BACKGROUND

- Crucial to mitigating the HIV epidemic is improving our understanding of long-term population, and individual-level HIV care.
- The treatment cascade provides a population perspective of implementation of HIV engagement in care services, including diagnosis, linkage and retention in care, and viral suppression.
- Although a powerful public health tool, the treatment cascade does not capture the dynamics and complexity of long-term and individual-level HIV care.
- Additionally, since HIV care has evolved from acute to chronic, we need to complement our understanding of HIV’s acute effect with that of its chronic impact on individuals.
- We therefore explored District of Columbia Women’s Interagency HIV Study (DC-WIHS) women’s patterns of engagement with this ever-changing HIV treatment environment using HIV treatment careers.

MATERIALS AND METHODS

- All women (N=329) enrolled in the DC-WIHS 1995-2012 with ≥4 semiannual visits were included in trajectory analyses.
- Trajectories were modeled as a function using SAS PROC TRAJ software (SAS Version 9.4 64-bit).
- A group-based logistic trajectory analysis approach was used to identify patterns of detectable HIV RNA viral load at ≥50 c/mL and ≥1000 c/mL (figs. 1 and 2).
- Group characteristics were explored using generalized linear modeling with generalized estimating equations for repeated measures.
- Trajectory results were verified using cumulative viral suppression-years as the unit of analysis (fig. 3).
- Overall mortality for each trajectory group was calculated using the (number of deceased individuals in a trajectory group) and (total number of all individuals in that trajectory group) (fig. 4).
- Univariate and multivariate analyses were used to explore factors associated with viremic trajectories (table 1). No interactions were included. Variables were selected based on results from a comprehensive adherence literature review.

RESULTS

- We observed long-term probability patterns of HIV care engagement in DC-WIHS, and classified three distinct patterns (fig 1):
  - Non-viremic HIV treatment careers or individuals who were unlikely to have detectable HIV RNA viral load over time.
  - Intermittently viremic HIV treatment careers or individuals who were likely to have both detectable and undetectable HIV RNA viral load over time.
  - Sustained viremic HIV treatment careers or individuals who were likely to have detectable HIV RNA viral load over time.

RESULTS CONTINUED

- With a less strict and more clinically sensitive detection limit, we also observed three distinct long-term probability patterns of HIV care engagement in the DC-WIHS (fig 2):
  - A “dose-response” effect was seen in the cumulative years of viremia by viremic state, with the highest cumulative years of viremia amongst sustained viremic and lowest among non-viremic groups (fig 3).

- Similarly, we observed an association between trajectory groups and mortality with significantly higher mortality observed in sustained viremic groups compared with intermittently viremic or non-viremic groups (fig 4).

- With more strict (≥50 c/mL), and less strict (≥1000 c/mL) detection limits, trajectory analyses supported the existence of HIV treatment careers, and revealed some variables associated with viremic careers in the DC-WIHS.
- At the ≥1000 c/mL detection limit, a convergence between non-viremic and intermittently viremic careers was observed (fig 2). This is possibly due to improved medical, behavioral and other outreach measures in recent years.
- The mortality analysis showed that survival for viremic groups varied from other careers (fig 4). Intermittently viremic careers had relatively similar mortality to non-viremic careers, which likely reflects that for survival receiving some antiretroviral drugs may be better than not receiving any.
- These results may not be applicable to more resource-constrained settings, or representative of male populations and other ethnic groups living with HIV in the U.S.
- However, these results are likely representative of women of color as one of the most disproportionately HIV-affected demographic groups in the U.S.
- Future studies will include life-history interviews and/or focus groups exploring factors contributing/discouraging long-term care engagement.

DISCUSSION AND CONCLUSION

- With more strict (≥50 c/mL), and less strict (≥1000 c/mL) detection limits, trajectory analyses supported the existence of HIV treatment careers, and revealed some variables associated with viremic careers in the DC-WIHS.
- At the ≥1000 c/mL detection limit, a convergence between non-viremic and intermittently viremic careers was observed (fig 2). This is possibly due to improved medical, behavioral and other outreach measures in recent years.
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- Future studies will include life-history interviews and/or focus groups exploring factors contributing/discouraging long-term care engagement.

REFERENCES


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