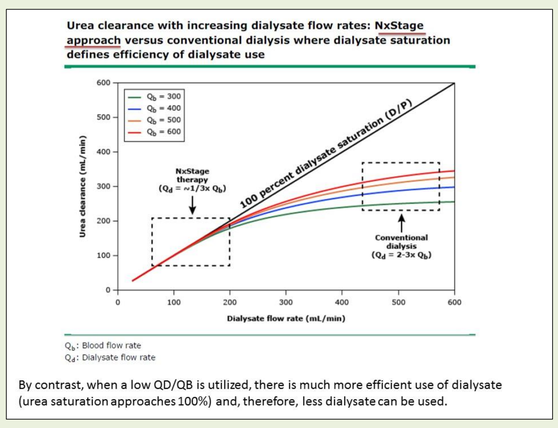
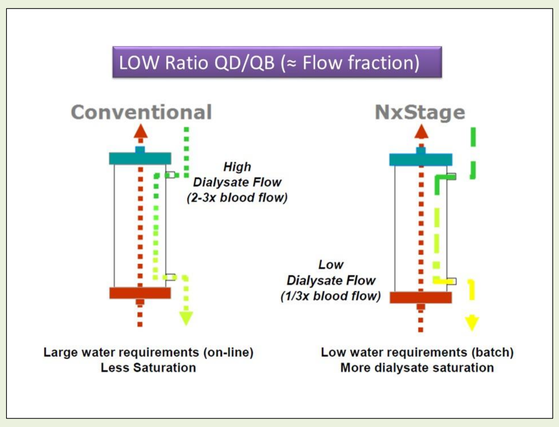
DIALYSIS DOSE IN SHORT DAILY HOME HEMODIALYSIS WITH LOW DIALYSATE VOLUME: WHEN LESS CAN BE MORE.

Pablo Molina, Belén Vizcaíno, Mercedes González-Moya, Sandra Beltrán, Cristina Castro, Julia Kanter, Ana I Ávila, José L. Górriz, Luis M. Pallardó.
Department of Nephrology. Hospital Universitari Dr Peset. Department of Medicine. Universitat de València. Valencia, Spain
molina_pab@gva.es

INTRODUCTION & AIMS

- The use of daily home hemodialysis (HHD) has been expanding over the past years due to the development of portable hemodialysis systems specifically designed for home use as the NxStage's System One®, which employs a low dialysis flow rate. Although this machine simplifies the HHD procedures, it could compromise the dialysis dose [1-3].





- The aim of this study was to examine the dialysis doses achieved in patients undergoing low-flow dialysate short daily HHD.

METHODS

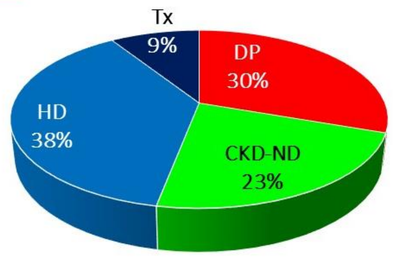
- Observational study which included all the patients undergoing daily HHD with NxStage One machine attended at our dialysis center.
- Serum measurements before and after dialysis were performed in 203 dialysis sessions in 13 patients, including urea, creatinine, phosphate, uric acid, and ß2microglobulin (ß2M).
- Total dialysate collection was also performed in 60 sessions.

Targets

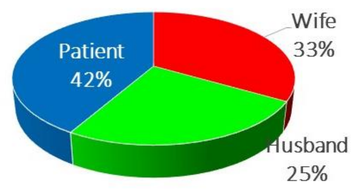
National Kidney Foundation KDOQI	Kt/V std ≥ 2.1
Sociedad Española de Nefrología	Weekly URR ≥ 210
ERA-EDTA Leading European Nephrology	nPCR ≥ 1.0 g/kg/d

