

Background : Optimizing the use of biomedical risk reduction strategies could significantly reduce HIV infections among MSM. These strategies include the practice of "taking viral load into account." As a prevention strategy, this can be defined as adapting the prevention practices that would normally be used in instances when an HIV-positive partner has an undetectable viral load (fewer than 40 copies per milliliter of blood). For example, sexual partners could decide to forego condom use based on the scientific and medical consensus that HIV is untransmissible if viral load is undetectable. Willingness to use such a strategy may depend on the extent to which sexual partners, regardless of their HIV status, feel confident that it will be effective in preventing HIV transmission. Few studies have focused specifically on consideration of viral load as prevention strategy that involves not simply people living with HIV, but also those who are HIV-negative or unaware of their HIV status.

Method: An online survey was used to gather data on knowledge and use of risk reduction strategies among MSM in Montreal. Between May 2016 and January 2017, 1028 participants responded to the survey. Bivariate analysis and multivariate regression were performed to identify characteristics associated with confidence in the effectiveness of taking viral load into account.

results: respondents

On average, respondents were 39.4 years of age (range 18-75). Just over half of respondents had at least a university degree (56%) and an annual income of CAD\$ 40,000 or more (55%). Most (74%) were HIV-negative, 10% did not know their status, and 15% were HIV-positive, of whom 95% reported an undetectable viral load (see table 1 and table 2).

Table 1. Respondents' characteristics

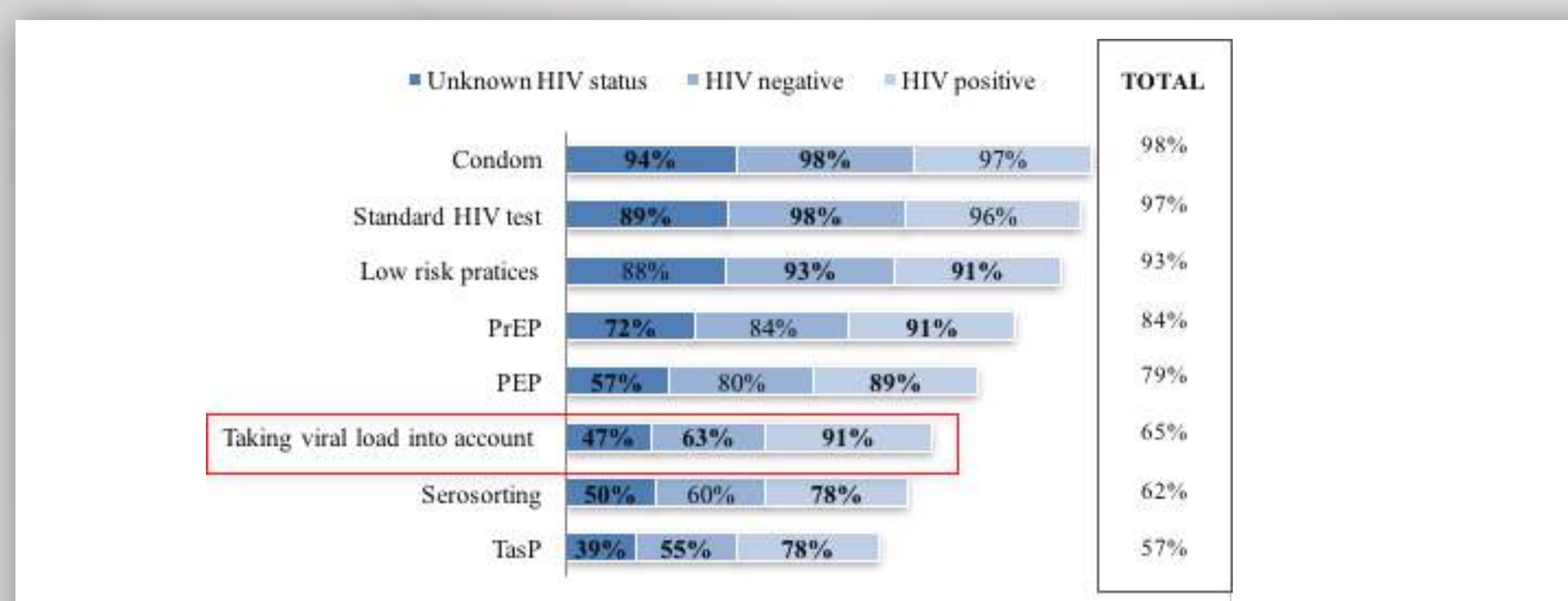
Variables	Respondent's HIV status			Total n=1028
	Unknown n=99 (10%)	Negative n=717 (74%)	Positive n=149 (15%)	
Mean ± Standard deviation				
age (years)	35.6 ± 13.1	38.3 ± 12.7	46.2 ± 11.6	39.4 ± 13.1
N (%)				
Education (≥ university degree)	42 (43.3)	425 (59.5)	68 (45.6)	535 (55.7)
Annual income (≥ \$40 000)	34 (38.2)	387 (56.3)	80 (55.9)	501 (54.5)
Place of birth (Canada)	86 (87.8)	566 (79.2)	115 (77.7)	767 (79.8)
Sexual orientation (gay or homosexual)	76 (77.6)	602 (84.1)	144 (96.6)	822 (85.4)

