

# Evidence Series: Case Report

## Remote Monitoring of APD Patients:

Assessing Clinical and  
Economic Value

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## BACKGROUND

For end-stage renal disease, survival depends on kidney replacement therapy in the form of kidney transplantation or chronic dialysis.

Peritoneal dialysis (PD) at home, is both more convenient and less costly than hemodialysis, which requires

### 3 x 4 HOUR



### VISITS PER WEEK

to the dialysis facility and complex equipment.



Remote  
patient  
management  
(RPM)

technologies collect medical information and transmit it to healthcare providers for patient management. RPM has the potential to improve the outcomes of patients receiving automated peritoneal dialysis (APD) at home.



## OBJECTIVES

Estimate through a simulation study the potential impact of RPM on APD patients' use of healthcare resources and costs in the United States, Germany and Italy.



## ENDPOINTS

- > Estimated cost savings of unscheduled visits and complications.
- > Associated cost savings of resource utilization.



## STUDY DESIGN

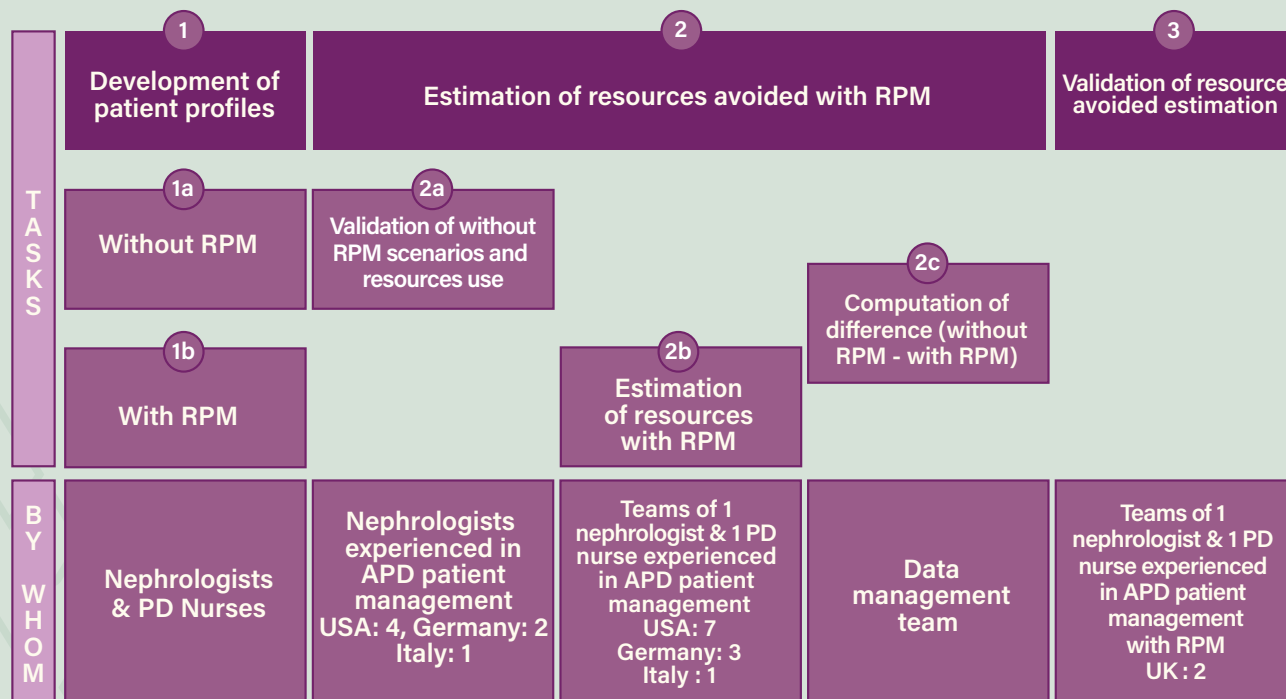
Twelve APD patient profiles ("simulations")



- > Two versions of each profile were created to simulate Healthcare resource use: one assuming use of RPM and one without (i.e. usual clinical practice).
- > The RPM technology tested was a two-way, home based APD cyclor that records clinical and treatment data and electronically transfers it

were developed by a group of nephrologists and nurses based on potential clinical scenarios

- daily through a secure online portal for review by clinicians.
- > The technology also allows clinicians to make treatment modifications directly on the APD cyclor.
- > Eleven APD teams estimated resources that would be used in the "with RPM" scenario using a separate on-line survey.



