Journal of Nephrology, 2026, 1–10
https://doi.org/10.1093/joneph/aajag004
Published: April 17, 2026
Original article

OXFORD

An integrated home dialysis model facilitates transition from peritoneal dialysis to self-care hemodialysis: evidence from a Belgian cohort

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Abstract

Background **Peritoneal dialysis (PD) is an effective, patient-centered, cost-efficient kidney replacement therapy (KRT) that preserves autonomy. However, long-term PD survival is limited, and many patients eventually transfer to hemodialysis (HD). Transition to self-care HD remains rare (<10%), with most patients moving to in-center HD. We evaluated whether an integrated self-care dialysis program—encompassing PD, home HD and satellite self-care HD—could improve transition rates from PD to self-care HD.**

Methods **We conducted a retrospective, single-center cohort study including all incident adult PD patients at Cliniques universitaires Saint-Luc, Brussels, between 2010 and 2021. Pediatric patients, those still on PD, or transferred elsewhere were excluded. Baseline clinical characteristics, comorbidities, and outcomes were compared between patients transitioning from PD to in-center HD versus self-care HD (home HD or satellite).**

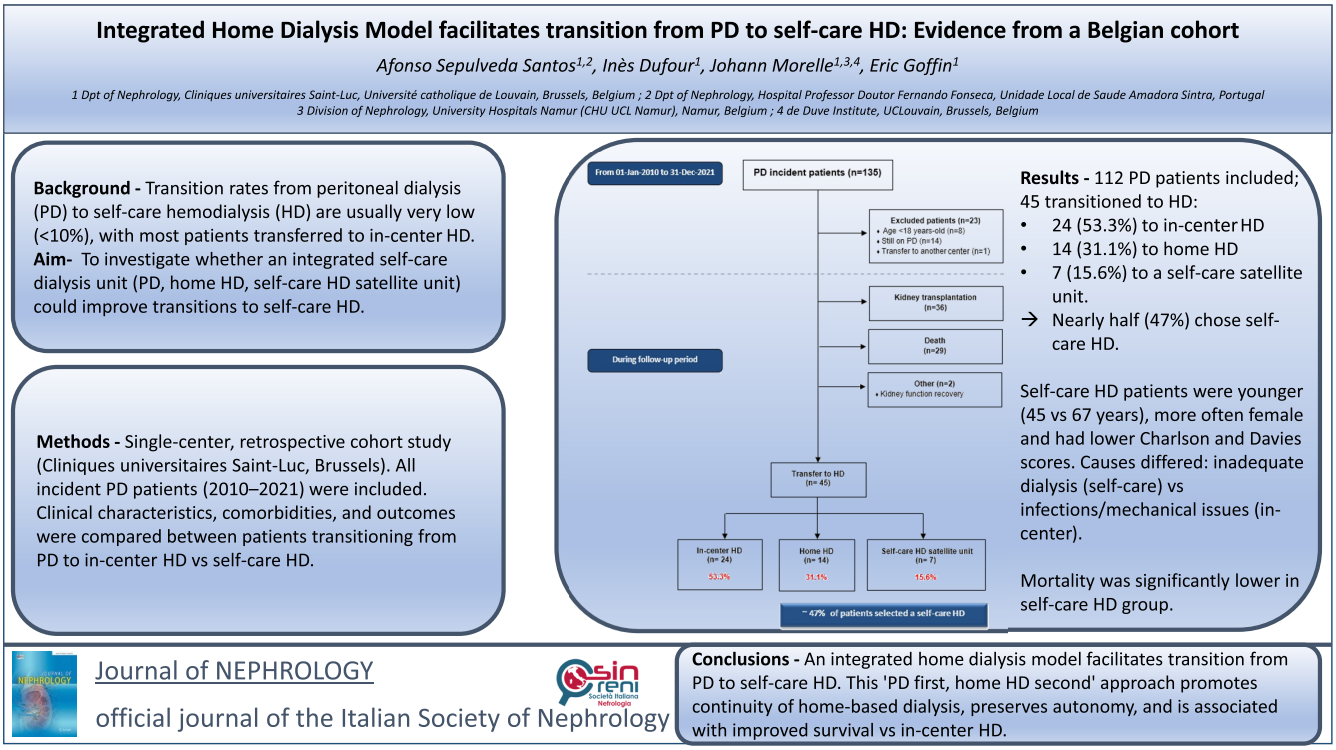
Results **Among 112 patients, 45 transitioned from PD to HD: 24 (53.3%) to in-center HD, 14 (31.1%) to home HD, and 7 (15.6%) to satellite self-care HD. Nearly half (47%) transitioned to a self-care modality. Compared with in-center HD patients, self-care HD patients were younger (45 vs 67 years), more frequently female, had lower comorbidity scores, and were more often listed for transplantation. Causes of transition differed: inadequate dialysis predominated in self-care HD, while infections and mechanical complications were more frequent in in-center HD. Mortality was lower in self-care HD; transplantation rates were similar.**

