Retention Trajectories in HIV Care Are Partially Patterned by Chronic Comorbidities in North America

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BACKGROUND

- Sustained retention in HIV care is critical for viral suppression and epidemic control, yet sources of heterogeneity in longitudinal care engagement, like clinical complexity and chronic comorbidity management, remain underexplored.
- Using a standard retention metric, we employed latent class analysis to describe retention trajectories and associated clinical profiles among people with HIV (PWH) in North America.

METHODS

We analyzed data from adult (≥18 years old) PWH comprising the clinical cohorts of the North American AIDS Cohort Collaboration on Research and Design (NA-ACCORD) from 2010 to 2023.

Definitions

Date of loss to follow-up: Last encounter, CD4⁺ cell count, or HIV viral load reported before a ≥18-month gap.

Clinical retention: Standard metric of ≥2 encounters (HIV primary care or telemedicine), ≥90 days apart, classified yearly from study entry until December 31, 2023, loss to follow-up, or death.

Analysis: We determined the optimal number of latent classes, *k*, using intercept-only models and selected the *k*-class solution minimizing a model fit criterion while yielding favorable class size proportions, relative entropy, and profile distinctness. We used posterior class membership probabilities to generate posterior-weighted distributions of demographics and clinical characteristics.

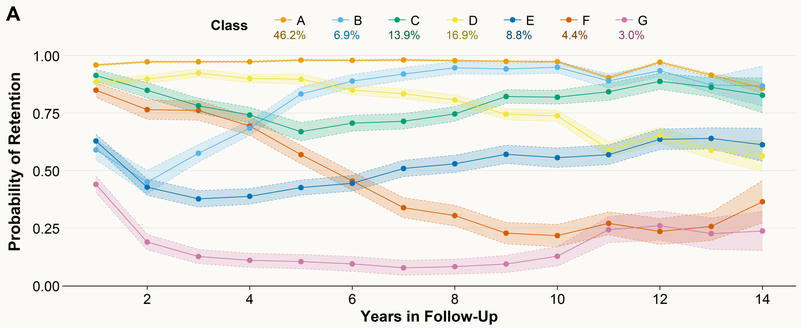
In North America, people with HIV engage with care in different ways over time. Chronic health conditions and differences between clinics help shape these patterns—suggesting that HIV services should be personalized.

CONCLUSIONS

Distinct retention trajectories in HIV care demonstrate a need for differentiated strategies for **sustaining long-term engagement** based not only on *demographics* and *HIV management*, but also on chronic **comorbidity management** and cohort-specific **practice differences**.

RESULTS

Figure. Class-specific annual retention probabilities from a 7-class latent profile model fit to 117,174 adults with HIV (median follow-up time, 5.6 years; interquartile range, 2.8–10.7 years). (**A**) Estimated probabilities of retention in care by class, with pointwise 95% confidence intervals. (**B**) Posterior-weighted distributions of demographics and clinical characteristics by class. The most pronounced imbalances in class membership were cohort-driven (e.g., class A membership range: 2.0–26.4%; class G membership range: 4.6–45.3%).



Classes are labeled alphabetically in descending order by mean retention probability.



CLASS A

Most consistently retained

Skewed toward older PWH (median, 48.1 years old) and those with a history of AIDS-defining illness (16.7%), treated hypertension (24.6%), or diabetes (10.9%).

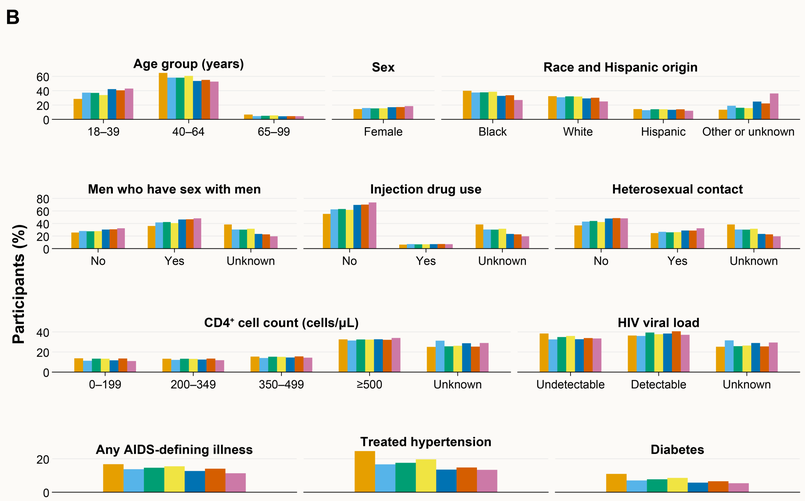
CLASS G

Least consistently retained

Skewed toward younger PWH (median, 42.5 years old) and those with no history of AIDS-defining illness (11.3%), treated hypertension (13.4%), or diabetes (5.4%).

Posterior-weighted distributions reflect uncertainty in class membership.

Rather than assigning each participant to a single trajectory class, individuals contribute to each class in proportion to their estimated probability of belonging to that class. This approach avoids hard classification and more accurately represents population-level characteristics of each trajectory.



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