Table 2. Characteristics of HIV-positive respondents'

Variables	HIV-positive respondents (n=149)
Average number of years since diagnosis (M±SD)	13.8 ± 9.6
Period of the epidemic in which HIV diagnosis was received	N (%)
Pre-HAART (prior to 1996)	37 (25.2)
Post-HAART and pre-Swiss statement (1996 – 2008)	55 (37.4)
Post-Swiss statement (after 2008)	55 (37.4)
Taking HAART	144 (97.3)
Viral load (undetectable)	141 (95.3)

Knowledge of HIV risk reduction strategies Figure 1 presents the risk reduction strategies that respondents reported knowing about. Strategies that nearly all respondents knew about include condoms and lubricant (98%), standard HIV testing (97%) and low risk practices (93%). With respect to biomedical strategies, 84% knew about PrEP, 79% about PEP, 57% about treatment as prevention (TasP), and 65% about taking viral load into account. Compared to respondents with unknown and negative HIV status, HIV positive respondents were more likely to know about this last strategy (91% vs. respectively 47% and 63%, p < 0.0001).

Figure 1. Knowledge of HIV risk reduction strategies according to HIV status



* The proportions shown in bold indicate that a statistically significant difference (<0.05) was observed between knowledge of the strategy and respondents' HIV status.

Confidence in the effectiveness of taking viral load into account as a risk reduction strategy

Table 3 presents the results of chi-square analysis. Of the 65% of respondents who knew about taking viral load into account, 67% were very confident that this is an effective risk reduction strategy. Compared to those with less confidence in its effectiveness, those who were confident were proportionally more likely to have heard about this strategy from a health worker (61% vs. 41%, p < 0.0001) or to have looked up information about it themselves (44% vs. 34%, p = 0.022); to be HIV-positive (30% vs. 10%, p < 0.0001); and to have had an HIV-positive partner in the last year with an undetectable viral load (50% vs. 30%, p < 0.0001). They were also more likely to be very confident about the effectiveness of PEP (89% vs. 77%, p = 0.001) and PrEP (96% vs. 82%, p < 0.0001).

Table 3. Results of bivariate analysis (chi-square): characteristics associated with confidence in the effectiveness of taking viral load into account

