

Life expectancy of HIV-positive individuals in the HAART era (1996-2010) compared to life expectancy in the general population: a longitudinal analysis of the COAST cohort from British Columbia (BC), Canada

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Background

- In British Columbia (BC), Canada, there is free and universal access to combination antiretroviral therapy (ART) for all HIV-positive individuals who are indicated for treatment.
- We characterized the life expectancy of a cohort of HIV-positive adults (≥19 years) in BC compared to a random sample of the general BC adult population from 1996-2010.

Methods

- The Comparative Outcomes And Service utilization Trends (COAST) study is a new population-based study that involves confidential data linkages between the BC Centre for Excellence in HIV/AIDS (BC-CfE), which contains data on demographics, antiretroviral (ARV) drug use, AIDS-defining, immunologic and virologic outcomes for HIV-positive individuals receiving ART in BC, and Population Data BC, a BC data holding and service provider that holds longitudinal data (including mortality data) for all four million BC residents.
- Our analysis employed de-identified data from individuals aged 19 years or over during study follow-up (1996-2010) who were:
 - HIV-positive and had ever accessed at least one ARV or ART
 - Randomly selected individuals (1%) from the general population of BC
- Abridged life tables were constructed to estimate life expectancy for these individuals stratified by sex and time period.
- We defined life expectancy as the average number of additional years that an individual in a given age category will live, assuming the current age-specific mortality rate remains constant over the course of the individual's lifetime.

Results

- 8,620 and 47,683 individuals contributed 66,601 and 472,443 person-years (PY) in the HIV-positive cohort (83% men) and the general population cohort (51% men), with a crude mortality rate (per 1,000 PY) of 30.5 (95% CI: 29.2, 31.9) and 8.4 (95% CI: 8.1, 8.7) respectively.
- Over the study period, life expectancy at age 20 was lower in the HIV-positive cohort (+ 32.1 years, standard error [SE] = 0.6) compared to the general population (+ 61.3 years, SE = 0.1). HIV-positive men had a higher life expectancy at 20 years (+ 32.2 years, SE = 0.8) compared to HIV-positive women (+29.4 years, SE=0.8).
- Conversely, men in the general population had a lower life expectancy at 20 years (+ 59.1 years, SE = 0.1) compared to women (+ 63.4 years, SE = 0.1) (Figure 1).

Table 1. Key cohort characteristics

Cohort	n	% Male	Person years (PY)	Crude mortality rate (/1000 PY)	Life Expectancy at age 20
HIV-positive	8,620	83%	66,601	30.5	32.1
General population	47,683	51%	472,443	8.4	61.3

- Over time (1996-2000, 2001-2005, 2006-2010), life expectancy at age 20 increased from + 26.4 (SE = 1.0) to + 33.4 (SE = 0.7) to + 36.3 (SE = 1.6) years in the HIV-positive cohort. The general population life expectancy at age 20 was relatively stable, changing from + 61.7 (SE = 0.2) to + 62.1 (SE = 0.1) to + 61.5 (SE = 0.2) years during this time period.

