Home Hemodialysis Demographics and Prescriptions with the NxStage System One: The European Experience in the KIDHNEy Cohort

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INTRODUCTION & AIMS

- Home hemodialysis (HHD) permits customization of treatment frequency and duration, including delivery of >3 treatments per week.
- Increased treatment frequency likely reduces both left ventricular hypertrophy and blood pressure, thereby plausibly resulting in lower risk of cardiovascular morbidity and mortality.
- HHD may be prescribed either on traditional hemodialysis equipment or on newer equipment, including the NxStage System One (NSO), which eliminates the need for a reverse osmosis system, consumes a significantly lower volume of dialysate, and features a simple user interface.
- We evaluated the demographics and prescriptions in the KIHDNEy cohort of HHD patients that used the NSO in 5 Western European countries.

METHODS

- Anonymized patient data were retrospectively collected from participating programs that used the NSO for HHD.
- Each program entered and updated its data in a structured spreadsheet instrument during 2015 and 2016.
- Demographic and prescription factors were summarized with descriptive statistics.

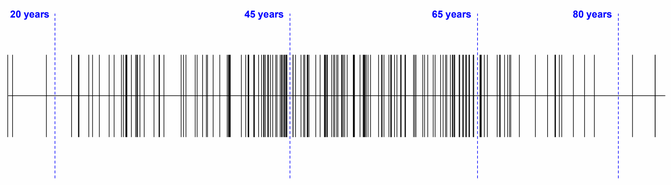
RESULTS

- We identified 182 patients in 9 HHD programs.
- Mean age was 49.5 years, whereas 25th and 75th percentiles of age were 41 and 61 years, respectively.
- The majority of patients were male, and on average, male patients were older than female patients.
- Mean body mass index was 26.0 kg/m^2; notably, 32% of patients were overweight and 18% were obese.
- Mean (median) dialysis duration before initiation of HHD with the NSO was 37 (18) months.
- Regarding renal replacement modality before HHD, 61% converted from conventional hemodialysis and 17% were new to renal replacement therapy.
- Mean Charlson comorbidity index was 3.9 points, whereas 75th and 90th percentiles of the index were 5 and 7 points, respectively.
- Regarding vascular access, 74% of patients used an arteriovenous fistula, 24% used a central venous catheter, and 2% used an arteriovenous graft.
- Most commonly prescribed treatment frequencies were 6 (63% of patients) and 5 (30%) sessions per week.
- Session length was 2.0-2.4 hours in 29% of patients, 2.5-2.9 hours in 43%, 3.0-3.4 hours in 23%, and ≥3.5 hours in 5%.
- Cumulative treatment time per week was ≤12 hours in 21% of patients, >12 and ≤15 hours in 53%, >15 hours and ≤18 hours in 20%, and >18 hours in 6%.
- Most (86%) patients with <12 hours of cumulative treatment time per week had urine output ≥0.5 L per day.

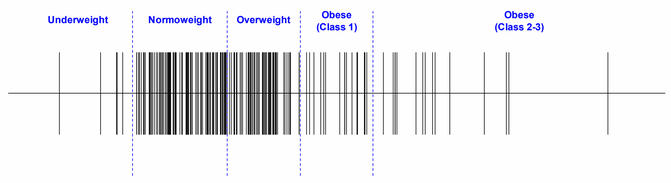
Cross-Classification of Treatment Frequency and Treatment Duration in HHD patients

Treatment Frequency	Treatment Duration (hours)				
	2.0-2.4	2.5-2.9	3.0-3.4	3.5-3.9	4.0+
3				1	
3.5 or 4		2		1	2
5	28	13	12		2
6	25	60	28	2	
7		3	2		1

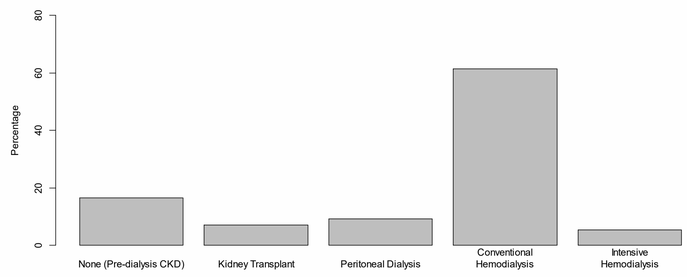
Age (years) in HHD patients



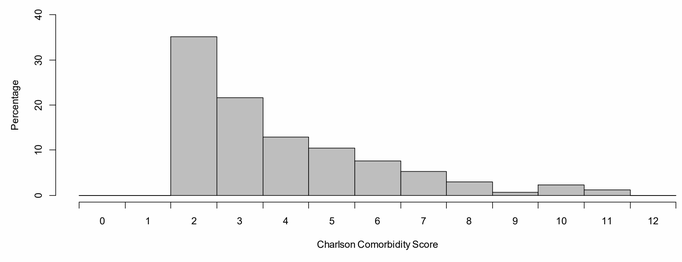
Body Mass Index (kg/m^2) in HHD patients



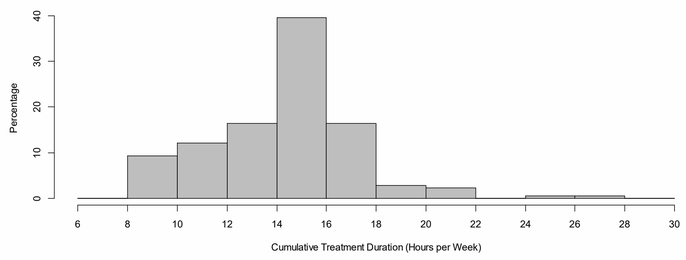
Renal Replacement Modality before HHD



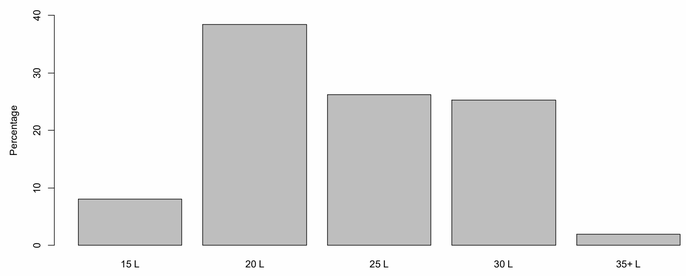
Charlson Comorbidity Score in HHD patients



Cumulative Treatment Duration in HHD Patients



Dialysate Volume (L per session) in HHD Patients



HHD Prescription Factors, by Body Mass Index

BMI	Frequency Sessions per Week	Duration Hours per Week	Dialysate Volume L per Session
<25	5.5	13.9	22.0
25-29	5.7	15.0	25.1
≥30	5.9	16.0	26.7

CONCLUSIONS

- HHD with the NxStage System One has been applied across a wide range of dialysis patients in Western Europe.
- Although the KIHDNEy cohort tended toward younger age and male sex, we found that patient subgroups that have been underrepresented among HHD patients in the United States (*JASN*, 23:895-904) have undergone HHD with the System One here.
- These include older patients, incident dialysis patients, and patients with substantial comorbidity.
- These data show that a broad spectrum of dialysis patients are potentially suitable for HHD with the System One and that patient selection should not be arbitrarily limited.
- Prescriptions can be individualized to address specific clinical needs.
- The majority of HHD patients receive more treatment hours per week than is typical of in-center hemodialysis in Western Europe.

KIHDNEy