

M-TRACK

» **ENHANCED SURVEILLANCE** OF HIV, SEXUALLY TRANSMITTED AND BLOOD-BORNE INFECTIONS, AND ASSOCIATED RISK BEHAVIOURS AMONG MEN WHO HAVE SEX WITH MEN IN CANADA

PHASE 1 REPORT || NOVEMBER 2011

Centre for Communicable Diseases and Infection Control
Infectious Disease Prevention and Control Branch
Public Health Agency of Canada



Public Health
Agency of Canada

Agence de la santé
publique du Canada

Canada

To promote and protect the health of Canadians through leadership, partnership, innovation and action in public health.

— Public Health Agency of Canada

For an electronic copy of this report, please contact:

Centre for Communicable Diseases and Infection Control
Public Health Agency of Canada
Tunney's Pasture
Postal Locator 0602B
Ottawa, ON K1A 0K9
E-mail: ccdic-clmti@phac-aspc.gc.ca

For a hard copy of this report, please contact:

CATIE
555 Richmond Street West, Suite 505
Toronto, ON M5V 3B1
Toll free: 1-800-263-1638
E-mail: orderingcentre@catie.ca

This publication can be made available in alternative formats upon request.

N.B. This document must be cited as the source for any information extracted and used from it.

Suggested citation: Public Health Agency of Canada. *M-Track: Enhanced Surveillance of HIV, Sexually Transmitted and Blood-borne Infections, and Associated Risk Behaviours among Men Who Have Sex with Men in Canada. Phase 1 Report*. Centre for Communicable Diseases and Infection Control, Infectious Disease Prevention and Control Branch, Public Health Agency of Canada; 2011.

© Her Majesty the Queen in Right of Canada, 2011

Cat.: HP40-64/1-2011E-PDF

ISBN: 978-1-100-20052-1

INFORMATION TO READERS

The Public Health Agency of Canada's Centre for Communicable Diseases and Infection Control, together with its collaborators, is pleased to present the results from Phase 1 of M-Track, an enhanced surveillance system of HIV, other sexually transmitted and blood-borne infections, and associated risk behaviours among gay, bisexual and other men who have sex with men in Canada.

This report presents key findings from Phase 1 of M-Track, which was implemented between 2005 and 2007 in five Canadian sentinel sites: Victoria, Winnipeg, Toronto, Ottawa and Montréal.

One of the key components of *The Federal Initiative to Address HIV/AIDS in Canada* is the development of knowledge to enhance our understanding of the HIV epidemic and inform the development of policies, programs and interventions, such as new prevention technologies and therapies. Knowledge development emphasizes improved population-specific surveillance, including epidemiologic, socio-behavioural, ethnographic and community-based research.

M-Track builds on earlier local efforts and is planned and implemented in partnership with local and provincial health authorities, site investigators, local study teams and community-based organizations. The Public Health Agency of Canada would particularly like to thank the study's participants without whom this survey would not have been possible.

Phase 2 of the surveillance system was initiated in 2008 and was conducted in Vancouver and Montréal. Data collection for Phase 2 ended in late 2010. The Public Health Agency of Canada is currently planning future phases of M-Track.

M-Track will provide important information to those involved in developing policies and programs aimed at preventing and controlling HIV and other sexually transmitted and blood-borne infections among men who have sex with men. Further phases of the surveillance system will help us better assess trends in the prevalence of HIV, hepatitis C, syphilis, other sexually transmitted and blood-borne infections and related risk behaviours among men who have sex with men in Canada.

ACKNOWLEDGEMENTS

M-Track would not have been possible without the dedication and assistance of many individuals and organizations. The successful implementation of Phase 1 of M-Track was made possible through the collaboration of Public Health Agency of Canada officials, researchers, provincial and local health authorities and community-based organizations from participating sites across Canada. The following organizations and individuals contributed to Phase 1 of M-Track:

MONTREAL (THE ARGUS STUDY)

Gilles Lambert (Principal Investigator [PI])

Joseph Cox (PI)

Michel Alary

René Lavoie

Joanne Otis

Robert Remis

Jean Vincelette

Philippe Carrière

Louis-Robert Frigault

Marc-André Gadoury

François Tremblay

Claude Tremblay

Patrick Berthiaume

Stéphane Cormier

Christian Joubert

Ayman Kafal

Alexandre Massicotte

Alexandre Morin

Bernard Ouellet

Alexandre Schnubb

Direction de santé publique de l'Agence de la santé et des services sociaux de Montréal

Institut national de santé publique du Québec

Université de Montréal

McGill University

Université Laval

Coalition des organismes communautaires du Québec contre le sida

Université du Québec à Montréal

University of Toronto

Centre hospitalier de l'Université de Montréal

VICTORIA (THE VICTORIA M-TRACK STUDY)

Murray Fyfe (PI)

Liz Walker

Dana Carr

Mark Gilbert

Robert Hogg

Doug McGhee

Eric Roth

Captain Snowden

David Mielke

Michael Yoder

Murray Anderson

Jaden Keitlah

Josephine MacIntosh

Alex McLeod

Rick Myers

Richard Stanwick

Mike Pennock
Audrey Shaw
Bridey Stirling

Vancouver Island Health Authority
BC Centre for Disease Control
BC Centre for Excellence in HIV/AIDS

WINNIPEG (THE WINNIPEG M-TRACK STUDY)

John Wylie (PI)
Margaret Ormond
Stephanie Harvard

Cadham Provincial Laboratory

ONTARIO (OTTAWA AND TORONTO, THE LAMBDA STUDY)

Ted Myers (PI)
Robert Remis (PI)
Winston Husbands (PI)
Frank McGee
James Murray
Sarah Jane Teleski
Juan Liu
Dan Allman
Barry Adam
Orhan Hassan
Christiane Bouchard
Charles Shames
Bruce Clarke
Peter Richtig
Christine Johnston
Miguel Cubillos
Carlos Idibouo
Albin Lopez
Glen Bugg
David Lewis
Peter Ho
Siva Gunaratnam
Vijay Saravanamuthu
Rui Pires
Junior Pradash
Marco Theriault
Jose Cedano

University of Toronto, Faculty of Medicine
Ministry of Health and Long-Term Care, AIDS Bureau
Ottawa Public Health
AIDS Committee of Toronto
African and Caribbean Council on HIV/AIDS in Ontario
Black Coalition for AIDS Prevention
Alliance for South Asian AIDS Prevention
Asian Community AIDS Services
Centre for Spanish Speaking Peoples

NATIONAL MICROBIOLOGY LABORATORY, PUBLIC HEALTH AGENCY OF CANADA

Alberto Severini
Pam Sawatzky
Raymond Tsang
John Kim
Laurie Malloch
Paul Sandstrom
Richard Pilon

**CENTRE FOR COMMUNICABLE DISEASES AND INFECTION CONTROL,
PUBLIC HEALTH AGENCY OF CANADA**

Chris Archibald (PI)
Susanna Ogunnaiké-Cooke
Marissa McGuire
Stephen Cule
Dana Paquette
Elizabeth Venditti
Susan Shurgold
Sherine Nahmias
Shauna Martin
Yogesh Choudri
Marene Gatali
Mark Vanderkloot
Tom Wong (Co-PI)
Stephanie Totten
Maureen Perrin
Gayatri Jayaraman
Rhonda Kropp
Jeff Dodds
Robert Lerch
Geneviève Tremblay
Michael Smith
Jacqueline Arthur

Centre for Communicable Diseases and Infection Control project team for this report:

Marissa McGuire, Project manager, lead author and analysis consultant

Stephanie Totten, Author and analysis consultant

Maureen Perrin, Author and analysis consultant

Susan Shurgold, Lead data analyst and quality assurance

Tory Atwood, Author

Elizabeth Venditti, Quality Assurance

Sherine Nahmias, Quality Assurance

Susanna Ogunnaike-Cooke, Editor

Gayatri Jayaraman, Editor

Chris P. Archibald, Editor

Tom Wong, Editor

RESPONDENTS

Special thanks to all the respondents who took the time to complete the survey and without whom this information could not be shared.

