No association between 'Treatment as Prevention' comprehension and sexual risk behaviours in a cohort of HIV-positive and HIV-negative men who have sex with men (MSM) in British Columbia, Canada

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Background

In British Columbia, Canada, MSM comprise 45% of the 9,300-13,500 individuals living with HIV and 63% of all new HIV diagnoses (150 out of 238 cases, in 2012).

'Treatment as Prevention' (TasP) is actively promoted as a strategy to both prevent HIV-related disease progression and premature death as well as decrease HIV transmission.

Despite growing public health support and evidence for TasP reducing risk of HIV transmission, little is known about whether key populations, including MSM, are knowledgeable about TasP and it's role as an HIV prevention strategy.

While better understanding of TasP may improve clinical outcomes (e.g., ART adherence and viral suppression) of HIV-infected individuals, there is concern that greater knowledge about TasP could be associated with increased sexual risk behaviour (e.g., unprotected anal intercourse) among both HIV-infected and uninfected individuals.

Study Objective: We measured TasP awareness and investigated socio-demographic, clinical, and behavioural covariates within a cohort of HIV-positive and HIV-negative men who have sex with men (MSM) in Vancouver.

Methods

Study Population: The Momentum Health Study is a prospective cohort study of MSM in the Greater Vancouver Area of BC. Participants are recruited via Respondent Driven Sampling (RDS). Data were analyzed for participants enrolled between Feb 28 2012 and Oct 31 2013.

Data collection: A self-administrated questionnaire collected socio-demographic and risk behavior variables. Clinical variables for the HIV-positive cohort were obtained through clinical screening.

Primary Outcome: Participants were asked if they had heard of TasP and, if so, to provide a definition in their own words. Text responses were coded by two independent reviewers using an *a priori* definition of TasP, which included mention of three factors: ART use; viral load suppression; and HIV transmission prevention. Each participant's TasP knowledge was coded into 1 of 3 categories: (1) 'never heard of TasP'; (2) 'incomplete TasP definition' (0 or 1 TasP factors identified), or (3) 'partial/complete TasP definition' (2 or 3 TasP factors identified). Participants with missing definitions (n=72) or those only describing pre- and post-exposure prophylaxis (PrEP/PEP) (n=45) were excluded.

Statistical Analysis: We compare TasP knowledge across socio-demographic, clinical, and risk behaviour characteristics of participants by 'never heard of TasP', 'incomplete TasP definition', and 'partial/complete TasP definition' using Pearson χ^2 test for categorical variables and Wilcoxon rank-sum test for continuous variables. We used multivariable proportional odds logistic regression to determine independent covariates of TasP knowledge.

Results

Of 502 MSM included in this analysis, 27% were HIV-positive, 75% were Caucasian, and median age was 33 [IQR 25,47]. Overall, 56% never heard of TasP. Of those who heard of TasP, 62% provided an incomplete definition and 38% a partial/complete definition. Participants learned about TasP from community agencies (39%), gay media (36%), friends (29%), doctors (25%), and sexual partners (14%). HIV-positive participants were more likely to have heard of TasP than HIV-negative participants (66% vs. 39% p<0.001).

Table 1: Socio-demographic characteristics by level of TasP Comprehension

	Total n (%)	Never heard of TasP, n(%)	Incomplete TasP Definition, n(%)	Partial/Complete TasP Definition, n(%)	p-value
HIV positive	136 (27)	46 (15)	37 (42)	53 (50)	**<0.001**
Caucasian	376 (75)	214 (70)	68 (76)	94 (89)	**<0.001**
Greater than high school	370 (75)	222 (74)	55 (63)	93 (89)	**<0.001**
Currently employed	319 (64)	201 (66)	42 (46)	76 (72)	**<0.001**
Relationship with regular partner	162 (34)	89 (31)	33 (38)	40 (42)	**0.088**

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Table 1 Continued

	Total, n(%)	Never heard of TasP, n(%)	Incomplete TasP Definition, n(%)	Partial/Complete TasP Definition, n(%)	p-value
Age					
16-24	100 (20)	79 (26)	11 (12)	79 (26)	**<0.001**
25-39	214 (43)	135 (44)	34 (38)	135 (44)	
40+	188 (37)	92 (30)	45 (50)	92 (30)	
Sexual identity					
Gay	425 (84)	259 (85)	72 (80)	94 (89)	**0.046**
Bisexual	49 (10)	32 (10)	11 (12)	6 (6)	
Other	28 (6)	15 (5)	7 (8)	6 (6)	
Neighbourhood					
Downtown / West End	250 (50)	135 (44)	54 (60)	61 (58)	**0.010**
Elsewhere in Vancouver	149 (30)	96 (31)	21 (23)	32 (30)	
Outside of Vancouver	103 (21)	75 (26)	15 (17)	13 (12)	

Table 2: Drug use, sexual and clinical variables by TasP Comprehension

	Total, n(%)	Never heard of TasP, n(%)	Incomplete TasP Definition, n(%)	Partial/Complete TasP Definition, n(%)	p-value
Any drug use in past 6 months	326 (65)	191 (62)	64 (71)	71 (67)	0.279
Party drug use in past 6 months	303 (60)	177 (58)	59 (66)	67 (63)	**0.335**
Injection drug use in past 6 months	38 (8)	25 (8)	7 (8)	6 (6)	**0.669**
No. anal sex partners in past 6 months					
0-1	163 (37)	103 (38)	27 (40)	33 (34)	**0.056**
2-5	151 (36)	99 (37)	26 (38)	26 (27)	
6+	123 (28)	69 (26)	15 (22)	39 (40)	
Unprotected anal sex with opposite or unknown status partner in past 6 months	322 (66)	195 (66)	62 (70)	65 (61)	**0.456**
Current CD4 cell count (HIV+ MSM only)					
<200	11 (8)	7 (16)	2 (6)	2 (4)	**0.212**
200-349	15 (11)	5 (11)	6 (17)	4 (8)	
350+	105 (80)	33 (73)	28 (78)	44 (88)	
Current VL <50 (HIV+ MSM only)	85 (65)	25 (56)	24 (67)	36 (72)	**0.237**

In adjusted analyses: Participants who were HIV-positive (AOR=3.92 [95% CI:2.60-5.90]), Caucasian (AOR=2.31 [95% CI: 1.44-3.73]), and had a regular sexual partner (AOR=1.60 [95% CI:1.08-2.36]) were more likely to report partial/complete TasP awareness. TasP comprehension was not associated with UAI with opposite or unknown status partner (OR=0.90 [95% CI:0.62-1.30], HIV clinical outcomes, or drug use behaviours.

Conclusions

Despite widespread TasP promotion in BC, awareness and understanding of TasP was relatively modest in this study, particularly among HIV-negative MSM. However, such awareness was not associated with sexual risk. It remains critical to strengthen TasP literacy to optimize individual health outcomes and reduce HIV transmission in BC.

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