

## A case study of an elderly PD patient with severe tremors who wanted to continue with home therapy

By Dr. Faiza Brunner MD, Peripal AG

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### Abstract

#### Introduction:

The inability of patients to manipulate PD devices has been identified as a barrier to peritoneal dialysis (Ref1). This case study is about an elderly patient who, although being a prevalent PD patient, was deteriorating in health. He developed debilitating tremors which contributed to several peritonitis episodes. Despite all these adversities, the patient wanted to maintain his independence. He wished to continue with home PD as he also had an elderly wife who was dependent on him. An innovative device called the PeriSafe® (Ref 2) enabled the patient to continue his PD therapy at home.

This case study highlights a key recommendation of the ISPD Practice Guidelines in 2020 which states that PD should be prescribed using shared decision-making between the person doing PD and the care team. The aim is to establish realistic care goals that 1. maintain quality of life for the person doing PD as much as possible by enabling them to meet their life goals, 2. minimise symptoms and treatment burden while 3. ensuring high-quality care is provided. (Ref 3)

#### Case presentation:

An elderly patient in his late 70s, who along with other medical issues was also undergoing treatment for cardio renal syndrome at the Dialysis Center in Zwickau which is one of the largest peritoneal dialysis centres in Saxony and Thuringia in Germany. He was started on renal replacement therapy in the form of CAPD in 2016 by his nephrologist. In the next few months and years, his physical condition deteriorated, however. The patient developed severe tremors in his hands which was so debilitating that he could not do safe connections of the tubing in CAPD anymore. He suffered a few episodes of peritonitis as a result which required treatment and hospitalization. In the meantime, his elderly wife also started becoming physically dependent on him for care.

*'I am Dr. Heike Martin and I run the Dialysis Centre Zwickau with 3 other colleagues. I have been a nephrologist since 1999'. Dipl. Med Dr. Heike Martin*

For this patient, hemodialysis was not a preferred option due to his medical conditions. An assisted APD which would have been possible for him however would have tethered him to a cyclor for a few hours at a time. He was concerned that he would not be able to attend to his wife should she have an emergency situation while he was having an exchange. Due these reasons, the patient was still keen on continuing his CAPD at home.

In 2018, his attending nephrologist came across a new innovative device designed to assist patients with home peritoneal dialysis. The PeriSafe® was developed at the ETH in Switzerland (Ref 2) using eye tracking technology specifically to evaluate the interaction of patients with current PD treatment. This technology indicated that the use of PD in frail individuals, irrespective of age, can be facilitated by connection-assist devices (Ref 4). The PeriSafe® simplified the connection of the tubing and breaking of the frangible (of the dialysate bag) with the push of some buttons and a lever. The substituted manual actions could now be done within a closed environment thereby reducing touch contamination.

*‘PeriSafe was a tremendous help in his therapy. It gave our patient the confidence to perform a contamination-free connection’.*

Dipl. Med Dr. Heike Martin

The health care professionals at the Zwickau Dialysis Center trained this patient to adapt to the PeriSafe® device which was not at all difficult to learn as he already knew the conventional therapy. They supported him in his decision to continue his independence by choosing to continue with peritoneal dialysis at home but at the same time keeping values and treatment goals at the forefront.

### **Management and Outcome:**

By taking the initiative to not only train themselves to using a novel innovation but also taking into account the patient’s needs, the HCPs at the Zwickau Dialysis Center put themselves at the forefront of advances and adjustments in the renal replacement therapy.

The patient was confident enough to take the PeriSafe® device home after a few training sessions at the dialysis center under the watchful eyes of HCPs. His PD care was continued even after he was admitted to a care home where he eventually succumbed to his illnesses in his early 80s. He managed to outlive his wife and was able to continue his therapy with the PeriSafe® despite a hospitalization. His nephrologist was convinced that further peritonitis episodes were also avoidable due to the use of this device. It greatly assisted his manual connection in PD which was impaired by his severe tremors.

In total, he used the PeriSafe® for almost a year and a half. He would not have been able to continue peritoneal dialysis at home without the assistance of the device and the support of his HCPs.

*‘For this patient, it was a gift, to be honest. He was able to continue PD treatment at home independently and without any problems, despite his severe tremor and old age’.*

Dipl. Med Dr. Heike

**Discussion:**

Despite tremendous progress on multiple fronts, patients with end stage renal disease carry a heavy burden of disease and treatment. We owe to the patients to continue to reconfigure health care delivery to better match dialysis modality to patients' desires, improve the efficiency of therapy without putting a greater burden on patients, reduce cardiovascular risk, and better apply lessons learnt from research in clinical practice (Ref 5).

**These factors have to addressed:**

1. Peritoneal dialysis is a patient or carer delivered home-based therapy and a key feature of PD is the requirement for patients and/or their carers to interact with PD equipment. This can be a limiting factor in frail, elderly or disabled patients (Ref 6).
2. More and more elderly patients who already depend on PD therapy may develop difficulties as their renal replacement therapy progresses as clearly addressed in this case study.
3. It has been shown that functional impairment, assessed by PD nurses, was strongly associated with assisted PD utilization in incident PD patients, but there was no information about the tools used to evaluate patient capability to perform peritoneal dialysis (Ref 7).
4. Tools used to evaluate dexterity could be utilized in peritoneal dialysis to estimate the capability to perform the peritoneal dialysis connection (Ref 8).
5. For those who choose renal replacement therapy, it is important to establish goals and ceilings of care and to provide holistic care focusing on optimising quality of life (Ref 9).
6. There are no differences in measures of quality of life and physical function between older patients on assisted PD and comparable patients on hemodialysis, except for treatment satisfaction, which is higher in patients on PD. Assisted PD should be considered as an alternative to hemodialysis for older patients, allowing them to make their preferred choices (Ref 10).

Ultimately, a PD prescription should take into account the local country resources, the wishes and lifestyle considerations of people needing treatment, including those of their families/caregivers', especially if providing assistance in their care. (Ref 3)

*'The number of those who could carry out their treatment alone would become larger with the use of Perisafe'.*

Dipl. Med Dr. Heike Martin

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