Reduction of Drop Out

Evidence Series: Study

Technique failure in remote patient monitoring in patients undergoing automated peritoneal dialysis: A retrospective cohort study

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Sharesource

Technique failure in remote patient monitoring in patients undergoing automated peritoneal dialysis: A retrospective cohort study

BACKGROUND

- Remote patient monitoring (RPM) programs in automated peritoneal dialysis (APD) allow clinical teams to be aware of many aspects and events of the therapy that occur in the home. This present study evaluated the association between RPM use and APD technique failure.

OBJECTIVES

- To evaluate the influence of the RPM program versus no RPM on the technique failure in a cohort of prevalent patients treated by APD in Colombia.
- The underlying hypothesis is that the RPM program improves the outcome measured in this cohort.

ENDPOINTS

- Technique failure, defined as the switch to hemodialysis lasting for at least 30 days.

METHODS

- A retrospective, multicenter, observational cohort study of 558 prevalent adult APD patients in Colombia
- Patients were divided into two cohorts based on the RPM use:
  - APD-RPM n=148 patients using the Homechoice Claria device with Sharesource connectivity
  - APD-without RPM n=410 patients using APD Homechoice without RPM

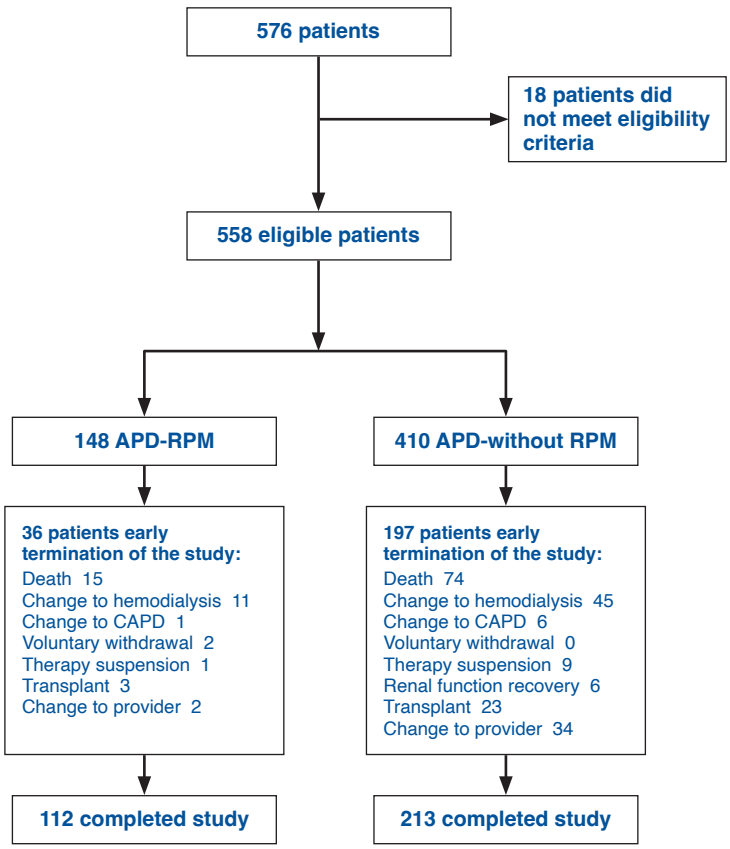

Figure 1. Patient flowchart in the study. The diagram shows the flow of patients in the study. Of the 576 originally recruited patients, 18 did not meet the eligibility criteria. One hundred forty-eight patients analyzed in APD-RPM; and 410 patients in APD without RPM. APD: automated peritoneal dialysis; RPM: remote patient monitoring.