Conclusions **Integrated home dialysis programs facilitate transitions from PD to self-care HD, preserve autonomy, and improve survival, supporting a "PD first, self-care HD second" approach.**

Key words peritoneal dialysis, self-care dialysis, home dialysis, integrated home dialysis

Received: September 27, 2025; **Accepted:** January 3, 2026

Graphical abstract



Introduction

Peritoneal dialysis (PD) is an efficient and cost-effective kidney replacement therapy (KRT) that allows kidney failure patients to preserve autonomy. Around 11% of patients on dialysis worldwide are treated with PD.[1] Choosing PD offers many advantages over conventional in-center hemodialysis (HD). It enables patients to schedule treatments flexibly, maintain their work commitments, fulfill social responsibilities, follow a less restrictive dietary regimen, and better preserve residual kidney function.[2–4]

However, the long-term survival of the PD technique is known to be limited, representing a major concern for patients with kidney failure, as it often necessitates transfer to HD.[5–8] Such transfers are frequently unplanned, undesired and psychologically distressing for patients, and can lead to poorer outcomes as well as disorganization within the care-team. PD technique failure may occur for a variety of reasons, most commonly peritonitis, inadequate dialysis, catheter-related complications or patient's choice. There are several risk factors associated with PD failure, including older age, high peritoneal membrane transport status, reduced peritoneal ultrafiltration capacity, malnutrition, diabetes mellitus and increased body mass index (BMI).[9–11]

Although several studies have examined the transition from PD to in-center HD, very few have focused on the potential impact of transfer to self-care HD. Reported transfer rates from PD to home HD remain low, typically ranging from 2 to 5%.[11–13] Furthermore, the outcomes of patients transitioning from PD to in-center HD or home HD are still not well defined and could be influenced by various factors such as the mode of transfer, ie planned vs unplanned[13–15] and the type of vascular access used for HD, ie fistula or catheter.[9,16]

The primary aim of this study was to investigate whether the presence of an integrated self-care dialysis unit—which includes PD, home HD and self-care HD in a satellite unit—within the same institution could improve the transition rates from PD to self-care HD following PD failure. The secondary aim was to compare patient outcomes according to their selected transition modality.

Methods

Population and data collection

We conducted a single-center, retrospective, observational cohort study including all incident patients who initiated PD between January, 2010 and December, 2021. Pediatric patients, those still on PD, and those who were transferred to other centers during the follow-up period were excluded. Kidney transplantation and mortality rates were also assessed during the follow-up period.

Demographic and clinical data were manually extracted from the patients' charts. Baseline characteristics were assessed at the time of transfer from PD to HD and included age, gender, primary kidney disease, BMI, presence of diabetes mellitus (type 1 or 2), ischemic heart disease, peripheral vascular disease, chronic obstructive pulmonary disease (COPD), history of active or past smoking, malignancy and late nephrology referral (defined as referral within 3 months before initiation of KRT).

The Davies comorbidity score was calculated, taking into account seven disease domains: malignancy, ischemic heart disease, peripheral vascular disease, left ventricular dysfunction, diabetes mellitus, systemic collagen vascular disease or other significant pathology. The score was graded as 0 (no comorbidity), 1 (one or two conditions) or 2 (three or more conditions).[17] The Charlson comorbidity index was calculated using age, history

of myocardial infarction, congestive heart failure, peripheral vascular disease, cerebrovascular accident or transient ischemic attacks, dementia, COPD, connective tissue disease, peptic ulcer disease, liver disease, diabetes mellitus, hemiplegia, moderate or severe CKD, solid tumor, leukemia, lymphoma, and AIDS.[18]

Primary kidney disease was classified into the following categories: primary glomerulonephritis, secondary glomerular disease, diabetic nephropathy, hereditary or congenital kidney disease, interstitial nephritis, other, or unknown etiology.

For patients who transitioned from PD to HD due to technique failure, the duration of PD treatment was calculated from the first day of PD initiation until the first day of permanent HD initiation.

