# Individual and jurisdictional factors associated with voluntary HIV testing in Canada: Results of a national survey, 2011

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## ABSTRACT

**OBJECTIVE:** HIV testing remains a central strategy for HIV prevention for its ability to link those who test positive to treatment and support. In Canada, national guidelines have recently changed as part of standard primary care to recommend voluntary HIV testing for those aged 16–64 years. Using results from a nationally representative survey, we examined individual and jurisdictional factors associated with voluntary testing.

**METHODS:** A total of 2,139 participants were sampled using a regionally stratified, two-stage recruitment process. English or French interviews (by phone or online) were conducted during May 2011. Voluntary testing was defined as testing at least once for reasons other than blood donation, insurance purposes, immigration screening or research participation. Weighted logistic regression analysis (including socio-demographic, sexual activity, HIV/AIDS knowledge and jurisdictional factors of HIV prevalence and anonymous testing availability) were conducted for the overall sample, and stratified by sex.

**RESULTS:** Twenty-nine percent (29%) of survey participants reported at least one lifetime voluntary HIV test. For the full-sample model, the following were associated with increased odds of testing: age <60 years, female sex, sexual minority status, perceived HIV knowledge, casual sex partner in previous year, and living in a higher-prevalence jurisdiction. For men, the strongest factor related to testing was sexual minority status (OR = 5.15, $p < 0.001$); for women, it was having a casual sex partner in the previous year (OR = 2.57, $p = 0.001$). For both men and women, residing in a jurisdiction with lower HIV prevalence decreased odds of testing.

**DISCUSSION:** Sex differences should be considered when designing interventions to increase testing uptake. Jurisdictional factors, including HIV prevalence and testing modality, should be investigated further.

**KEY WORDS:** HIV; testing; anonymous testing; Canada

La traduction du résumé se trouve à la fin de l'article.

*Can J Public Health* 2015;106(2):e4–e9
doi: 10.17269/CJPH.106.4625

Despite a range of educational campaigns and policies designed to increase voluntary human immunodeficiency virus (HIV) testing in Canada, one in four Canadians living with the disease are unaware of their HIV status.[1] Knowing HIV status early in the course of HIV infection is important for the well-being of a person living with HIV and for prevention of further transmission of the virus. In the absence of early diagnosis and treatment, HIV infection can rapidly progress to AIDS.[2]

In Canada, traditional approaches to HIV testing have targeted at-risk populations. Today, new HIV testing technologies (such as point-of-care testing) allow broader access, encouraged by policy shifts towards more general population testing (including routine opt-out testing and 'seek and treat' approaches) in many jurisdictions.[3–6] In 2006, the United States' Centers for Disease Control and Prevention (CDC) developed new HIV testing guidelines using an opt-out model, recommending that voluntary testing be integrated into routine medical practice for all adults, whether or not they engage in HIV risk behaviours.[3] In 2013, the Public Health Agency of Canada (PHAC) established national guidelines recommending voluntary HIV testing as part of standard primary care for those aged 16–64.[7]

Research regarding HIV testing in the general Canadian population is sparse.[8,9] A 2012 PHAC-commissioned study suggested that 37% of Canadians have ever been tested for HIV (excluding testing for insurance purposes, blood donation or research participation).[9] This represented an increase from previous PHAC HIV/AIDS surveys, from 27% in 2003 and 32% in 2006.[9] Other studies have been conducted in Canada to investigate individual and geographic factors related to voluntary HIV testing. In general, those who have ever voluntarily tested tend to be younger, be sexually active, identify as a sexual minority (i.e., non-heterosexual), be knowledgeable about HIV, or live in Quebec.[8,10–12] However, while individual-level factors are necessary considerations, to better understand testing uptake in the general population, it is important to also include jurisdictional factors (including available testing modalities, regional testing campaigns, and HIV prevalence) that may influence testing.[10,13]

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**Conflict of Interest:** None to declare.

