Characterization of Epidemiology and Care Outcomes of HIV in Georgia Amidst Ongoing Regional Conflict

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Background

Fastest growing HIV epidemics in Europe are in Russia & Ukraine[1]

Conflict in Ukraine has led to significant population displacement in Eastern Europe, impacting regional HIV epidemiology[2,3]

- For example, Poland recently experienced:
  - 15% increase in people living with HIV (PLWH) receiving services
  - Introduction of HIV-1 subtype A6 into largely subtype B region

Impact of this population displacement on epidemiology of HIV and associated infections in Georgia remains unclear

Methods

This cross-sectional study aimed to characterize HIV risks, molecular epidemiology, & associated infections among PLWH receiving care at the T. Tsertsvadze Infectious Diseases, AIDS, & Clinical Immunology Research Center in Tbilisi, Georgia

Aimed to enroll up to 650 PLWH ≥ 18 years of age into four mutually exclusive groups:

- Up to 400 taking antiretroviral therapy (ART) & receiving care at IDACIRC
- Up to 100 who have never taken ART
- Up to 50 from Abkhazia (Russian-occupied region of Georgia)
- Up to 100 from non-Georgian Eastern European countries

Data collection includes demographics, health & sociobehavioral factors, HIV viral load (VL) with sequencing for those with VL ≥1000 copies/mL, CD4 lymphocyte count, & associated infection testing

Adjusted risk ratios (aRR) and 95% confidence intervals (CI) calculated for health & sociodemographic factors associated with unsuppressed (>1000 copies/mL) versus suppressed (≤1000 copies/mL) HIV VL with log-binomial regression, and low-level viremia (LLV; HIV VL 20-1000 copies/ml) versus VL <20 copies/ml or not detected with adjusted Robust Poisson regression.

Figure 1. Map depicting location of Tbilisi, Georgia

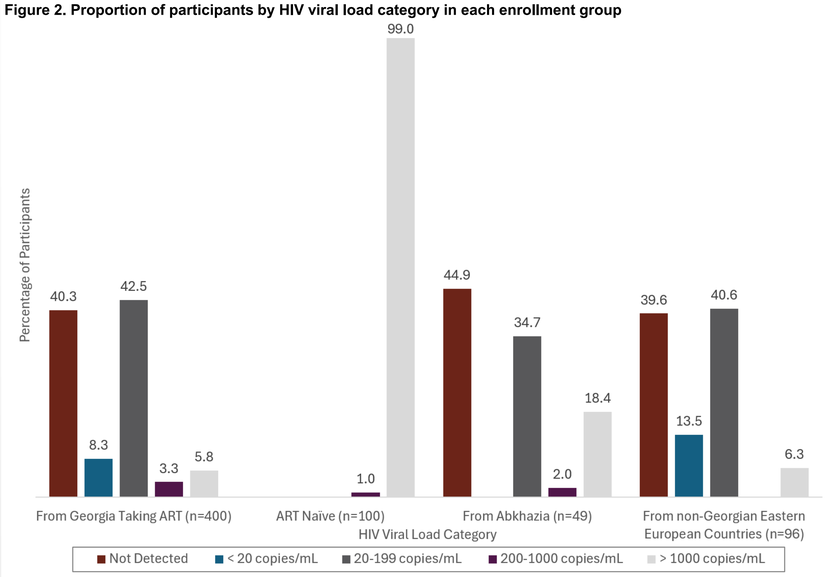
Results

Participant accrual occurred February 2025 – March 2026

- 645 participants enrolled (99.2% of target)

Median age 38 years (interquartile range 30-48 years), 24% female

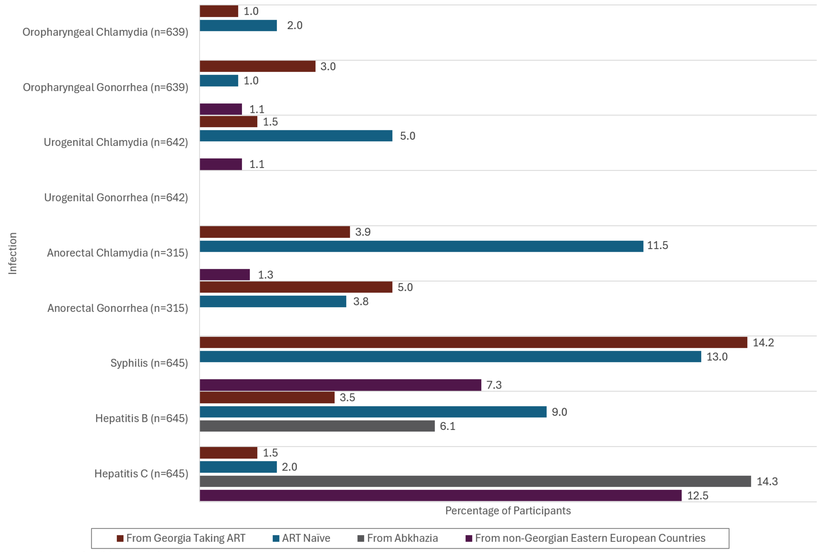
Figure 2. Proportion of participants by HIV viral load category in each enrollment group



