Abstract for 16th International Workshop on Aging & HIV

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Title: Modeling State-Level Aging Patterns Among PLWDH in the United States

Background: As people living with HIV continue to age in the United States (US), local healthcare systems should prepare to manage the increasing burden of age-related comorbidities. It remains unclear how these demographic trends - and their corresponding impacts on healthcare systems - will continue into the future and how they differ across US states.

Material and Methods: The Johns Hopkins Epidemiologic and Economic Model (JHEEM) is a dynamic transmission model of HIV in the US. The model is calibrated to population demographics (by age, race/ethnicity, sex) and key HIV epidemiological targets - including new diagnoses and diagnosed prevalence by age group - in 11 states comprising 63% of diagnosed prevalence in the US. We project HIV epidemics from 2025 to 2040, estimating the proportion of people living with diagnosed HIV (PLWDH) over the ages of 55 and 65 years as well as the median age of PLWDH. 95% credible ranges (CR) are reported across 1,000 independent simulations per state.

Results: The model projected the number of PLWDH in the 11-state region to rise from 665,000 (CR: 658,000 to 671,000) in 2025 to 702,000 (CR: 673,000 to 726,000) in 2040, of whom those age 55+ numbered 308,000 (CR: 302,000 to 315,000) in 2025 and 402,000 (CR: 379,000 to 326,000) in 2040. This reflected an increase in the proportion of PLWDH age 55+ from 46% (CR: 45 to 47%) in 2025 to 57% (CR: 54 to 60%) in 2040 and a shift in median age of PLWDH from 51 years (CR: 51 to 52) to 61 years (CI: 58 to 63). State-level analysis suggested substantial variations in local outcomes. For example, the proportion of PLWDH age 55+ in California was projected to rise from 50% (CR: 47 to 53%) to 67% (CR: 59 to 75%), with the median age rising from 54 years (CR: 52 to 56) to 67 years (CR: 63 to 70). By contrast, simulations in Wisconsin projected a stable proportion of PLWDH age 55+ , 44% (CR: 41 to 47%) versus 43% (CR: 37 to 53%), accompanied by reductions in projected median age from 49 years (CR: 47 to 51) to 41 years (CR: 38 to 60) between 2025 and 2040. Projected state-level changes in the proportion of PLWDH age 55+ were most strongly correlated with urbanicity (Pearson correlation coefficient = +0.72; p=0.01).

Conclusions: The population of persons living with HIV in the US is projected to age significantly by 2040, and the aging patterns will vary across states. This aging is projected to occur more rapidly in urban states, where rates of new diagnoses remain higher than in rural states. It will be important to allocate resources to help healthcare systems adapt to changing demographic patterns of PLWDH in a manner that reflects state-level needs.