TABLE OF CONTENTS

INFORMATION TO READERS	I
ACKNOWLEDGEMENTS	II
TABLE OF CONTENTS	VII
LIST OF TABLES	IX
LIST OF FIGURES	X
LIST OF APPENDICES	X
ACRONYMS AND ABBREVIATIONS	XI
EXECUTIVE SUMMARY	1
1. INTRODUCTION	5
1.1 About This Report	5
1.2 Report Objective	5
2. BACKGROUND	6
2.1 HIV/AIDS and Other STBBI among Gay, Bisexual and Other MSM in Canada	6
2.2 The Federal Initiative to Address HIV/AIDS in Canada (FI)	6
2.3 Enhanced (behavioural and biological) Surveillance in Canada	6
2.3.1 M-Track: Enhanced (behavioural and biological) Surveillance among Gay, Bisexual and Other MSM in Canada	7
3. METHODS	8
3.1 Overview of Methods	8
3.2 Surveillance System Design	8
3.2.1 M-Track Phase 1 Objectives	8
3.2.2 Sentinel Site Selection	8
3.2.3 Eligibility Criteria	8
3.2.4 Sample Size Projections	9
3.2.5 Sampling and Recruitment	9
3.2.6 Data Collection	9
3.2.7 Data Management	11
3.2.8 Survey Staff and Training	11
3.2.9 Ethical Considerations	12
3.3 Approaches to Data Analysis	12
4. RESULTS	14
4.1 Overview of Results	14
4.2 Participant Overview and Socio-Demographic Characteristics	14
4.3 Sexual Life and Other Practices	18
4.3.1 General Sex Life	18
4.3.2 Regular Sex Partners	21
4.3.3 Casual Partnerships	24
4.3.4 Sex with Female Partners	26
4.3.5 Sex in Exchange for Money, Drugs or Other Goods and Services	27

4.4	Recreational Drug Use	27
4.5	HIV Testing, Prevalence, Awareness, and Treatment History	30
4.5.1	HIV Testing History	31
4.5.2	HIV Prevalence and Awareness of Status	34
4.5.3	HIV Treatment History	35
4.6	Other Sexually Transmitted and Blood-borne Infections	35
4.6.1	STBBI Testing History	36
4.6.2	Self-reported STBBI History and HCV and Syphilis Lifetime Seroprevalence	38
4.7	Knowledge and Assumptions of HIV, HCV and other STBBI	40
5.	DISCUSSION	43
5.1	Summary of Findings	43
5.1.1	Participant Overview and Socio-Demographic Characteristics	43
5.1.2	Sexual Life and Other Practices	44
5.1.3	Recreational Drug Use	45
5.1.4	HIV Testing, Prevalence, Awareness and Treatment History	46
5.1.5	HCV, Syphilis and Other STBBI	46
5.1.6	Knowledge and Assumptions of HIV, HCV and Other STBBI	47
5.2	Strengths/Limitations	48
5.3	Conclusions and Next Steps	48
	APPENDIX 1. EXAMPLE OF CORE M-TRACK SURVEY QUESTIONS (PHASE 1)	51
	REFERENCES	65

LIST OF TABLES

TABLE 1.	Data collection period, sample size and provision of DBS sample	12
TABLE 2.	Recruitment venues	14
TABLE 3.	Age of respondents	15
TABLE 4.	Personal income before taxes from all sources (annual)	15
TABLE 5.	Highest level of education attained	16
TABLE 6.	Language first learned and still understood today	16
TABLE 7.	Single ethnic or cultural origin respondent most strongly identified with	17
TABLE 8.	Sexual identity of respondents	17
TABLE 9.	Public settings used for finding sexual partners, past six months	18
TABLE 9.	Public settings used for finding sexual partners, past six months (CON'T)	19
TABLE 10.	Number of male sex partners (oral or anal), past six months	20
TABLE 11.	Number of male anal sex partners, past six months	20
TABLE 12.	Condom use by either partner at last anal sex, past six months	21
TABLE 13.	Any unprotected anal intercourse (UAI) in the past six months	21
TABLE 14.	Number of regular male sex partners, past six months	22
TABLE 15.	Condom use during insertive and receptive anal sex with an HIV negative regular partner(s), by respondent's self-reported HIV status, past six months	22
TABLE 16.	Condom use during insertive and receptive anal sex with an HIV positive regular partner(s), by respondent's self-reported HIV status, past six months	23
TABLE 17.	Condom use during insertive and receptive anal sex with a regular partner of unknown status, by respondent's self-reported HIV status, past six months	24
TABLE 18.	Number of casual sex partners, past six months	24
TABLE 19.	Condom use with casual male partners, past six months	25
TABLE 20.	Self-reported HIV status and any unprotected anal sex with a casual sex partner by assumptions or knowledge of partner's HIV status	26
TABLE 21.	Number of female sex partners, past six months	26
TABLE 22.	Commercial sex involvement (oral or anal sex), past six months	27
TABLE 23.	Reported drug use two hours before or during sex, in the past six months	28
TABLE 24.	History of injection drug use	29
TABLE 25.	HIV testing history	31
TABLE 26.	Reasons for never having been tested for HIV	31
TABLE 27.	Reasons for not having been tested for HIV in the past two years among self-reported HIV negative men	32
TABLE 28.	Self-reported HIV status	34
TABLE 29.	Seroprevalence of HIV and awareness of HIV positive status	34
TABLE 30.	HIV treatment history	35
TABLE 31.	STBBI testing history	36
TABLE 32.	Frequency of STBBI testing in the past two years	37
TABLE 33.	Self-reported history of STBBI diagnoses	38
TABLE 34.	Self-reported result of most recent HCV test	39

TABLE 35. Seroprevalence of syphilis and HCV	39
TABLE 36. HIV and HCV co-seropositivity	40
TABLE 37. HIV and syphilis co-seropositivity	40
TABLE 38. Knowledge and assumptions regarding the transmission of HIV, HCV and other STBBI	41
TABLE 39. Myths and misconceptions about HIV, HCV and other STBBI	42

LIST OF FIGURES

FIGURE 1. Cotton-fibre based paper product designed for the collection of body fluids	10
FIGURE 2. Sample DBS kit	10
FIGURE 3. Collected DBS on the drying rack	10