Among 133 participants with sequenced HIV:

- 90.2% subtype A6, 6.8% subtype B, 2.3% CRF02_AG/B, & 0.8% subtype F
- 123 (92.5%) with HIV drug resistance mutations detected
  - 117 (95.1%) with integrase strand transferase inhibitor (INSTI) resistance mutations
    - L74i integrase polymorphism detected in the majority (115, 98.3%)

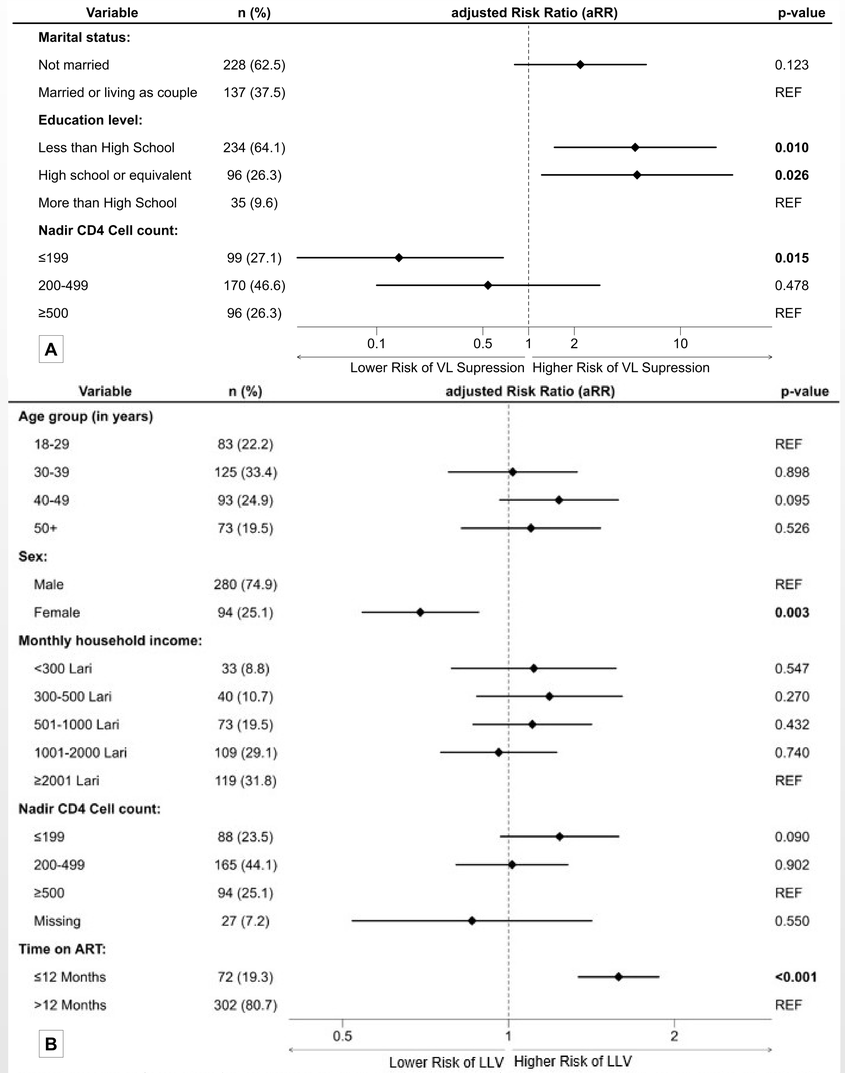
Figure 3. Prevalence of associated infections among participants by enrollment group



n = total number of participants tested

Results

Figure 4. Sociodemographic & health factors associated with viral load suppression (A) & low-level viremia (B)



Independent models were run for each outcome (viral load suppression and low-level viremia). Potential variables of interest included: enrollment group, age, sex, education level, marital status, employment status, household income, time on antiretroviral therapy (ART), current ART regimen, HIV genotype, CD4 count (cells/mm3) at nadir, & presence/absence of L74i integrase polymorphism. Variables that consisted of >2 categories were converted into binary indicator variables (0/1) with pre-specified reference groups. Variables to include in the model for each outcome were identified using independent grouped Least Absolute Shrinkage and Selection Operator (LASSO) regressions. The variables that were selected from each grouped LASSO were used in the corresponding regression model to understand factors related to each outcome. REF = referent group; VL = viral load; LLV = low-level viremia.

Discussion

High viral suppression rates suggest effective HIV care in Georgia

Subtype A6 predominance with lower prevalence of other subtypes reflects regional epidemic influence

Characteristic subtype A6 INSTI polymorphism L74i is associated with virologic failure with long-acting cabotegravir; whether it drives this risk & the implications for cabotegravir use in the region are unclear

Association of low CD4 count at nadir with unsuppressed VL & less time on ART with LLV not unexpected. However, association of lower education level with suppressed VL & female sex with lower risk of LLV presents an opportunity to further investigate potential supportive factors in these groups to enhance HIV care efforts

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