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Increases in life expectancy among treated HIV-positive individuals in the United States and Canada, 2000-2007

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Background

- Combination antiretroviral therapy (ART) has significantly increased survival among HIV-positive adults in the United States and Canada, but gains in life expectancy for this region have not been characterized.
- We aim to estimate temporal changes in life expectancy among HIV-positive adults prescribed ART from 2000-2007 in the U.S. and Canada.

Methods

- Participants were from the North American AIDS Cohort Collaboration on Research and Design (NA-ACCORD), aged ≥20 years and treatment-naive before initiating ART.
- Mortality rates were calculated using participants' person-time from 1 January 2000 or ART initiation until death, loss to follow-up, or administrative censoring at 31 December 2007.
- Life expectancy at age 20, defined as the average number of additional years that a person of a specific age will live (assuming the current age-specific mortality rates remain constant), was estimated using abridged life tables.

Results

- The crude mortality rate was 19.8/1,000 person-years, among 22,937 individuals (23% female; 62% non-white) contributing 82,022 person-years and 1,622 deaths.
- Life expectancy at age 20 increased from 36.1 [standard error (SE) 0.5] to 51.4 [SE 0.3] years from 2000-02 to 2006-07.
- Men and women had comparable life expectancies in all periods except the last (2006-07), in which men were expected to live 6.1 years longer.
- Life expectancy was lower for individuals with a history of injection drug use, non-whites, and in patients with baseline (pre-ART) CD4 counts <350 cells/mm^3.

Table 1. Demographic and clinical characteristics of participants, overall and for those contributing to each calendar period (n=22,937)

	Period 1 (2000-2002) n (%)	Period 2 (2003-2005) n (%)	Period 3 (2006-2007) n (%)	Overall (2000-2007) n (%)
Age at start of ART				
20-34	2774(25)	3331(21)	3036(17)	5808(25)
35-44	4938 (45)	6670 (42)	6679 (38)	9622 (42)
45-54	2486 (23)	4248 (27)	5737 (32)	5692 (25)
55+	743 (7)	1464 (9)	2307 (13)	1823 (8)
Sex				
Female	2509 (23)	3733 (24)	4206 (24)	5352 (23)
Male	8432 (77)	11980 (76)	13553 (76)	17585 (77)
Mode of transmission				
Injection drug use	2470 (23)	3219 (20)	3513 (20)	4684 (20)
MSM	4324 (40)	5990 (38)	6911 (39)	8842 (39)
Other	4147 (38)	6504 (41)	7335 (41)	9411 (41)
Race				
White	4410 (40)	6214 (40)	6808 (38)	8643 (38)
Non-white	6531 (60)	9499 (60)	10953 (62)	14294 (62)
CD4 cell count at start of ART (cells/mm^3)				
<350	7578 (69)	11402 (73)	12884 (73)	16615 (72)
≥350	3363 (31)	4311 (27)	4875 (28)	6322 (28)

