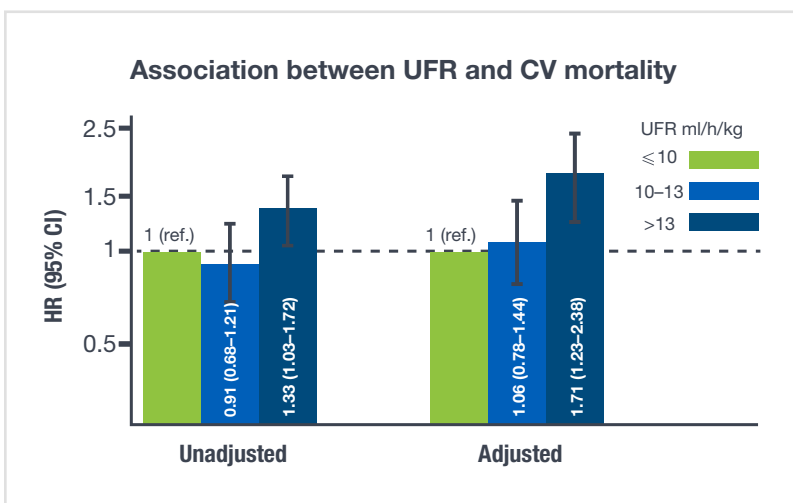


Ultrafiltration rates > 13 mL/kg/h were associated with increased all-cause mortality and CV mortality.¹

Flythe JE, Kimmel SE, Brunelli SM. Rapid fluid removal during dialysis is associated with cardiovascular morbidity and mortality. *Kidney International*. 2011;79:250-257.

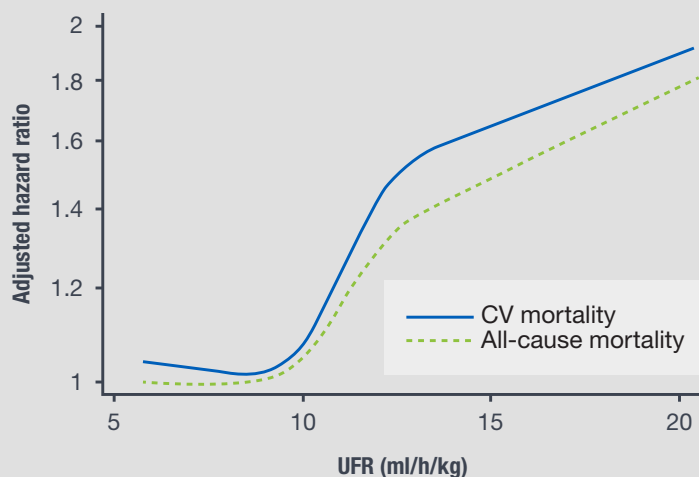
Observational study using data collected from the Hemodialysis (HEMO) study analyzing the association between ultrafiltration rates (UFR) with both all-cause and cardiovascular (CV) related mortality in chronic, thrice-weekly hemodialysis patients.

Primary endpoints of the study showed a significant association between UFR ≤ 10 mL/kg/h, UFR > 13 mL/kg/h and when multivariable adjustments were used to account for baseline, the differences were further heightened. These results were similar for both all-cause and CV mortality.



Secondary analysis examined the thresholds at which UFR may start to become harmful.

Threshold(s) at which UFR may become harmful: CV and all-cause mortality



The findings demonstrated the hazard ratios for both CV and all-cause mortality rose sharply at values between 10 and 14 ml/kg/h, and to a less pronounced degree at higher values.

Improve all-cause and CV mortality with lower ultrafiltration rates and extended time or increased frequency of treatments

Decreasing UFR and limiting fluid intake may cause certain issues, such as:

- Increasing time for fluid removal is not always feasible
- Reducing patients' fluid intake often proves ineffective

Due to the shown damaging effects of higher ultrafiltration rates, UFR should factor more prominently into the determination of dialytic session length and more frequent dialysis examined as a possible consideration.

Study Design: This study was an observation analysis of 1,846 patients from the Hemodialysis Study (HEMO). The HEMO Study was a 2X2 factorial multicenter randomized trial to evaluate the effects of dialysis dose and membrane flux on clinical outcomes. All study data were obtained via subject interviews, medical chart reviews, and self-reported questionnaires. Dialysis treatment parameters including ultrafiltration volume, treatment duration, vascular access type, and intradialytic symptoms were measured at baseline and then monthly.

Important Information: The reported benefits of home hemodialysis (HHD) may not be experienced by all patients. The NxStage System is a prescription device. All forms of hemodialysis involve some risks. When vascular access is exposed to more frequent use, infection of the site, and other access related complications may also be potential risks.

References: 1. Flythe JE, Kimmel SE, Brunelli SM. Rapid fluid removal during dialysis is associated with cardiovascular morbidity and mortality. *Kidney Int.* 2011;79:250-257.



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