**Background and Objectives**

- Long-term HIV care engagement is required for optimal clinical and prevention outcomes, but longitudinal patterns of HIV care attendance are poorly understood.
- Identification of distinct longitudinal trajectories of HIV care, along with predictors thereof, could inform the design of tailored interventions for improving HIV care engagement.
- We used visit data from the eight-site CFAR Network of Integrated Clinical Systems (CNICS) to examine patterns and predictors of HIV care attendance over a ten-year period.

**Methods**

- We conducted a retrospective cohort study of all adults newly entering CNICS between January 1, 2005 and December 31, 2015 (N=18,160).
- We followed cohort members longitudinally until death, ten years, or March 22, 2018.
- Our outcome was HIV primary care visit attendance (yes/no) in each six-month interval after CNICS entry.
- We used group-based trajectory modeling to:
  - Identify a set of longitudinal HIV care patterns followed from the time of CNICS entry; and
  - Examine associations between each pattern and age at entry, transmission risk group, and race/ethnicity.
- We tested models with 2-7 trajectory groups and selected the final model based on the Bayesian Information Criterion.

**Results – Trajectory Identification**

We identified five distinct HIV care trajectories (Figure 1):

- **Rapid Decline** (23% of cohort)
- **Intermediate Decline** (17% of cohort)
- **Slow Decline** (16% of cohort)
- **Consistently High** (~32% of cohort)
- **Slow Fluctuation** (~12% of cohort)

**Results – Predictor Analysis**

- Older age at entry appeared protective against all sub-optimal trajectories (with the “consistently high” pattern as referent): odds ratios per five-year age increase ranged from 0.74 (0.72-0.76) for the “slow fluctuation” group to 0.85 (0.82-0.87) for the “slow decline” group (Table 1).
- Classification in the “heterosexual” transmission risk group (versus any other risk category) was associated with lower odds of membership in three of the four sub-optimal care trajectory groups relative to membership in the “consistently high” group.
- The relationship between race/ethnicity and sub-optimal care patterns was less clear, with persons categorized as white/non-Hispanic (versus any other race/ethnicity classification) having similar odds of membership in the “slow fluctuation” and “slow decline” trajectory groups, but higher odds of membership in the “intermediate decline” and “rapid decline” groups, relative to the “consistently high” group.

**Conclusions**

- Most new CNICS entrants exhibited sub-optimal HIV care trajectories, but there was wide variation in the longitudinal pathways followed.
- By identifying heterogeneous care engagement patterns and predictors thereof, this analytical approach allows improved understanding of HIV care engagement over time for designing tailored interventions and refined models of the HIV care continuum.

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* Overall age at entry appeared protective against all sub-optimal trajectories (with the “consistently high” pattern as referent): odds ratios per five-year age increase ranged from 0.74 (0.72-0.76) for the “slow fluctuation” group to 0.85 (0.82-0.87) for the “slow decline” group (Table 1).

<table>
<thead>
<tr>
<th>Trajectory group</th>
<th>Entry age</th>
<th>Transmission risk group</th>
<th>Race/ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistently high</td>
<td>1.0 (ref)</td>
<td>1.0 (ref)</td>
<td>1.0 (ref)</td>
</tr>
<tr>
<td>Slow fluctuation</td>
<td>0.74 (0.72-0.76)</td>
<td>0.90 (0.79-1.04)</td>
<td>0.92 (0.80-1.04)</td>
</tr>
<tr>
<td>Slow decline</td>
<td>0.85 (0.82-0.87)</td>
<td>0.66 (0.56-0.76)</td>
<td>1.03 (0.91-1.17)</td>
</tr>
<tr>
<td>Intermediate decline</td>
<td>0.83 (0.81-0.85)</td>
<td>0.56 (0.49-0.64)</td>
<td>1.28 (1.15-1.43)</td>
</tr>
<tr>
<td>Rapid decline</td>
<td>0.83 (0.81-0.85)</td>
<td>0.64 (0.58-0.71)</td>
<td>1.27 (1.16-1.39)</td>
</tr>
</tbody>
</table>

*per five-year increase in age at CNICS entry
† Dichotomized as heterosexual vs. MSM, PWID. MSM + PWID, “Unknown,” and “Other”
‡ Dichotomized as white, non-Hispanic vs. all other race/ethnicity categorizations