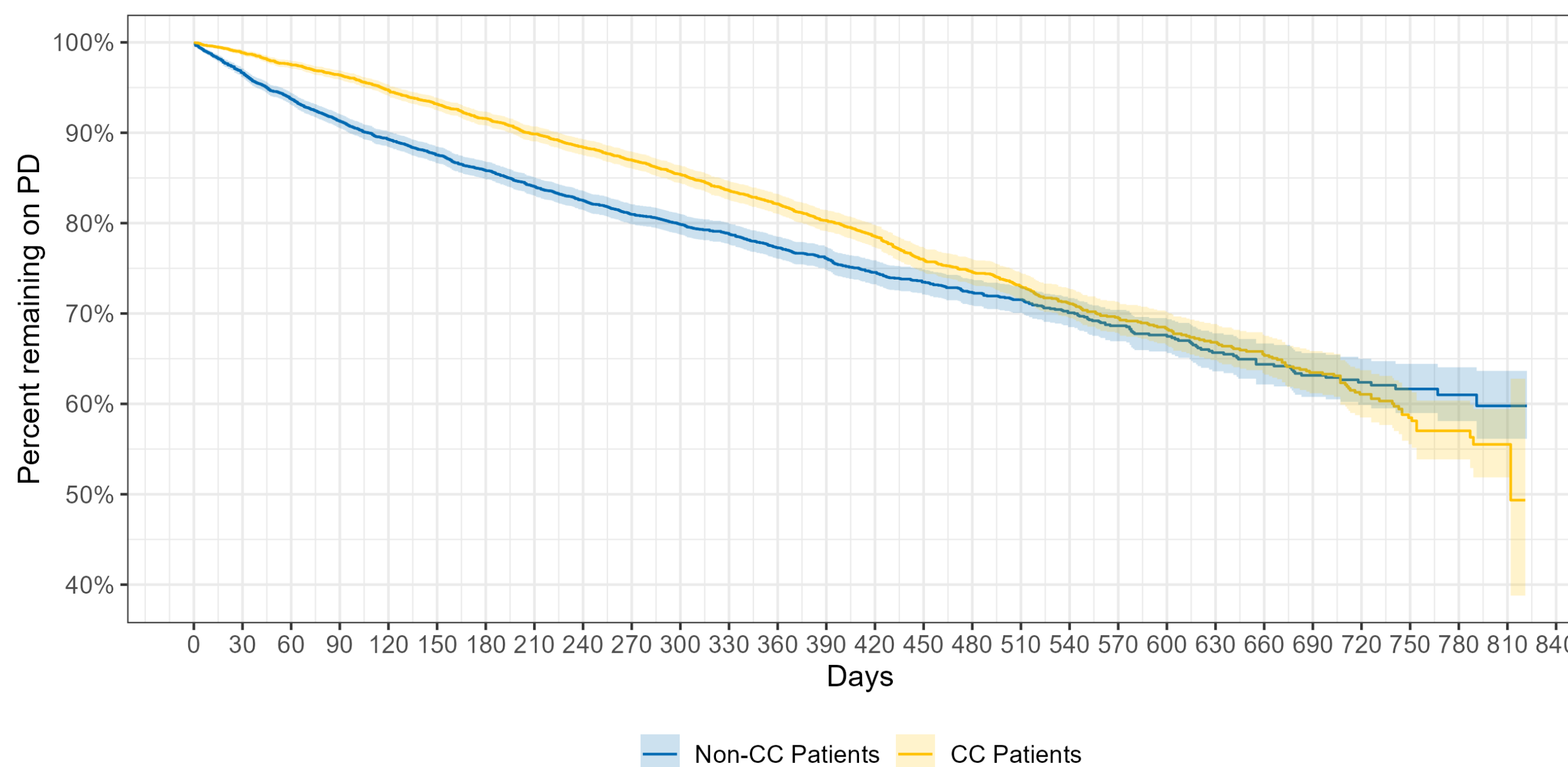
- The study population included all peritoneal dialysis (PD) patients who began treatment at a large dialysis organization between July 2021 and December 2022 and initiated use of a CC [Homechoice Claria or Amia, Baxter International] within 30 days of first documented treatment.
- Patient data were obtained from electronic medical records and initiation of CC was ascertained from electronic treatment records.
- Matched pairs of CC PD patients and non-CC PD patients were constructed, based on clinical and demographic factors, to address measurable confounding.
- Patients were followed from 30 days after PD initiation until the earliest of transition to ICHHD, death, kidney transplant, or end of study follow-up.
- Kaplan-Meier estimation and Cox regression were used to compare technique survival in CC and non-CC patients; death and transplantation were classified as censoring events.

Results

Table 1: Unmatched and Matched Patient Characteristics

	Unmatched Non-CC patients (n = 11,900)	Unmatched CC patients (n = 5,338)	Matched Non-CC Patients (n = 5,308)	Matched CC Patients (n = 5,308)
Female	4928 (41.4%)	2186 (41.0%)	2164 (40.8%)	2176 (41.0%)
Dialysis Vintage (yrs.)	0.238 [0.002, 37.8]	0.148 [0.002, 27.0]	0.228 [0.002, 30.0]	0.148 [0.002, 27.0]
Age (yrs.)	61.0 [0, 99.0]	60.0 [0, 97.0]	61.0 [0, 97.0]	60.0 [0, 97.0]
Race/Ethnicity				
American Indian or Alaskan Native	129 (1.1%)	54 (1.0%)	46 (0.9%)	53 (1.0%)
Asian	643 (5.4%)	300 (5.6%)	279 (5.3%)	299 (5.6%)
Black	2560 (21.5%)	1245 (23.3%)	1216 (22.9%)	1238 (23.3%)
Hispanic	1708 (14.4%)	734 (13.8%)	661 (12.5%)	727 (13.7%)
Middle Eastern or North African	65 (0.5%)	22 (0.4%)	23 (0.4%)	20 (0.4%)
Native Hawaiian or Other Pacific Islander	84 (0.7%)	53 (1.0%)	38 (0.7%)	53 (1.0%)
Other	1192 (10.0%)	619 (11.6%)	610 (11.5%)	616 (11.6%)
White	5519 (46.4%)	2311 (43.3%)	2435 (45.9%)	2302 (43.4%)

Figure 1: Kaplan-Meier Curve for Home Patient Retention Over Time by CC Use



Results and Conclusions

- The study cohort included 5,308 matched pairs of CC and non-CC peritoneal dialysis patients. The mean age of the cohort was 60.5 years, and 41% of the patients were female.
- Among CC patients, 5% experienced transition to ICHHD after 90 days, compared to 10% of non-CC patients.
- After 360 days, 18% of CC patients experienced transition to ICHHD, compared to 25% of non-CC patients.
- Overall, CC patients had a 16% lower rate of transition to ICHHD, compared to non-CC patients (hazard ratio: 0.84, 95% confidence interval: 0.78, 0.91).
- Broader use of CC technology may facilitate improvement in retention of patients undergoing PD.

References

1. Borrelli, S., Frattolillo, V., Garofalo, C., Provenzano, M., Genuardo, R., Conte, G., Minutolo, R., & De Nicola, L. (2020). Monitoraggio da remoto del paziente in dialisi: il cambio di passo per la dialisi domiciliare? [Remote patient monitoring in dialysis patients: the "change of pace" for home dialysis]. *Recenti progressi in medicina*, 111(7), 404-410. <https://doi.org/10.1701/3407.33922>

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