Outcome definition

The primary outcome was defined as the transition from PD to HD. Among patients who switched to HD, two subgroups were analyzed separately: those transferring to in-center HD and those transitioning to a self-care HD modality, including home HD or self-care HD in a satellite unit. In our department, self-care options for kidney replacement therapy include PD, home HD and self-care HD in a satellite unit. The satellite unit (equipped with six dialysis machines) is open from 8 AM till 11 PM, enabling patients with full-time employment to undergo HD before or after working hours. Designed to replicate a home-like environment, and staffed by a nurse to provide assistance when needed, the satellite unit offers a genuine self-care HD option.[19]

To evaluate the impact of transfer planning on outcomes, two additional subgroups were analyzed: "unplanned" and "planned" technique transfers. Unplanned HD initiation was defined by the underlying reason for transfer, such as unresolved peritonitis or mechanical complications, as documented in the patients' charts.

Secondary outcomes included patient status at 3 and 12 months, and at the end of follow-up—defined as remaining on HD or a self-care HD modality, kidney transplantation or death-, as well as overall transplantation and mortality rates at the end of follow-up.

Statistical analysis

Descriptive analyses were performed using the IBM ® SPSS ® Statistics software for Windows, version 22. Categorical variables are presented as frequency distributions or percentages. Continuous variables are expressed as median and interquartile range (IQR) [25th–75th percentile (P25 to P75)]. Bivariate analysis was conducted using non-parametric tests. For continuous variables, the comparison of medians was performed with Mann-Whitney or Kruskall-Wallis tests. Multivariate analysis was performed using binary logistic regression in order to identify predictors of transfer. For all comparisons and correlations, a P-value <0.05 was considered statistically significant.

Results

Study population

Of the initial 135 incident PD patients, 23 were excluded: eight pediatric patients, one who transferred to another center during follow-up, and 14 still on PD. The final analysis included 112 patients. Among them, 36 received a kidney transplant, 29 died while on PD, and two experienced kidney function recovery (Figure 1). Forty-five patients transitioned from PD to HD: 24 (53.3%) to in-center HD, 14 (31.1%) to home HD, and 7 (15.6%) to the self-care HD satellite unit. All subsequent analyses refer to this subgroup of 45 patients who transitioned from PD to HD.

Patients' characteristics ($n = 45$)

At the time of transition from PD to HD, median patient age was 55.0 (IQR 42.5–69.0) years. Comorbidities and primary causes of chronic kidney disease are summarized in Table 1. At transition, 25 (56%) patients were on continuous ambulatory peritoneal dialysis (CAPD) and 20 (44%) on automated peritoneal dialysis (APD). Twenty-seven (60%) patients were listed for kidney transplantation.

In-center HD versus self-care HD

Patients who transitioned to self-care HD (home HD or self-care satellite unit) were significantly younger than those who transitioned to in-center HD (45.0 vs 67.0 years, $P < 0.001$). The self-care HD group included a higher proportion of females (71%; $P = 0.01$) and had significantly lower Charlson comorbidity index and Davies comorbidity score (3.0 vs 7.0, $P < 0.001$ and 1.0 vs 2.0, $P < 0.001$, respectively). They also had a higher likelihood of being professionally active and a lower prevalence of diabetes (10% vs 38%, $P < 0.05$), dyslipidemia (24% vs 58%, $P < 0.05$), and ischemic heart disease (10% vs 50%, $P < 0.01$). No significant differences were observed for other comorbid conditions, nor for the patients' social support.

The causes of transition differed significantly between the groups ($P < 0.01$) (Table 1 and Table S1). Inadequate dialysis was more frequent in the self-care HD group (71% vs. 21%), whereas mechanical complications and infections were more prevalent in the in-center HD group (29% vs 14% and 46% vs 14%, respectively). PD vintage did not significantly differ between groups. A majority of patients in the self-care HD group had previously been on APD (62% vs 28%, $P < 0.05$).

Planned versus unplanned transition to HD

To determine whether planned transition from PD to HD was associated with a higher proportion of patients choosing self-care HD, patients were categorized into planned ($n = 25$) vs unplanned ($n = 20$) groups, see Table 2. In the planned group, inadequate dialysis (membrane dysfunction and/or insufficient ultrafiltration), mechanical complications, and patient choice were significantly more frequent causes of transfer. In contrast, infections predominated in the unplanned group (70.0% vs 0%, $P < 0.001$).

Patients with a planned transition were significantly younger than those with an unplanned transition (45 vs 61 years, $P < 0.05$). Among comorbidities, only dyslipidemia was more prevalent in the unplanned group (60% vs 28%, $P < 0.05$). Charlson comorbidity index and Davies comorbidity score were also higher in the unplanned group (6.5 vs 3.0, $P < 0.01$ and 2.0 vs 1.0, $P < 0.05$, respectively).

Most patients, regardless of transition type, initiated HD with a tunneled catheter as vascular access.

