Patient Management and Efficiency

Reduced Costs and Resources

Evidence Series: Study

Longitudinal Experience with Remote Monitoring for Automated Peritoneal Dialysis Patients

Sabrina Milan Manani et al

Sabrina Milan Manani, Grazia Maria Virzì, Anna Giuliani, Sonia Berti, Carlo Crepaldi -Department of Nephrology, Dialyssis and Transplant, San Bortolo Hospital, Vicensa, Italy; IRRIV- International Renal Research Institute, Vicenza, Italy. Mitchell H. Rosner - Division of Nephrology, University of Virginia Health System, Charlottesville, VA, USA. Claudio Ronco - Full Professor of Nephrology, Department of Medicine, University of Padua, Padua, Italy. Nephron Clinical Practice Nephron DOI: 10.1159/000496182. Published January 30, 2019

Sharesource

BACKGROUND

- **Remote Monitoring (RM) of patients on APD offers the potential benefits** of accurate monitoring of the therapy, improved patient safety through surveillance of critical stages of the treatment, early detection of problems or limited compliance to prescription.
- Furthermore, the 2-way communication system with interactive interface allows fast trouble shooting: the physicians can change the prescription using the remote connection, reducing the need for frequent in-person visits to the PD center.

OBJECTIVES

To evaluate the utility of the RM-APD Homechoice Claria APD System with Sharesource for 1 year by comparing it to traditional APD management.

ENDPOINTS

- Number of night alarms, hospital visits and personalized prescription changes
- Direct and indirect costs

METHODS

A single centre observational study comparing outcomes in patients with (current patients) and without (historical data) exposure of RM in the PD centre at San Bortolo Hospital, Vicena, Italy that **compared 2 groups over 1 year.**

RESULTS

- 43 RM-APD patients were enrolled in the trial vs 42 APD patients
- A reduction in the patient's dropout was observed with RM-APD (16.27 %) compared to the control (23.8%). Although this did not reach statistical significance it is important to note that the dropouts were due to technique failure and change of dialysis modality. There were fewer dropouts due to technique failure and change of dialysis modality in RM-APD group compared to APD control group (3 versus 5).

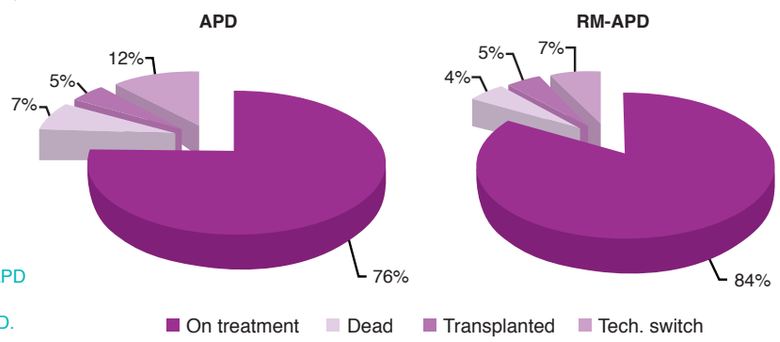

Fig. 3. Conditions and outcomes for RM-APD and APD groups after 1 year of observation. APD automated peritoneal dialysis; RM-APD, remote monitoring-APD.

RESULTS

- The number of night alarms were statistically lower in the RM-APD group compared to the control APD group, see table 1.

Table 2. Comparison between RM-APD and traditional APD

	RM-APD (*n*=43)	Traditional APD (*n*=42)	p values
Program changed per patient/year, median (IQR)	2 (1-3)	1 (0-2)	0.005
In-person visits per patient/year, median (IQR)	4.0 (3.0-5.0)	5.0 (4.25-5.75)	<0.01
Night alarms per patient/months, median (IQR)	1.3 (0.6-1.5)	2.0 (1.3-3.7)	0.002
Total wKt/V	1.8 (1.5-2.2)	1.79 (1.55-2.0)	0.94
Total wCreatinine clearance	58.5 (44.5-86.5)	68 (48.2-84.7)	0.61

wKt/V, total (renal and peritoneal) weekly Kt/V_{urea} ; wCreatinine clearance; total (renal ad peritoneal) weekly creatinine clearance; IQR, interquartile range; RM, remote monitoring; APD, automated peritoneal dialysis.