In the US, jurisdictional factors have been associated with voluntary HIV testing uptake. Notably, while the availability of anonymous testing is thought to promote testing at the *individual level* among members of specific at-risk groups (e.g., gay, bisexual and other men who have sex with men (MSM),[14] there is debate as to whether it is an effective HIV testing promotion tool at the *general population* level.[15,16] HIV testing in a jurisdiction may also be related to HIV prevalence: regionally, areas with higher-than-average HIV prevalence have been associated with increased testing uptake, though whether presence/visibility of HIV leads to testing, or whether greater testing leads to more HIV case finding is unclear.[13]

In Canada, sex and sexual orientation have a consistent relationship with voluntary testing,[9–12] as there are substantial differences between men and women in the means of exposure to HIV. In 2011, more than 60% of HIV-positive men in Canada acquired the infection from MSM contact, while more than 60% of positive women acquired it from heterosexual contact.[17] In addition, there are jurisdictional service system factors that promote testing among pregnant women: it is recommended that pregnant women be screened for HIV, although whether this is done voluntarily (opt-in) or through routine screening with right of refusal (opt-out) varies by province/territory.[18]

The objectives of this analysis were to describe voluntary HIV testing in the general population and to examine individual-level knowledge, behaviours, socio-demographic and jurisdictional factors related to testing for the general population, and separately for men and women. To our knowledge, this is the first examination of jurisdictional factors in relation to HIV testing in a national Canadian sample.

## METHODS

### Survey development

The survey was constructed based on a literature review, and for comparative purposes, where possible, relevant items were composed to resemble previous national HIV surveys.[9] The final survey contained socio-demographic questions and items regarding HIV/AIDS knowledge, attitudes and sexual behaviours. Given the sensitive nature of the study, the survey was pre-tested with a sample of 100 respondents. As no issues were presented, these surveys were included in the final sample. Ethics approval was obtained from the University of Toronto Research Ethics Board.

### Measures

Definitions of what constitutes voluntary HIV testing vary. The most frequently utilized is VCT (Voluntary Counselling and Testing), whereby HIV testing is initiated by the individual, preceded and followed by recommended counselling, and excludes compulsory testing. According to the CDC, testing that is conducted for purposes other than HIV diagnosis, management and treatment is not considered VCT.[3] Testing associated with blood donation, insurance, immigration or research studies, for instance, is conducted primarily for reasons other than HIV management, and does not generally include pre- and post-test counselling. The World Health Organization and International Labour Organization also abide by this VCT definition of voluntary testing.[19,20] To be consistent with international consensus, we adopted this definition. Thus, survey participants reporting testing for reasons other than blood donation, insurance, immigration or research were considered voluntary testers. To determine the types of testing, participants were asked, "Have you ever been tested for HIV/AIDS for any of the following reasons?" More than a dozen options were listed. Participants could select as many reasons as desired.

Questions on socio-demographics (sex, age, educational attainment, household income, marital status, and member of a sexual minority (non-heterosexual) or visible minority group (non-White)) were included as categorical questions (Table 1). For sexual behaviours, participants were asked if they had had sexual intercourse in the previous 12 months, whether a condom was used at last intercourse, and whether they had had a casual partner in the last 12 months. The HIV/AIDS knowledge scale consisted of seven items regarding transmission, cures and vaccines. The first five items addressed transmission (kissing, sharing food, coughing and sneezing, sharing needles and intercourse). Two additional items, regarding HIV cures and vaccines, were also included: "To the best of your knowledge, can HIV/AIDS be cured?" and "To the best of your knowledge, is there an effective vaccine to prevent HIV infection?" The seven items combined produced satisfactory scale metrics for an exploratory scale (KR-20=0.61). Perceived knowledge was asked on a 7-point Likert scale ("How knowledgeable would you say you are about HIV/AIDS?"). Items were constructed to capture jurisdictional factors using participant province, with those residing in high HIV prevalence jurisdictions (i.e., those with the largest percentage of cumulative positive HIV test reports to December 2012, including British Columbia (19.0%), Alberta (7.8%), Ontario (43.8%) and Quebec (22.5%)) compared to lower prevalence jurisdictions (Yukon (0.1%), Northwest Territories (0.1%), Nunavut (0.0%) Saskatchewan (2.3%), Manitoba (2.5%), New Brunswick (0.5%), Nova Scotia and PEI (1.1%), and Newfoundland/Labrador (0.4%),[17] and with jurisdictions that offered anonymous testing (Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick and Nova Scotia) compared to those that did not.[21]

### Survey administration

The survey was conducted in May 2011, in English or French, among participants aged 16 years or older in each province and territory. A two-stage sampling design was employed. First, participants were sampled from the general population using a random-digit-dial (RDD) method that incorporated both cellular and land-line telephone numbers. An Interactive Voice Response (IVR) system was used to manage calls, with numbers retired after one initial call and three unanswered call-backs. Once contacted, individuals entered socio-demographic information on their keypads and were asked to participate in a survey at a later date. Those who agreed were added to a panel of willing participants. At the second stage, panel members were sampled directly (with stratification by region) and contacted by a live interviewer with an invitation to complete the survey by phone or online.

