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Introduction and Aims

Malnutrition and protein-energy wasting, as assessed by a combination of several nutritional parameters, are associated with increased morbidity and mortality in hemodialysis (HD) patients (1). "Nutritional resilience" refers to the maintenance of an adequate nutritional status in the face of stressors such as intercurrent illness and hospitalization. We conducted a retrospective cohort study in incident HD patients to identify changes in nutritional parameters around the time of hospitalization and to assess predictors of nutritional resilience.

Methods

The patient cohort was derived from the Fresenius Medical Care North America database, and included incident patients who 1) started HD between 2007 and 2011, 2) were hospitalized for 7-14 days during this period, and 3) started HD >60 days prior to hospitalization and survived >60 days after hospitalization. Only data from the first hospitalization per patient during 2007-2011 were used. To assess temporal patterns of nutritional parameters, serum albumin, creatinine, phosphate, equilibrated normalized protein catabolic rate (enPCR) and interdialytic weight gain (IDWG) were plotted over 3 months prior to and after hospitalization.

Change in albumin (the percent difference between serum albumin within 30 days before hospital admission and within 30 days after discharge) was analyzed by discharge diagnosis category.

Logistic regression was performed to assess baseline factors (average values over 90 days before hospitalization) associated with a decline in serum albumin >5% after hospitalization.

Results

31,632 patients were included in the analysis. Prior to hospitalization, most nutritional parameters declined, although there was an increase in enPCR, likely reflecting increased tissue catabolism (Fig. 1).

The greatest declines in albumin were observed in hospitalizations for injuries resulting in amputation or fracture (-9.3%) or other musculoskeletal injuries (-8.6%) (Fig. 2).

References

1. Fouque D, Kalantar-Zadeh K, Kopple J, Cano N, Chauveau P, Cuppari L, et al. A proposed nomenclature and diagnostic criteria for protein-energy wasting in acute and chronic kidney disease. *KI* 2008;73:391-398.