LIST OF APPENDICES

APPENDIX 1. EXAMPLE OF M-TRACK SURVEY QUESTIONS (PHASE 1)	51
--	----

ACRONYMS AND ABBREVIATIONS

A

AIDS: Acquired immune deficiency syndrome

C

CBO: Community-based organization

CCDIC: Centre for Communicable Diseases and Infection Control

D

DBS: Dried blood spot

E

EIA: Enzyme immunoassay

F

FI: The Federal Initiative to Address HIV/AIDS in Canada

H

HCV: Hepatitis C virus

HIV: Human immunodeficiency virus

I

IDU: People who inject drugs

L

LGV: Lymphogranuloma venereum

LSE: Last sexual event

M

MSM: Men who have sex with men

N

NHRL: National HIV and Retrovirology Laboratories

NML: National Microbiology Laboratory

O

OMS: Ontario Men's Survey

P

PHAC: Public Health Agency of Canada

R

REB: Research ethics board

S

STBBI: Sexually transmitted and blood borne infections

STI(s): Sexually transmitted infections

T

TPPA : Treponema pallidum particle agglutination test

U

UAI: Unprotected anal intercourse

UNAIDS: The Joint United Nations Programme on HIV/AIDS

W

WHO: World Health Organization

EXECUTIVE SUMMARY

INTRODUCTION

The Public Health Agency of Canada (PHAC) is responsible for coordinating the federal response to HIV/AIDS, as described in *The Federal Initiative to Address HIV/AIDS in Canada*,¹ and in *Leading Together: Canada Takes Action on HIV/AIDS*,² Canada's blueprint for action.

One of the key components of *The Federal Initiative to Address HIV/AIDS in Canada* (FI) is knowledge development, which includes the establishment of sentinel surveillance programs for vulnerable populations. In response to the FI and in keeping with second generation HIV surveillance approaches recommended by the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS),³ PHAC implemented an enhanced surveillance system among men who have sex with men (MSM) in Canada. This surveillance system, called "M-Track", builds on earlier local efforts and focuses on gay, bisexual and other MSM. Implementing M-Track in Canada provided a means for building on previous research initiatives. It also complements many other efforts underway to address HIV/AIDS and other sexually transmitted and blood-borne infections (STBBI) in Canada.

The Centre for Communicable Diseases and Infection Control (CCDIC) established the M-Track surveillance system in collaboration with local and provincial health departments, community-based organizations and academic researchers.

M-TRACK PRIMARY OBJECTIVES (PHASE 1)

- To ensure a core set of comparable behavioural measures among MSM in all sentinel surveillance sites, while addressing data needs on local and regional issues and questions of specific local interest.
- To describe the changing patterns and trends in sexual behaviour among MSM from participating surveillance sites across Canada.
- To determine the prevalence of HIV, hepatitis C virus (HCV), and syphilis from a biological sample.
- To identify patterns of HIV, other sexually transmitted infection (STI), and viral hepatitis testing.

OVERVIEW OF M-TRACK METHODS

- M-Track is an enhanced HIV surveillance system that tracks HIV, HCV and syphilis prevalence and associated risk behaviours among MSM in Canada by combining behavioural and biological surveillance.
- M-Track is conducted through periodic, cross-sectional surveys administered at selected sentinel sites across Canada.
- Participants are primarily recruited using venue-based sampling methods.
- Participation is voluntary, completely anonymous and requires informed consent.
- Information on demographics, sexual behaviours, drug use, HIV and other STBBI testing, and attitudes towards HIV, HCV and other STBBI is collected via a self-administered national core questionnaire. Sites have the option of adding additional site specific questions to address local needs.
- A dried blood spot (DBS) is collected from a finger-prick blood sample for HIV, HCV and syphilis testing.
- M-Track is planned and implemented in partnership with site investigators, local study teams, community advisory committees and other stakeholders.

REPORT OBJECTIVE

The objective of this report is to present descriptive findings from Phase 1 M-Track surveys undertaken between 2005 and 2007 at sentinel sites across Canada.

This report is intended as a comprehensive overview of the data collected and provides useful information for public health policy and program evaluation. It will also serve as a baseline for data comparison over time and for future more in-depth analyses of interest to community members, researchers and policy and program analysts.

DATA ANALYSIS

Between 2005 and 2007, 4,838 men across five sentinel sites participated in Phase 1 of M-Track. Overall, 4,793 men completed the questionnaire. In Victoria, Winnipeg and Montréal, the survey completion rate was 100%, while the completion rate was 98.4% in Toronto and 97.7% in Ottawa. The proportion of total participants who provided a DBS also varied across the sites from a low of 41.2% in Toronto to a high of 99.3% in Montréal. Variation in participation reflects the different eligibility criteria across the sites. In Toronto and Ottawa, respondents were offered the option of providing a DBS without completing the questionnaire, or they could complete the questionnaire without providing a DBS.

Only men who completed the questionnaire are included in the analytic sample for all result tables presented in this report (n=4,793).

The data in this report are presented in tabular format by sentinel site (when numbers sufficed for analysis), to allow for comparison across sentinel sites and with the national M-Track sample as a whole.

It is important to note that the data presented in this report are not based on a random sample. Thus differences between sentinel sites may actually reflect variations in recruitment methods, sampling methods and/or eligibility criteria, rather than differences in socio-demographic characteristics or behaviours of the MSM population between sites.

No statistical procedures were used to compare findings across sentinel sites in this report, nor were any statistical techniques applied to account for missing data. Data in tables with small cell sizesⁱ were not suppressed, since disclosure poses no risk to the confidentiality of individual participants.

Each table presents the specific sub-group of respondents to which the analysis applies—referred to as “eligible” in this report—to facilitate the appropriate interpretation of the data presented in the tables.

SUMMARY OF RESULTS: M-TRACK PHASE 1

Participant Overview and Socio-Demographic Characteristics

Approximately half of all men who participated in Phase 1 of M-Track were recruited in bars; the remainder were recruited at events, associations and bathhouses. The majority of M-Track respondents were between the ages of 30 and 49 (54%) and the mean and median age of all M-Track participants was 39 (range, 16-86). Approximately one third of M-Track participants reported an annual personal income of \$50,000 or more; about 12% reported an annual personal income of \$10,000 or less, or reported no income. With respect to highest level of education attained, approximately sixty percent of the M-Track sample had completed a minimum of a college or university degree. When asked about their ethnic and/or cultural ancestry, the majority most strongly identified as North American (72%). The vast majority of M-Track participants self-reported their sexual orientation as gay (82%) and an additional 14% as bisexual.

Sexual Life

M-Track participants commonly reported seeking out sex in a variety of social and public settings in the six months preceding survey administration. For example, a large proportion of men reported seeking sex in bars (56%), saunas (41%) and on the Internet (39%) in the previous six months.

The majority of M-Track participants who had sex (oral or anal) with a man in the previous six months also reported having had anal sex with at least one man in the previous six months (60.4%). Nearly forty percent reported multiple male anal sex partners in the previous six months.

In addition to being asked about general sexual activities, respondents who reported sex with a male partner in the previous six months were also asked more detailed questions about sexual activities with regular, casual, commercial and female sex partners in the previous six months. Among those who reported a male sex partner in the previous six months, nearly eighty percent

ⁱ The definition of small cell size varies but is often defined as a cell count greater than zero but less than three, five, or six, depending on the nature of the data and the source.

reported having sex with a regular male sex partner. A similar proportion reported having sex with a casual male sex partner. Nearly half, however, reported only one regular sex partner (44.5%) and an additional 33.5% of men reported multiple (> 1) regular male sex partners. The majority also reported multiple casual partners (63.4%).