The blended participation rate of 24.8% at this stage of sampling is typical for a RDD survey of this nature.[22,23] Participation was

**Table 1.** Socio-demographic differences between voluntary HIV testers and non-voluntary/non-testers

| Variable | Categories | Male | | | | Female | | | | Overall | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Non-voluntary/ non-testers | Voluntary testers | Overall | p* (n) | Non-voluntary/ non-testers | Voluntary testers | Overall | p* (n) | Non-voluntary/ non-testers | Voluntary testers | Overall | p* (n) |
| Overall | – | 75.8 | 24.2 | 100.0 | N/A (990) | 66.6 | 33.5 | 100.0 | N/A (1063) | 71.0 | 29.0 | 100 | N/A (2053) |
| Sex | Male | – | – | – | | – | – | – | | 51.5 | 40.2 | 48.2 | <0.001 (2053) |
| | Female | | | | | | | | | 48.5 | 59.8 | 51.8 | |
| Age (years) | 16–29 | 24.8 | 21.4 | 24.0 | <0.001 (990) | 22.3 | 23.4 | 22.6 | <0.001 (1063) | 23.6 | 22.6 | 23.3 | <0.001 (2053) |
| | 30–59 | 47.5 | 65.2 | 51.7 | | 42.6 | 64.6 | 49.9 | | 45.1 | 64.8 | 50.8 | |
| | ≥60 | 27.8 | 13.4 | 24.3 | | 35.2 | 12.1 | 27.4 | | 31.4 | 12.6 | 25.9 | |
| Education | High school graduate (or less) | 23.6 | 19.7 | 22.7 | 0.276 (980) | 26.4 | 17.2 | 23.3 | 0.003 (1059) | 25.0 | 18.2 | 23.0 | 0.005 (2039) |
| | College graduate | 32.0 | 30.3 | 31.6 | | 28.5 | 34.6 | 30.5 | | 30.3 | 32.9 | 31.0 | |
| | University graduate | 44.4 | 49.9 | 45.8 | | 45.1 | 48.2 | 46.2 | | 44.8 | 48.9 | 46.0 | |
| Income† | <$40,000 | 24.6 | 25.1 | 24.7 | 0.869 (847) | 30.8 | 30.8 | 30.8 | 0.182 (867) | 27.4 | 28.6 | 27.8 | 0.817 (1714) |
| | $40,000-$80,000 | 29.7 | 31.2 | 30.0 | | 38.8 | 33.2 | 36.8 | | 33.9 | 32.4 | 33.4 | |
| | >$80,000 | 45.7 | 43.7 | 45.2 | | 30.5 | 35.9 | 32.5 | | 38.7 | 39.0 | 38.8 | |
| Marital status | Single | 36.9 | 43.6 | 38.49 | 0.066 (969) | 42.5 | 41.7 | 42.2 | 0.800 (1026) | 39.6 | 42.4 | 40.4 | 0.239 (1995) |
| | Married | 63.1 | 56.4 | 61.5 | | 57.5 | 58.3 | 57.8 | | 60.4 | 57.6 | 59.6 | |
| Sexual minority (non-heterosexual) | No | 97.6 | 85.2 | 94.6 | <0.001 (974) | 96.1 | 95.2 | 95.8 | 0.490 (1037) | 96.9 | 91.1 | 95.2 | <0.001 (2012) |
| | Yes | 2.4 | 14.8 | 5.4 | | 3.9 | 4.8 | 4.2 | | 3.1 | 8.9 | 4.8 | |
| Visible minority | No | 91.5 | 90.6 | 91.2 | 0.687 (974) | 92.8 | 92.6 | 92.7 | 0.894 (1037) | 92.1 | 91.8 | 92.0 | 0.805 (2012) |
| | Yes | 8.6 | 9.4 | 8.8 | | 7.2 | 7.4 | 7.3 | | 7.9 | 8.2 | 8.0 | |
| Sex (in last 12 months) | No | 26.9 | 15.8 | 24.2 | <0.001 (972) | 38.6 | 21.4 | 32.7 | <0.001 (1023) | 32.5 | 19.1 | 28.5 | <0.001 (1996) |
| | Yes | 73.2 | 84.2 | 75.9 | | 61.4 | 78.7 | 67.3 | | 67.5 | 80.9 | 71.5 | |
| Condom use last intercourse | No | 78.4 | 71.2 | 76.4 | 0.042 (733) | 79.4 | 79.6 | 79.5 | 0.937 (684) | 78.8 | 76.1 | 77.9 | 0.248 (1416) |
| | Yes | 21.6 | 28.9 | 23.6 | | 20.6 | 20.4 | 20.5 | | 21.2 | 23.9 | 22.1 | |
| Casual partner (in last 12 months) | No | 93.7 | 85.7 | 90.5 | <0.001 (686) | 87.5 | 76.1 | 84.5 | <0.001 (730) | 90.2 | 81.7 | 87.4 | <0.001 (1415) |
| | Yes | 6.3 | 14.3 | 9.5 | | 12.5 | 23.9 | 15.6 | | 9.8 | 18.3 | 12.6 | |
| Jurisdiction has anonymous testing | No | 27.6 | 23.5 | 26.6 | 0.208 (990) | 25.4 | 22.3 | 24.4 | 0.272 (1063) | 26.5 | 22.8 | 25.5 | 0.077 (2053) |
| | Yes | 72.4 | 76.5 | 73.4 | | 74.6 | 77.7 | 75.6 | | 73.5 | 77.2 | 74.6 | |
| Jurisdictional HIV prevalence | Low | 83.3 | 90.7 | 85.1 | 0.003 (990) | 83.4 | 90.3 | 85.7 | 0.002 (1063) | 83.4 | 90.4 | 85.4 | <0.001 (2053) |
| | High | 16.7 | 9.3 | 14.9 | | 16.6 | 9.7 | 14.3 | | 16.6 | 9.6 | 14.6 | |

