

## Evidence Series: Study

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

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## 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, which allows earlier detection of issues and thus interventions.

## OBJECTIVES

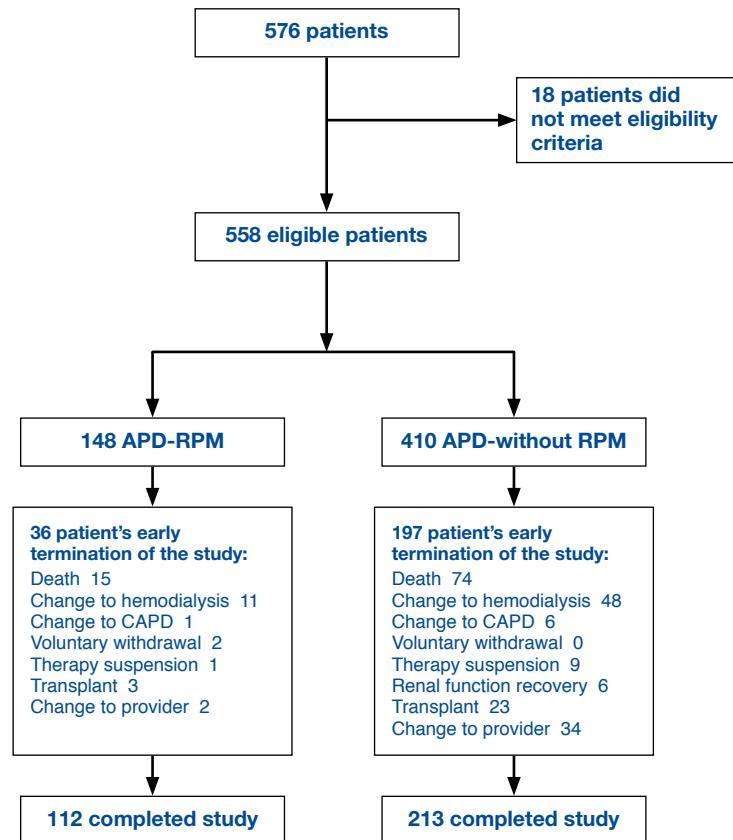
- To evaluate if the use of RPM in APD patients can lead to lower technique failure requiring transfer to HD.
- The underlying hypothesis is that RPM program improves the outcome measured in this cohort

## ENDPOINTS

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

## METHODS

- A retrospective, multicentre, 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 analysed 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



**148 APD-RPM + 148 APD-WITHOUT-RPM PATIENTS**

**IN A MATCHED SAMPLE OF**

- Technique failure was

**LOWER** in the RPM group vs no RPM group

**55%**

- 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	
	Treated	Untreated	Treated	Untreated
Technique failure	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.

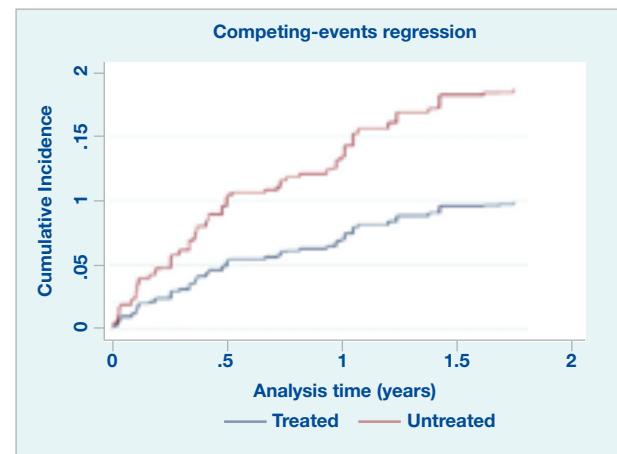
\*Incidence rate ratio defined as APD-RPM/APD-without RPM.

# 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

**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 PRM; APD: automated peritoneal dialysis; RPM: remote patient monitoring.

- When reviewing the causes of the technique's 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  
resulting in better clinical  
management of patients  
supported by the RPM-APD program**

# CONCLUSIONS

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

For safe and proper use of products mentioned here, refer to the operator manual

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