Just over sixty percent had protected sex at their last anal sexual intercourse event, but approximately fifty-five percent reported having unprotected anal intercourse (UAI) with a man at least once in the previous six months (all partner types). Nearly half of those with a casual partner surveyed in M-Track used a condom consistently during insertive and receptive anal sex respectively (47.0% and 49.6%). The proportion of men who reported consistent condom use with a regular serodiscordant partner in the previous six months was generally higher than consistent condom use in a regular seroconcordant partnership.

In the six months preceding survey participation, roughly ten percent independently reported giving or receiving money, drugs or other goods or services in exchange for sex. A similar proportion of men also reported sex with female partners in the previous six months (11.8%).

Among men who self-reported as HIV positive, and having had sex with a casual partner in the previous six months, approximately twenty percent reported having UAI with a partner believed to be HIV negative. Of self-reported HIV negative men, fewer than five percent reported any UAI in the previous six months with a casual partner whom they believed to be HIV positive.

Recreational Drug Use

Non-injection drug use prior to or during sex was fairly common among M-Track participants. Approximately sixty-one percent had used a recreational substance and/or other type of drug (excluding alcohol) within two hours of having sex or during sex in the previous six months.

Injection drug use was less common. Overall, 10.3% of participants reported a history of injecting drugs and 4.5% of participants reported injecting some drug in the previous six months. The most commonly reported drug ever injected was cocaine, reported by 5.8% of all participants. Fewer reported a history of injecting steroids (3.6%), crystal methamphetamine (3.2%) or heroin (2.4%). An even smaller proportion reported injecting drugs in the previous six months: 2.1% (cocaine), 1.5% (steroids), 1.2% (crystal methamphetamine) and < 1.0% (heroin).

HIV Testing, Prevalence, Awareness and Treatment History

The vast majority of M-Track participants reported having been tested for HIV (86.2%). Among those self-reporting as HIV negative, most had been tested for HIV in the two years preceding survey participation (75.2%).

Among those never tested for HIV, a large proportion indicated they had not been tested because they considered themselves to be a low risk of HIV infection (54.1%). Other common reasons for never having been tested included fear of testing, reported by almost thirty percent of men, and already knowing one's status, reported by over a quarter of men. The majority of self-reported HIV negative men who had not been tested for HIV in the past two years also indicated that they had not recently been tested because they considered themselves to be at low of risk of HIV infection (59.4 %). Knowing one's status as a reason for not being tested in the past two years was reported by nearly thirty percent of men.

The prevalence of HIV among M-Track participants was high. Among participants who provided a DBS sample of sufficient quantity for testing, the prevalence of HIV was 15.1%, ranging from a low of 11.1% in Ottawa, to a high of 23.1% in Toronto.

Of those testing positive for HIV on DBS, 19.1% were unaware of their HIV positive status. Approximately seventy-five percent of self-reported HIV positive participants reported a history of taking HIV medication, and a smaller proportion reported that they were currently on HIV treatment (66.0%).

HCV, Syphilis and other STBBI

The majority of respondents reported having been tested for HCV (66.9%), gonorrhea (66.6%), and syphilis (62.6%). Over eighty percent of these participants had been tested within the past two years.

The proportion of respondents who reported being diagnosed with an STBBI at least once varied depending on the infection. For example, 21.1% reported being diagnosed with gonorrhea, 11.2% with chlamydia and 6.5% with syphilis.

Among participants who provided a biological sample of sufficient quantity for testing, the seropositivity of both syphilis and HCV was high (6.3% and 5.3%).

The proportion of participants seropositive for both HIV and HCV was 2.2%, and the proportion seropositive for both HIV and syphilis was 2.9%. It should be noted that the HCV and syphilis seropositive cases do not necessarily represent active infections and that resolved HCV or syphilis infections do not complicate the health status of HIV positive individuals in the same way as active infections do.

Knowledge and Assumptions about HIV and other STBBI

At least seventy-five percent of respondents could correctly answer questions on the prevention and transmission of HIV and other STBBI; however, there were important gaps in respondents' knowledge that need to be addressed by public health officials and health care providers. Knowledge about HIV was higher than for other STBBI. While nearly all respondents understood that persons infected with HIV could appear healthy, only 58.5% understood that HCV could also be asymptomatic, and 74.4% were aware that STIs do not always cause symptoms. Only 31.3% of respondents were aware that treatment is available for HCV.

STRENGTHS AND LIMITATIONS

M-Track results are collated from sentinel sites and provide an important national perspective on risk behaviours among MSM in Canada. M-Track data are collected by cross-sectional surveys. While it is not possible to examine causality directly, these surveillance data offer critical information for service providers and prevention programs at all levels: national, provincial, territorial and local.

In addition, the large survey sample sizes relative to other similar surveys in Canada, means that adequate statistical power is available to examine differences between sub-groups regarding risk behaviours and associated factors.

M-Track primarily uses venue-based sampling methods to overcome some inherent difficulties in accessing hard-to-reach populations. As a result, the surveillance findings are not representative of the entire target population in Canada.

With the exception of the biological component, the findings in this report are based on self-reported data, which are subject to recall bias and social desirability bias. As a result, socially undesirable behaviours may have been underreported, while socially desirable behaviours may have been overreported.

CONCLUSIONS AND NEXT STEPS

M-Track is the primary source of data for monitoring trends in the occurrence of HIV, HCV and syphilis among MSM in Canada, including changes in behaviours associated with the acquisition and transmission of these pathogens. M-Track data will therefore be used to monitor progress with respect to Canada's goal of preventing the acquisition and transmission of new HIV infections.

Feedback from Phase 1 of the M-Track surveillance system demonstrated that the system was well received by participants and collaborating partners. The establishment of this surveillance system across Canada was critical in the generation of information for planning and evaluating the response to HIV and other STBBI among MSM in Canada. Through this system, national and, to a certain extent, provincial and local trends in risk behaviours can be assessed.

Results from Phase 1 of M-Track confirmed that the seroprevalence of HIV, syphilis and HCV are high among MSM from participating sentinel sites across Canada. Many men are having safer sex. But it is clear that the potential for the transmission of HIV and other STBBI among MSM in Canada still exists, since a significant proportion of men still report UAI. Phase 1 of M-Track also confirms that testing for HIV is high, but that a proportion of participants were unaware of their HIV positive status. Data related to the testing behaviours of MSM for other STBBI, as well as knowledge about other STBBI among MSM, indicate that awareness about the consequences of infection could be enhanced, and that testing for all pertinent infections should be offered to MSM reporting risky sexual practices.

MSM are not a homogeneous group; thus, a single prevention message or strategy is unlikely to succeed. Prevention messages must be tailored at the community level, given the distinct risk profiles among men who participated across the sentinel sites. Policy development should focus on helping men who are HIV negative remain negative, and should provide those who are positive with care and counselling, as well as with information on how to avoid transmitting HIV and other STBBI.

This report is intended to provide a comprehensive overview of the data from a national perspective. It not only provides useful information for public health action, policy development and program evaluation, but it will also serve as a baseline for continued monitoring and for more complex analyses undertaken in the future.

Phase 2 of M-Track has been completed in Vancouver and Montréal. Current efforts are focused on improving the M-Track surveillance system as PHAC and its partners work towards the implementation of Phase 3.