| Variable | Scale range | Mean (SE) | | | | Mean (SE) | | | | Mean (SE) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Non-voluntary/ non-testers | Voluntary testers | Overall | p‡ (n) | Non-voluntary/ non-testers | Voluntary testers | Overall | p‡ (n) | Non-voluntary/ non-testers | Voluntary testers | Overall | p‡ (n) |
| Knowledge scale | 1–7 | 5.88 (0.05) | 6.08 (0.08) | 5.91 (0.04) | 0.031 (987) | 5.81 (0.05) | 6.22 (0.06) | 5.93 (0.04) | <0.001 (1063) | 5.85 (0.04) | 6.16 (0.05) | 5.94 (0.03) | <0.001 (2053) |
| Perceived knowledge | 1–7 | 4.32 (0.05) | 4.96 (0.08) | 4.47 (0.04) | <0.001 (987) | 4.45 (0.05) | 4.87 (0.07) | 4.58 (0.04) | <0.001 (1063) | 4.38 (0.04) | 4.91 (0.05) | 4.53 (0.03) | <0.001 (2134) |

*F-test (Chi-square corrected for survey data using Rao-Scott correction and converted to F-statistic).
†Annual household pre-tax income.
‡Wald test, adjusted for weighted data.

moderately higher among those who completed the survey by phone compared to those who did so online (31.1% vs. 18.4% respectively. Sampling error was ±2.1 percentage points with 95% confidence.

### Analysis

Analysis was performed with Stata IC v. 13.1. All presented results are weighted to represent the Canadian population, except where indicated otherwise. Analysis consisted of bivariate and multivariate logistic regressions for the overall sample, and stratified by sex. A backwards step-wise variable selection process was used to guide modelling decisions, in addition to Hosmer-Lemeshow's Goodness of Fit test and testing of nested models. Given the high proportion of missing data on income (16.7%) and its lack of significant contribution to models and correlation with other variables, this variable was dropped from the multivariate models.

