ADHERENCE TRAJECTORIES AMONG AFRICAN AMERICANS LIVING WITH HIV

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Background: HIV Disparities

- African Americans living with HIV show lower antiretroviral treatment (ART) adherence than do Whites living with HIV, contributing to disparities in viral suppression and survival.
- Culturally relevant factors, psychosocial factors, and structural factors have been associated with non-adherence among African Americans in prior research:
  - Cultural factors: stigma, medical mistrust (due to experienced and historical discrimination)
  - Psychosocial factors: mental health (depression), substance use
  - Structural factors: poverty

The Present Study

• Research has not fully examined how cultural, psychosocial and structural factors together may contribute to different trajectories of non-adherence over time

• Glass et al. (2009) Swiss Cohort Study: four trajectories of self-reported adherence (good, worsening, improving, poor)
  – Worse adherence: younger age, basic education, changed living conditions, started IDU, increased alcohol use, depression, longer time with HIV, lipodystrophy, and changing care provider
  – Improved adherence: simplified regimen, changed ART class, less time on ART, starting comedication (for opportunistic infections, CVD, HCV, cancer)
The Present Study

- To understand potential reasons for disparities, we explored whether there were distinct adherence trajectories (or, patterns) among African Americans living with HIV,
- To explore whether these different trajectories had distinct cultural, psychosocial and structural correlates
Methods: Participants

• Combination of two longitudinal (6-month) datasets of HIV-positive African American adults recruited in community settings in Los Angeles, CA (8/10-3/15)
  – Project Mednet: 246 participants
    • Longitudinal study of social networks
  – Project Rise: 108 participants
    • Control group from adherence intervention study
• Duplicate participants (n = 33) omitted from Rise
• Participants missing electronic adherence data at any timepoint omitted (n = 82)
• Final n = 239
Methods: Measures

- Electronically monitored adherence with the Medication Event Monitoring System (MEMS)
  - Mednet: 2, 4, and 6 months post-baseline
  - Rise: 1.5, 4.5, and 6 months post-baseline
  - Calculated past 2-week adherence (% of doses taken) at each time-point
  - Adjustment for use of cap (e.g., pocketed doses)
Methods: Measures

• Baseline audio computer-assisted self-interviews:
  – Cultural/Psychosocial:
    • Internalized stigma, medical mistrust, perceived ART efficacy, healthcare satisfaction rating, depression severity, problem alcohol use, stimulant substance use, sex while high
  – Structural/Socio-demographic/Medical
    • Age, sexual orientation, time since diagnosis, prior incarceration (past 3 months), income, stable housing
Methods: Group-based Trajectory Analysis

- Proc Traj (a SAS procedure developed at Carnegie Mellon) was used to identify clusters of individuals with similar progressions of adherence over time
  - Developmental trajectories estimated from longitudinal data based on a semiparametric, group-based modeling strategy, and then membership probabilities estimated in each group for every participant

Jones & Nagin, 2007
Methods: Regression Analysis

• Bivariate and multivariate multinomial regression models predicted trajectory membership with cultural, psychosocial, structural, socio-demographic, and medical factors
  – Comparisons between pairs of trajectories for each predictor

• Final multivariate model: stepwise procedures

Jones & Nagin, 2007
## Results: Participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>M (SD) or %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>47.7 (10.0)</td>
</tr>
<tr>
<td>Female</td>
<td>25.1%</td>
</tr>
<tr>
<td>MSM</td>
<td>65.3%</td>
</tr>
<tr>
<td>Low Income (&lt;$10,000 annually)</td>
<td>66.1%</td>
</tr>
<tr>
<td>Stable Housing</td>
<td>74.1%</td>
</tr>
<tr>
<td>Time since diagnosis (years)</td>
<td>14.4 (8.0)</td>
</tr>
<tr>
<td>Incarceration (last 3 mos.)</td>
<td>7.6%</td>
</tr>
</tbody>
</table>
Results:
Group-Based Trajectory Analysis

The analysis yielded three groups:

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Time 1 M (SD)</th>
<th>Time 2 M (SD)</th>
<th>Time 3 M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Decreasing</td>
<td>61</td>
<td>23.2 (23.8)</td>
<td>26.8 (26.4)</td>
<td>16.3 (20.5)</td>
</tr>
<tr>
<td>Moderately Low-Stable</td>
<td>83</td>
<td>63.5 (24.8)</td>
<td>60.2 (24.7)</td>
<td>58.4 (23.9)</td>
</tr>
<tr>
<td>High-Stable</td>
<td>95</td>
<td>92.6 (9.9)</td>
<td>92.4 (10.4)</td>
<td>89.9 (13.7)</td>
</tr>
</tbody>
</table>

Jones & Nagin, 2007
Adherence Trajectories

% of Doses Taken

Time 1  |  Time 2  |  Time 3

High-Stable
Moderately Low-Stable
Low-Decreasing
## Bivariate Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Low vs. High OR (95% CI)</th>
<th>Middle vs. High OR (95% CI)</th>
<th>Low vs. Middle OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural/Socio-Demographic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.95 (0.92 – 0.98)**</td>
<td>0.98 (0.95 – 1.01)</td>
<td>0.97 (0.94 – 1.00)+</td>
</tr>
<tr>
<td>Recent Jail</td>
<td>2.72 (0.85 – 8.74)+</td>
<td>1.13 (0.32 – 4.05)</td>
<td>2.40 (0.74 – 7.80)</td>
</tr>
<tr>
<td><strong>Psychosocial/Cultural</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stimulant Use</td>
<td>1.87 (0.82 – 4.24)</td>
<td>2.44 (1.16 – 5.13)*</td>
<td>0.77 (0.36 – 1.63)</td>
</tr>
<tr>
<td>Sex while high</td>
<td>2.80 (1.18 – 6.63)*</td>
<td>2.80 (1.26 – 6.24)*</td>
<td>1.00 (0.46 – 2.15)</td>
</tr>
<tr>
<td>Med mistrust (race)</td>
<td>1.17 (0.71 – 1.92)</td>
<td>1.56 (0.98 – 2.48)+</td>
<td>0.75 (0.45 – 1.25)</td>
</tr>
<tr>
<td>ART efficacy</td>
<td>0.65 (0.36 – 1.17)</td>
<td>0.54 (0.32 – 0.92)*</td>
<td>1.20 (0.69 – 2.09)</td>
</tr>
<tr>
<td>Care rating</td>
<td>0.90 (0.73 – 1.12)</td>
<td>0.76 (0.63 – 0.92)**</td>
<td>1.19 (0.99 – 1.44)+</td>
</tr>
</tbody>
</table>

Note: Only variables with significant/marginal results shown; all bivariates controlled for dataset (Rise vs. Mednet).

+p<.10; *p<.05; **p<.01; ***p<.001
## Final Multivariate Model

<table>
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<tr>
<th>Variable</th>
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<td>Care rating</td>
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Note: Model controlled for dataset used

+p<.10; *p<.05; **p<.01
Summary

- Older participants were more likely to be in the moderately low or high adherence group.
- Participants with lower perceived ART efficacy, who rated their healthcare as worse, and who used stimulant drugs, were more likely to be in the moderately low (vs. high) adherence group.
- Participants with higher healthcare ratings were more likely to be in the low (vs. middle) group.
Limitations

• Small sample size for trajectory analysis
• Data points combined over two different studies and 5 years (although methods and research staff were consistent)
• Trajectories were generally flat, so analysis may not add insights above prior research using simpler regression models to predict continuous adherence outcomes
Discussion

• Psychosocial and culturally relevant factors including substance use and medical mistrust were associated with moderately low adherence trajectories, above effects of structural/socio-demographic factors
  – Unknown why few predictors were associated with very low adherence trajectory
    • Possible power issue or unmeasured structural variables (e.g., neighborhood factors) that are high barriers to access to care
• Future work could involve replication with a larger sample size, as well as additional predictors or domains
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  – Sean Lawrence, Nikki Rachal, Kelsey Nogg

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