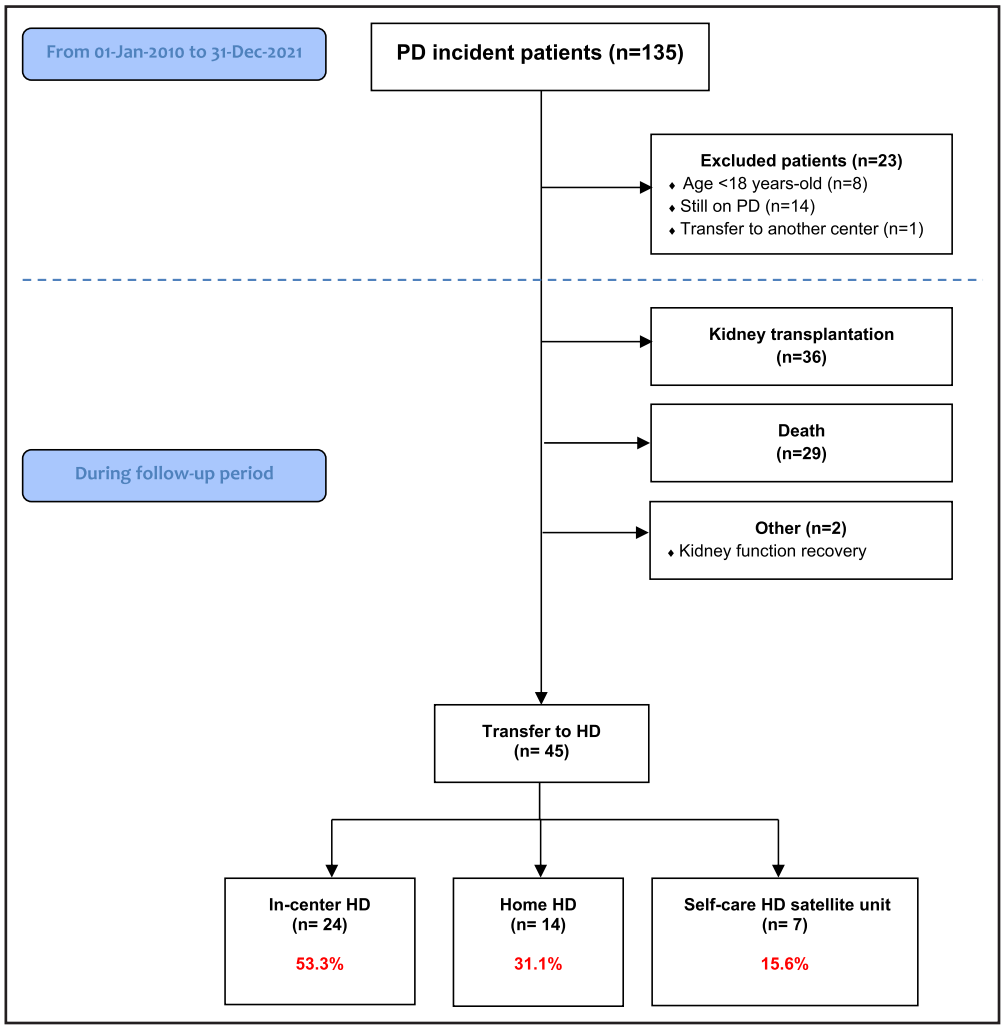


Figure 1 Study flow chart.

Home HD versus self-care HD satellite unit

No significant demographic or clinical differences were observed between patients transitioning to home HD and those transitioning to the self-care HD satellite unit (Table S1). Tobacco use was more prevalent in the home HD group (14% vs 0%, $P < 0.001$). Charlson comorbidity index and Davies comorbidity score, primary kidney disease, initial KRT modality, PD modality, and PD vintage were comparable between groups.

Predictors of PD transition to self-care HD

Binary logistic regression was performed to evaluate the associations of age, sex, Charlson comorbidity index, kidney transplantation waiting list status, and PD modality with the likelihood of transitioning to self-care HD. Initial analysis indicated multicollinearity among variables. One outlier was identified based on standardized residual values but was retained in the dataset. The model was statistically significant: X^2 (5, $n = 45$) = 36.57, $P < 0.001$, indicating its ability to distinguish between patients transitioning to in-center HD and those transitioning to self-care HD. As shown in Figure 2, only kidney transplantation waiting list status and female sex contributed significantly to the model.

Outcomes after transition

The median follow-up after transition from PD was 20.4 (IQR 4.4–43.0) months, with a total median follow-up of 46.0 (IQR 23.0–75.0) months. Patient outcomes by dialysis modality (in-center HD vs self-care HD) are presented in Table 3. Overall mortality was significantly higher in the in-center HD group at all analyzed time points ($P < 0.01$), while kidney transplantation rates did not differ between groups.

