Rate and risk of transmissible HIV RNA (≥1500 copies/mL) among adults on ART

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Abstract #904

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Background

- Durable viral suppression protects individual health and reduces onward transmission of HIV.
- Durability of viral suppression may differ among key populations of U.S. persons living with HIV, including men who have sex with men (MSM), Black adults, Hispanic adults, and persons who inject drugs (PWID).
- ***The objective of our study was to estimate the durability of viral suppression in the decade after ART initiation among key US populations and over calendar time.***

Methods

Source population: NA-ACCORD US and Canadian clinical cohorts
- Similar demographic characteristics to persons living with HIV in the US (according to CDC HIV Surveillance data) and the Medical Monitoring Project (a nationally-representative survey of adults with HIV who are receiving outpatient medical care in the US and Puerto Rico)

Study population: NA-ACCORD participants
- Initiate ART from 1 Jan 2005 to 31 Dec 2013 while under observation in the NA-ACCORD study; and
- Had a suppressed HIV RNA (<1500 copies/mL) at 2 years after initiation

Outcome: Transmissible HIV viral load (defined as ≥1500 copies/mL)
- A single measurement of plasma HIV RNA ≥1500 copies/mL occurring ≥2 years after ART initiation. This threshold was chosen based on findings from previous studies that demonstrated it better identified an increased probability of transmission while excluding "blips" and thus better estimated a meaningful break in viral suppression.

Covariates to define key populations
- Age estimated from year of birth, sex at birth, race/ethnicity from self-report, HIV transmission risk (MSM, PWID)

Statistical approach
- Adults were followed from 2 years after ART initiation to the first of the following:
  - Date of first HIV RNA ≥1500 copies/mL (event of interest)
  - Date of death
  - Loss to follow up (date of last CD4 or HIV RNA measurement + 1.5 years)
  - Administrative censoring at 31 Dec 2015
- Incidence rates and 95% confidence intervals, and cumulative incidence curves were estimated for key populations

Results

Table 1. Characteristics of participants, by plasma HIV RNA ≥1500 copies/mL

	<1500 copies/mL	≥1500 copies/mL
	18,214	4,807
Characteristics	**N%**	**N%**
Age (years) at study entry		
<40	6,197 34%	1,869 39%
40-49	5,714 31%	1,553 32%
50-59	4,352 24%	1,058 22%
>=60	1,951 11%	327 7%
Sex		
Female	2,687 15%	990 21%
Male	15,526 85%	3,817 79%
Intersexed	1 0%	0 0%
Race		
Black	6,299 35%	2,361 49%
Non-Black	9,988 55%	2,159 45%
Other/unknown	1,927 11%	287 6%
HIV transmission risk		
IDU	2,207 12%	1,036 22%
Non-IDU	9,746 54%	2,463 51%
Other/unknown	6,261 34%	1,308 27%
CD4 at ART initiation (cells/mm^3)		
<200	6,231 34%	2,154 45%
200-349	6,061 33%	1,549 32%
350-499	3,580 20%	708 15%
>=500	2,168 12%	344 7%
Missing	174 1%	52 1%
Median years from study entry to end of follow-up (IQR)	3 (2 – 5)	1 (0 – 2)

Figure 1. Incidence rates, 95% confidence intervals, and cumulative incidence estimates of plasma HIV RNA ≥1500 copies/mL, by calendar year after two years of viral suppression following ART initiation

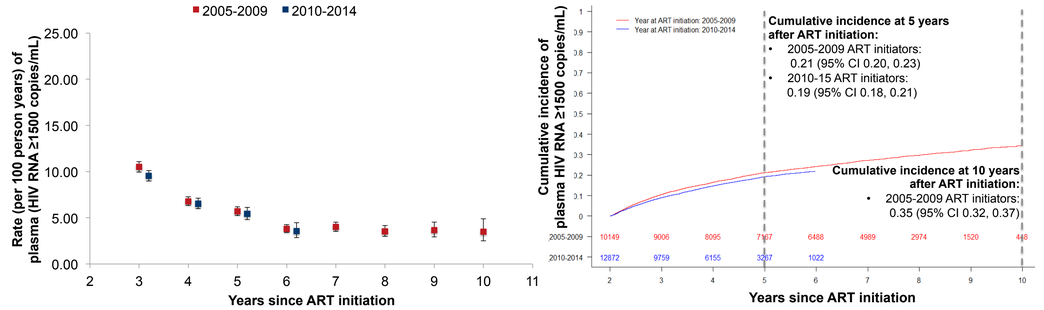
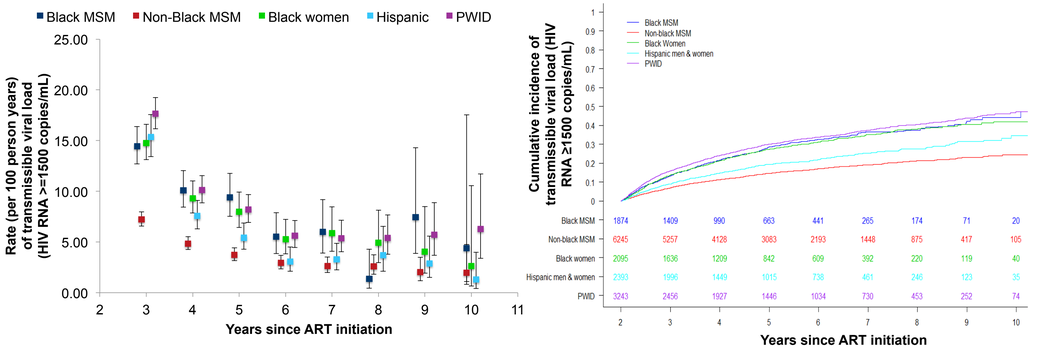


Figure 2. Incidence rates, 95% confidence intervals, and cumulative incidence estimates of plasma HIV RNA ≥1500 copies/mL by key populations in the US HIV epidemic after two years of viral suppression following ART initiation



Conclusions

- From 2005-15, durability of viral suppression differed among key populations the first decade after ART; tailored interventions remain essential to improve durability of viral suppression.
- Despite continued evolution in therapies, overall durability of viral suppression was similar among those initiating ART in 2005-9 & 2010-14.

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