

Comparative Analysis of Late Initiation of HIV Treatment between Canada and the UK, 2000-2011

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Background

- Combination antiretroviral therapy (ART) outcomes are dependent on a number of patient-, provider-, and structural-level factors, which vary between the UK and Canada.
- We described trends in CD4 cell count at ART initiation from 2008 to 2011 in both countries, and identified factors associated with timing of ART initiation



Methods

- The CANOC Collaboration is a pan-provincial collaborative cohort of HIV+ individuals initiating ART naively in Canada: 10,000 participants, 8 cohorts from British Columbia, Ontario and Quebec.
- The UK CHIC Study is a collaborative cohort of 45,000 individuals from 19 participating centers within England and Scotland, which evaluate treatment uptake and clinical outcomes of HIV+ individuals accessing care in the UK.

A subset of data from the Canadian Observational Cohort (CANOC) Collaboration and UK Collaborative HIV Cohort (CHIC) Study were merged.

Study inclusion criteria:

- Aged ≥18 years,
- Initiated ART between 2000 and 2011,
- Presumed ART-naïve at treatment initiation.
- Presumed infected via sexual transmission (to improve cohort comparability)

Outcomes:

“Late initiation” was defined as a baseline CD4 count ≤200 cells/mm³ or a baseline AIDS-defining illness. A sub-analysis raised the CD4 count threshold to <350 cells/mm³ for those starting ART in 2008 onwards, reflecting changes to WHO treatment guidelines.

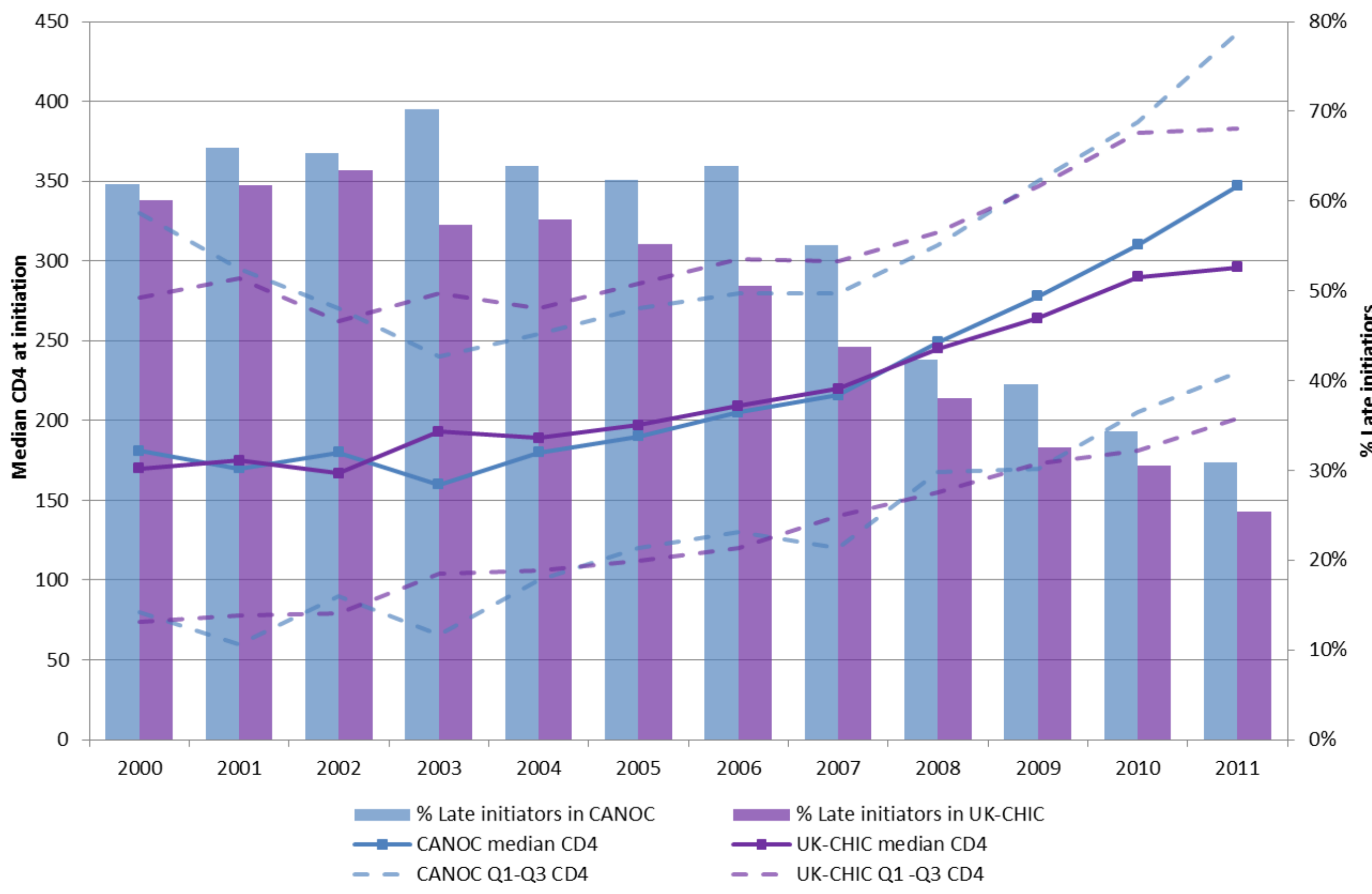
Statistical methods: Temporal trends in CD4 count at ART initiation were assessed using negative binomial regression, and factors independently associated with late initiation were determined using logistic regression.