Table 4 summarizes outcomes according to transfer type (unplanned vs planned). No significant differences in overall mortality or kidney transplantation rates were observed between these groups.

Discussion

In our retrospective cohort study, nearly half (47%) of PD patients transitioning from PD to HD opted for a self-care modality, either home HD or HD in a self-care satellite unit. Our findings suggest that the availability of an integrated self-care dialysis program within the same institution, offering either PD, home HD, or self-care satellite HD, may play a decisive role in facilitating patient choice and increasing the uptake of self-care HD modalities after

Table 1 Patients' baseline characteristics.

	Overall transferred patients (*n* = 45)	In-center HD (*n* = 24)	HHD and self-care satellite unit (*n* = 21)	*P*-value
Age (years)—(IQR)	55.0 (42.5–69.0)	67.0 (55.0–73.0)	45.0 (28.0–53.5)	**<0.001**
Male—no (%)	22 (49)	16 (67)	6 (29)	**0.01**
Comorbidities—n (%)				
Hypertension	43 (96)	24 (100.0)	19 (90.5)	0.12
Diabetes mellitus	11 (24)	9 (38)	2 (10)	**0.03**
Dyslipidemia	19 (42)	14 (58)	5 (24)	**0.02**
Ischemic heart disease	14 (31)	12 (50)	2 (10)	**0.003**
Peripheral vascular disease	6 (13)	5 (21)	1 (5)	0.11
Malignancy	5 (11)	4 (17)	1 (5)	0.21
Tobacco use (current or former)	14 (31)	12 (50)	2 (10)	**0.003**
COPD	4 (9)	4 (17)	—	0.05
BMI (Kg/m2)—(IQR)	24.8 (22.4–30.4)	25.5 (22.9–30.6)	24.2 (19.7–30.5)	0.74
Overweight	9 (20)	6 (25)	3 (14)	0.37
Obesity	13 (29)	7 (29)	6 (29)	0.97
Charlson comorbidity index (IQR)	4.0 (2–7)	7.0 (4.25–8.75)	3.0 (2.0–4.0)	**<0.001**
Davies comorbidity score (IQR)	1.0 (1.0–2.5)	2.0 (1.0–3.0)	1.0 (1.0–1.0)	**<0.001**
Primary kidney disease—n (%)				0.05
Primary glomerulonephritis	7 (16)	4 (17)	3 (14)	
Secondary glomerular disease	7 (16)	2 (8)	5 (24)	
Interstitial nephritis	1 (2)	—	1 (5)	
Congenital disease	3 (7)	2 (8)	1 (5)	
Hereditary kidney disease	5 (11)	—	5 (24)	
Diabetic kidney disease	9 (20)	6 (25)	3 (14)	
Other	9 (20)	8 (33)	1 (5)	
Unknown	4 (9)	2 (8)	2 (10)	
Late nephrology referral—n (%)	2 (4)	1 (4)	1 (5)	0.92
KRT first modality—n (%)				0.97
PD	36 (80)	19 (79)	17 (81)	
HD	7 (16)	4 (17)	3 (14)	
KTp	2 (4)	1 (4)	1 (5)	
PD modality—n (%)				**0.03**
CAPD	25 (56)	17 (71)	8 (38)	
APD	20 (44)	7 (28)	13 (62)	
Cause of transfer—n (%)				**0.007**
Inadequate dialysis	20 (44)	5 (21)	15 (71)	
Mechanical complication	10 (22)	7 (29)	3 (14)	
Infection	14 (31)	11 (46)	3 (14)	
Patient choice	1 (2)	1 (4)	—	
On KTx waiting list—n (%)	27 (60)	7 (29)	20 (95)	**<0.001**
Planned technique transfer—n (%)	25 (56)	11 (46)	14 (67)	0.16
Vascular access—n (%)				0.28
AVF	1 (2)	24 (100)	1 (5)	
Tunneled catheter	44 (98)	—	20 (95)	
Social support				0.11
Living alone	15 (33)	5 (21)	10 (48)	
Living with someone	30 (67)	19 (79)	11 (52)	
Professional status[a]				< 0.001
Active	10 (23)	0 (0)	10 (48)	
Retired	15 (34)	14 (61)	1 (4)	
Disabled	19 (43)	9 (39)	10 (48)	
Time on PD (months)—(IQR)	16.0 (5.0–33.0)	19.0 (4.3–33.0)	16.0 (6.5–36.5)	0.76
Time from transfer to end of FU (months)—(IQR)	20.4 (4.4–43.0)	8.6 (2.0–43.3)	30.0 (10.1–43.2)	0.11
Total time of FU (months)—(IQR)	46.0 (23.0–75.0)	37.5 (17.5–74.5)	55.0 (23.0–75.0)	0.30

Abbreviations: HD, hemodialysis; HHD, home hemodialysis; COPD, chronic obstructive pulmonary disease; BMI, body mass index; PD, peritoneal dialysis; KTp, kidney transplantation; CAPD, continuous ambulatory peritoneal dialysis; APD, automated peritoneal dialysis; AVF, arteriovenous fistula; KRT, kidney replacement therapy; FU, follow up.
IQR: interquartile range.
Body-mass index is the weight in kilograms divided by the square of the height in meters.
[a]Information missing for one patient.