Variables	Confidence in the effectiveness		
	Less confident n=167	Very confident n=342	p-value
N (%)			
Heard about this strategy:			
From a health worker (health care professional or community worker)	69 (41.3)	207 (60.5)	<0.0001
By looking up information themselves	56 (33.5)	151 (44.2)	0.022
From personal network (friends or partners)	82 (49.1)	181 (52.9)	0.418
In the media (article, news report, Mobilise! project)	59 (35.3)	117 (34.2)	0.803
Via professional experience (job, studies, activism)	19 (11.4)	57 (16.7)	0.116
Ever use PrEP	27 (18.0)	58 (24.0)	0.164
Access to regular health care professional	116 (78.9)	256 (85.0)	0.104
Respondent's HIV status			
Unknown	14 (8.4)	20 (5.8)	<0.0001
Negative	137 (82.0)	221 (64.6)	
Positive	16 (9.6)	101 (29.5)	
Had an HIV-positive partner with an undetectable viral load in the last year	48 (30.0)	163 (49.8)	<0.0001
Very confident about the effectiveness of PEP	102 (77.3)	280 (89.2)	0.001
Very confident about the effectiveness of PrEP	121 (82.3)	299 (95.5)	<0.0001

Multivariate analysis (table 4) indicates that respondents who are HIV-negative (aOR: 0.2, CI95% 0.12 - 0.49), who have an unknown HIV status (aOR: 0.3 CI95% 0.09 - 0.78) and who had an HIV-positive partner in the last year with an unknown viral load (aOR: 0.2, CI95% 0.08 - 0.41) are less likely to be confident in the effectiveness of taking viral load into account.

Table 4. Results of multivariate analysis: factors associated with confidence in the effectiveness of taking viral load into account

Variables	aOR (CI95%)
Respondent's HIV status	
Unknown	0.3 (0.09 – 0.78)*
Negative	0.2 (0.12 – 0.49)**
Positive	ref
Had an HIV-positive partner in the last year with an unknown viral load	0.2 (0.08 – 0.41)**
Access to regular health care professional	1.4 (0.77 – 2.53)
Had an STI in the past year	1.1 (0.66 – 1.90)

* <0.05 ** <0.0001

Adjusted odds ratio for the control variables: age, education, annual income, being in a relationship, size of gay social network, and place of birth.

conclusion: Health workers and frontline organizations play a key role in providing access to reliable information about biomedical strategies. Interventions and community education are needed that increase confidence in the effectiveness of undetectable viral load, PrEP, and PEP in an integrated way and that specifically target MSM who are HIV-negative or who do not know their HIV status. This research suggests that HIV-positive MSM tend to have a higher level of confidence in the effectiveness of taking viral load into account as a prevention strategy and are well-positioned to play a leadership role in peer education efforts aimed at optimizing the use of biomedical risk-reduction strategies.



26th annual canadian conference on hiv/aids – cahr 2018

research team: Principal Investigators: Ken Monteith, Joanne Otis. Co-investigators: Marianne Beaulieu, Line Chamberland, Jorge Flores Aranda, Gabriel Girard, Aurélie Hot, Bruno Laprade, Bertrand Lebouché, Alain Léobon, David Lessard, Maria Nengeh Mensah, Pierre-Henri Minot, Sarah Mathieu-Chartier, Roberto Ortiz, David Thompson, Cécile Tremblay. Staff: Thomas Haig, Jessica Caruso, Ludivine Veillette-Bourbeau, Gabriel Daunais-Laurin, Pierre-André Marquis, Patrice Bécotte, Gabriel Giroux. Thank you to all study participants.

Partners: COCQ-SIDA; Département de sexologie, UQAM; RÉZO; ACCM; Chaire de recherche sur l'homophobie, UQAM; CIUSSS du Centre-Sud-de-l'Île-de-Montréal; Clinique médicale L'Actuel; Clinique médicale OPUS; Clinique médicale du Quartier Latin; Direction régionale de santé publique de Montréal; Fugues; Institut thoracique de Montréal; LGBT in the City; Maison Plein Cœur; Ministère de la Santé et des Services sociaux du Québec; Portail VIH/sida du Québec; Warming Montréal. Funding: Canadian Institutes of Health Research (CIHR); Réseau sida & MI des Fonds de recherche du Québec – Santé (FRQS); the CIHR Centre for REACH in HIV/AIDS (REACH 2.0); and a community grant from the Positive Action Canada Innovation Program provided by Viiv Healthcare.

correspondence: ken.monteith@cocqsida.com

Conflict of interest disclosure: We have no conflicts of interest.