## RESULTS

The final sample consisted of 2,139 adults residing in Canada. Missing data were minimal (<5%) for all variables, with the exception of income. Most respondents (78.6%) chose to complete the survey online. In total, 88 (unweighted) individuals did not respond to the HIV testing item and were excluded from the current analysis, leaving a subsample of 2,051 ($n$ = 2,053 weighted) for analysis.

Overall, 29.0% had voluntarily tested for HIV (24.2% of male respondents; 33.5% of female respondents). In terms of bivariate associations (Table 1), sex, age, education and sexual minority status varied significantly between voluntary testers and non-voluntary and non-testers. Voluntary testers tended to be female ($p < 0.001$), younger (<0.001), and more educated ($p = 0.005$) than non-voluntary and non-testers. In addition, 8.9% of voluntary testers identified as a sexual minority compared to 3.1% of non-voluntary and non-testers ($p < 0.001$). More testers (18.3% compared to 9.8% of non-voluntary and non-testers) reported having had casual sex partners ($p < 0.001$) over the previous 12 months. Voluntary testers also tended to be more knowledgeable about HIV ($p < 0.001$) and to perceive themselves as more knowledgeable ($p < 0.001$) than non-voluntary and non-testers. Of the two jurisdictional factors, HIV prevalence category (low or high) was significantly related to voluntary testing ($p < 0.001$), while the relationship between voluntary testing and anonymous testing availability approached significance ($p = 0.077$).

For the overall multivariate model (Table 2), a number of factors were related to voluntary testing. Those 30–59 years of age were almost twice as likely as 16–29 year olds to have had a voluntary HIV test during their lifetime (OR = 1.86, $p < 0.001$). In contrast, participants 60 and over were about half as likely as those 16–29 to have ever had a voluntary HIV test (OR = 0.58, $p = 0.002$). Both female sex and sexual minority status were associated with increased odds of lifetime voluntary HIV testing (OR = 1.80, $p < 0.001$ and OR = 2.08, $p = 0.002$ respectively). Those who reported having had a casual sexual partner in the previous 12 months were more than twice as likely to have tested voluntarily (OR = 2.29, $p < 0.001$) compared to all others (those who had had a partner who was not casual and those who did not engage in any sexual activity in the last 12 months). In addition, living in jurisdictions of low HIV prevalence (compared to high) was related to an approximately 40% decrease in odds of testing (OR = 0.61, $p = 0.002$). While HIV knowledge score was not significant, for each point, perceived HIV knowledge was associated with a 28% increase in the odds of testing (OR = 1.28, $p < 0.001$).

Among sex-stratified multivariate models (Table 2), different patterns emerged. For men, after controlling for marital status and regional HIV prevalence, the most salient factors related to lifetime voluntary testing were sexual minority status (OR = 5.15, $p < 0.001$), perceived knowledge (OR = 1.39, $p < 0.001$) and sexual