Table 2 Patients' characteristics: unplanned vs planned transfer.

	Unplanned Transfer ($n=20$)	Planned Transfer ($n=25$)	*P*-value
Age (years)—IQR	61.0 (53.3–72.0)	45.0 (37.0–63.0)	**0.03**
Male—n (%)	13 (65)	9 (36)	0.05
Comorbidities—n (%)			
Hypertension	19 (95)	24 (96)	0.87
Diabetes mellitus	7 (35)	4 (16)	0.14
Dyslipidemia	12 (60)	7 (28)	**0.03**
Coronary heart disease	9 (45)	5(20)	0.07
Peripheral vascular disease	4 (20)	2 (8)	0.24
Malignancy	4 (20)	1 (4)	0.09
Tobacco use (current or former)	6 (30)	8 (32)	0.89
COPD	3 (15)	1 (4)	0.20
BMI (Kg/m2)—IQR	27.0 (23.0–31.0)	23.8 (21.8–29.9)	0.33
Overweight	5 (25)	4 (16)	0.45
Obesity	7 (35)	6 (24)	0.42
Charlson comorbidity index—IQR	6.5 (3.3–8.0)	3.0 (2.0–5.5)	**0.006**
Davies comorbidity score—IQR	2.0 (1.0–3.0)	1.0 (1.0–2.0)	**0.05**
Primary kidney disease n—(%)			0.06
Primary glomerulonephritis	2 (10)	5 (20)	
Secondary glomerular disease	2 (10)	5 (20)	
Interstitial nephritis	1 (5)	—	
Congenital disease	—	3 (12)	
Hereditary kidney disease	1 (5)	4 (16)	
Diabetic kidney disease	4 (20)	5 (20)	
Other	4 (20)	1 (8)	
Unknown	2 (10)	2 (8)	
Late nephrology referral (%)	2 (102)	—	0.11
KRT first modality—n (%)			0.34
PD	16 (80)	20 (80)	
HD	4 (20)	3 (12)	
KTp	—	2 (8)	
PD modality—n (%)			0.59
CAPD	12 (60)	13 (52)	
APD	8 (40)	12 (48)	
Cause of transfer—n (%)			**<0.001**
Inadequate dialysis	2 (10)	18 (72)	
Mechanical complication	4 (20)	6 (24)	
Infection	14 (70)	—	
Patient choice	—	1 (4)	
Transfer technique—n (%)			0.36
Conventional HD center	13 (65)	11 (44)	
HHD	5 (25)	9 (36)	
Self-care satellite unit	2 (10)	5 (20)	
On transplant waiting list—n (%)	10 (50)	17 (68)	0.22
Vascular access—n (%)			0.37
AVF	—	1 (4)	
Tunneled catheter	20 (100)	24 (96)	
Time on PD (months)—IQR	15.0 (4.0–32.0)	16.0 (6.0–38.5)	0.57
Time from transfer to end of FU (months)—IQR	13.8 (2.7–55.4)	28.5 (5.1–40.7)	0.84
Total time of FU (months)—IQR	43.0 (21.5–77.5)	55.0 (28.5–74.0)	0.89

Abbreviations: HD, hemodialysis; HHD, home hemodialysis; COPD, chronic obstructive pulmonary disease; BMI, body mass index; PD, peritoneal dialysis; KTx, kidney transplantation; CAPD, continuous ambulatory peritoneal dialysis; APD, automated peritoneal dialysis; AVF, arteriovenous fistula.
IQR: interquartile range.

