REFINING CLINICAL RETENTION METRICS TO REFLECT THE REALITIES OF HIV CARE IN NORTH AMERICA

Elisa Yazdani, MS[1], Amber Hackstadt, PhD[1], Alicia Rector, MS[1], Keri N. Althoff, PhD, MPH[2], Jess Edwards, PhD, MPH[3], Kelly A. Gebo, MD, MPH[2], John Gill, MB, MSc[4], Brenna Hogan, MPH[5], Michael Horberg, MD, MAS[6], Seble Kassaye, MD, MS[7], Catherine Lesko, PhD, MPH[5], Viviane Lima, PhD, MSc[8], Sonia Napravnik, PhD, MPH[3], & Peter F. Rebeiro, PhD, MHS[1] for the North American AIDS Cohort Collaboration on Research and Design (NA-ACCORD)

1. Vanderbilt University, Department of Biostatistics, Nashville, TN; 2. Johns Hopkins University School of Medicine, Baltimore, MD; 3. University of North Carolina at Chapel Hill, Department of Epidemiology, Chapel Hill, NC; 4. University of Calgary School of Medicine, Calgary, AB; 5. Johns Hopkins University Bloomberg School of Public Health, Department of Epidemiology, Baltimore, MD; 6. Kaiser Permanente Mid-Atlantic States, Washington, DC; 7. Georgetown University, Washington, DC; 8. British Columbia Centre for Excellence in HIV/AIDS, Vancouver, BC

Contact:
Peter Rebeiro, PhD, MHS
p.rebeiro@vumc.org

BACKGROUND

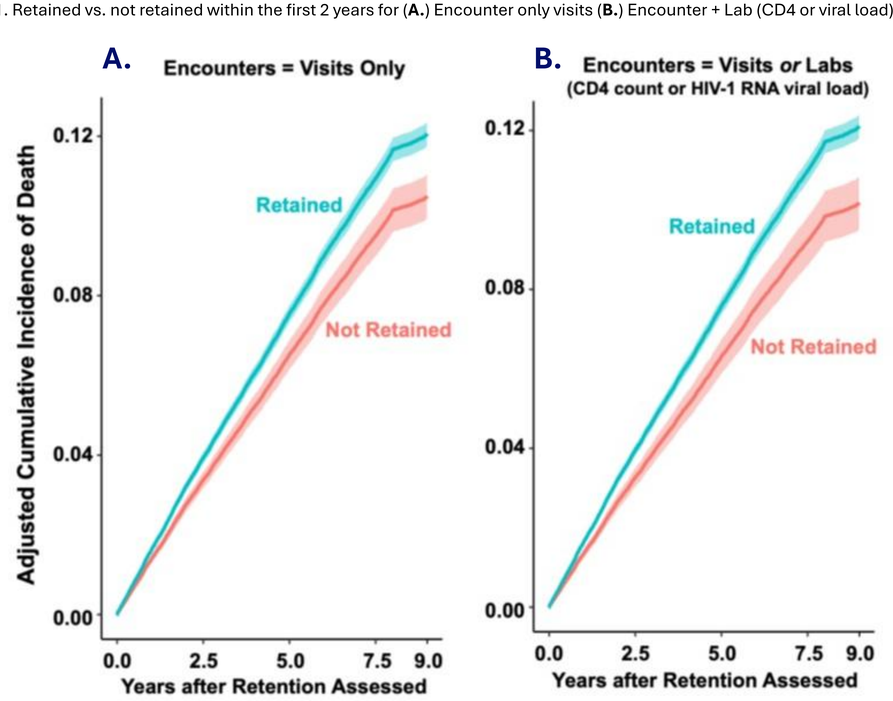
- Retention in clinical care is a quality-of-care indicator and necessary component of the HIV care continuum
- Recent advancement of ART medications and changes in care during the COVID-19 pandemic may have shifted how well traditional definitions of retention capture quality-of-care
- Recent research indicates that those not attending regular clinical visits may be healthier, due to viral stability and thus requiring fewer visits
- Explored the association between the **traditional definition of retention** and mortality

METHODS

- **Population:** Adult (≥18 years old) PWH enrolling at 13 NA-ACCORD clinical cohorts from 2010-2021
  - Excluded those that died within first 2 years of entering the study
- **Retention:** At least 2 encounters within 12 months, ≥ 90 days apart, in both of the first 2 years after study entry
  - *Encounter-only*: Visits are solely based on visits with clinicians (in-person or tele-health)
  - *Encounter + Labs*: Visits are based on visits with clinicians and CD4 + viral load labs
    - All visits for person-year period are anchored to the first visit with a clinician
- **Outcome:** All-cause Mortality
  - Ascertainment relied on cohort specific practices, which included SSDI and NDI linkage
- **Statistical Analysis:**
  - Multivariable Cox Regression Model, to estimate hazard ratios and 95% confidence intervals (CIs) for mortality by retention status
  - Models adjusted for baseline age, birth sex, race/ethnicity, HIV transmission risk, CD4 count (cells/uL, nearest entry, ≤ 90 days before to ≤ 60 days after), viral suppression (HIV-1 RNA <200 copies/mL at final encounter in both of the 2 years following entry), enrollment year, and site, with follow-up starting 2 years after study entry