1. INTRODUCTION

1.1 ABOUT THIS REPORT

This report presents the key findings from Phase 1 of M-Track, an enhanced surveillance system of HIV and other sexually transmitted and blood-borne infections (STBBI) among men who have sex with men (MSM) in Canada. It provides a brief overview of second generation surveillance systems and background information on the development of M-Track. It also describes the design and methods of the M-Track surveillance system, including information on eligibility criteria, sample size projections, sampling and recruitment strategies, survey staff and their training, as well as the main components of the data collection process (i.e., the survey instrument and the biological sample). Key findings from Phase 1 of M-Track are presented in the section on results. This report concludes with a brief discussion of its main findings, the strengths and limitations of M-Track, as well as the implications and plans for future phases of M-Track.

1.2 REPORT OBJECTIVE

This report presents descriptive findings from Phase 1 M-Track surveys undertaken between 2005 and 2007 at participating sentinel sites across Canada from a national perspective. The report is a comprehensive overview of the data collected, which is intended as information for public health policy development and program evaluation. It should also serve as a baseline for continued monitoring of changes and for higher level analyses undertaken in the future. Subsequent analyses will explore the relationship between specific variables and issues of interest to community members, researchers and policy and program analysts.

2. BACKGROUND

2.1 HIV/AIDS AND OTHER STBBI AMONG GAY, BISEXUAL AND OTHER MSM IN CANADA

Recent data indicate that HIV/AIDS continues to disproportionately affect MSM in Canada. Despite past achievements in curbing the epidemic among MSM, early in the twenty-first century research pointed to an increase in the transmission of HIV among MSM in Western countries, including Canada, renewing questions about how to enhance existing programs and policies aimed at preventing the transmission of HIV.^{4,5}

In 2008, the number of positive HIV test reports reported to the Public Health Agency of Canada (PHAC) attributed to the MSM exposure category continued to account for the largest proportion of HIV test reports among adults.⁶ The most recent national estimates indicate that the incidence of HIV among MSM is relatively stable; yet this group still accounted for the highest proportion of estimated new HIV infections in Canada in 2008.⁷

MSM are also disproportionately affected by other STBBI. Sporadic outbreaks of syphilis have occurred among MSM in Canada over the past decade. There are also important interactions between syphilis and HIV infection, and evidence shows that early detection and treatment of an STI (such as syphilis) can affect the sexual transmission of HIV. Further, seropositivity for the hepatitis C virus (HCV) among MSM who do not report a history of injection drug use is associated with HIV infection, raising the possibility of sexual transmission of HCV in this group when no other transmission risk is reported.⁸⁻¹⁰ However, self-reported risk practices may not be accurate.

Routine national surveillance systems for sexually transmitted infections and viral hepatitis do not collect data on the exposure category or the risk behaviours among cases, which limits their use in estimating the burden of other STBBI among MSM in Canada.

While a detailed discussion of the epidemiology of HIV/AIDS and other STBBI among MSM in Canada is beyond the scope of this report, PHAC publishes data on recent trends and developments related to the HIV epidemic in Canada in the *HIV/AIDS Epi Updates Report*.¹¹

2.2 THE FEDERAL INITIATIVE TO ADDRESS HIV/AIDS IN CANADA (FI)

PHAC is responsible for coordinating the federal response to HIV/AIDS, as described in *The Federal Initiative to Address HIV/AIDS in Canada*¹ and in *Leading Together: Canada Takes Action on HIV/AIDS*,² Canada's blueprint for action.

One of the key components of the FI is knowledge development, which aims to enhance the understanding of the HIV epidemic, and to inform the development of policies, programs and interventions, including new prevention technologies and therapies.

More specifically, the FI identified a need to develop discrete approaches to address HIV/AIDS among eight key populations: MSM, people who inject drugs (IDU), Aboriginal peoples, youth-at-risk, people in prison, women, persons from countries where HIV is endemic and people living with HIV/AIDS.

2.3 ENHANCED (BEHAVIOURAL AND BIOLOGICAL) SURVEILLANCE IN CANADA

In response to the FI, in addition to generating knowledge on the epidemiology of HIV/AIDS in Canada through routine HIV/AIDS case surveillance and HIV strain and drug resistance surveillance, PHAC has committed to the development of enhanced (behavioural and biological) surveillance systems to monitor HIV and other STBBI.

In the early 1990s, the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) recommended that countries develop and implement second generation HIV/AIDS surveillance to monitor their HIV epidemics. Second generation HIV surveillance systematically integrates information from several sources, including data from biological and behavioural surveys, in order to provide a more complete picture of the HIV epidemiology and trends in a given jurisdiction/geographical area. Thus, trends in pre-defined indicators can be monitored over time among populations most at-risk of becoming newly infected with HIV. Second generation HIV/AIDS surveillance can serve as an early warning system for the spread of HIV and other STBBI, because it monitors both changes in behaviour over time and emerging risks. It also provides in-depth behavioural information, which informs and supports the evaluations of prevention policies and programs.³

In line with second generation HIV/AIDS surveillance approaches recommended by the WHO and the UNAIDS,³ PHAC has, to date, developed and implemented enhanced surveillance systems (biological and behavioural) for HIV and other STBBI that focus on people who inject drugs (called I-Trackⁱⁱ) and on gay, bisexual and other MSM (called M-Trackⁱⁱⁱ). The Enhanced Surveillance of Canadian Street Youth (called E-SYS), monitors STBBI prevalence and risk behaviour in street-involved youth. Focusing on persons originating from countries where HIV is endemic,^{iv} the E-Track concept has been successfully piloted in Québec and is undergoing further development. Two additional “Track” systems are currently being developed: the A-Track (focusing on Aboriginal peoples) and the P-Track (focusing on people living with HIV).

These surveillance systems comprise periodic cross-sectional surveys conducted at selected sites in Canada. The systems and tools are developed in consultation with epidemiologists, researchers (national and international), community-based organizations (CBO) and representatives from each key population. At the site level, survey implementation is led by local multidisciplinary site teams, composed of local/provincial public health epidemiologists, researchers and local program officers/CBO officials.

The overall objective of these surveillance systems is to describe the changing patterns in the prevalence and incidence of HIV and other STBBI and associated testing patterns and risk behaviours within each respective population. P-Track is envisioned to monitor trends related to access to care and treatment services.

2.3.1 M-TRACK: ENHANCED (BEHAVIOURAL AND BIOLOGICAL) SURVEILLANCE AMONG GAY, BISEXUAL AND OTHER MSM IN CANADA

In 2005, PHAC implemented M-Track, an enhanced surveillance system for HIV and other STBBI among MSM in Canada.

The implementation of M-Track provided a means of building on previous research initiatives and it complements many other efforts currently underway to address HIV/AIDS and other STBBI in Canada.

As of 2010, a total of six sites had participated in M-Track across Canada. Phase 1 of M-Track was first implemented in Montréal in 2005. Between 2006 and 2007, four additional sites joined M-Track: Toronto, Ottawa, Winnipeg and Victoria. The Vancouver site was the most recent to implement M-Track, joining Phase 2, which began in 2008 and ended in 2010. Montréal also participated in Phase 2 of M-Track.

