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Extracellular Volume Control In Dialysis Patients To Reduce Hospitalizations

Thomas F. Parker, III, MD; 1 Raymond M. Hakim, MD, PhD; 2 Allen R. Nissenson, MD; 3 Mahesh Krishnan, MD, MPH, MBA; 3 Irina Goykhman, RN, BSN, MBA; 3 T. Christopher Bond, PhD; 3 Franklin W. Maddux, MD; 4 Kevin Chan, MD; 4 Laura Schmidt RN, BSN, MHR; 1 Sarah Nolan RN, BSN; 1 Renal Ventures Management; 2 Vanderbilt University School of Medicine; 3 DaVita, Inc; 4 Fresenius Medical Care

Background: Extracellular volume (ECV) overload is a leading cause of hospitalizations in chronic hemodialysis (HD) patients; yet, objective measurement of ECV is not standard in HD care. Renal Ventures Management, DaVita, Inc, and Fresenius Medical Care combined resources in a self-funded quality initiative (QI) to determine if objective measurement of ECV removal and attainment of normalized ECV could reduce all-cause and ECV-related hospitalizations.

Methods: Fourteen facilities were randomly selected for either education (E) or education + ECV monitoring (EM). In the EM facilities, ultra-filtration monitoring and assessment of normalized ECV—"dry weight"—was accomplished with a monitoring device (Critline). In the E facilities, clinical assessment used ultra-filtration algorithm to achieve "dry weight."

Results: Before E and EM implementation, all-cause and ECV-related hospital rates were similar between the 2 groups. After E implementation, there was an ~50% decrease in ECV hospitalizations (Table).

Mean (SD)	Hospitalizations (per 1000 treatments)		Hospitalized days (per 1000 treatments)	
	Before	After	Before	After
All-Cause Hospitalizations				
Crit-Line (n=7 facilities)	13.87 (3.51)	10.45 (1.99)	72.68 (19.95)	64.26 (12.19)
Education (n=8 facilities)	11.09 (2.58)	10.68 (2.80)	66.35 (30.67)	66.38 (26.10)
Fluid-Related Hospitalizations				
Crit-Line (n=7 facilities)	1.02 (0.65)	0.53 (0.39)	4.17 (2.59)	1.83 (1.71)
Education (n=8 facilities)	0.99 (0.71)	1.04 (0.62)	4.51 (5.09)	5.54 (4.12)

Conclusions: In this QI, among 3 major providers, objective measurement of ECV during dialysis was associated with significant decrease in ECV-related hospitalizations, substantially more than education alone. Such processes hold promise for patient and provider outcomes.

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