Common clinical retention definitions fail to discriminate patterns of engagement in care that should predict key outcomes like all-cause mortality; retention metrics should be refined to improve their utility

Figure. Adjusted cumulative incidence of death for those people with HIV enrolled in clinical care within the NA-ACCORD from 2010-2021. Retained vs. not retained within the first 2 years for (**A.**) Encounter only visits (**B.**) Encounter + Lab (CD4 or viral load) visits



ACKNOWLEDGEMENTS

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. This work was supported by National Institutes of Health grants U01AI069918, F31AI124794, F31DA037788, G12MD007583, K01AI093197, K01AI131895, K23EY013707, K24AI065298, K24AI118591, K24DA000432, KL2TR000421, N01CP01004, N02CP055504, N02CP91027, P30AI027757, P30AI027763, P30AI027767, P30AI036219, P30AI050409, P30AI050410, P30AI094189, P30AI110527, P30MH62246, R01AA016893, R01DA011602, R01DA012568, R01 AG053100, R24AI067039, U01AA013566, U01AA020790, U01AI038855, U01AI038858, U01AI068634, U01AI068636, U01AI069432, U01AI069434, U01DA03629, U01DA036935, U10EY008057, U10EY008052, U10EY008067, U01HL146192, U01HL146193, U01HL146194, U01HL146201, U01HL146202, U01HL146203, U01HL146204, U01HL146205, U01HL146208, U01HL146240, U01HL146241, U01HL146242, U01HL146245, U01HL146333, U24AA020794,U54MD007587, UL1RR024131, UL1TR000004, UL1TR000083, Z01CP010214 and Z01CP010176; contracts CDC-200-2006-18797 and CDC-200-2015-63931 from the Centers for Disease Control and Prevention, USA; contract 90047713 from the Agency for Healthcare Research and Quality, USA; contract 90051652 from the Health Resources and Services Administration, USA; grants CBR-86906, CBR-94036, HCP-97105 and TGF-96118 from the Canadian Institutes of Health Research, Canada; Ontario Ministry of Health and Long Term Care; and the Government of Alberta, Canada. Additional support was provided by the National Institute Of Allergy And Infectious Diseases (NIAID), National Cancer Institute (NCI), National Heart, Lung, and Blood Institute (NHLBI), Eunice Kennedy Shriver National Institute Of Child Health & Human Development (NICHD), National Human Genome Research Institute (NHGRI), National Institute for Mental Health (NIMH) and National Institute on Drug Abuse (NIDA), National Institute On Aging (NIA), National Institute Of Dental & Craniofacial Research (NIDCR), National Institute Of Neurological Disorders And Stroke (NINDS), National Institute Of Nursing Research (NINR), National Institute on Alcohol Abuse and Alcoholism (NIAAA), National Institute on Deafness and Other Communication Disorders (NIDCD), and National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK).

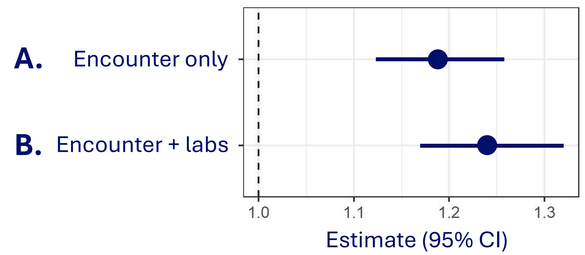


Figure. Results from Multivariable Cox Regression model for hazard ratios risk of mortality with (**A.**) Encounter only visits (**B.**) Encounter + Lab (CD4 or viral load) visits

RESULTS

- Among 95,428 PWH contributing 546,805 person-years, median baseline age was 47 years (IQR: 37-55), 84% were male, 44% non-Hispanic black, 35% men who have sex with men, 7% people who inject drugs, and 5-year mortality risk was 11.4%
- Early retention was 69% by the visit-only metric and 74% by the visit-or-laboratory metric
- The **Figure** above shows (**A.**) 19% increase in the risk of mortality among those retained in care within the first 2 years vs. not retained and (**B.**) the 24% increase in the risk of mortality among those retained in care within the first 2 years vs. not retained
- The **Figure** to the left shows those who were retained were at a higher risk of death.
- 5-year cumulative incidence for (**A.**) retained is 9%, not-retained is 6%; for (**B.**) retained is 9%, not-retained is 7%

Limitations and Next Steps

- This is an observational study and though we controlled for baseline confounders in regression models, residual confounding may still be present
- We will next include additional time-varying covariates that could impact various clinical factors and therefore the outcome
- We will also consider additional outcomes, e.g., viral suppression

CONCLUSIONS

- Frequent interactions with HIV in current era may be more indicative of clinical and non-clinical needs
- Retention metrics should be re-operationalized to better capture patterns of engagement in care that predict key clinical outcomes