

Biological Predictors of Frailty Transitions Among People Living With HIV

Viet Le, Hui-Yi Lin PhD, Robert Siggins PhD, Tekeda Ferguson PhD, David Welsh MD
LSUHSC Department of Internal Medicine



Introduction

Background:

- Frailty is a geriatric syndrome typically marked by increased vulnerability to environmental stressors and is generally attributed to a diminished physiological reserve.
- People living with HIV (PLWH) experience a precocious onset of frailty.
- Use of common lab biomarkers may be useful in the characterizing degrees of frailty in research or clinical settings.

Hypothesis:

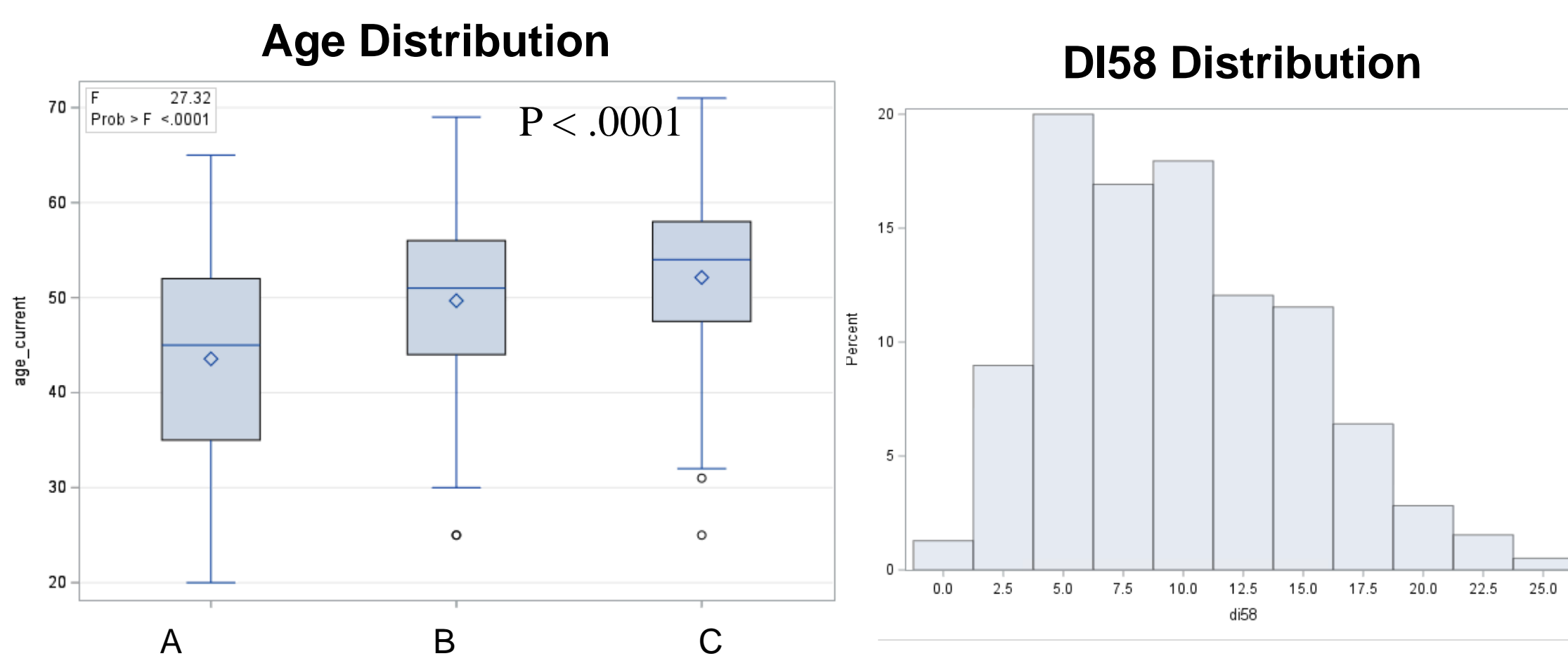
- Abnormal cardiovascular, immunological, metabolic, and other aging-related biomarker values will correlate with levels of frailty severity in PLWH populations

Methods

- Populations from the New Orleans Alcohol Use in HIV (NOAH) study (n=390) were separated into three tertiles, based on scores in the Deficit Index (DI-58)
- The DI-58 characterizes frailty as a proportion of self-reported, age-related deficits a single patient may have out a list of 58 deficits.

	Deficit Index Score		
	1st Tertile N = 137	2nd Tertile N = 129	3rd Tertile N = 124
Age (year), mean +/- SD	43.6 +/- 11.1	49.6 +/- 9.1	52.1 +/- 8.5
Sex, Female, N (%)	32 (23.4%)	48 (37.2%)	42 (33.9%)
Non-African American, N	27	16	22
African American, N	110	113	102

Table 1. Population Characteristics of the New Orleans Alcohol Use in HIV (NOAH) Study. Scores on the DI placed each patient into a different group, being A B or C when scoring the 1st, 2nd, or 3rd tertile respectively.

