

SYSTEMATIC REDUCTION OF INTERDIALYTIC WEIGHT GAIN AND POST HEMODIALYSIS WEIGHT LOWERS SYSTOLIC AND DIASTOLIC BLOOD PRESSURE: PRELIMINARY RESULTS OF A QUALITY IMPROVEMENT PROJECT.

¹Jochen G. Raimann, ¹Caroline Williams, ²Surendra Gupta, ¹Michelle Myers, ²Paul Parker, ²Alice Wei, ¹Nathan W. Levin.

¹Renal Research Institute, New York, NY, United States and
²Fresenius Medical Care, Waltham, MA, United States.

Background

Volume overload in hemodialysis (HD) patients is determined by the balance of Na⁺ and water during intra- and interdialytic periods. Reduction of dietary and dialytic Na⁺ intake has favorable effects on left ventricular mass and mortality as established from work in Tassin, and Izmir. We conducted a quality improvement project (QIP) which immersed Fresenius HD clinics in a culture of Na⁺ restriction supplemented by systematic and persistent post HD body weight (BW) reduction based on blood pressure (BP) assessments. This current retrospective analysis reports the success of the QIP on SBP and DBP, and investigates the relative effectiveness of the employed measures.

Methods

All patients in three HD clinics in this QIP received additional dietary intervention. In those with low (<120 mmHg) and high (>140 mmHg) SBP, respectively, post HD BW was reduced by 0.6 to 0.9 kg each week until a nadir of SBP was reached without intradialytic complications. BW, IDWG, SBP and DBP were compared over 4 months. Over periods of 2 to 9 months on an individual level, the effect sizes of IDWG and post HD BW reduction were quantitated using a linear mixed model (LMM) predicting BP (additionally adjusted for age, gender and race). Data are reported as mean ±SD or mean (95% CI).

Results

In 177 patients [63±13 years, 67% male, 62% white, 2.3±0.9 kg IDWG (3.1±1.2 IDWG% of BW), 76.6±19.6 kg post HD BW, 150±18 mmHg pre and 77±12 mmHg post HD BW] the intervention resulted in a borderline significant change of IDWG [-0.12 (-0.27 to 0.03) kg] and significant changes of pre [-3.9 (-6.5 to -1.2) kg] and post HD BW [-3.8 (-6.4 to -1.1) kg] in 151 subjects that completed 4 months of QIP. In a subset of 64 patients with SBP≥160mmHg the intervention reduced the pre HD SBP and DBP by -15.7 (-20.2 to -11.2) and -7.2 (-9.8 to -4.5) mmHg, respectively. In those with low SBP (<120mmHg; N=64) the intervention caused an increase of SBP and DBP by 11.2 (-1.2 to 23.5) and 4.4 (-2.9 to 11.6) mmHg, respectively. LMM identified ΔIDWG% and Δpost HD BW as having significant slope estimates in the prediction of SBP (ΔSBP of 0.81 (P=0.04) and 0.09 (P=0.01) per 1 unit change of IDWG% and post HD weight, respectively) and DBP (ΔDBP of 0.40 (P=0.08) and 0.05 (P=0.02) per Δunit of IDWG% and post HD weight, respectively).

Discussion and Conclusion

In this QIP we have significantly reduced IDWG, pre and post HD weight and consequently pre HD SBP and DBP without increasing HD session times. Our data confirms the necessity of both IDWG and post HD BW reduction to effectively lower SBP and DBP in keeping with the methods and results of the Izmir group (Ok, E. and E. J. Mees (2010). "Unpleasant truths about salt restriction." *Semin Dial* 23(1): 1-3).

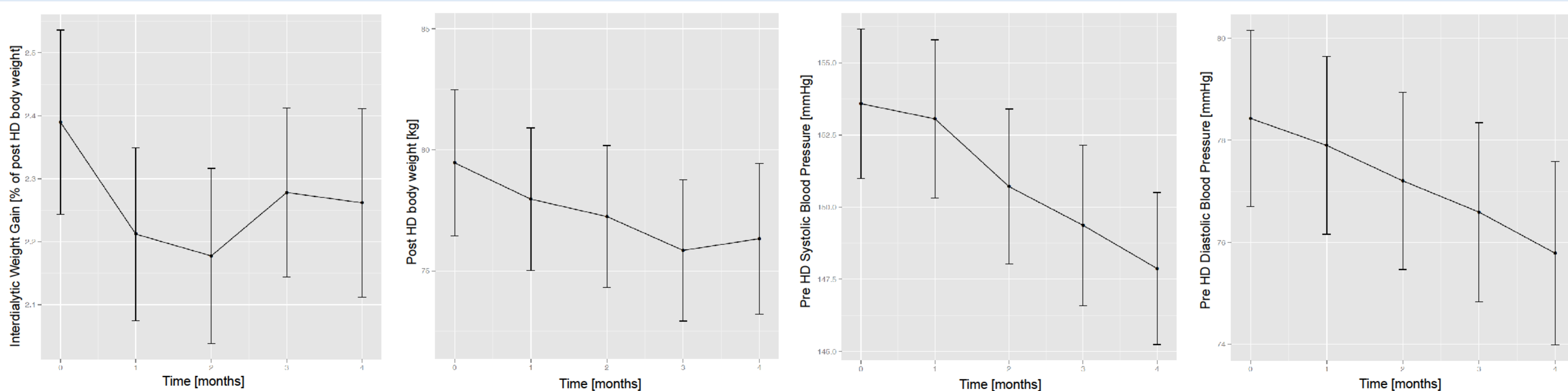


Figure: Change of observed parameters over a period 4 months into the Quality Improvement Project.