**Table 2.** Multivariate logistic regression models comparing voluntary HIV testers and non-voluntary/non-testers

| Variable | Category | OR | Std. Err. | *P* > *t* | 95% CI | |
|---|---|---|---|---|---|---|
| Overall ($n$ = 1942) | | | | | | |
| Age (years) | 16–29 | 1.00 | – | – | – | – |
| | 30–59 | 1.86 | 0.25 | 0.000 | 1.43 | 2.42 |
| | ≥60 | 0.58 | 0.10 | 0.002 | 0.41 | 0.83 |
| Sex | (Female vs. male) | 1.80 | 0.19 | 0.000 | 1.46 | 2.23 |
| Sexual minority (non-heterosexual) | (Yes vs. no) | 2.08 | 0.49 | 0.002 | 1.31 | 3.30 |
| Perceived knowledge | (Scale) | 1.28 | 0.05 | 0.000 | 1.18 | 1.39 |
| Jurisdictional HIV prevalence | (Low vs. high) | 0.61 | 0.10 | 0.002 | 0.44 | 0.83 |
| Casual partner (in last 12 months) | (Yes vs. not casual/no partner) | 2.29 | 0.40 | 0.000 | 1.62 | 3.23 |
| Men ($n$ = 938) | | | | | | |
| Marital status | Married vs. unmarried | 0.64 | 0.11 | 0.011 | 0.46 | 0.90 |
| Sexual minority (non-heterosexual) | Yes vs. no | 5.15 | 1.64 | 0.000 | 2.76 | 9.62 |
| Perceived knowledge | (Scale) | 1.39 | 0.09 | 0.000 | 1.22 | 1.59 |
| Jurisdictional HIV prevalence | Low vs. high | 0.61 | 0.15 | 0.047 | 0.38 | 0.99 |
| Sexual intercourse (in last 12 months) | Yes vs. no | 2.51 | 0.55 | 0.000 | 1.63 | 3.86 |
| Women ($n$ = 1019) | | | | | | |
| Age | 16–29 | 1.00 | – | – | – | – |
| | 30–59 | 1.70 | 0.30 | 0.003 | 1.21 | 2.40 |
| | ≥60 | 0.52 | 0.12 | 0.006 | 0.33 | 0.83 |
| Perceived knowledge | (Scale) | 1.15 | 0.06 | 0.010 | 1.03 | 1.28 |
| Jurisdictional HIV prevalence | Low vs. high | 0.60 | 0.13 | 0.017 | 0.39 | 0.91 |
| Casual partner (in last 12 months) | Yes vs. not casual/no partner | 2.57 | 0.73 | 0.001 | 1.47 | 4.48 |
| Sexual intercourse (in last 12 months) | Yes vs. no | 1.40 | 0.23 | 0.044 | 1.01 | 1.95 |
| HIV knowledge | (Scale) | 1.16 | 0.07 | 0.013 | 1.03 | 1.30 |

– Overall sample and sex-stratified models.

intercourse in the previous 12 months (OR = 2.51, $p < 0.001$). In contrast, for women, age (OR = 1.70, $p = 0.003$ for those 30–59 years compared to 16–29) and having had a casual partner (OR = 2.57, $p = 0.001$; compared to non-casual partner or no partner) were the covariates with the largest effects (controlling for actual and perceived knowledge, sexual intercourse over the last 12 months and regional HIV prevalence). In addition, in multivariate models, while actual and perceived HIV knowledge were significant for women, only perceived knowledge was important for men. For women, perceived knowledge was associated with a 15% increase in the odds of voluntary testing for each additional point, and actual knowledge with a 16% increase in odds of testing for each correct answer. For both sexes, residing in jurisdictions with low HIV prevalence (compared to higher prevalence jurisdictions) was related to decreased odds of voluntary testing (OR = 0.61, $p = 0.047$ and OR = 0.60, $p = 0.017$ for men and women respectively).

## DISCUSSION

Our results regarding lifetime voluntary HIV testing in the general Canadian population in 2011 (29.0%) were lower than estimates provided by other national studies using slightly different definitions of voluntary testing (PHAC-supported studies, which include testing for immigration, suggest 32% in 2006 and 37% in 2012;[9] our results, if we included immigration, would suggest 31% lifetime voluntary HIV testing). Likely, the two-stage sampling method utilized contributed to the differences. There are several beneficial features of the two-stage sampling methodology that make it distinct from typical opt-in panels (where participants self-select). Respondents were sampled randomly from the general population, with an RDD frame using landline and cellular phone, and those who agreed to the survey were added to the panel. Additionally, because each successful IVR contact was contacted by an interviewer by phone, every sample member (online and offline) was verified by a live interviewer. In addition, compared to other sampling methodologies (including common address-based frames or landline-only RDD frames), the current method has traditionally produced better response rates and cost-effectiveness.[22,23]

In our analysis, individual factors predominated as covariates related to HIV testing (including age, sexual minority status, actual and perceived HIV knowledge, and casual sex partner), suggesting that those most at risk are more likely to test. At the jurisdictional level, while jurisdictional HIV prevalence was significantly related to voluntary HIV testing, availability of anonymous HIV testing was not a predictive factor in the multivariate model. While we must be cautious interpreting these jurisdictional results, as we did not have information on respondent moves/migration between provinces, results suggest that at the general Canadian population level, availability of anonymous testing does not promote HIV testing.

