TUPE300

Timing of combination antiretroviral therapy initiation in Canada, 2000-2010

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Background

- Combination antiretroviral therapy (ART) significantly decreases morbidity and mortality, as well as HIV transmission.
- Using a multi-site Canadian cohort we aim to (1) characterize the timing of ART initiation from 2000-2010, and (2) determine factors associated with late initiation of treatment.

Methods

- Participants from the Canadian Observational Cohort (CANOC), a cohort of HIV-positive individuals 18+ years of age initiating ART after 2000 in three Canadian provinces were included.
- **Late initiation** was defined as a **baseline CD4 count <200 cells/mm³** or a **baseline AIDS-defining illness**.
  - → Sensitivity analysis: CD4 criteria updated to <350 cells/mm³ in 2008
- Temporal trends were assessed using the Cochran-Armitage test and negative binomial regression, and factors independently associated with late initiation were determined using logistic regression.

Results

- 7,638 participants (19% female) were included, of median age 40 years (IQR 34-46) (**Table 1**).
- In multivariable analysis, late initiation was more likely among: British Columbians (AOR=1.50, 95% CI=1.30-1.74) and Ontarians (AOR=1.30, 95% CI=1.13-1.49); persons with injection drug use history (AOR=1.34, 95% CI=1.18-1.53); older individuals (AOR=1.14 per decade, 95% CI=1.09-1.20); and individuals starting ART in earlier calendar years (AOR=1.16 per year, 95% CI=1.14-1.17) (**Table 2**).
- The median baseline CD4 count increased from 190 cells/mm³ (IQR 80-330) in 2000 to 300 cells/mm³ (IQR 200-400) in 2010 (p<0.001) (**Figure 1**).
- In 2010, 27% of patients started with a CD4 count <200 cells/mm³, and 63% with a CD4 count <350 cells/mm³ (**Figure 2**).

Table 1. Baseline demographic and clinical characteristics of included participants (n=7638)

Characteristic	
Age (median, IQR)	40 (34-46)
Female	1465 (19%)
Province	
British Columbia	3588 (47%)
Ontario	2626 (34%)
Quebec	1424 (19%)
HCV-positive	
Yes	1916 (27%)
No	5194 (73%)
History of IDU	
Yes	1755 (32%)
No	3658 (67%)
CD4 cell count (median, IQR)	210 (110-300)
Log_{10} viral load (median, IQR)	4.9 (4.3-5.0)

Table 2. Factors associated with late ART initiation

Variable	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Sex				
Male	1.00			
Female	1.05 (0.93-1.17)	0.422		
Province				
Quebec	1.00		1.00	
British Columbia	1.47 (1.30-1.67)	<0.001	1.50 (1.30-1.74)	**<0.001**
Ontario	1.17 (1.02-1.33)	0.020	1.30 (1.13-1.49)	**<0.001**
HCV-positive	1.49 (1.34-1.66)	<0.001		
History of IDU				
No	1.00		1.00	
Yes	1.56 (1.39-1.75)	<0.001	1.34 (1.18-1.53)	**<0.001**
Unknown	0.82 (0.74-0.92)	<0.001	0.76 (0.67-0.85)	**<0.001**
MSM	0.65 (0.58-0.72)	<0.001		
Age (per decade)	1.12 (1.07-1.17)	<0.001	1.14 (1.09-1.20)	**<0.001**
Year started ART	0.87 (0.85-0.88)	<0.001	0.87 (0.85-0.88)	**<0.001**

Figure 1. Median CD4 count and the percentage with late initiation at pre-ART baseline, 2000-2010