It is anticipated that information collected and generated by M-Track will be used by local, provincial, territorial and national organizations to improve the planning of their prevention programs and activities.

ii <http://www.phac-aspc.gc.ca/i-track/index-eng.php>

iii <http://www.phac-aspc.gc.ca/aids-sida/about/mtrack-eng.php>

iv List of HIV endemic countries: http://www.phac-aspc.gc.ca/publicat/epiu-aepi/epi-1205/app_a-eng.php

3. METHODS

3.1 OVERVIEW OF METHODS

In addition to providing a broad overview of M-Track methods, this section provides details on the data analysis methods used in this report. Section 3.2 provides an overview of the surveillance system design used in Phase 1 of M-Track, including details about the objectives of M-Track (3.2.1), sentinel site selection (3.2.2), eligibility criteria (3.2.3), sample size projections (3.2.4) and sampling and recruitment (3.2.5). This section also discusses data collection tools (3.2.6), data management processes (3.2.7), survey staff and training procedures (3.2.8) and ethical considerations (3.2.9). Section 3.3 outlines the data analysis methods used to generate this report, and briefly discusses future analyses based on M-Track data.

3.2 SURVEILLANCE SYSTEM DESIGN

3.2.1 M-TRACK PHASE 1 OBJECTIVES

PRIMARY OBJECTIVES

- To ensure a core set of comparable behavioural measures among MSM in all sentinel surveillance sites, while addressing data needs on local and regional issues and questions of specific local interest.
- To describe the changing patterns and trends in sexual behaviour among MSM from participating surveillance sites across Canada.
- To determine the prevalence of HIV, HCV, and syphilis from a biological sample.
- To identify patterns of HIV, STI, and viral hepatitis testing.

SECONDARY OBJECTIVES

- To identify potential risk factors associated with high-risk sexual behaviour, including socio-demographic variables, recreational drug use, and relationship status.
- To identify potential risk factors associated with current or past HIV infection and STBBI, including sexual behaviour, socio-demographic variables, recreational drug use, and relationship status.
- To identify general issues relevant to sexual health and sexual behaviour for men who have sex with men.
- To consider the possibility of assessing incidence with tests to detect recent infection.

3.2.2 SENTINEL SITE SELECTION

Sentinel sites were chosen based on feasibility, needs assessment, local interest, and on the site's ability to implement the survey.

A total of five sites participated in Phase 1 of M-Track between 2005 and 2007 (Victoria, Winnipeg, Toronto, Ottawa, Montréal).

3.2.3 ELIGIBILITY CRITERIA

Men who have ever had sex with another man^v and who were at least fifteen years old were eligible to participate (n.b., minimum age of consent to participate depends on provincial requirements and ranged from fifteen in Winnipeg to eighteen years of age in Victoria and Montréal). Participants were only permitted to participate once during the survey period across all of the surveillance sites. No explicit screening criteria were used to establish eligibility during the recruitment stage. Instead, the criteria were applied to the data during data cleaning.

In two sentinel sites, Victoria and Montréal, participation was restricted by place of residence. In Victoria, participation was restricted to residents of the southern Vancouver Island area or the southern Gulf Islands; in Montréal, respondents had to reside on the island of Montréal.

3.2.4 SAMPLE SIZE PROJECTIONS

The requisite sample size for each site was based on source population size, analytic needs and financial resources. The objectives for each site's survey were refined and target outcomes were identified in collaboration with local sentinel site study teams. Sample size projections varied from 250 in Winnipeg to 2025 in Montréal. Toronto and Ottawa were combined under one research team with different arms. The minimum combined sample size target was 1000 (800 in Toronto and 200 in Ottawa) and the maximum was 1500 (1000 in Toronto and 500 in Ottawa). Victoria sought to recruit 330 men.

3.2.5 SAMPLING AND RECRUITMENT

Sampling and recruitment strategies were guided by time, budget and constraints on access to population. Sentinel sites used a variety of sampling and recruitment methods, though all sites used some form of venue-based convenience sampling.

"Venues" were defined as settings for social interaction or health care by MSM within each sentinel site. The type and number of venues used to recruit men for M-Track varied across sentinel sites. For example, Victoria used venue-based convenience sampling combined with recruitment of respondents at special events and through the research team's personal networks. Ottawa and Toronto used a multi-stage venue-based approach, which involved selecting venues, scheduling of venues and enrolment of participants. Ethno-specific groups were intentionally selected for recruitment to achieve a more representative sample of MSM (unique to Toronto and Ottawa). Similarly, Montréal used an adapted time-location sampling method to improve the generalizability of findings. The number of venues and special events varied across sites. Winnipeg used respondent driven sampling (RDS) in addition to venue-based sampling.¹²

The recruitment period also varied across sentinel sites, ranging from approximately twelve weeks in Victoria and Ottawa, to approximately twenty-eight weeks in Montréal. Three M-Track sentinel sites (Ottawa, Toronto and Montréal) also built websites to provide further details on the surveillance system and its results to participants.^{vi}

For further details on the respective sampling and recruitment methods of the M-Track sentinel sites, please refer to the site-specific reports.¹³⁻¹⁵

3.2.6 DATA COLLECTION

Data for Phase 1 of M-Track were collected using self-administered paper-based questionnaires. Winnipeg participants also had the option of an interviewer-administered/assisted questionnaire. Research assistants were present to obtain consent and collect dried blood spot (DBS) samples from respondents.

3.2.6.1 QUESTIONNAIRE

The M-Track questionnaire was created by a working group of experts from across Canada, including individuals who were instrumental in the design and implementation of the *Sex Now* surveys, the *Ontario Men's Survey* and Montréal's *Omega Cohort*.

The core questionnaire asked about socio-demographics, sexual behaviours, drug use, HIV, HCV and other STBBI testing behaviours, as well as questions on knowledge and attitudes related to HIV and other STBBI.

A core set of questions, with minor variations, was used across all sites in order to enable comparability across sites (please see Appendix 1 for an example of core survey questions from Phase 1 of M-Track). Survey sites also had the opportunity to add their own questions to the survey to address local needs.

In Winnipeg and Victoria the survey was available in English only; whereas in Toronto, Ottawa and Montréal the survey was available in both English and French.

3.2.6.2 BIOLOGICAL SAMPLE COLLECTION AND TESTING

In addition to being asked to self-report their HIV, HCV and other STBBI status, participants were asked to provide a finger-prick blood sample, which was used to create a DBS sample for HIV, HCV and syphilis testing. Biological samples were only collected with participants' explicit consent. Samples were not stored for future testing except where explicit consent was given at the time of the survey. Participants could also opt out of specific tests (e.g., HIV testing).

The biological sample was collected on a cotton-fibre based paper product (Whatman 903[®] DBS specimen card) designed for the collection of bodily fluids (Figure 1). The area on the fingertip to be pricked was cleaned with an alcohol swab, and a microlancet was then used to puncture the cleaned area (Figure 2). The sample card was filled with blood spots and the puncture site was covered with a bandage (Figure 3).