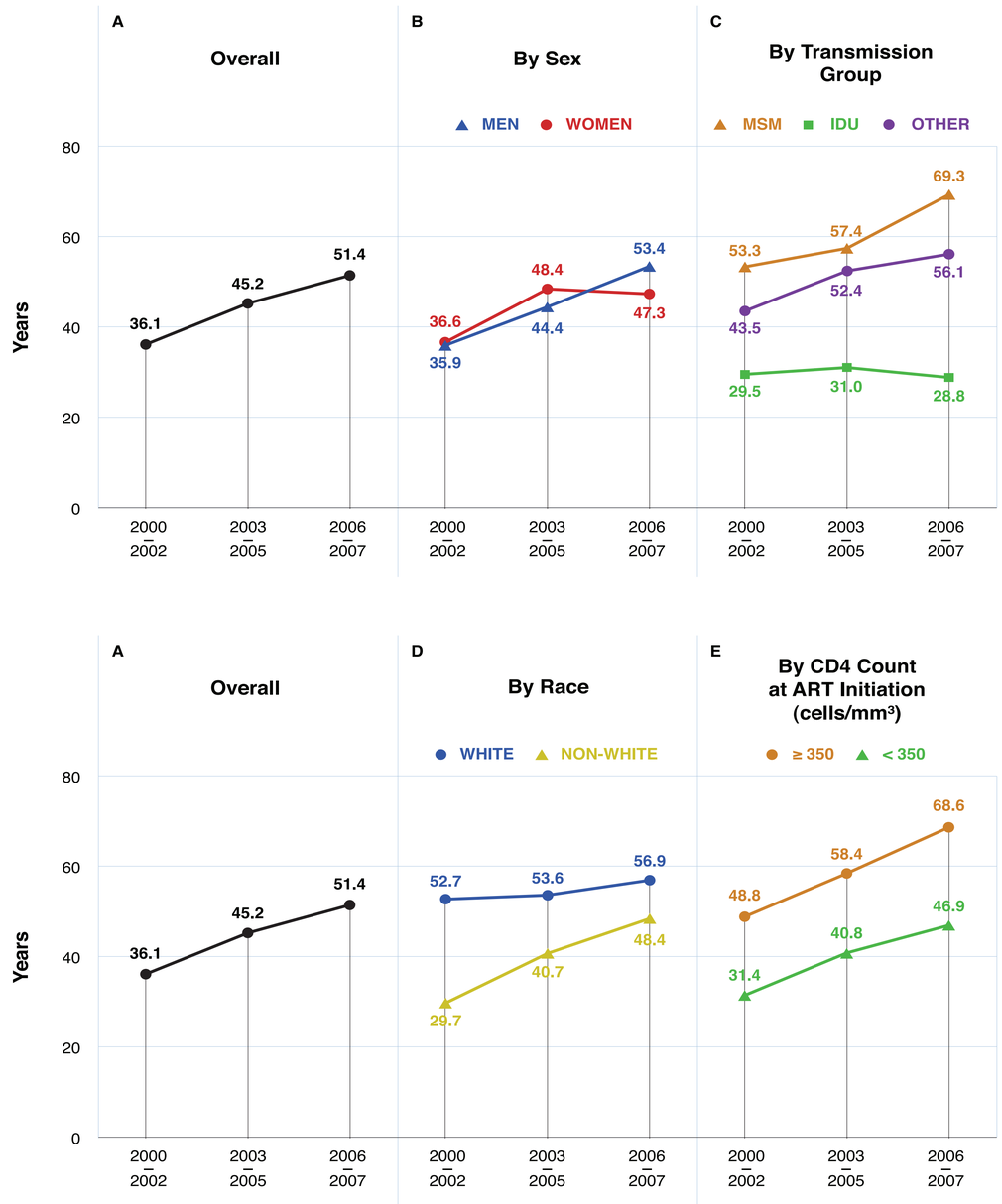
Note: MSM, *men who have sex with men*; ART, *combination antiretroviral therapy*

Table 2. Population size, deaths, and mortality rate, overall and by select categories, 2000-2007

	Population	Deaths	Person Years	Unweighted mortality rate* (95% CI**)
Overall	22,937	1,622	82,022	19.8 (18.8, 20.8)
Sex				
Female	5,352	366	19,171	19.1 (17.2, 21.2)
Male	17,585	1,256	62,851	20.0 (18.9, 21.1)
Mode of transmission				
Injection drug use	4,684	598	17,326	34.5 (31.9, 37.4)
Men who have sex with men	8,842	403	32,139	12.5 (11.4, 13.8)
Other transmission groups	9,411	621	32,508	19.1 (17.7, 20.7)
Race				
White	14,294	539	33,717	16.0 (14.7, 17.4)
Non-white	8,643	1,083	48,305	22.4 (21.1, 23.8)
CD4 cell count at start of ART (cells/mm^3)				
<350	16,615	1,351	58,003	23.3 (22.1, 24.6)
≥350	6,322	271	24,019	11.3 (10.0, 12.7)

*Per 1,000 person-years
**CI: Confidence Interval

Figure 1. Mid-point life expectancy estimates at age 20 years in three calendar periods, overall and by select characteristics, 2000-2007



Conclusions

- A 20-year-old HIV-positive individual on ART in the U.S. or Canada is expected to live into their early 70s, a life expectancy approaching that of the general population. Disparities by sex, race, HIV transmission risk group, and CD4 count exist.

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NA-ACCORD North American AIDS Cohort Collaboration on Research and Design

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