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Background

CANOC was developed to evaluate the impact of antiretroviral care on the health and well being of individuals living with HIV in Canada.

This collaboration provides opportunities for cohorts across the country to work together on questions of national significance and examine research problems that these cohorts alone could not answer.

The team has also establish training, research and mentoring opportunities for graduate students, post-doctoral fellows and clinicians across the country interested in this area of research.

Methods

CANOC is comprised of 31 investigators with diverse skill sets from leading Canadian research institutions in three provinces across the country.

Cohort participants must have started naive on three or more antiretroviral drugs on/after January 1st, 2000 and have a baseline HIV-1 RNA measure and CD4 cell count within 6 months prior to the start of therapy.

Data extraction is performed at the participating sites and sent to a central location where a relational database is built and managed.

Participants that have postal codes or dissemination areas are linked to the 2006 Census at the dissemination area level via Statistic Canada's postal code conversion file. The variables of interest from the Census include median income, prevalence of low income, education, unemployment and aboriginal identity.

Results

Table 1 displays the sociodemographic characteristics of the CANOC participants. As of April 2009, CANOC consisted of 4790 individuals.

Table 2 displays the clinical characteristics of CANOC Participants. Median baseline CD4 counts and viral load measurements vary by province, but the overall median CD4 and viral load measurements were 192 cells/mm³ and 50,500 c/mL, respectively.

Table 3 shows a comparison of CANOC participants and the general population, broken down by CANOC census catchment areas. People enrolled in CANOC generally have lower income, higher unemployment rates and are more likely to have finished high school compared to the general population. The analysis is reflective of a largely urban population and can only be generalized by the catchment area of the individuals.

	BC	Ontario	Quebec	Overall
Male	1505 (78.8%)	1324 (81.2%)	1022 (81.1%)	3851 (80.4%)
Missing/Unknown	0	0	2	2
Baseline Age (Years)				
Median	40	40	40	40
IQR	34 - 47	34 - 46	34 - 46	34 - 46
Missing/Unknown	0	0	17	17
Injection Drug Use Ever	490 (25.7%)	121 (7.5%)	158 (12.5%)	769 (16.1%)
Missing/Unknown	0	666	125	791
Known Ethnicity	1332 (69.7%)	699 (43.1%)	167 (13.3%)	2198 (45.9%)
Aboriginal Descent*	149 (11.2%)	18 (2.6%)	4 (2.4%)	171 (7.8%)

*Aboriginal descent includes those individuals who are of "mixed race and have identify as descending from First Nations people

	B.C.	Ontario	Quebec	Overall
Naive Start of ARV				
Year 2000-2002	810 (42.4%)	512 (31.6%)	372 (29.5%)	1694 (35.4%)
Year 2003-2005	922 (48.3%)	583 (36.0%)	417 (33.1%)	1922 (40.1%)
Year 2006-2008	178 (9.3%)	525 (32.4%)	471 (37.4%)	1174 (24.5%)
Baseline CD4 Count (cells/mm³)				
N	1910	1615	1253	4778
Median	170	210	220	192
IQR	70 - 250	116 - 306	130 - 299	100 - 280
Missing	0	5	7	12
Baseline pVL (c/mL) Overall				
N	1910	1620	1260	4790
Median	>100,000	67,841	53,370	80,500
IQR	39,200 - >100,000	16,534 - >100,000	12,479 - >100,000	21,300 - >100,000
First Therapy				
Total	1910	1620	1260	4790
Nuc 2, NN	837 (43.8%)	664 (41.0%)	465 (36.9%)	1966 (41.0%)
Nuc 2, PI Boosted	851 (44.6%)	546 (33.0%)	463 (36.7%)	1860 (38.8%)
Nuc 2, PI Single	174 (9.1%)	166 (10.2%)	135 (10.7%)	475 (9.9%)
Nuc 3	47 (2.5%)	21 (1.3%)	102 (8.1%)	170 (3.5%)
Other	1 (0.1%)	223 (13.8%)	95 (7.6%)	319 (7.6%)
Baseline AIDS	290 (15.2%)	130 (7.8%)	154 (12.2%)	574 (12.0%)
Unknown/No ADI				
Diagnosis	735	1426	1060	4023
Tested for Hep C antibodies	1263 (66.1%)	1507 (93.0%)	923 (73.3%)	3152 (65.8%)
Missing/Unknown	647	113	337	1638
Positive for HCV antibodies (Among those tested)	566 (44.8%)	185 (11.7%)	106 (27.3%)	857 (26.5%)
Follow-up Time (months)				
Median	41.3	38.2	37.7	39.3
IQR	38.8	33.0	30.7	35.0
IQR	20.9 - 59.8	14.0 - 60.2	11.3 - 58.3	16.2 - 59.4

Province	% Aboriginal Identity			Median Income (\$)			Prevalence Low Income (%)			Unemployment (%)			High School Education (%)		
	CANOC	General	p-value	CANOC	General	p-value	CANOC	General	p-value	CANOC	General	p-value	CANOC	General	p-value
BC (1606)	2.2	4.8	<0.001	24,284	24,867	0.138	16.7	13.3	<0.001	5.9	6.0	0.192	82.5	80.1	<0.001
ON (1337)	0.5	2.0	<0.001	26,790	27,258	0.030	15.4	11.7	<0.001	7.0	6.4	<0.001	84.7	77.8	<0.001
QC (1288)	0.0	1.5	<0.001	21,220	24,430	<0.001	22.2	12.3	<0.001	8.2	7.0	<0.001	78.5	75.0	<0.001
CANADA	0.8	3.8	<0.001	23,982	25,615	<0.001	17.6	11.6	<0.001	6.7	6.6	0.266	81.9	76.2	<0.001

Conclusions

Canada is unique in that it has diverse and significant regional differences in populations affected by HIV. Through CANOC, we can examine variations in clinical management and treatment outcomes within a universal health care system and attempt to improve clinical outcomes of individuals living with HIV and those living in vulnerable communities.

CANOC consists of the largest amount of current Canadian patient information ever collected.

Implementing successful research will require knowledge of patient-important clinical issues; population-level issues and issues likely to be of relevance to policy-makers.

CANOC aims to develop a nationally and internationally recognized and policy-relevant program of research in HIV therapeutics and population and public health

Our efforts to improve research dissemination to physicians and persons living with HIV as well as to improve knowledge translation of research on HIV/AIDS therapeutics into provincial, national and international HIV/AIDS treatment guidelines will contribute to global recognition of the CANOC collaboration.

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For more information about CANOC, please visit www.canoc.ca

