

**Abstract Number 148**

**EARLY MORTALITY IN HIV-INFECTED PATIENTS INITIATING ART WITHOUT A PRETHERAPY CD4**

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**Background:** In the treat-all era, CD4 levels are no longer required to determine treatment eligibility, resulting in some programs phasing out CD4 tests altogether. Pre-therapy CD4, however, can play a crucial role in informing screening and prophylaxis for opportunistic infections, which are contributors to HIV-related mortality. We assessed the association between presence of a pre-therapy CD4 and early mortality among patients in Zambia starting ART.

**Methods:** We evaluated patients starting ART between August 1, 2013 and July 31, 2015 in Zambia. We obtained pre-therapy CD4 (most recent determination within 6 months of treatment initiation), sociodemographic and clinical data from the electronic medical record. We identified a probability sample of patients lost to follow-up for intensive tracing to determine vital status. Findings from tracing were incorporated into Kaplan-Meier estimates and multivariate proportional hazards regression through inverse probability-weights. Estimates were adjusted for potential common causes of CD4 determination and survival (e.g. WHO stage, calendar time, facility type, etc.).

**Results:** Of 39,556 patients starting ART (63% women, median age 35.64 (IQR 29.88 – 42.41)), 31,895 (76%) had a pre-therapy CD4 on record (median CD4 270 cells/ $\mu$ l (IQR 145-396)). The cumulative incidence of mortality after ART initiation in the study population was 5.12% (95% CI 4.32, 6.10). The cumulative incidence of mortality with and without pre-therapy CD4 at 1 year was 4.54% (95% CI 3.73, 5.60) and 7.06% (95% CI 5.14, 9.98), respectively (Cox test for equality  $p=0.03$ ). After adjustment for pre-therapy WHO stage, sex, age, facility type, ART initiation date, patients without a pre-therapy CD4 had 1.48 times the hazard of mortality in the first year compared to those with a pre-therapy CD4 determination (95% CI 1.00, 2.17,  $p=0.046$ ). Advanced WHO stage and male sex were associated with higher probability of early mortality (WHO stage IV, HR, 7.69 (95% CI, 4.19, 14.13  $p<0.001$ ) male sex, HR, 1.62 (95% CI, 1.13, 2.32  $p<0.008$ )).

**Conclusion:** Despite the possibility of unmeasured confounding, these results suggest that patients initiating ART without pre-therapy CD4 experience a higher risk of early mortality even after adjustment for demographic characteristics and disease stage. Even though pre-therapy CD4 are no longer required to determine eligibility, further research to evaluate the safety of discontinuing pre-therapy CD4 is needed before widespread discontinuation.