Our results also show substantial testing differences by sex, re-affirming the relationship between voluntary testing and sex.[9,10] Sexual minority status (i.e., non-heterosexual), while a predictor of voluntary testing status overall, when stratified by sex was significant only among men. It was also the most salient covariate related to testing among men, associated with a fivefold increase in odds. In contrast, among women, age and casual sexual partner were the strongest predictors of HIV testing. There were also differences by sex in terms of actual knowledge (significant for women only) and perceived knowledge (significant for men and women). Given these disparities, the dynamics between sex and testing behaviours should be considered when addressing voluntary testing through educational campaigns.

There were important limitations to the current study. First, social desirability bias (tendency of participants to alter responses to appear more favourable to others) is a concern, particularly as the survey contained sensitive questions about sexual behaviours. Interview mode may have mediated this bias, as those interviewed by phone could have been less candid than online respondents not surveyed by a live interviewer. In addition to these concerns, the survey was cross-sectional, and thus we were unable to determine whether testing status influences the covariates or vice versa. Finally, the study was not designed to capture information on key subpopulations of interest for the HIV epidemic, including Aboriginal Peoples; African, Caribbean and Black communities; and gay, bisexual, or other men who have sex with men.

HIV testing has a long, contested history in HIV prevention, but remains a central public health strategy, as it can identify new and existing HIV cases, link those who test positive for HIV to treatment and support, and promote partner notification and testing.[24,25] While voluntary testing among Canadian adults remains low, the differences among men and women demonstrated here suggest that interventions to increase HIV testing should be designed to address sex-specific testing behaviours. The relationship between jurisdictional factors and testing was not entirely clear, and the complexities of these relationships require more extensive research at both the population and the individual level.

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Received: June 9, 2014
Accepted: October 13, 2014

## RÉSUMÉ

**OBJECTIF :** Le dépistage du VIH demeure une stratégie centrale en matière de prévention du virus, car il permet d'aiguiller les personnes séropositives vers les traitements et le soutien disponibles. Au Canada, les lignes directrices nationales ont changé récemment dans le cadre des soins primaires normalisés, et l'on recommande maintenant le dépistage volontaire du VIH pour les 16 à 64 ans. À l'aide des résultats d'une enquête représentative nationale, nous avons examiné les facteurs individuels et les facteurs liés à la région administrative associés au dépistage volontaire.

**MÉTHODES :** En tout, 2 139 participants ont été échantillonnés selon un processus de recrutement en deux étapes, stratifié selon la région. Des entretiens en anglais ou en français (par téléphone ou en ligne) ont été menés en mai 2011. Le dépistage volontaire était défini comme étant un dépistage au moins une fois pour une raison autre que pour donner du sang, à des fins d'assurance ou de contrôle des immigrants ou pour participer à une étude de recherche. Des analyses de régression logistique pondérées (incluant les facteurs sociodémographiques, d'activité sexuelle, de connaissance du VIH et du sida et les facteurs de prévalence du VIH et de disponibilité du dépistage anonyme selon la région administrative) ont été menées pour l'échantillon global, puis stratifiées selon le sexe.

**RÉSULTATS:** Vingt-neuf p. cent (29 %) des participants de l'enquête ont déclaré avoir subi au moins un dépistage volontaire du VIH au cours de leur vie. Pour le modèle utilisant l'échantillon entier, les facteurs suivants ont été associés à une probabilité de dépistage accrue : l'âge <60 ans, le sexe féminin, le statut de minorité sexuelle, les connaissances perçues du VIH, une ou un partenaire sexuel occasionnel au cours de l'année antérieure et le fait de vivre dans une région administrative à prévalence élevée de VIH. Chez les hommes, le facteur le plus fortement lié au dépistage était le statut de minorité sexuelle (RC = 5,15, $p < 0{,}001$); chez les femmes, c'était d'avoir eu une ou un partenaire sexuel occasionnel au cours de l'année antérieure (RC = 2,57, $p = 0{,}001$). Chez les deux sexes, le fait de vivre dans une région administrative où la prévalence du VIH était plus faible réduisait la probabilité du dépistage.

**DISCUSSION :** Il faudrait tenir compte des différences entre les sexes lorsqu'on conçoit des interventions pour accroître le recours au dépistage. Les facteurs comme la prévalence du VIH et les modalités de dépistage dans la région administrative devraient faire l'objet d'études plus poussées.

**MOTS CLÉS :** VIH; dépistage; dépistage anonyme; Canada