White Blood Count, Albumin, and BMI Enhance VACS Index Prognostic Model, but Nadir CD4 and CD8 Metrics Do Not

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Survival by decade from continuous model

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559. White Blood Count, Albumin, and BMI Enhance VACS Index Prognostic Model, but Nadir CD4 and CD8 Metrics Do Not
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Background. People living with HIV frequently achieve long-term viral suppression necessitating better metrics of disease burden for clinical management and research. The Veterans Aging Cohort Study (VACS) Index predicts hospitalization, mortality, and other outcomes, using routinely available clinical data. We sought to enhance the index by evaluating whether nadir CD4, CD8, CD4/CD8 ratio, white blood count (WBC) or absolute neutrophil count (ANC), albumin, and body mass index (BMI) enhanced prediction. The original index categorized predictors for ease of understanding and calculation of a risk score. We also sought to expand categories and develop a continuous variable model, suitable for use with automated calculation, to provide higher resolution.

Methods. VACS includes all HIV infected patients in VA Care. Among those who initiated ART 1996–2013 (excluding any treated for HCV infection), we obtained laboratory values from a randomly selected visit 2000–2014, at least one year after ART initiation. Patients were followed for 5 years, allcause mortality until September 30, 2016. We fit Cox models starting with currently used predictors (age, CD4, HIV-1 RNA, hemoglobin, FIB4, eGFR and HCV status) and decided to include new variables based on model fit, chi-square, strength and significance of individual levels and c-statistic. Functional form for continuous variables was determined graphically. Adequacy of final models was assessed with Kaplan-Meier plots by decades of risk.

Results. Among 28,390 patients there were 7,293 deaths (7.2 per 100 person-years) in median 4.1 years of follow-up. Nadir CD4, CD8, CD4/CD8 did not improve prediction. WBC and ANC performed equally but WBC was more widely available. C-statistics improved from 0.76 to the original VACS Index (in this sample) to 0.805.

Conclusion. Addition of WBC, albumin, and BM enhances utility of the VACS Index as a measure of overall severity of disease both as an outcome for research and for patient monitoring in the clinical setting. Validation in external cohorts is in progress.

560. The Impact of Continuous Virologic Suppression on the Development of Non-AIDS Diagnoses
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Background. In the era of effective antiretroviral therapy (ART) non-AIDS diagnoses (NAD) have emerged as significant concerns. HIV virus is an important driver of systemic inflammation that has been linked to the development of NAD. In this study, we examined the distribution of NAD in a group of early diagnosed and treated HIV-infected individuals with equal access to care to evaluate the effect of continuous virologic suppression (CS) on NAD.

Methods. The U.S. Military HIV Natural History Study (NHS) is a prospective cohort of HIV-infected DoD beneficiaries the majority of whom are deroconverted. Medical record review and structured interviews are utilized to capture NAD. We included subjects initiating ART after 1996 if they had ≥2 viral loads (VLs) measured while on ART. CS was defined as having all VLs <50 copies/mL. A Cox proportional hazard model was used to evaluate the association between CS and NAD.

Results. Of the 2,642 eligible participants (93% male, 43% African-American AA), median follow-up 6.5 (IQR 3.31–12) years, 945 (37.3%) subjects (94% male, 42% AA, median follow-up 3.74 years) met criteria for CS. The median time from HIV diagnosis to ART initiation was 1.34 (IQR 0.19–5.46) years, while the median seroconversion window was 1.31 (IQR 0.8–2.1) years. A total of 402 (15.2%) NAD were recorded and were recorded (table). Factors associated with NAD included older age at ART initiation (HR 1.6 per 10-year increase [95% CI 1.4–1.8]) and female gender (HR 1.6 [95% CI 1.0–2.7]), while a higher CD4 count was protective (HR 0.93 per 50 cell increase [95% CI 0.90–0.95]). CS status was not associated with NAD (HR 0.75 [95% CI 0.50–1.11]).

Conclusion. In the ART era, about 1 in 7 NHS subjects had a NAD. The numbers of NAD in the CS subjects were lower than the rest of the cohort. While not statistically significant, the hazard ratios trended towards demonstrating a benefit for continuous virologic suppression. This trend is consistent with previous reports that have demonstrated a benefit of immunologic reconstitution and virologic control on the incidence of NAD.

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561. Screening for Comorbid Conditions Among People with HIV in Medical Care
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Background. A significant proportion of morbidity and mortality among people living with HIV (PLWH) is attributable to non-HIV comorbid conditions. Despite the importance of detecting and treating comorbidities among PLWH, screening rates for people living with HIV (PLWH) are lower than the rest of the cohort. While not statistically significant, the hazard ratios trended towards demonstrating a benefit for continuous virologic suppression. This trend is consistent with previous reports that have demonstrated a benefit of immunologic reconstitution and virologic control on the incidence of NAD.

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