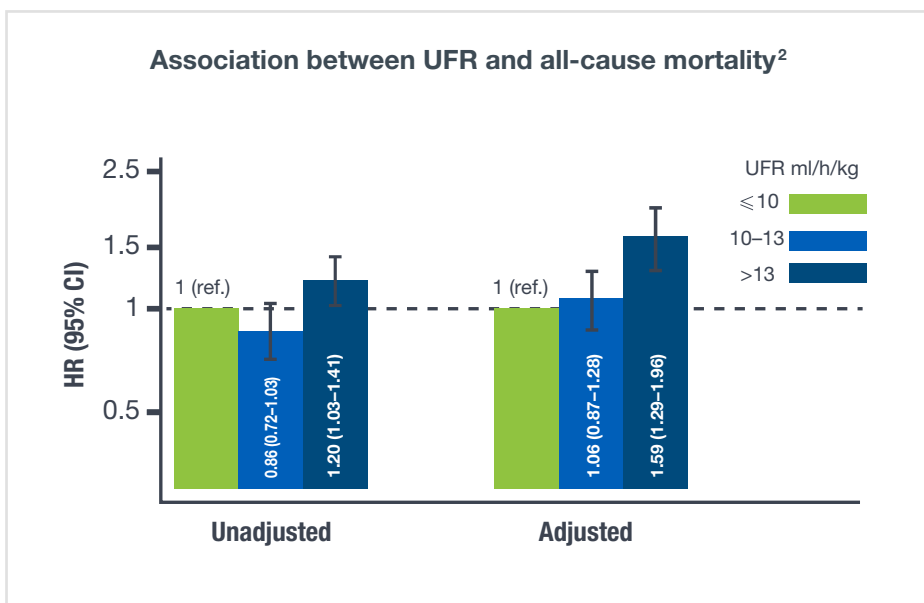


## Increased risk of all-cause patient mortality when ultrafiltration rates rise above 8 mL/kg/h.<sup>1</sup>

Assimon MM, Wenger JB, Wang L, Flythe JE. Ultrafiltration Rate and Mortality in Maintenance Hemodialysis Patients *American Journal of Kidney Disease*. 2016;68(6):911-922.

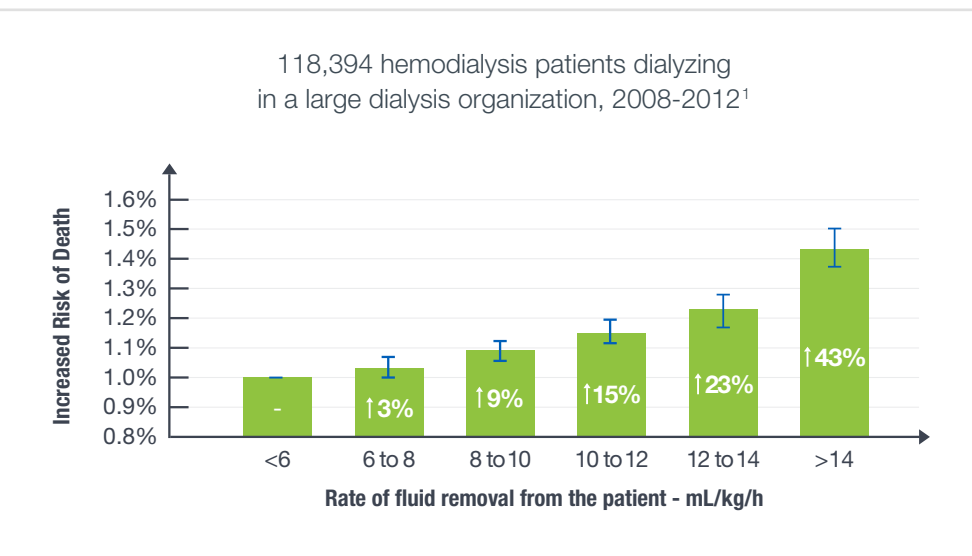
This observational investigation analyzed the association of ultrafiltration rate and mortality in a large patient cohort. Mean 30-day ultrafiltration rates were dichotomized at 13 and 10 mL/h/kg, separately and categorized using various cutoff points. Ultrafiltration rates normalized to body weight, body mass index, and body surface area were investigated.



**Initial investigation concluded ultrafiltration rates > 13 mL/kg/h vs ≤ 13 mL/kg/h AND > 10 mL/kg/h vs ≤ 10 mL/kg/h were both associated with greater mortality.**

## Incremental harm observed for ultrafiltration rates starting at > 8 mL/kg/h

**Secondary analysis concluded that in more finely categorized ultrafiltration rates, mortality risk increased incrementally at 3% for each additional 1 mL/kg/h ultrafiltration rate increase.**



Ultrafiltration rate thresholds above even 8 mL/kg/h, might be harmful to patients. This notable ultrafiltration-related harm begins substantially lower than 13 mL/kg/h making the case for lower ultrafiltration thresholds attainable with more frequent hemodialysis treatments.

**Study Design:** This study collected data from a cohort of 337,863 patients receiving hemodialysis at a single large dialysis organization from June 2008 through December 2012, with patients 18 years of age or older. Out of the 337,863 total patients, 118,394 patients made it past the 30-day baseline period, to identify covariates and define subgroups, as well as a 30-day exposure period, to assess ultrafiltration rates. Patients surviving the baseline and exposure periods, N= 118,394 (to study day 60) were followed forward in historical time to death, censoring event, or the study's end.

**Study Limitations:** Residual confounding cannot be excluded given the observational study design.

**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.** Assimon MM, Wenger JB, Wang L, Flythe JE. Ultrafiltration rate and mortality in maintenance hemodialysis patients. *AM J Kidney Dis.* 2016;68(6):911-922. **2.** Flythe, J.E, Kimmel, S.E., Brunelli, S.M. Rapid fluid removal during dialysis is associated with cardiovascular morbidity and mortality. *Kidney International* (2011) 79, 250–257.



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