

Real World In-Center Urea Clearance Experience with a Novel Self-Care Hemodialysis System

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BACKGROUND

Patients receiving hemodialysis have expressed a desire for greater control of their dialysis treatments. Tablo®, is a novel hemodialysis system which enables patient-empowered care at a dialysate flow rate of 300 mL/min. Kinetic modeling data and bench top testing predict that the majority of US patients can achieve adequate urea clearance with conventional 3.5 to 4-hour treatment times on a thrice weekly hemodialysis treatment schedule with Tablo. Herein we present a real-world experience of urea kinetics for patients undergoing in-center self-care hemodialysis with Tablo.



METHODS

Nine patients at an in-center hemodialysis unit were transitioned from traditional care to in-center self-care with Tablo. All treatments were conducted under a physician's supervision and prescription. Patients were instructed on the use of the device and independently managed their own treatments. Fistula cannulation was performed by the patient or by a patient care technician while all other steps of set up, treatment management and take down were performed by the patient. Laboratory testing was done per the attending physician's direction and data were collected as part of post-market monitoring activities. Laboratory tests were collected by facility staff in accordance with routine practice. Urea samples were collected after first decreasing blood pump speed to 100 mL/min and allowing one minute to elapse before the post-urea sample was collected. The Kt/V_{urea} were calculated using the second generation Daugirdas equation. De-identified data on weight, blood pump speed, and ultrafiltration volume are automatically collected by Tablo and transmitted to a Health Insurance Portability and Accountability Act of 1996 (HIPAA)-compliant cloud-based server.

RESULTS

The table below demonstrates pre-dialysis weights, measured urea reduction ratios, calculated single pool Kt/V_{urea} values, and average ultrafiltration rates. The number of independent measurements made over a 3-month period are denoted by N. From Tablo collected data, blood pump speeds ranged from 350-400 mL/min. Over the 3-month observation period there were no changes in prescribed treatment time from the initial dialysis prescription on Tablo. Dialyzers utilized during the course of the observation period ranged in surface area from 1.6-1.8 M².

CONCLUSIONS

- Centers for Medicare & Medicaid Services (CMS) mandated urea clearance targets can be routinely achieved with a thrice weekly schedule in a patient population with a wide range of weights using Tablo and a dialysate flow rate of 300 mL/min.
- These observational data, show self-care patients using Tablo, achieved an appropriate level of urea clearance, supporting previously reported urea kinetic modeling data.

Patient	Pre-HD Weight (kg)	SpKt/V _{urea}	URR	Ultrafiltration (kg)	Treatment Time (min)	N
3	63.6	1.72	76	2.32	180	9
4	74.1	1.23	65	2.13	210	3
1	74.3	1.72	78	1.86	195	14
5	86.9	1.46	71	2.48	225	4
7	93.9	1.34	68	2.97	210	7
9	94.3	1.48	71	3.10	210	4
6	96.9	1.41	68	3.95	240	8
8	118.5	1.28	67	4.13	210	9
2	124.5	1.39	70	2.23	210	12
Avg.	91.9	1.45	70	2.80	210	7.8