Results

Table 1: Descriptive statistics for demographic and clinical variables (n=20,192)

Characteristic	Category	Total	Not late n(%)	Late n(%)	p-value
Gender	Male	15084	8032 (75.8)	7052 (73.5)	<0.001
	Female	5108	2567 (24.2)	2541 (26.5)	
Hepatitis C positive	No	10444	6045 (94.7)	4399 (94.0)	0.1
	Yes	616	336 (5.3)	280 (6.0)	
Hepatitis B positive	No	10341	6108 (95.5)	4233 (92.8)	<0.001
	Yes	620	290 (4.5)	330 (7.2)	
MSM risk	No	8091	3614 (34.1)	4477 (46.7)	<0.001
	Yes	12101	6985 (65.9)	5116 (53.3)	
Era	2000-2003	6739	2634 (24.9)	4105 (42.8)	<0.001
	2004-2007	7858	4093 (38.6)	3765 (39.2)	
	2008-2011	5595	3872 (36.5)	1723 (18.0)	
Cohort	CANOC	3638	1740 (16.4)	1898 (19.8)	<0.001
	UK CHIC	16554	8859 (83.6)	7695 (80.2)	

Figure 1: Median CD4 at ART initiation and proportion of late initiators



The median baseline CD4 count increase was the following:

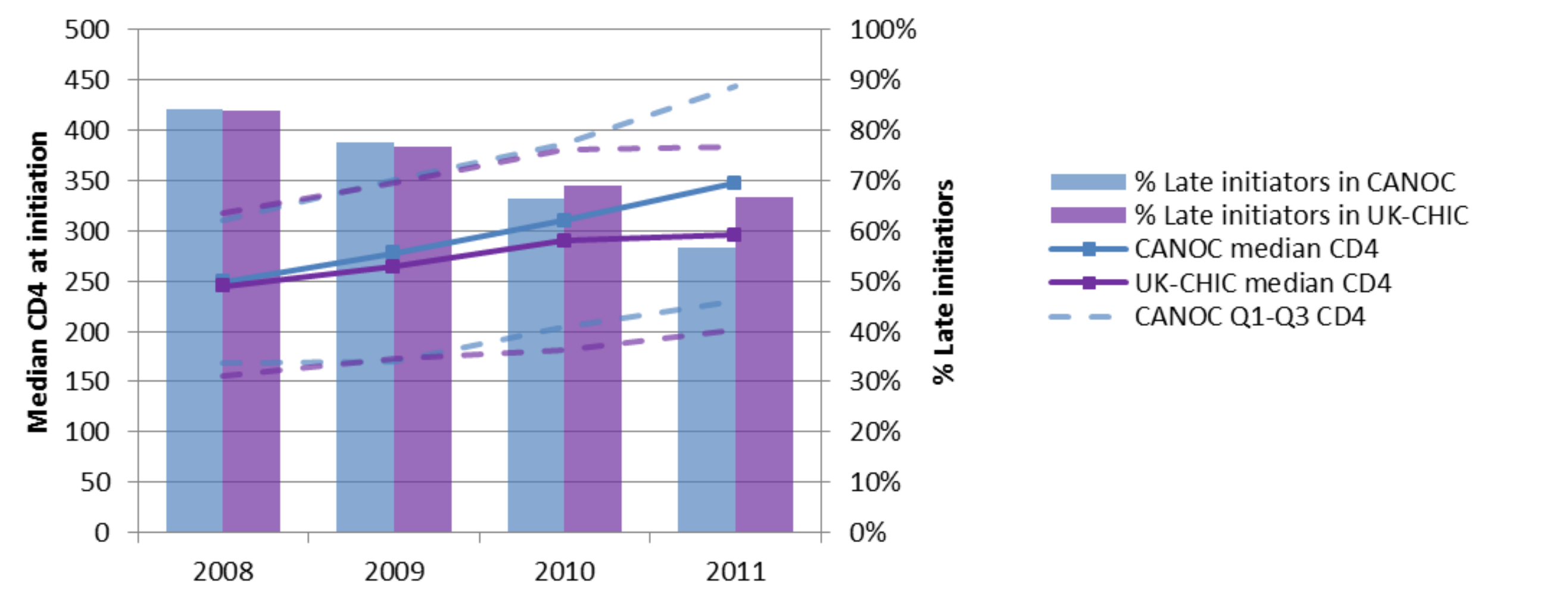
- CANOC: from 181 cells/mm³ in 2000 to 347 cells/mm³ in 2011
- UK CHIC: from 170 cells/mm³ in 2000 to 296 cells/mm³ in 2011 (both p<0.001)

Table 2: Logistic regression model for late initiation

Variable	ART initiation at CD4 count ≤ 200 cells/mm ³ , 2000-2011 n=20,192		ART initiation at CD4 count ≤ 350 cells/mm ³ , 2008-2011 n=7,821	
	Adjusted Odds Ratio (95% CI)	p-value	Adjusted Odds Ratio (95% CI)	p-value
Cohort				
UK CHIC	1	<0.001	1	0.6
CANOC	1.46 (1.35-1.58)		0.97 (0.85-1.10)	
Gender X sexual orientation				
MSM	1		1	<0.001
Heterosexual male	2.55 (2.34-2.78)	<0.001	1.99 (1.67-2.38)	
Female	1.47 (1.37-1.57)	<0.001	1.48 (1.29-1.70)	
Age (per decade)	1.20 (1.16-1.24)	<0.001	1.07 (1.01-1.13)	<0.001
Year therapy started (per year earlier than 2012)	1.17 (1.16-1.18)	<0.001	1.42 (1.36-1.49)	<0.001

A sub-analysis with a 350 cells/mm³ CD4 count threshold for the 2008-2011 period showed that cohort of origin was not a significant factor anymore, gender had a similar effect, while that of age was attenuated and that of starting therapy earlier was strengthened; these latter two might be due to proagressive adoption of new guidelienes.

Figure 2: Proportion of individuals with CD4 counts ≤ 350 at ART initiation, 2008-2011



Conclusions

Although increasing consistently over time, the median CD4 at ART initiation remained below treatment guidelines in both cohorts in 2011. Although UK CHIC has a smaller proportion of late initiation overall (≤200 cells/mm³), CANOC had a lower proportion from 2008 to 2011 with the new CD4 criteria of ≤350 cells/mm³.

Late HIV diagnosis is a critical factor to late initiation, and further investigation is needed to assess its impact.

*United Kingdom Collaborative HIV Cohort (UK CHIC)

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