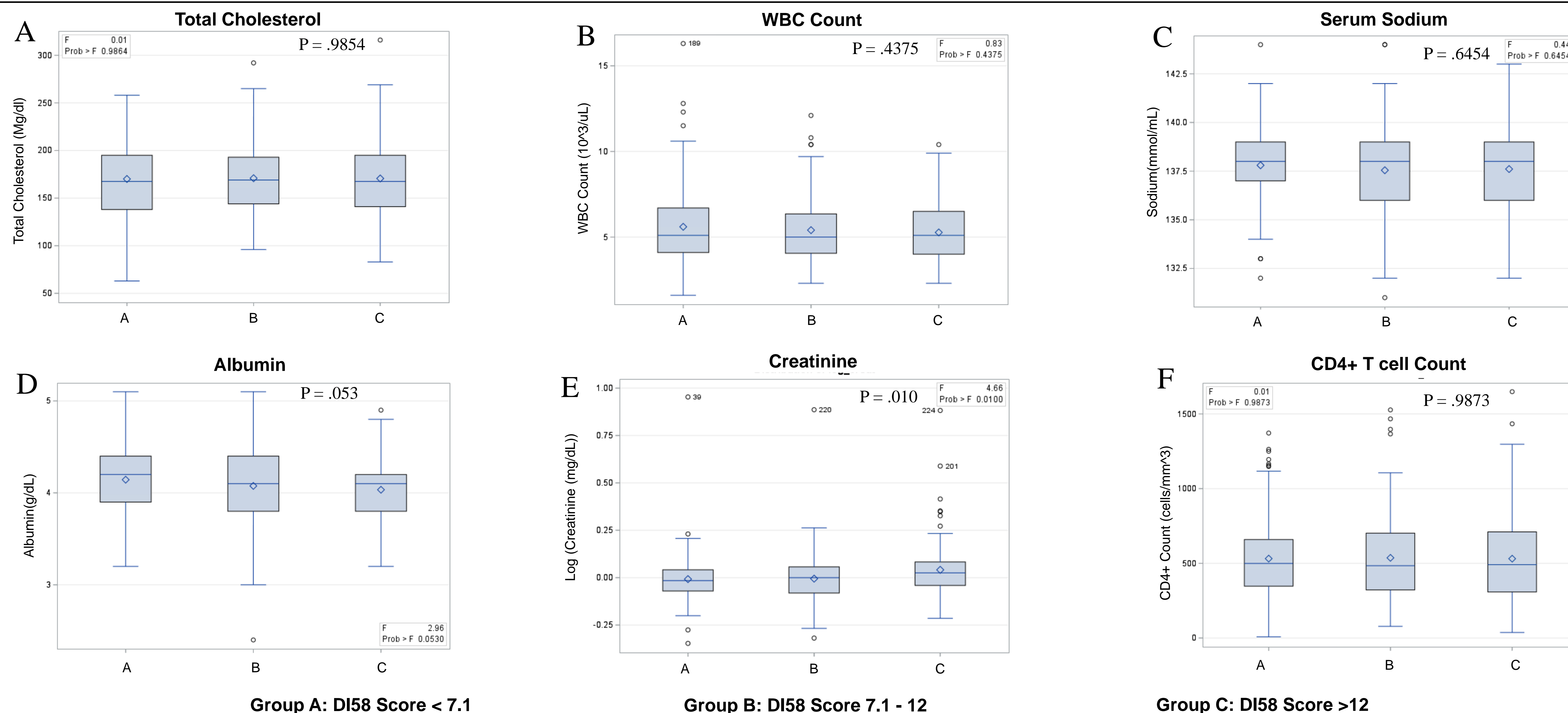


Group A: DI58 Score < 7.1 Group B: DI58 Score 7.1 - 12 Group C: DI58 Score > 12

Figure 1. Age distribution between the three groups.

Figure 2. DI58 distribution within the entire population. Mean is 9.71 +/- 5

Data



Figures 3A-3F. Box-wisker plots describing Total Cholesterol (A), WBC Count (B), Serum Sodium (C), Albumin (D), Creatinine (E), and CD4+ T cell count (F) in relation to populations with varying degrees of frailty according to the DI-58. Of the six lab biomarkers analyzed, albumin (P=.053) and creatinine (P=.01) are shown to have significant differences with degrees of frailty within the NOAH population.

Discussion

- Of the six lab variables analyzed within the NOAH dataset, two (creatinine, p = 0.01; albumin, p = 0.053) correlate with frailty in a cross-sectional analysis.
- Creatinine and albumin reflect kidney and liver function respectively; consistent with the decreased physiological reserve characteristic of frailty.
- The absence of correlations with total cholesterol, WBC Count, CD4+ T cell count, and sodium (despite correlations reported in the published literature) may be due to the unique population studied (PLWH) or a function of sample size.

Conclusion & Future Directions

- Creatinine and Albumin correlate with frailty in the NOAH cohort of PLWH
- This is a preliminary analysis; ongoing analyses will test the predictive value of a broader range of biomarkers for the development of frailty in longitudinal data.

Acknowledgements

- Credit for this research goes to the LSUHSC Summer Research Program for Medical students.
- Supported by NIAAA T35AA021097 & P60AA009803
- Special thanks to Hui-Yi Lin (PhD), Robert Siggins (PhD), Tekeda Ferguson (PhD), David Welsh (MD) at LSUHSC.