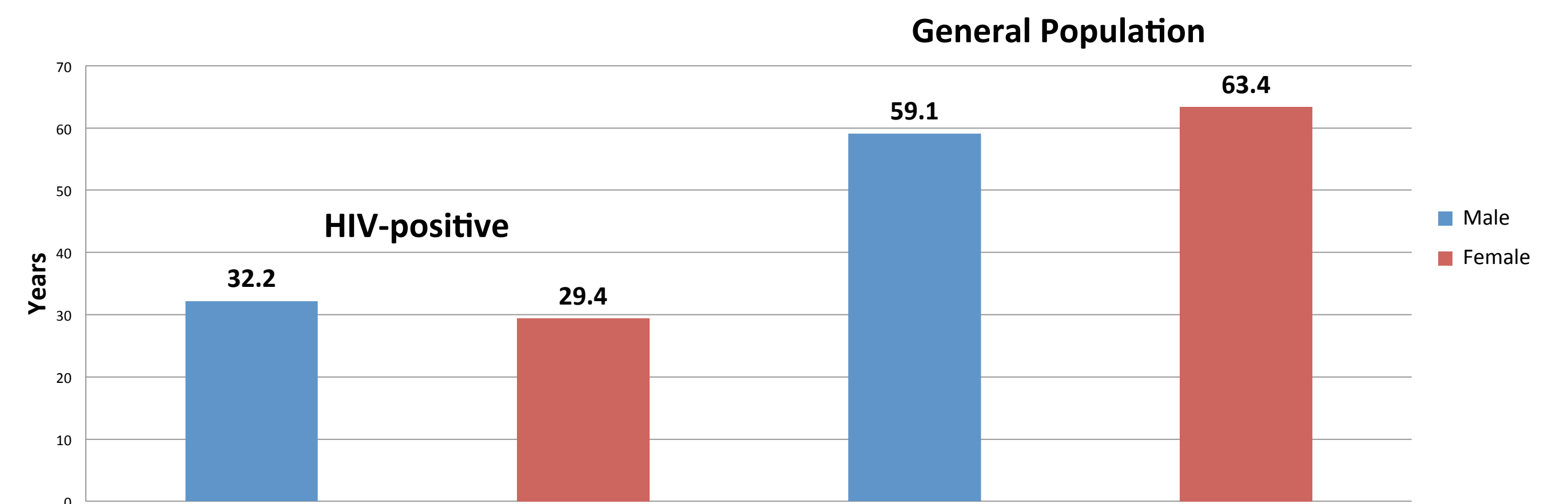


Figure 1. Life expectancy at 20 years stratified by sex over the study period between HIV-positive individuals and the general BC adult population

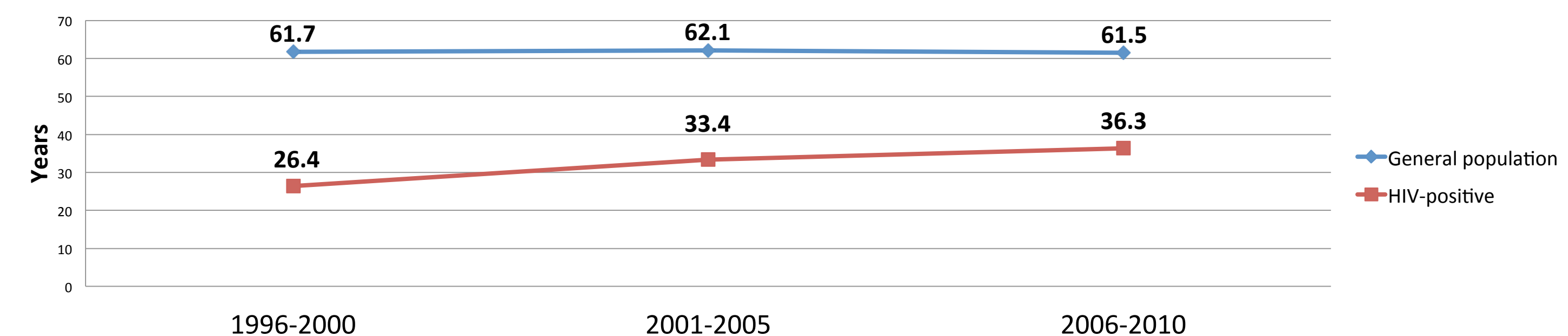


Figure 2. Life expectancy at age 20 across time periods 1996-2000, 2001-2005, 2006-2010

Discussion

- Life expectancy improved over time with increasing use of ART from 1996 onwards. Our estimates for the HIV-positive cohort are attenuated compared to the recent life expectancy analyses in other cohorts, because we have not restricted to those just initiating modern ART and included individuals starting on suboptimal regimens in 1996.
- Future analyses will consider ARV-naïve individuals initiating modern ART with the aim of creating estimates more relevant to the current context of antiretroviral care.

Acknowledgements

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