THE PATIENTS WHO UNDERWENT
TRADITIONAL APD NEEDED

5.14 in person visits **in the year of observation**

compared to... **3.56** IN **RM-APD GROUP**

This was a **statistically significant reduction**

There was **no significant difference** in **PD adequacy** between the 2 groups.

This leads on to a **statistically significant reduction** in the costly time spent by physicians and nurses during each inpatient visit.

The time saving due to this was calculated at:

2,520 min for the physicians & **1,680** min for the nurses.

Considering the median distance from the Hospital the APD control group travelled 5,620km with a time consumption of 7,770 min in total for inpatient visits. Whereas the RM-APD group travelled 4,536km and spent 6,216 min doing so.

Based on the patient questionnaire there was

100% satisfaction

in terms of ease of use of the system

They reported satisfaction with the high level of interaction from the care team and with the ability to resolve technical issues in a timely manner.

RESULTS

Physicians performed 2.02 program changes per patient of the APD prescriptions in the RM-APD group

ALMOST DOUBLE COMPARED TO THE CONTROL GROUP (1.07/PATIENT)

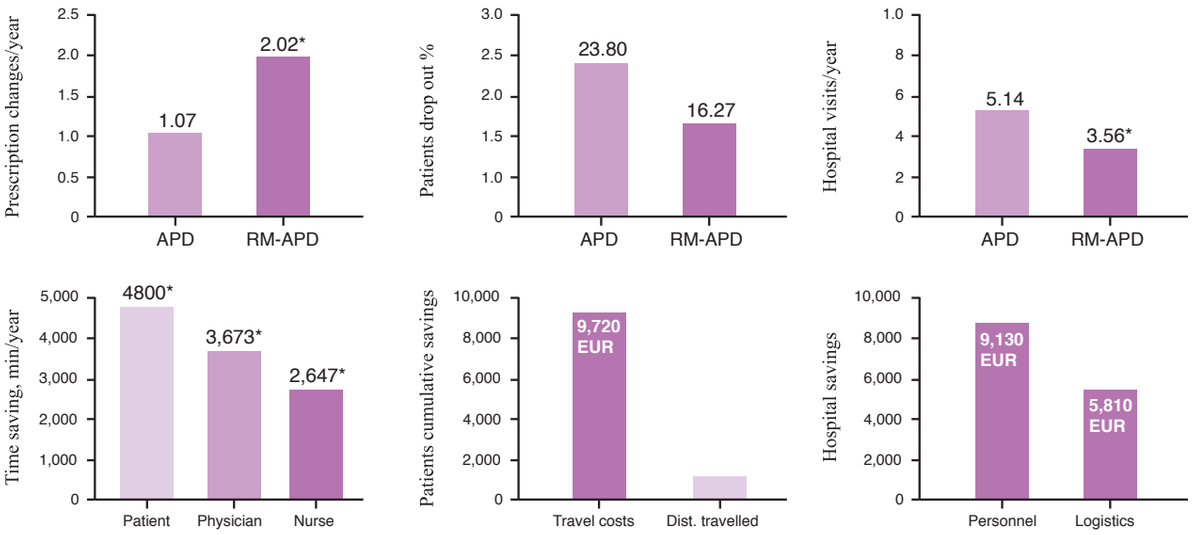

Fig. 5. Different benefits were observed from the utilization of the RM-APD regime. In particular, a significant difference of prescription changes was observed demonstrating that even in a stabilized prevalent population, prescription change is more frequent in case of RM-APD leading to a more personalized therapy regime. Patient drop out decreased significantly mostly due to a lower rate of technique failure. The number of in person hospital visits was reduced with consequent savings for the patient, the care team, and the hospital. * $p < 0.001$. APD, automated peritoneal dialysis; RM-APD, remote monitoring-APD

CONCLUSIONS

- There was a statistically significant reduction in the number of night alarms and in hospital visits. Based on this a reduction in cost and time was observed for patients, caregivers and hospital staff.
- Patient satisfaction with the RM-APD system was high and this led to a perceived virtual reduction of the distance between them and the clinical staff.
- Double the number of patient prescription changes were performed in the RM-APD group
- Time and cost savings in transport are particularly useful, both for the patients affected by end-stage renal disease and for their caregivers.

In conclusion, this data confirms the long-term benefits of a 2-way communication system:

An early detection of problems

Permits a close follow-up of outpatients

Knowledge-based handling of complication

Avoids extra visits for technical problems

For safe and proper use if products mentioned herein refer to the operator manual

Baxter