Ultrafiltration Rates Updated

Purpose: Reduce ultrafiltration rates (UFRs) in patients on hemodialysis (HD) and the associated risk for cardiovascular (CV) morbidity and mortality.

What Does the Evidence Say?

• The leading cause of death in the patient on HD is CV disease (McCullough, Chan, Weinhandl, Burkart, & Bakris, 2016).

• The Hemo Study was a seven year randomized clinical trial of 1846 patients on 3X/week HD. UFRs were compared as follows:
  - up to 10 mL/hr/kg
  - 10-13 mL/hr/kg
  - Greater than 13 mL/hr/kg

• Comparing UFRs up to 10 mL/hr/kg to UFRs greater than 13 mL/hr/kg, the higher UFRs were significantly associated with higher all cause and CV related mortality with hazard ratios of 1.59 and 1.71 respectively (Flythe, Kimmel, & Brunelli, 2011).

What Does the Evidence Say? (continued)

• Higher UFRs are associated with greater risk for all cause and CV death (Flythe et al., 2011).

• UFRs greater than 10 mL/hr/kg were associated with increased risk of mortality (Saran et al., 2006).

• Myocardial stunning occurs in patients on HD (Brown, Burrows, Pruett, & Burrows, 2015; Morfin et al., 2016).

• UFR is positively associated with myocardial stunning and a number of regional wall motion abnormalities (Morfin et al., 2016).

• A higher UFR is one of the statistically significant factors for predicting myocardial stunning in the patient on HD (Brown et al., 2015).
Change in Practice

- Calculate UFRs at up to 10 mL/kg/hr or less (Flythe et al., 2011).
- Use a UFR calculator. An example is the one developed by MEI with input from members of the Barwon Health Renal Unit, Geelong, Australia (available at http://homedialysis.org/home-dialysis-basics/ufr-calculator). (Flythe et al., 2011).
- Increase treatment time (Doss-McQuitty, 2014).
- Increase frequency of treatment sessions (Doss-McQuitty, 2014).
- Limit fluid intake (Doss-McQuitty, 2014).
- Educate patients (Gomez, 2011).

References