FIGURE 1. Cotton-fibre based paper product designed for the collection of body fluids

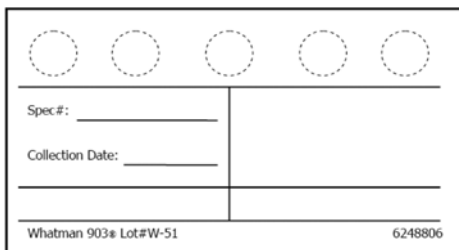


FIGURE 2. Sample DBS kit



FIGURE 3. Collected DBS on the drying rack



Biological samples were labelled at the point of collection with a unique anonymous identification code that corresponded to the participant's questionnaire. The coded samples were transported to the National HIV and Retrovirology Laboratories (NHRL) in Ottawa for HIV and HCV testing and subsequently sent to the National Microbiology Laboratory (NML) in Winnipeg for syphilis testing. Each sentinel site was responsible for forwarding its biological samples to PHAC for laboratory testing.

DBS samples were screened for HIV using the Bio-Rad GS rLAV HIV-1 Enzyme immunoassay (EIA). Confirmatory testing was subsequently performed using the Bio-Rad Genetic Systems™ HIV-1 Western Blot assay. A positive result indicates a current HIV infection. The HIV screening (EIA) and confirmatory assay (Western Blot) are approved by Health Canada as diagnostic assays for use with DBS samples.

HCV testing was performed using the Ortho® HCV version 3.0 EIA. Confirmatory testing was not performed for samples that tested reactive. A positive result may be due either to false positivity or the presence of antibodies against HCV, which indicates either past or present HCV infection but does not distinguish acute from chronic or resolved infections.

Syphilis testing was performed using the Serodia® *Treponema pallidum* particle agglutination assay (TP-PA). As with HCV, confirmatory testing was not performed for samples that tested positive. A positive result may be due either to false positivity or the presence of antibodies against syphilis, which indicates either past or present syphilis infection but does not distinguish acute from chronic or resolved infections.

Since the surveillance system is anonymous, respondents did not receive the results of their tests. Nonetheless, participants were encouraged to seek testing for HIV and other STBBI via local clinics or physicians. Local contact information for health care providers and testing facilities was collected at each site and used by interviewers to make appropriate referrals.

In Toronto and Ottawa, a small number of respondents provided a DBS sample without completing the questionnaire. These respondents are not included in the analyses presented in this report.

3.2.7 DATA MANAGEMENT

3.2.7.1 DATA ENTRY AND CLEANING PROCESS

The CCDIC assumed data management responsibilities for the combined national dataset, including laboratory results. Laboratory results were managed by NHRL, NML and CCDIC, and were provided to sentinel sites as they became available.

Standardized data recoding procedures were applied to all sentinel site datasets to create a national data set for analysis. Pre-coded standard response categories were selected for all variables, where feasible. Although the M-Track questionnaire contains national core questions that were intended for use in all participating sites, core questions were omitted from site questionnaires in some cases, and in others the response categories were modified. In order for the data to be analysed at the national level response categories were sometimes collapsed across sites and/or derived variables were created from multiple questions to improve comparability.

The main survey question on ethnicity was particularly challenging from a data management perspective; thus, the data management processes applied to this question are described in some detail here. With the exception of Montréal, respondents were asked an open-ended question about which single ethnic or cultural group they most strongly identified. The question produced a large variety of responses, posing several interpretive challenges. To facilitate analysis, all text responses were recoded into a pre-defined list of ethnic origins based on Statistics Canada's 2001 Census guidelines.^{vii} Where more than one response was provided, the first was used. Respondents indicating any Aboriginal ancestry, however, were always coded as "Aboriginal". Respondents who identified as "French Canadian" or "English Canadian" were coded as "North American". Where a response did not match any of the Census 2001 guidelines (e.g., "Citizen of the world"), the respondent was recoded as non-classifiable for the ethnicity variable.

3.2.8 SURVEY STAFF AND TRAINING

3.2.8.1 SURVEY STAFF

The national M-Track coordinator, an epidemiologist from PHAC, served as the primary federal contact, providing support to each sentinel site in implementing the survey, training local survey teams, managing day-to-day needs for the surveillance system as a whole, and liaising with local survey teams to address any issues on an ad hoc basis. The national M-Track coordinator was supported by a surveillance officer and a second epidemiologist.

The local principal investigators were responsible for overall leadership and study management within their respective sentinel site, including finalizing the questionnaire, obtaining local research ethics board (REB) approvals, hiring local study teams, overseeing survey implementation, liaising with community stakeholders and PHAC, ensuring data security and quality, leading analysis plans and drafting summary reports at the sentinel site level.

A site coordinator was selected at each site to oversee day-to-day operations of the survey at the site level, to coordinate research assistants and to liaise with the venues participating in the survey. Site coordinators were selected on the basis of their experience working with the MSM community and on similar research. The site coordinator was the main point of contact for the national M-Track coordinator and the PHAC M-Track team, providing regular updates on survey progress at the site level and requesting support as needed.

The interviewers/research assistants at each site were selected by the site study team based on previous experience working with the MSM community. The research assistants were responsible for recruiting, screening and obtaining consent from all participants in the survey. They were also responsible for collecting DBS samples, as well as for answering participants' questions and providing contact information for related services.

3.2.8.2 TRAINING

All survey study teams were trained in the M-Track protocol and procedures guidelines prior to survey implementation. Training topics included: ethics, recruitment, sampling methods, questionnaire administration, universal precautions, DBS collection techniques and debriefing session content. Staff safety and security issues were also discussed with the sentinel site study team.

3.2.9 ETHICAL CONSIDERATIONS

The study protocol, questionnaire and procedural guidelines were approved by the Health Canada/PHAC REB (formerly known as the Health Canada REB) and by local REBs at each sentinel site. Participation in the survey was voluntary and anonymous, and surveys and DBS samples were only completed after obtaining informed consent. Participants were given a small honorarium for their time and effort. The confidentiality of study participants was emphasized throughout the survey's implementation. The participants' names were not recorded on the questionnaire or DBS sample.

3.3 APPROACHES TO DATA ANALYSIS

Compiling and analyzing data from a national enhanced surveillance system is a complex task, not only because of the challenges presented by large data sets, but also because countless variables and possible associations are available for exploration and analysis. A number of factors influence the selection of data and their mode of presentation. The objective of this report is to provide a simple and comprehensive overview of the data collected in Phase 1 of M-Track. Thus, the data presented in this report are descriptive and are only intended to provide a preliminary overview of the data from a national perspective. Nonetheless, the report provides a baseline for comparing results from future phases and for formulating questions for more complex analyses.

Table 1 describes the overall data collection period for Phase 1 of M-Track and the details on sample size and provision of DBS samples by site. Between 2005 and 2007, 4,838 men across five sentinel sites participated in Phase 1 of M-Track. The number of participants ranged from a low of 121 in Winnipeg to a high of 2,020 in Toronto.

TABLE 1. Data collection period, sample size and provision of DBS sample

	Local Survey Name	Year of Survey Implementation	SAMPLE SIZE		
			Total Number of Participants n	Completed Questionnaire n (%)	Provided DBS n (%)
Victoria	M-Track Victoria	2007	224	224 (100.0)	184 (82.1)
Winnipeg	M-Track Winnipeg	2006	121	121 (100.0)	96 (79.3)
Toronto	Lambda	2007	2020	1987 (98.4)	832 (41.2)
Ottawa	Lambda	2007	516	504 (97.7)	309 (59.9)
Montréal	Argus	2005	1957	1957 (100.0)	1944 (99.3)
Total	—	—	4838	4793	3365

Overall, 4,793 men completed questionnaires. In Victoria, Winnipeg and Montréal, all M-Track participants completed a questionnaire. In Toronto, 98.4% completed the questionnaire and in Ottawa, 97.7%, which reflects differing eligibility criteria across the sites. Respondents in Toronto and Ottawa were given the option of providing only a DBS.

