Association between HIV and early weight loss and the impact on subsequent treatment outcomes among patients with tuberculosis

Lauren A Saag¹, Peter F. Rebeiro¹, Marcelo Cordeiro-Santos², Afriano Kritski³, Bruno B. Andrade⁴, Betina Durovni⁵, Solange Calvacante, Megan Turner¹, Marina C. Figueiredo¹, Valeria C. Rolla¹ and Timothy R. Sterling²
¹Vanderbilt University Medical Center; ²Fundação Medicina Tropical Dr. Heitor Vieira Dourado; ³Universidade Federal do Rio de Janeiro; ⁴Instituto Brasileiro para Investigação da Tuberculose; ⁵Instituto Nacional de Infectologia Evandro Chagas and ⁶Secretaria Municipal de Saúde do Rio de Janeiro

OBJECTIVES/SPECIFIC AIMS: Previous research suggests that weight loss during early TB treatment (first two months of anti-TB therapy) is a predictor of poor tuberculosis (TB) treatment outcomes among HIV-negative populations, but the relationship has not been well studied in the context of HIV. We examined the association between HIV and weight change during the first two months of anti-tuberculosis treatment, and also assessed the effects of HIV and early weight change on tuberculosis (TB) treatment outcomes.

METHODS/STUDY POPULATION: Adults with culture-confirmed, drug-susceptible, pulmonary TB, regardless of HIV status, were enrolled into the Regional Prospective Observational Research for Tuberculosis (RePORT)-Brazil cohort and followed on standard anti-TB therapy. For the primary analysis, we compared weight change in persons living with HIV (PLWH) and HIV-negative patients between baseline and two months using multivariable bootstrapped quantile regression and modified Poisson regression. For secondary analysis, we examined the separate effects of HIV and weight change on poor TB treatment outcome (treatment failure, TB recurrence, or death) using Cox proportional hazards regression.

RESULTS/ANTICIPATED RESULTS: Among 323 participants, 45 (14%) were HIV-positive. On average, PLWH lost 0.7% (IQR: 0.8%, 6.7%) of their baseline body weight between baseline and two months; those without HIV gained 3.5% (IQR: 0.8%, 6.7%). After adjusting for age, sex, and baseline BMI, PLWH lost 4.1% (95% confidence interval (CI): −6.5%, −1.6%) more weight during the first two months of anti-TB treatment than HIV-negative individuals. HIV infection was associated with weight loss ≥5% (adjusted odds ratio = 9.3; 95% CI: 4.2-20.6). Regarding the secondary analysis, 14 patients had a poor TB treatment outcome: 2 treatment failures, 4 cases of recurrent TB, and 8 deaths. PLWH and patients who lost ≥5% weight had significantly increased risk of poor TB treatment outcome with hazard ratios of 8.77 (95% CI: 2.96-25.94) and 4.09 (95% CI: 1.11-15.14), respectively.

DISCUSSION/SIGNIFICANCE OF IMPACT: Our results suggest that HIV is associated with weight loss during early TB treatment, and both HIV and early weight loss were associated with poor treatment outcome. Future research should examine the potential etiologies of these findings and identify the types of interventions that would best promote weight gain during TB treatment, especially among PLWH, in order to prevent poor TB treatment outcomes.