Patients characteristics at baseline

N=13 Pre-HHD treatment modality



Person who does HDD



Patient characteristics

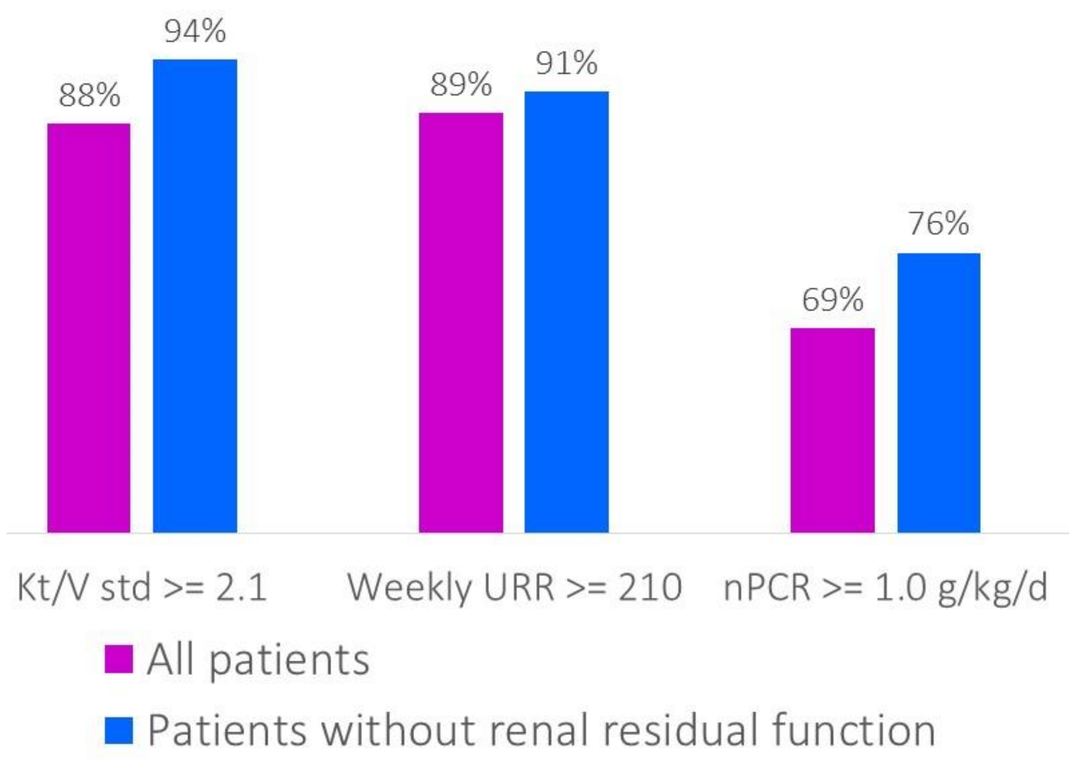
	HDD (n=13)
Age (y)	57.4 ± 14.7
Gender (male: n, %)	10 (77%)
Charlson score (median, IQR)	5 (3.5-7.0)
Dialysis vintage (mo; median, IQR)	47 (12-263)
Home hemodialysis training (w)	7.0 ± 2.5
CKD etiology (n, %)	
-Nephrosclerosis	2 (15%)
-Diabetic nephropathy	2 (15%)
-Glomerular	3 (23%)
-Polycystic kidney disease	2 (15%)
-Interstitial	1 (9%)
-Others	3 (23%)
Height (cm)	165 ± 7
Weight (kg)	78 ± 11
V (Watson)	38 ± 5

Dialysis features

Treatment parameter	HDD (n=13)
Dialysis modality	High-flux HD
Membrane	Purema
Surface (m^2)	1.6
UF coefficient (mL/h x mmHg)	65
Length of dialysis (weekly h)	13.8 ± 1.4
Frequency	
-5 times per week	10 (77%)
-6 times per week	3 (23%)
Blood flow (ml/min)	351 ± 14
Dialysate flow (ml/min)	190 ± 11
Vascular access	
-AVF / Graft	58%
-Catheter	42%

RESULTS

Rate of target achievement

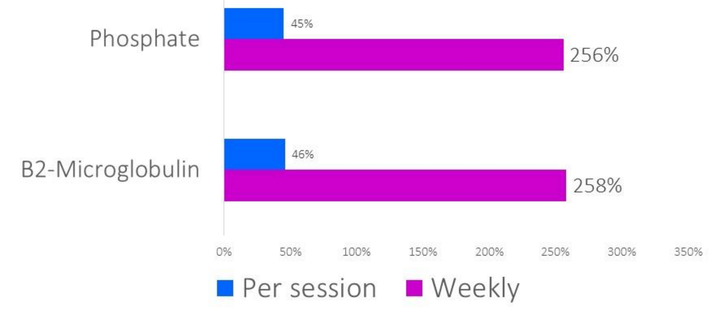


Dialysis doses achieved

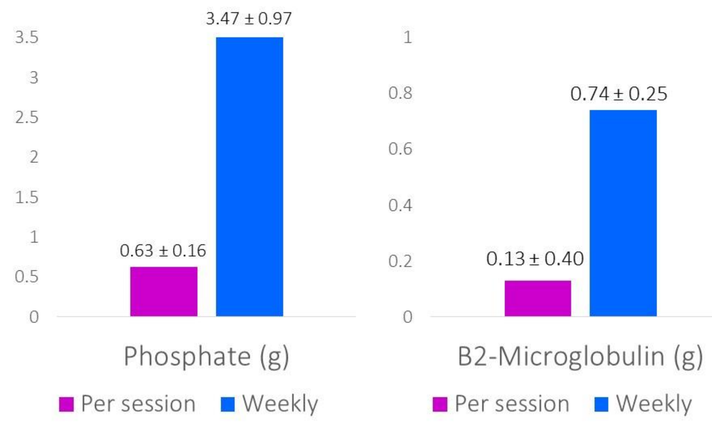
	HDD (203 sessions)
Kt/V (sp)*	0.7 ± 0.3
Kt/V std	2.39 ± 0.54
URR (%)*	39 ± 8
Weekly UUR (%)	255 ± 51
EKR	17.9 ± 6.8
TAC	39.7 ± 15.4
nPCR (g/kg/d)	1.3 ± 0.6

*Per dialysis session

Reduction rates (%)



Solute mass eliminated (g)



1. Standard Kt/V, TAC and nPCR averaged 2.39±0.54, 39.7±15.4 and 1.3±0.6 g/kg/d, respectively.
Standard Kt/V ≥ 2.0 was achieved in 88% of the sessions, increasing to 91% when only patients without renal residual function were studied.
1. The mean weekly reduction rate of ß2M was 258%, which is similar than usually achieved with on-line hemodiafiltration thrice weekly [4].
2. The weekly solute mass elimination of phosphate and ß2M averaged 3.47±0.97 and 0.74±0.25 g weekly, which is similar than usually achieved with on-line hemodiafiltration thrice weekly [4].
3. Adequate protein intake assessed by nPCR was achieved in 70% of patients, which is greater than usually achieved with conventional hemodialysis [5].

CONCLUSIONS

Low-flow dialysate short daily HHD can be used to achieve adequate dialysis dose, being associated with high protein intake assessed by nPCR.

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