

# Examining the impact of a health equity-oriented approach on treatment adherence in an integrated HIV care facility in Vancouver, Canada

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## Background

- Gross social inequities experienced by people living with HIV (PLHIV) may impact antiretroviral therapy (ART) uptake and adherence.
- Interventions targeting health inequities may help cultivate health enabling environments and ultimately enhance treatment outcomes.
- The Dr. Peter Centre (DPC) is a low-threshold health care facility for PLHIV who experience concurrent barriers to achieving optimal therapeutic outcomes, including poverty, addictions and mental health concerns. In order to alleviate the stigma associated with these barriers and improve client engagement, DPC staff incorporate a health-equity oriented approach to care.
- There is no documented evidence of the impact of the DPC's health equity-oriented approach on the health outcomes of clients. Here we report on the relationship with adherence to ART.

## Methods

- A longitudinal cohort of DPC clients enrolled in the program since February 2011 provides the data frame for this analysis.
- Socio-demographic, relevant social determinants of health, and social service utilization data are ascertained through a 1-hour structured interviewer-administered survey. Clinical variables are obtained through longitudinal linkages with the provincial Drug Treatment Program.
- The survey adapts eight Health Equity Indicators (HEI) designed to measure clients' perception of the DPC based on a Likert response scale. Principal Component (PC) Analyses were conducted to explore the correlation between the HEI and convert responses into 2 PC and 2 outlier variables (Figure 1).
- Fisher's Exact and Wilcoxon rank-sum Tests were conducted in bivariate analyses to examine associations between optimal ART adherence, defined as  $\geq 95\%$  in the 12 months prior to interview date, and salient explanatory variables, including the HEI.
- Univariable models were fitted using logistic regression to determine factors associated with optimal adherence. Model selection was conducted based on Type III p-values and AIC minimization.

**Table 1: Characteristics of Dr. Peter clients by adherence level n=97**

Variable		Not optimally adherent (n=50; 51.6%)	Optimally Adherent (n=47; 48.5%)	p-value
Age (median, Q1-Q3)		47 (39-52)	50 (43-53)	0.1794
Total Household Income (median, Q1-Q3)		\$1,100 (1090-1111)	\$1,103 (1100-1272)	0.079
Birth Sex	Male	38 (76.0%)	39 (83.0%)	0.458
	Female/ Other	12 (24.0%)	8 (17.0%)	
Sexual Orientation	Homosexual	28 (56.0%)	26 (55.3%)	1.000
	Heterosexual	22 (44.0%)	21 (44.7%)	
Aboriginal Identity	Yes	16 (33.3%)	15 (31.9%)	1.000
	No	32 (66.7%)	32 (68.1%)	
CESD-10 <sup>1</sup> (median, Q1-Q3)		12 (6-17)	10 (6-13)	0.284
Primary medical provider knows me as a person	Yes	35 (75.4%)	38 (84.4%)	0.306
	No	12 (25.5%)	7 (15.6%)	
Resiliency scale <sup>2</sup>	Low	42 (84.0%)	30 (63.8%)	0.008
	High	8 (16.0%)	17 (36.2%)	
AMAS <sup>3</sup> (median, Q1-Q3)		47 (44-51)	50 (47-53)	0.036
Virologic response	No	33 (66.0%)	22 (46.8%)	0.067
	Yes	17 (34.0%)	25 (53.2%)	

<sup>1</sup>CESD-10: Centre for Epidemiologic Depression Scale, cut-off score of 10 or higher indicates presence of significant depressive symptoms.

<sup>2</sup>Resiliency scale: series of statements assessing resiliency, a score of greater than 91 indicates a high resiliency.

<sup>3</sup>AMAS: Antiretroviral Medication Attitude Scale: series of questions related to HIV treatment.

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At the Dr. Peter Centre do you feel...	Principal Component Analysis
<ul style="list-style-type: none"> <li>Welcomed by staff</li> <li>Like you belong</li> <li>Cared for by staff</li> <li>Respected by staff</li> </ul>	<b>Principal component 1: staff relationships</b>
<ul style="list-style-type: none"> <li>Engaged</li> <li>Emotionally supported</li> </ul>	<b>Principal component 2: response to environment</b>
<ul style="list-style-type: none"> <li>Respected by peers</li> </ul>	<b>Outlier: peer relationships</b>
<ul style="list-style-type: none"> <li>Safe</li> </ul>	<b>Outlier: safe</b>

**Figure 1: Health Equity Indicators and Principal Component Analysis**

## Results

- Between February 2014 and April 2015, baseline interviews were completed with 121 participants, of which 97 had been on ART for at least one year, allowing for analysis of adherence data.
- Median age of the enrollees was 48 years [Q1-Q3: 42-53], 20.6% were female, 32.6% identified as Aboriginal and had a median annual household income of \$1,100 CAD [Q1-Q3: \$1,100-\$1,167].
- Participants accessed ART for a median of 2,958 days [Q1-Q3 1,483-5,156], calculated from first ART date to interview date. Overall, 48.5% were optimally adherent to ART in the year prior to interview.
- In bivariable analyses, the only variable significantly associated with optimal treatment adherence was a greater sense of resiliency (Unadjusted Odds Ratio = 2.97, 95% Confidence Interval = 1.14-7.78)
- None of the HEI attained significance. Age, virologic response, and a higher score on the Attitude to Medication Adherence Scale (AMAS) attained marginal significance.
- Good internal consistency (Cronbach's alpha = 0.77) was found in the HEI when excluding the questions, "do you feel respected by peers?" and "do you feel safe?" Two Principal Components were found within the HEI.

**Table 2: Bivariable analyses: Factors associated with adherence**

Variable	Unadjusted Odds Ratio	95% Confidence Interval
Age	1.03	0.98-1.08
HEI_staff	0.88	0.52-1.50
HEI_environment	0.86	0.53-1.40
HEI_feel respected by peers	0.56	0.23-1.36
HEI_feel safe	0.57	0.16-2.10
CESD-10	0.96	0.90-1.02
Resiliency	2.97	1.14-7.78
AMAS	1.06	0.99-1.14

## Discussion

- Over half of the study participants in the DPC cohort did not achieve optimal adherence levels in the 12 months prior to interview date in a context where HIV care, including ART, is available free of charge.
- As organizations adapt an equity-oriented approach to ameliorate these observed disparities, researchers are tasked with developing tools to measure the efficacy of these interventions.
- The HEI fell short in explaining the pervasive disparities in ART adherence. This may be a reflection of the fact that adherence measures represent a time period when the client was not engaged in DPC services, as many study participants were new DPC admissions. Findings from the follow up may help isolate the impact of the HEI over a longer time period.
- In addition, linkages with Dr. Peter Centre administrative data in future analyses will permit the exploration of the HEI as an intermediary variable that mediates the relationship between Dr. Peter Centre client attendance levels and ART adherence.
- The protective effect of resiliency warrants further exploration, as it could be a target of future interventions.

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