- The APD-RPM program included an educational introduction for patients, families, caregivers and healthcare professionals to assure a good understanding of the new Homechoice Claria device including:
  - adjustment of care plan processes
  - training in the use of scales, digital blood pressure monitors
  - importance of bidirectional communication with dialysis nurses
  - retraining of nurses in:
    - PD adequacy
    - APD prescription
    - handling of Homechoice Claria and Sharesource
- A propensity score was used to create a pseudo-population with baseline covariates well balanced
- The association of RPM with technique failure was estimated adjusting for the competing events death and kidney transplant

RESULTS

IN A MATCHED SAMPLE OF 148 APD-RPM + 148 APD-WITHOUT-RPM PATIENTS

- Technique failure was

55% LOWER in the RPM group vs no RPM group

- A lower technique failure rate was observed in APD-RPM cohort:
  - APD-RPM = 0.08 [0.05–0.15] episodes per patient-year
  - APD-without-RPM = 0.18 [0.12–0.26] episodes per patient-year
- Incidence rate ratio = 0.45, confidence interval = 95%[0.22–0.91], p-value = 0.03

Table 3. Technique failure incidence for total and matched population.

	Before matching		PS-matched sample	
Technique failure	**Treated**	**Untreated**	**Treated**	**Untreated**
	11	45	11	23
	137	499	137	131
	0.08 [0.05, 0.15]	0.09 [0.07, 0.12]	0.08 [0.05, 0.15]	0.18 [0.12, 0.26]
	0.88 [0.41, 1.74]		0.45 [0.22, 0.91]	
	0.65		0.03	

Treated: APD-RPM; untreated: APD-without-RPM; propensity score: CI: confidence interval; APD: automated peritoneal dialysis; RPM: remote patient monitoring.
***Incidence rate ratio defined as APD-RPM/APD-without RPM.**

RESULTS

- There is a lower incidence of technique failure in the APD-RPM propensity matched cohort:
  - $p < 0.01$ when adjusted by death
  - $p < 0.01$ when adjusted by kidney transplant
- When reviewing the causes of the technique failure, the lower rate resulted from less drop out related to:
  - adherence problems
  - patient or caregiver burn out
  - catheter dysfunction
  - clearance of small solutes or ultrafiltration

RPM may have enabled EARLIER INTERVENTIONS which could reflect better managed care in patients supported by the RPM-APD program

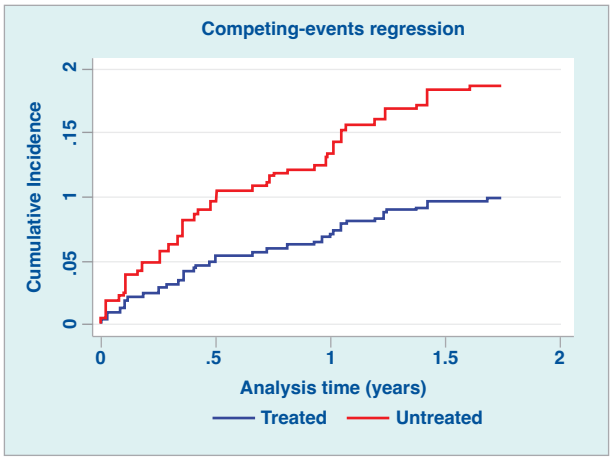

Figure 2. Technique failure cumulative incidence function with competing events. The figure shows the cumulative incidence of technique failure using the propensity-score matching with competing events. Treated: APD-RPM; untreated: APD-without RPM; APD: automated peritoneal dialysis; RPM: remote patient monitoring.

CONCLUSIONS

- The use of RPM, such as Sharesource, in APD patients may be associated with a lower technique failure rate.
- This technology may contribute to better outcomes
- Additional interventional studies are needed to confirm the benefits of RPM programs and to measure other patient reported outcomes.

Baxter's **Homechoice Claria** APD system is intended for automatic control of dialysis solution exchanges in the treatment of pediatric and adult renal failure patients undergoing peritoneal dialysis in the HOME HEALTHCARE ENVIRONMENT including comparable use in professional healthcare facilities.

The **Sharesource** portal is intended for use by healthcare professionals to remotely communicate new or modified treatment parameters with compatible dialysis instruments and transfer completed treatment data to a central database to aid in the review, analysis, and evaluation of patients' historical treatment results. This system is not intended to be a substitute for good clinical management practices, nor does its operation create decisions or treatment pathways.

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