Overview of study

## STUDY POPULATION

Table 1 Participant Practice Characteristics per Country

| PARTICIPANT PRACTICE CHARACTERISTICS                           |                     |               |             |
|----------------------------------------------------------------|---------------------|---------------|-------------|
| COUNTRY                                                        | UNITED STATES (N=7) | GERMANY (N=3) | ITALY (N=1) |
| Practice setting, n                                            |                     |               |             |
| Hospital                                                       | 2                   | 1             | 1           |
| Dialysis center                                                | 5                   | 2             | 0           |
| Average number of APD patients managed per year                | 82                  | 48            | 80          |
| Average number of years of experience in managing APD patients | 17                  | 21            | 27          |

APD, automated peritoneal dialysis



## RESULTS

### Resource Utilization

Estimated **reduced resource utilization** across the three countries ranged from

**1-2** HOSPITALIZATIONS

.....

**1-4** HOME VISITS

.....

**2-5** EMERGENCY ROOM VISITS

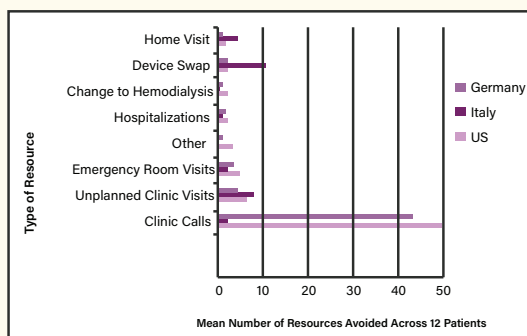
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**4-8** UNPLANNED CLINIC VISITS

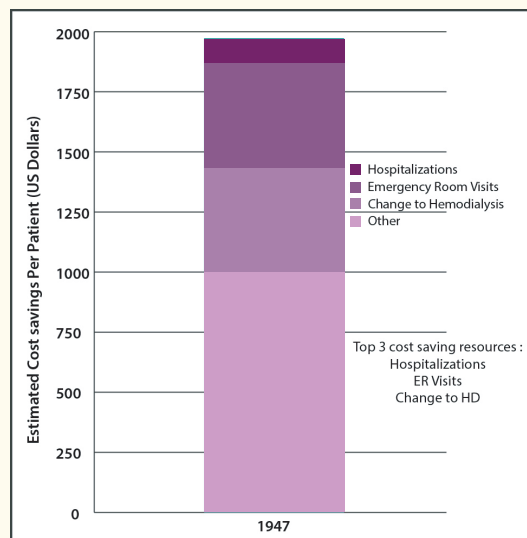
### Resource Costs

**Total savings** across all scenarios were

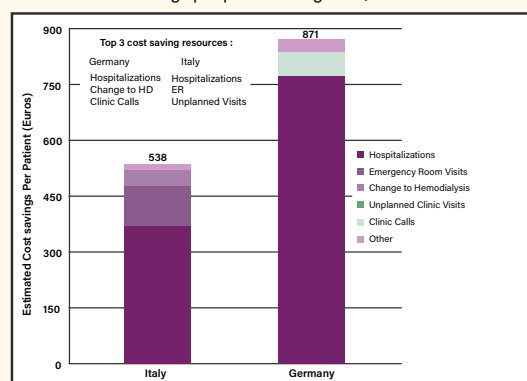
**\$23,364 USA**  
**\$11,477 GERMANY**  
**\$7,088 ITALY**



Healthcare resource avoidance with RPM



Estimated cost savings per patient using RPM, United States



Estimated cost savings per patient using RPM, Germany and Italy

## CONCLUSIONS

In a simulated environment, RPM reduced healthcare system resource utilization and costs in patients with problems such as treatment adherence, fluid overload, volume depletion, low drain/unidentified alarms or factitious data. The data suggest that RPM may enable earlier intervention when these events occur, thus avoiding complications or treatment discontinuation and reducing the associated economic costs.

Results in actual clinical setting may vary. This study was conducted in a simulated environment which will require additional studies to confirm findings. Information derived from this study may not correlate with clinical outcomes.

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.

**Rx Only:** For safe and proper use of products mentioned herein, please refer to the appropriate Instructions for Use or Operator's manual.

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