Figure 1: Nutritional parameters around hospitalization

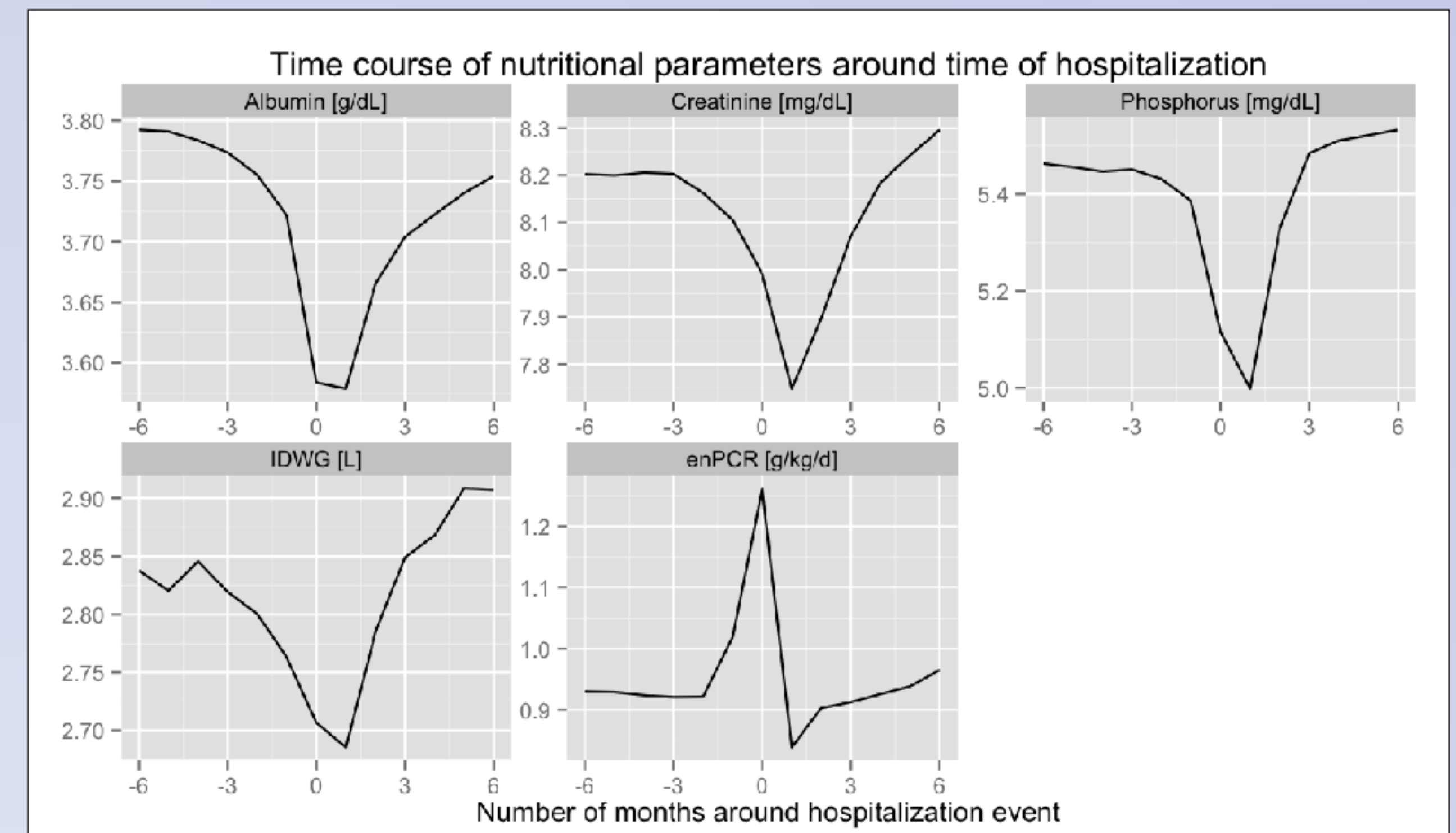


Figure 2: Percent change in albumin according to type of hospitalization

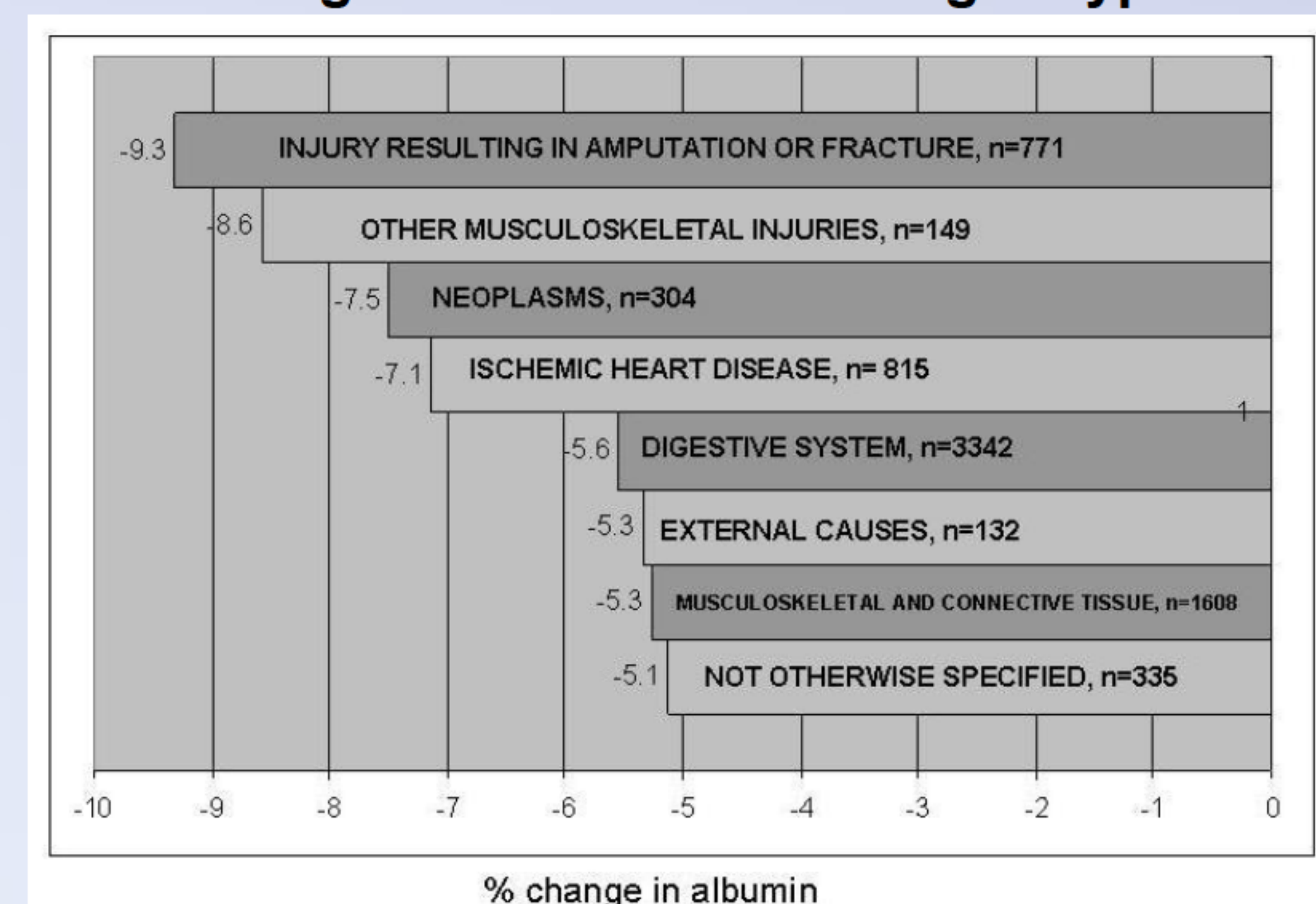
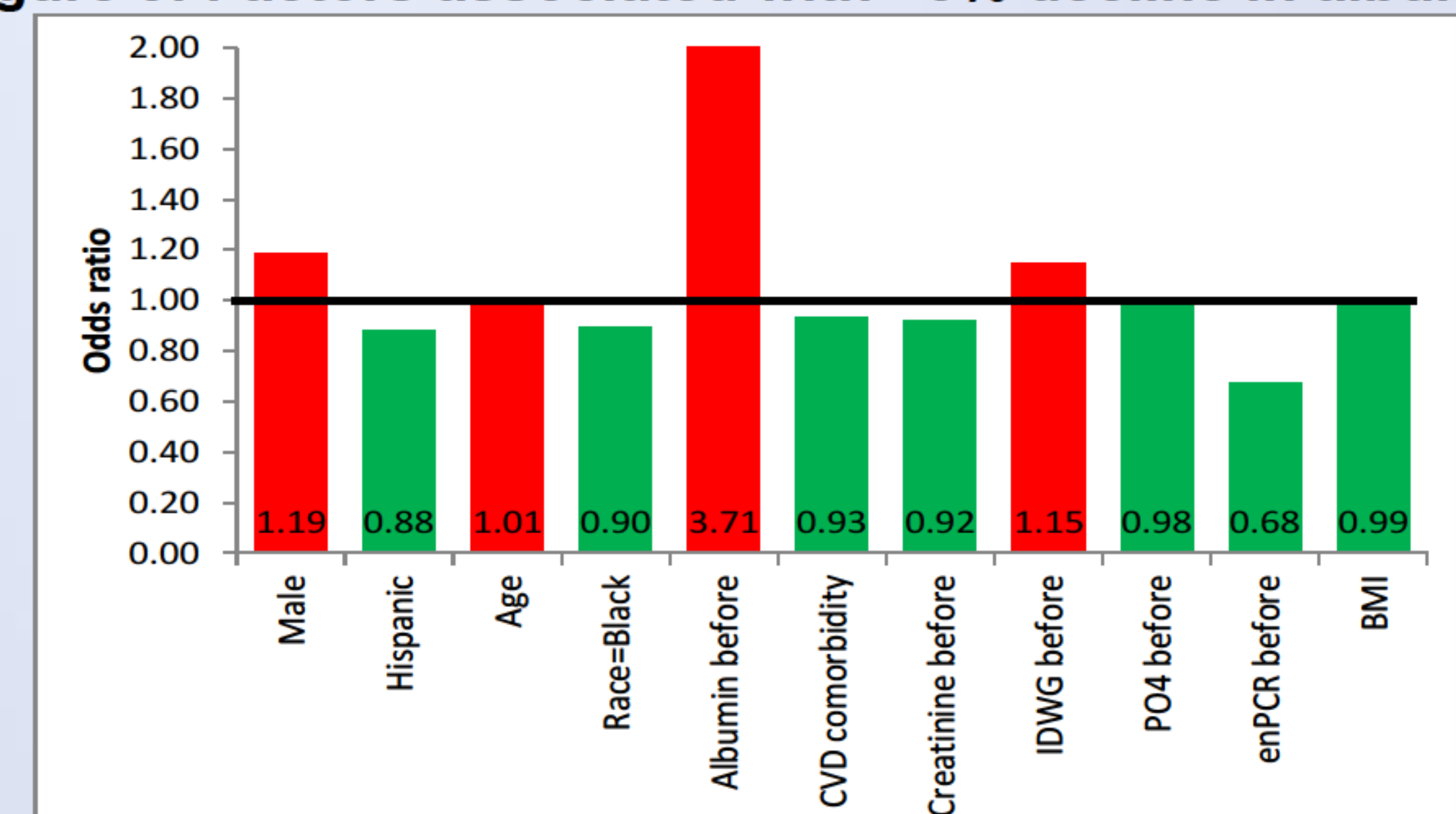


Figure 3: Factors associated with >5% decline in albumin



Only statistically significant parameters (p<0.05) are shown. Green bars: increased values in these parameters are associated with decreased likelihood of albumin decline. Red bars: increased values in these parameters are associated with increased likelihood of albumin decline.

Statistically significant factors that were "protective" against a >5% decline in albumin during hospitalization included higher creatinine, higher body mass index, lower IDWG, female gender, younger age, non-white race and cardiovascular disease as a comorbidity (Fig. 3).

Conclusion

Worsening of nutritional parameters is observed with hospitalization in the HD population, and the degree of albumin decline varies with discharge diagnosis. These results will aid in developing a risk score for nutritional decline during hospitalization in HD patients and assist in identifying those who will benefit most from nutritional interventions.

