

Serum Creatinine and Five-Year Survival in 138,773 Maintenance Hemodialysis Patients

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INTRODUCTION

In maintenance hemodialysis (HD) patients receiving any given hemodialysis regimen, serum creatinine measured prior to a HD treatment session is a measure of nutritional status including muscle mass and probably striated meat intake. We therefore hypothesized that higher serum creatinine is a robust short- and long-term predictor of greater survival.

We examined survival predictability of monthly measured pre-HD serum creatinine – averaged into calendar quarterly values – in 38,773 HD patients in all DaVita clinics during the 7/2001-6/2006.

METHODOLOGY

- Patients were observed for up to 5 yrs or until death or censorship.
- Time-dependent Cox models examined survival of 7 a priori selected quarterly-averaged serum creatinine categories as well as for 5-yr time averaged continuous creatinine using cubic spline models, after adjustment for case-mix and measures of malnutrition-inflammation complex syndrome (MICS).

RESULTS

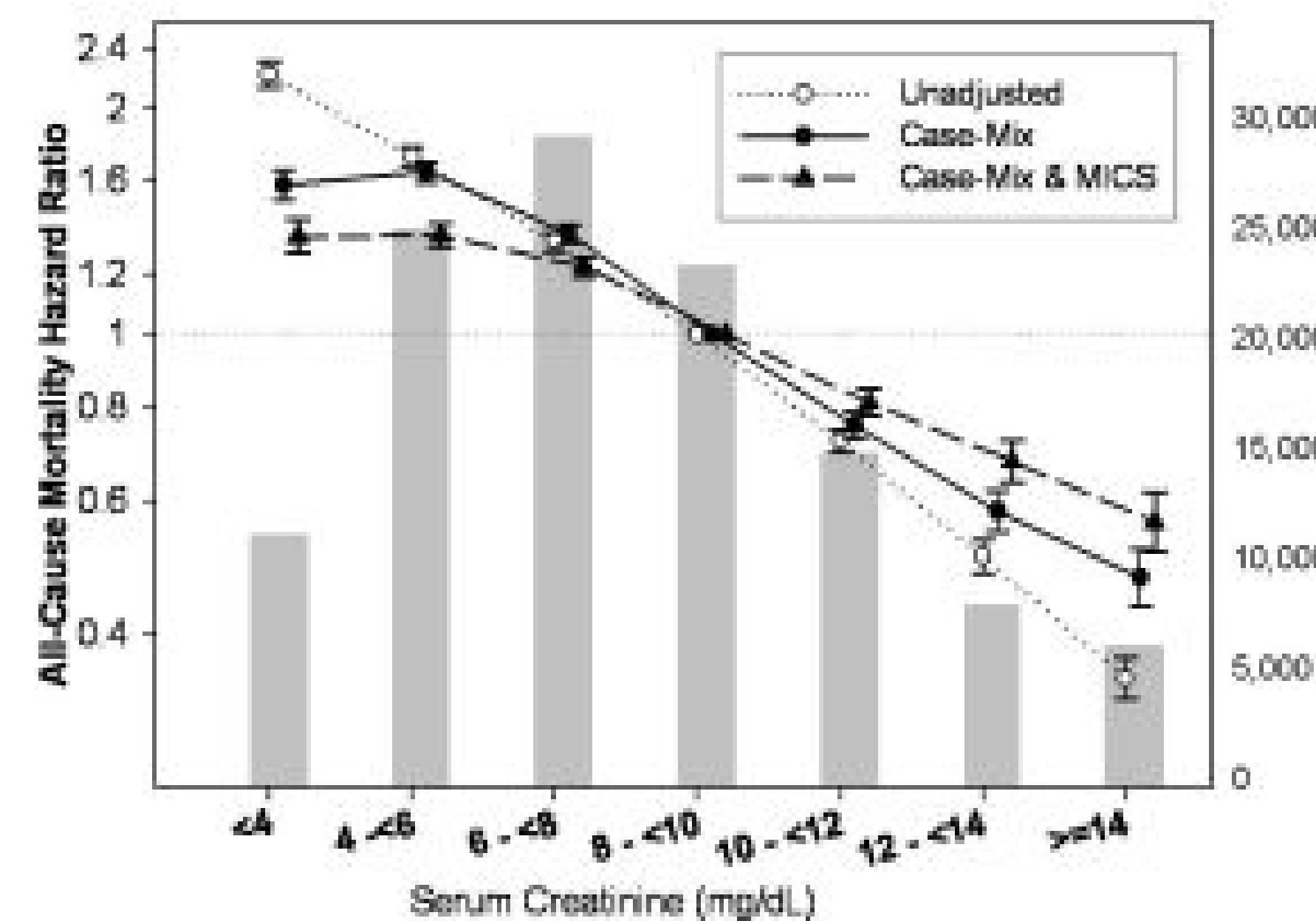


Figure 1. Time Periods of Survival by Serum Creatinine

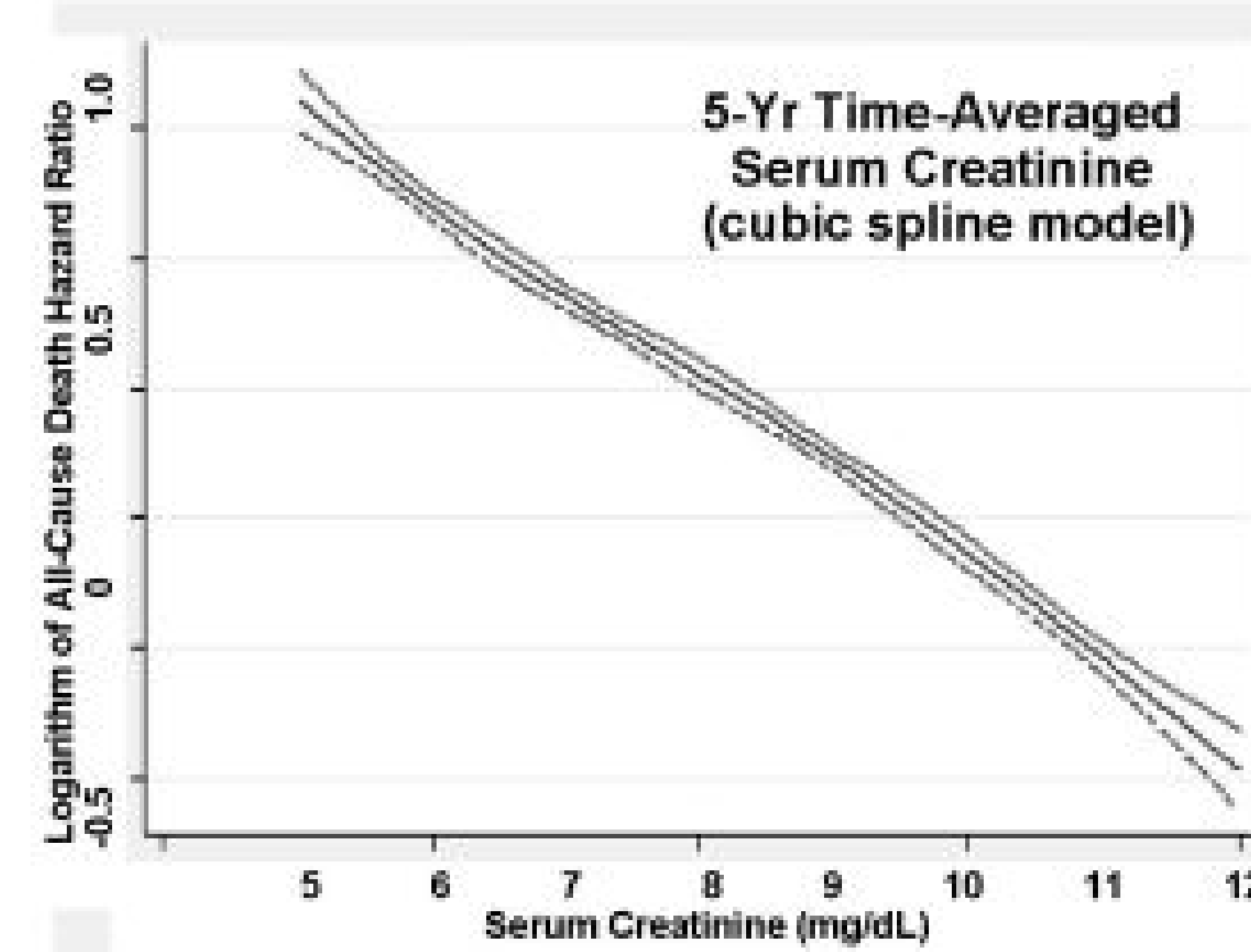


Figure 2. Survival by Serum Creatinine Levels

- Patients were:
 - 61.9±15.5 yrs old and included
 - 45% women,
 - 32% Blacks,
 - 15% Hispanics and
 - 50% diabetics.

CONCLUSIONS

- Higher serum creatinine values were incrementally and linearly associated with greater survival in all models, within any selected period of time (1 yr to 5-yr cohorts) (Figure 1) and after virtually any level of multivariate adjustment (Figure 2).

KEY LEARNINGS

- ✓ Higher serum creatinine levels are incrementally and linearly associated with greater long-term and short-term survival.
- ✓ This robust and strictly linear survival benefit may indicate the role of nutritional status, including muscle mass and probably meat intake, on longevity of HD patients.
- ✓ An effect of illness, which can reduce both survival and food intake, cannot be excluded.
- ✓ Prospective trials to examine the hypothesis that higher serum creatinine is a robust short- and long-term predictor of greater survival are indicated.

We thank the patients who participated in this study and DaVita Clinical Research® (DCR) for support in preparing this poster. DCR is committed to advancing the knowledge and practice of kidney care.