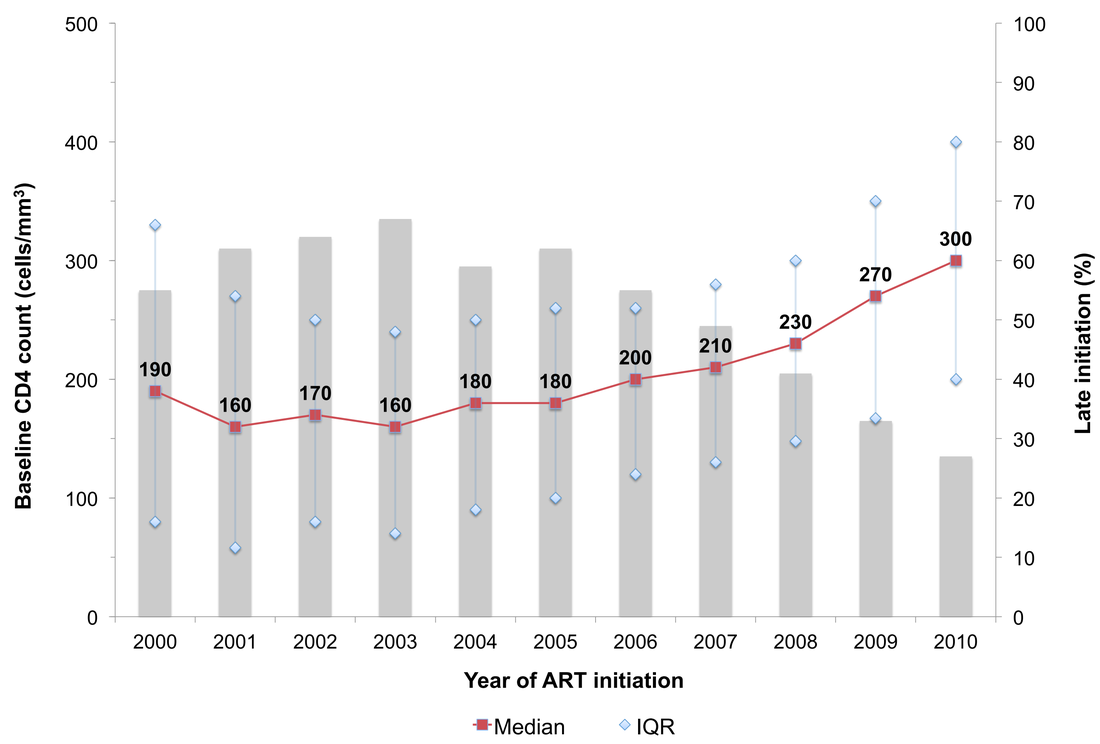
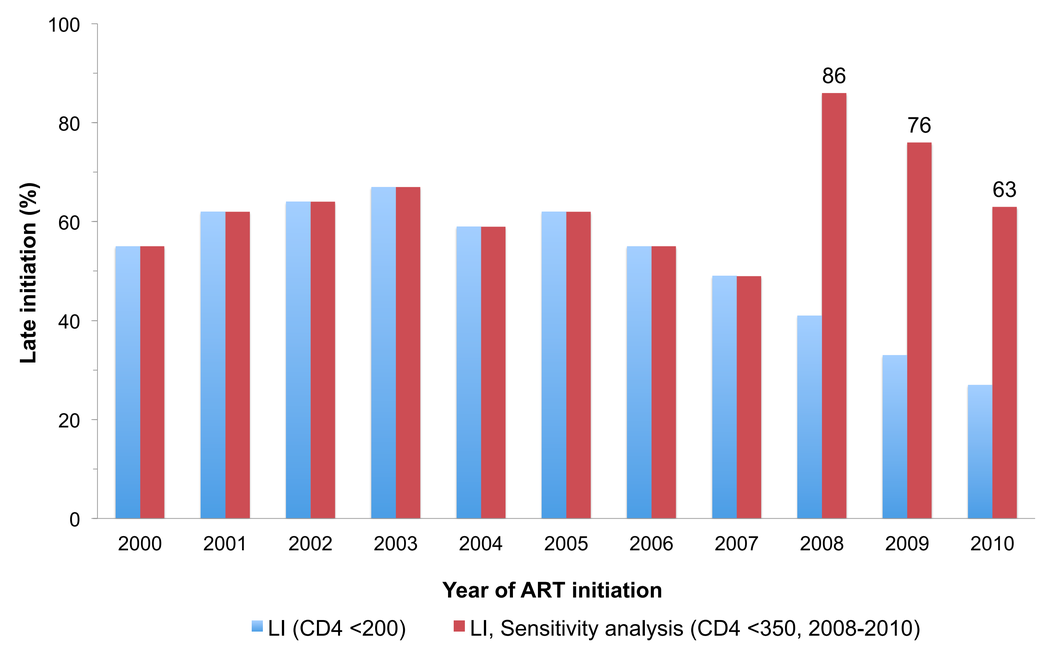


Figure 2. Sensitivity analysis: percentage with late initiation at pre-ART baseline, 2000-2010



Conclusions

- Although improving, CD4 count at first initiation of ART in CANOC remains below treatment guidelines.
- There is a need to expand HIV testing and subsequent linkage to care, to decrease morbidity and mortality, as well as HIV transmission in Canada.

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