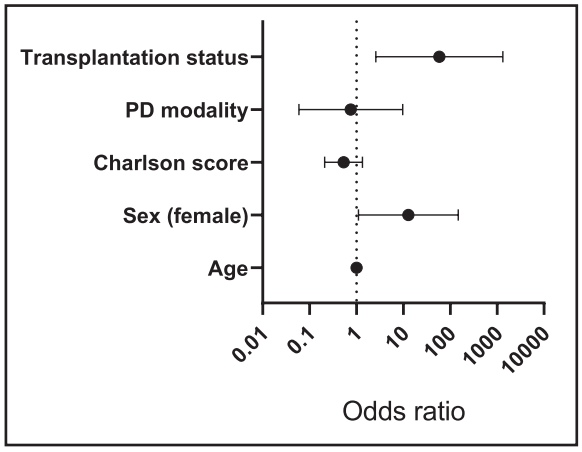


Figure 2 Odds ratio of transfer to self-care HD: binary logistic regression including continuous (age) and categorical variables (transplantation status, PD modality, Charlson comorbidity index and sex). Abbreviations: HD, hemodialysis; PD, peritoneal dialysis.

PD failure. Moreover, patients who selected a self-care HD modality demonstrated significantly better outcomes.

The proportion of transitions to self-care HD is markedly higher in our unit than previously reported in studies and registry data, where transfer rates from PD to home HD typically range between 2% and 5%.[11–13,20,21] According to the most recent European Renal Association (ERA) Registry data, it is disappointing to note that only 0.3% of patients transitioned to home HD after discontinuing PD.[22] By contrast, Mahmoud et al reported a 13% rate of patients ending PD and transferring to home HD, as promoted by their integrated home dialysis model.[23]

In our analysis, unsurprisingly, patients who transitioned from PD to self-care HD were significantly younger, had lower comorbidity scores, and a lower prevalence of diabetes, dyslipidemia, cardiovascular disease, and smoking habit than those who transferred to in-center HD. This association between better baseline health status and the selection of self-care HD is consistent with previous reports,[14] thus highlighting the importance of patient functional reserve and motivation in the uptake of home-based or self-managed therapies. Interestingly, we did not observe any meaningful influence of social support on the likelihood of transitioning to self-care HD, although this finding should be interpreted with caution given the limited size of our cohort. In contrast, the transition to self-care HD was more common among patients who were still professionally active, suggesting that the desire to maintain autonomy in their dialysis therapy may have provided additional motivation. Finally, in our logistic regression model, female sex and being listed for kidney transplantation were the only independent predictors of transfer to self-care HD, suggesting that factors beyond comorbidity burden—such as patient engagement in their treatment plan or suitability for kidney transplantation—may influence modality choice. Another point regards assistance for dialysis at home. In Belgium, while assisted PD is widely accessible and enables patients with declining autonomy to remain at home, the practical implementation of assisted home HD remains very limited, mainly due to a lack

Table 3 Patients' outcomes: in-center HD vs self-care HD.

	Overall transferred patients (*n* = 45)	In-center HhD (*n* = 24)	HHD and self-care satellite unit (*n* = 21)	*P*-value
Outcome at 3 months—n (%)				**<0.001**
In-center HD	20 (44)	20 (87)	—	
HHD or self-care satellite unit	18 (40)	—	18 (90)	
Kidney transplantation	3 (7)	1 (4)	2 (10)	
Death	2 (4)	2 (9)	—	
Unknown/missing	2 (4)			
Outcome at 12 months—n (%)				**<0.001**
In-center HD	11 (24)	11 (55)	—	
HHD or self-care satellite unit	16 (36)	1 (5)	15 (88)	
Kidney transplantation	4 (9)	2 (10)	2 (12)	
Death	6 (13)	6 (30)	—	
Unknown/missing	8 (18)			
Outcome at the end of FU—n (%)				**<0.001**
In-center HD	6 (13)	5 (25)	1 (5)	
HHD or self-care satellite unit	12 (27)	1 (5)	11 (55)	
Kidney transplantation	10 (22)	3 (15)	7 (35)	
Death	12 (27)	11 (55)	1 (5)	
Unknown/missing	5 (11)			
Overall kidney transplantation—n (%)	12 (27)	4 (16.7)	8 (38.1)	0.11
Overall mortality—n (%)	12 (27)	11 (46)	1 (5)	**0.002**

Abbreviations: HD, hemodialysis; HHD, home hemodialysis; PD, peritoneal dialysis; FU, follow-up.

Table 4 Patients' outcomes: unplanned vs planned transfer.

