

# Association of Body Fat and Survival in Hemodialysis Patients

Debbie Benner, MA, RD, CSR<sup>2</sup>; Claudia Luna<sup>1</sup>; Amanda Luna<sup>1</sup>; Allen R. Nissenson, MD, FACP, FASN<sup>2</sup>; Csaba P. Kovesdy, MD<sup>3</sup>; and Kamyar Kalantar-Zadeh, MD, MPH, PhD<sup>1\*</sup>

(1)Harold Simmons Center for Chronic Disease Research & Epidemiology, LABioMed at Harbor-UCLA, Torrance, CA; (2)DaVita Inc., Lakewood, CO; (3)VAMC, Salem, VA

## INTRODUCTION

Hemodialysis (HD) patients (pts) exhibit an obesity paradox, in that higher body mass index appears associated with greater survival.

It is not clear whether lower body fat is incrementally associated with death risk.

We hypothesized that extremely low body fat (<10%) is a strong predictor of mortality.

## METHODOLOGY

- Using near-infrared interactance, we examined body fat percentage (%) in 671 HD pts from 8 DaVita clinics and investigated 5-yr survival (2001-06).
- Pts were 53.6±15.0 yrs old and included 52% men, 30% Blacks and 54% diabetic. Total body fat percent was 27.04 ±10.49 (min: 5.1, max: 45.9).
- Patients were divided into 5 a priori selected body fat % groups and mortality was assessed.
- Case mix model adjusted for age, gender, vintage, diabetes, Charlson index score, and Black race.
- Malnutrition-inflammation complex syndrome (MICS) model adjusted for case-mix variables and also albumin, hemoglobin, nPCR, phosphorus, TIBC, ferritin, calcium and creatinine.

## RESULTS

Table 1. Risk of Mortality by Body Fat Percent Quintiles

Body Fat % Group	<10% (n=34)	10%-<20% (n=156)	20%-<30% (n=210)	30% -<40% (n=182)	≥40% (n=89)
<b>Unadjusted</b>	0.85 (0.41-1.77)	0.70 (0.46-0.96)	1 (reference)	0.97 (0.68-1.40)	1.29 (0.84-1.98)
<b>Case Mix</b>	2.54 (1.13-5.71)	1.01 (0.65-1.58)	1 (reference)	0.71 (0.47-1.07)	0.96 (0.59-1.59)
<b>MICS</b>	2.96 (1.32-6.63)	1.06 (0.67-1.68)	1 (reference)	0.67 (0.44-1.01)	0.83 (0.51-1.38)

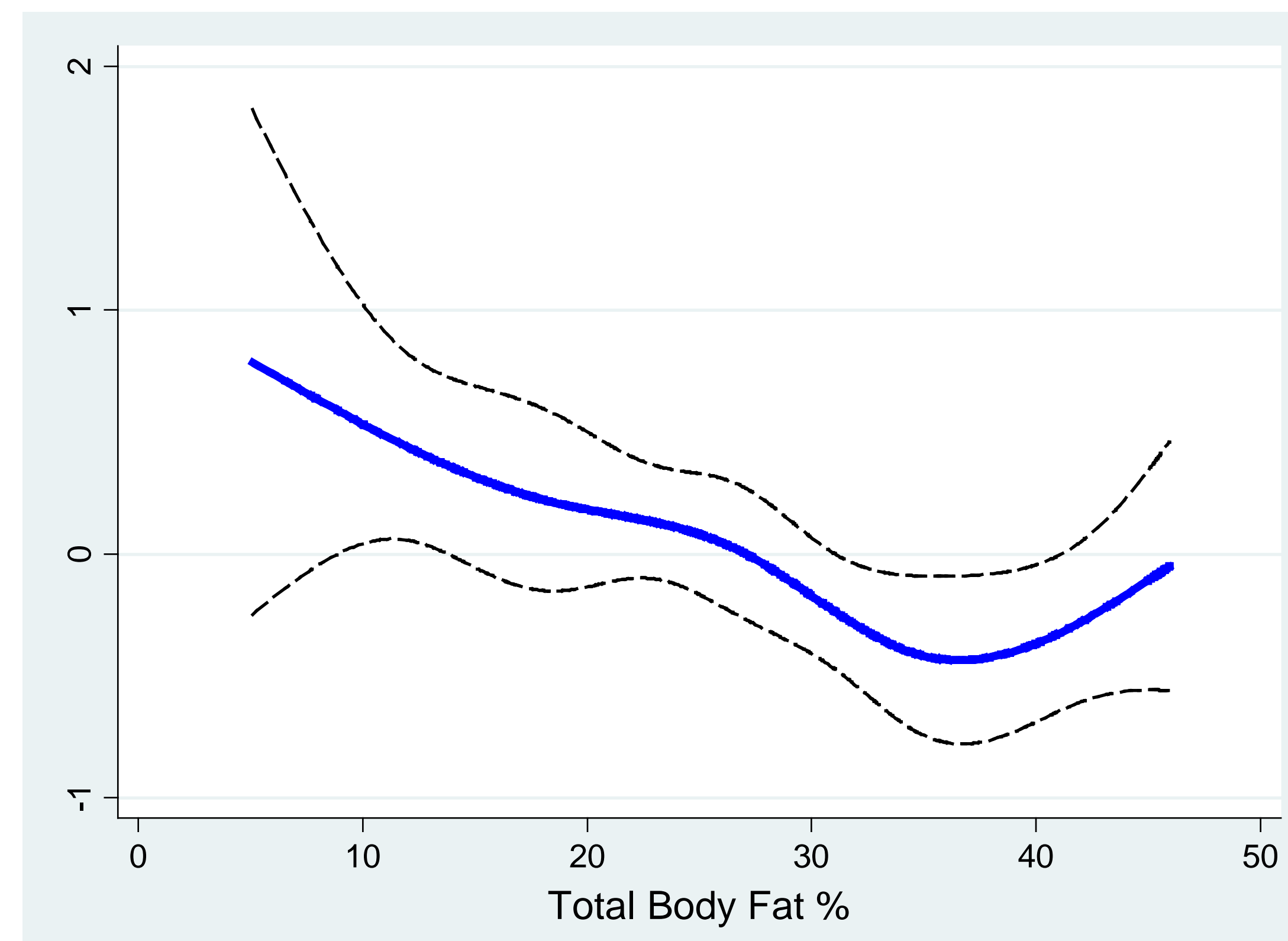


Figure 1. Cubic Spline Cox Models of Body Fat Percentage and 5-Year Mortality in 671 MHD Pts

## CONCLUSIONS

- The lowest fat <10% (compared to pts with body fat in the 20-30% range) was associated with the following findings:
  - 2.5 to 3 times higher death risk after case-mix adjustment , and
  - 2.9 times higher death risk after MICS multivariate adjustment (Table 1).
- Cubic spline Cox models for body fat percent controlled for case-mix And MICS covariates confirmed the reverse J-shaped pattern in that low or very high body fat percentage was associated with increased death risk (Figure 1).

## KEY LEARNINGS

- ✓ A low total body fat percentage is associated with higher 5-year mortality in HD pts even after adjustment for case-mix and other surrogates of nutritional status.

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