Socio-economic and Clinical Factors Associated With Late Initiation of Antiretroviral Therapy: Preliminary Results From the ENGAGE Cohort Study

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Background

- Despite clinical guidelines recommending treatment at any stage in HIV disease, many individuals delay antiretroviral therapy (ART) initiation.

- In this analysis we sought to identify determinants of late ART initiation and monitor the characteristics of individuals initiating ART.

- Results identify facilitators and barriers to linkage to HIV care in a setting where ART is provided free of charge and there is universal health care coverage.

Methods

- People living with HIV and newly initiating ART (within the previous year) in the province of British Columbia (BC) were enrolled in ENGAGE, a prospective cohort study nested within the provincial Drug Treatment Program at the BC Centre for Excellence in HIV/AIDS.

- Participants completed a 1-hour structured survey collecting demographic information, attitudes toward ART, and use of healthcare and support services.

- The primary outcome, 'late initiation of ART', was defined as CD4 cell count ≤500 cells/μL at time of initiation.

- To be included in this analysis individuals need to have a CD4 test result on record prior to ART initiation. The median number of days between the participant's CD4 test date and ART initiation was 18 days [Q1-Q3:1-31 days]. Engage participants enrolled between December 6, 2013 and December 31, 2014 were included in this analysis.

- Bivariate analyses (Wilcoxon rank-sum and Fisher's exact test) were used to test the association between late initiation and socio-demographic and clinical characteristics. Multivariable logistic regression was used to determine factors associated with late ART initiation.

Results

Table 1: Bivariate Comparison of Participants Initiating ART Late Versus Early (n=61)

Variable		Early Initiators >500 cells/μL (n=30; 49%)	Late Initiators ≤500 cells/μL (n=31; 51%)	p-value
Age (median, Q1-Q3)		32 (28-43)	41 (36-46)	0.039
Monthly Personal Income (median, Q1-Q3)		1500 (950-3200)	1000 (600-1800)	0.015
Birth Sex	Male Female	29 (97) 1 (3)	23 (74) 8 (26)	0.026
Sexual Orientation	Homosexual Heterosexual Other	19 (65) 8 (28) 2 (7)	15 (50) 11 (37) 4 (13)	0.466
Born in Canada	Yes No	22 (73) 8 (27)	24 (77) 7 (23)	0.772
Aboriginal Ethnicity	Yes No	8 (27) 22 (73)	8 (26) 23 (74)	1.000
Completed College	Yes No	13 (54) 11 (46)	14 (56) 11 (44)	1.000
Incarcerated (ever)	Yes No	9 (31) 20 (69)	5 (16) 26 (84)	0.227
Homeless (ever)	Yes No	15 (50) 15 (50)	11 (35.5) 20 (64.5)	0.306
Hepatitis C Infection (ever)	Yes No	6 (20) 24 (80)	6 (19) 25 (81)	1.000
Injection drug use (ever)	Yes No	8 (27) 22 (73)	7 (23) 24 (77)	0.772
Employed	Yes No	16 (53) 14 (47)	8 (26) 23 (74)	0.037
Mental Health Diagnosis (ever)	Yes No	16 (53) 14 (47)	13 (42) 18 (58)	0.446
Did you want to start ART after diagnosis	Yes No	19 (63) 11 (37)	21 (72) 8 (28)	0.580

Results are n (%) for categorical variables.

Table 2: Multivariable analysis: Factors associated with late ART initiation (n=61)

Variable	Adjusted Odds Ratio	95% Confidence Interval
Age at Interview Date (per 10 years increase)	3.03	1.41 – 6.53
Monthly Personal Income (per CAD 1,000 decrease)	1.88	1.17 – 3.00
Incarcerated Ever (No vs. Yes)	8.33	1.51 – 45.45

- Overall, 51% of our participants were late ART initiators. The median CD4 cell count at time of initiation was 490 cells/μL [Q1-Q3: 290-600].

- Enrollees were 15% female, had a median age of 40 years [Q1-Q3: 29-45], 26% reported Aboriginal ancestry, and had a median monthly personal income of 1,100 CAD [Q1-Q3: 628-2,500].

- In our multivariable model, older age [Adjusted Odds Ratio (AOR)=3.03, 95% Confidence Interval (CI) 1.41-6.53, per 10 year increase], lower monthly personal income [AOR= 1.88, 95% CI 1.17-3.00, per 1,000 CAD increase] and not having a history of incarceration [AOR= 8.33, 95% CI 1.51-45.45) were all found to be positively associated with late ART initiation.

- Our finding of incarceration being negatively associated with late ART initiation is interesting and warrants further study. Our small sample size and number of participants with a history of incarceration should be noted when interpreting this result.

- Individuals who participated in ENGAGE initiated ART with significantly higher CD4 cell counts, and were more likely to report Aboriginal ancestry or Caucasian ethnicity than individuals who were eligible for the study but did not participate.

Table 3: Comparison of Study Participants to the Eligible Population (n=61)

Variable		ENGAGE Participants (n=61)*	Eligible individuals (n=479)	p-value
CD4 Cell Count at Time of ART Initiation (median, Q1-Q3)		490 cells/μL (290-600 cells/μL)	380 cells/μL (200-560 cells/μL)	0.016
Age (median, Q1-Q3)		39 (30-45)	40 (31-50)	0.118
Gender	Male Female	52 (85) 9 (15)	398 (83) 81 (17)	0.855
Aboriginal	Yes No	16 (26) 45 (74)	44 (9) 435 (91)	<0.001
Caucasian	Yes No	32 (52.5) 29 (47.5)	97 (20) 382 (80)	<0.001

Results are n (%) for categorical variables.

Conclusion

- In this analysis, over half of the individuals initiating ART in BC initiated late, with disparities observed by income level, age at time of ART initiation and history of incarceration.

- Continued efforts are needed to engage individuals in care earlier in order to fully benefit from high-quality HIV care.

- Due to our current small sample size we have low power to detect differences between early and late initiators.

- Recruitment for the ENGAGE Study is ongoing.

Acknowledgements

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