	Unplanned Transfer ($n=20$)	Planned Transfer ($n=25$)	*P*-value
Outcome at 3 months—n (%)			0.21
In-center HD	12 (60)	8 (34)	
HHD or self-care satellite unit	5 (25)	13 (57)	
Kidney transplantation	2 (10)	1 (4)	
Death	1 (5)	1 (4)	
Outcome at 12 months—n (%)			0.21
In-center HD	7 (41)	3 (15)	
HHD or self-care satellite unit	5 (29)	11 (55)	
Kidney transplantation	3 (18)	2 (10)	
Death	3 (18)	4 (20)	
Outcome at the end of FU—n (%)			0.09
In-center HD	2 (13)	4 (18)	
HHD or self-care satellite unit	2 (13)	10 (42)	
Kidney transplantation	7 (44)	3 (13)	
Death	5 (31)	7 (29)	
Overall kidney transplantation—n (%)	7 (35)	5 (20)	0.26
Overall mortality—n (%)	5 (25)	7 (28)	0.82

Abbreviations: HD, hemodialysis; HHD, home hemodialysis; FU, follow-up.

of availability of trained home-care nurses capable of providing regular support. Addressing this limitation might potentially facilitate even greater transition from PD to home HD.

Unplanned transfers, frequently triggered by infectious complications, were associated with older age and higher comorbidity scores, and a greater probability of transitioning to in-center HD, all suggestive of a need for closer clinical supervision in these patients.[16] Although no differences in long-term mortality or transplantation rates were observed between planned and unplanned transitions in our cohort, prior studies have linked unplanned HD initiation—particularly with catheter use—to increased early mortality.[16,24] In our cohort, the near-universal use of tunneled catheters at HD initiation, regardless of planning, may have attenuated outcome differences between groups. This high rate of tunneled central venous catheters contrasts with the current European "fistula-first" policy and can be explained by specific patient preferences and/or the impossibility of creating an AVF in some individuals. In practice, our approach emphasizes respecting patient autonomy, thus ensuring that the final choice of the vascular access aligns with the patient's informed preferences and clinical situation.

The survival benefit observed in patients transitioning to self-care HD compared with in-center HD is an important finding. Although residual confounding cannot be excluded, our results are in line with studies demonstrating better survival among home HD patients and those managed in self-care settings.[25,26] Possible explanations include greater treatment autonomy, more flexible scheduling, and closer alignment of therapy with patient lifestyle, all of which may enhance adherence and overall health status. Additionally, our self-care satellite unit model[19]—offering extended hours and a home-like environment—may bridge the gap between home therapies and in-center care, making self-care HD more accessible to patients unable to perform dialysis entirely at home. Our observation is also in line with the data recently published by the Canadian Organ Replacement Register which reported better clinical outcomes among 163 patients transitioning from PD to home HD compared with 711 incident home HD patients, after propensity-score adjustment.[21]

From a clinical perspective, these findings underscore the value of an integrated home dialysis program in promoting patient-centered care. Early education about all KRT modalities, regular reassessment of patient suitability for self-care options, and the availability of structured satellite units may increase the likelihood of planned, patient-driven transitions rather than reactive, crisis-driven changes in modality. In an integrated home dialysis unit, patients undergoing PD and self-care HD are trained and followed by the same dedicated team. Moreover, PD and home HD patients share training spaces and frequently interact with one another, fostering familiarity with both dialysis techniques. This approach facilitates the transition from "home to home", promoting a philosophy of "PD first, self-care HD second". Since both the patient and the healthcare team already know each other, continuity and trust are maintained. Patients become familiar with both techniques, and the care team can address shared challenges across modalities, thus enhancing patient support and program efficiency. This is part of recent recommendations and strategies advocating for continuity of home-based dialysis when PD ends.[21,27–30]

Our study has limitations. Its retrospective, single-center design limits generalizability, and the relatively small sample size reduces statistical power for subgroup analyses. Residual confounding related to unmeasured psychosocial or logistical factors cannot be excluded. Nevertheless, the strength of our work lies in the comprehensive evaluation of all incident PD patients over an 11-year period and the detailed comparison of clinical characteristics and outcomes between different HD transition pathways.

In conclusion, within an integrated home dialysis program, nearly half of patients experiencing PD technique failure transitioned to a self-care HD modality, with significantly better survival compared to those who transferred to in-center HD. The presence of a self-care satellite unit may facilitate access to self-managed dialysis, particularly for younger, healthier, and more engaged patients. Future prospective studies should explore strategies to increase planned transitions and assess the long-term impact of self-care HD uptake on patient outcomes and healthcare resource utilization.

Author contributions

All authors contributed equally to this work. All authors were involved in Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing—original draft, Writing—review & editing, Visualization, and Supervision. All authors have read and approved the final manuscript.

Conflicts of interest

None declared.

Funding

The authors received no financial support for this study.

Data availability

The data underlying this article will be shared upon reasonable request to the corresponding author.

Ethical disclosure

The study had the approval of the Ethical Committee of our institution (ref 2022/10FEV/059)

Informed consent

Informed consent was not requested by the ethics committee, as the study involved anonymized retrospective data.

Supplementary material

Supplementary material is available at *Journal of Nephrology* online.

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