The proportion of participants who provided a DBS also varied across the sites from a low of 41.2% in Toronto to a high of 99.3% in Montréal. While participants at all sites were encouraged to complete both components of the survey, the behavioural questionnaire and biological DBS sample (see section 3.2.6), respondents in all sites except Montréal were eligible to participate provided they agreed to take part in one component.

Only men who completed the questionnaire are included in the analytic sample for all subsequent result tables presented in this report (n=4,793).

The data in this report are presented in tabular format by sentinel site (when numbers were sufficient for analysis), to allow for comparison across sentinel sites and with the national M-Track sample as a whole.^{viii} Sentinel sites are presented as column headers, ordered from west to east geographically. An overall column total labelled “Total n, %” is presented in applicable tables, and it represents the total sample size and proportion across all sites. This method is called self-weighting because each site contributes to the total average as a function of its sample size. The advantage of this method is that larger sample sizes have more weight, which minimizes sampling error. But it may also bias the overall total proportion where there is considerable inter-site variability, or where the sample size in each site is not proportional to the relative size of the actual MSM population in each site.

Response categories are presented in descending order by frequency with the exception of ordinal variables and the “Other” category, which is always presented last.

It is important to note that data presented in this report are not based on a random sample. Therefore differences across the sentinel sites may reflect variations in recruitment methods, sampling methods and/or eligibility criteria (3.2) and do not necessarily reflect differences in socio-demographic characteristics or behaviours among MSM across sites. No statistical procedures were used to compare findings across sentinel sites in this report.

Data in tables with small cell sizes^{ix} were not suppressed, since disclosure poses no risk of identifying individual participants. These procedures are in line with PHAC’s policy on the collection, use and dissemination of public health data.¹⁶

Poor or marginal quality data can be determined by the degree of non-response, where data with a “high” degree of non-response (“missing data”) are treated as marginal or poor quality. Defining a “high” degree of non-response, however, depends on the source and the uses of the data. Missing data can bias estimates and limit the generalizability of findings, if respondents who opted to answer the question differ from those who opted not to, and because missing data can reduce statistical power. In self-administered surveys, missing data are common, particularly when questions are sensitive as is the case in M-Track.^{17,18}

A variety of techniques are available for handling missing data, including suppression of the data altogether. In this report, no statistical techniques were used to account for missing data, since analyses are limited to cross-tabulations. Instead, missing data are presented in an independent row in each table (where feasible). Denominators used in the calculation of proportions exclude records with missing values (unless otherwise noted). Readers should be aware that this method assumes that missing values are random, which is not always the case. To ensure that the data presented in the tables are properly interpreted, each table presents the specific sub-group of respondents to which the analysis applies—called the “eligible” in this report. The “Total” row in each table describes the total “eligible” sample size.

The M-Track questionnaire contains national core questions that all sites were intended to use. In exceptional cases, however, some core questions were omitted from site questionnaires and/or new core questions were introduced to the questionnaire throughout Phase 1. Where applicable, these exceptions are noted in relevant tables. Dashes (—) within a table cell indicate that the response category does not apply.

In general, the results presented in this report reflect the main lines of the core M-Track questionnaire (Appendix 1).

viii Please note that due to rounding, total column percentages do not always add to 100%.

ix The definition of small cell size varies, but it is often defined as a cell count greater than zero but less than three, five, or six, depending on the nature of the data and the source.

4. RESULTS

4.1 OVERVIEW OF RESULTS

The results section of this report presents the cell count and frequency distribution of responses to the M-Track questionnaire and DBS results by sentinel site. Section 4.2 presents data collected on the socio-demographic characteristics of participants, section 4.3 covers sexual life and other practices and section 4.4 covers recreational drug use. Section 4.5 presents data about the prevalence of HIV among participants, as well as awareness regarding HIV status and HIV testing and treatment history. Section 4.6 presents data on the prevalence of HCV and other STBBI among participants, as well as testing behaviour and self-reported history of HCV and other STBBI. Finally, section 4.7 presents data on knowledge and assumptions about HIV and other STBBI. For details on the data analysis methods used to generate these results, please refer to section 3.3.

4.2 PARTICIPANT OVERVIEW AND SOCIO-DEMOGRAPHIC CHARACTERISTICS

Like most surveys, the M-Track questionnaire asked a number of questions about the socio-demographic characteristics of participants. This section presents data related to the recruitment venue, as well as the age, education, income, language, ethnicity and sexual orientation of participants. These findings provide an overview of the characteristics of participants in Phase 1 of M-Track. Thus, to some extent, they also inform the interpretation of results on testing patterns related to HIV and other STBBI, the biological lab results, and the risk behaviours reported by survey participants.

TABLE 2. Recruitment venues

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Bar	43 (19.2)	50 (41.3)	854 (44.4)	180 (37.1)	1034 (52.8)	2161 (45.9)
Event	92 (41.1)	—	442 (23.0)	105 (21.6)	49 (2.5)	688 (14.6)
Association	15 (6.7)	—	175 (9.1)	75 (15.5)	28 (1.4)	293 (6.2)
Bathroom	2 (<1.0)	—	198 (10.3)	17 (3.5)	195 (10.0)	412 (8.7)
Other	72 (32.1)	71 (58.7)	254 (13.2)	108 (22.3)	651 (33.3)	1156 (24.5)
(n)	224	121	1923	485	1957	4710
Missing	0 (0.0)	0 (0.0)	64 (3.2)	19 (3.8)	0 (0.0)	83 (1.7)
Total	224	121	1987	504	1957	4793

Table 2 shows the number and proportion of men in M-Track recruited at different venues across participating sentinel sites. “Venues” were defined as settings used for social interaction or health care by MSM, within the respective sentinel sites. The type and number of venues used to recruit men for M-Track varied across sentinel sites. Nearly half of all participants in Phase 1 of M-Track were recruited in bars. The proportion of respondents recruited in bars ranged from a low of 19.2% in Victoria to a high of 52.8% in Montréal.

With the exception of Winnipeg, participants were also recruited at events, at associations and at bathhouses. In Winnipeg, there are fewer social venues catering to gay men (e.g., there are only two or three main gay nightclubs); thus, many interviews were held in community and outreach centres.

In the two largest sentinel sites, Montréal and Toronto, roughly ten percent of men were recruited from bathhouses.

“Other” recruitment venues included restaurants, social groups, street outreach sites, support groups, churches and fixed sites set-up specifically for M-Track.

TABLE 3. Age of respondents

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
15-19	8 (3.8)	5 (4.3)	18 (1.0)	12 (2.6)	31 (1.6)	74 (1.7)
20-24	36 (17.1)	23 (19.8)	149 (8.6)	57 (12.6)	250 (13.0)	515 (11.6)
25-29	27 (12.8)	29 (25.0)	203 (11.8)	51 (11.3)	257 (13.3)	567 (12.8)
30-34	18 (8.5)	18 (15.5)	233 (13.5)	47 (10.4)	236 (12.3)	552 (12.5)
35-39	15 (7.1)	9 (7.8)	246 (14.3)	53 (11.7)	255 (13.3)	578 (13.1)
40-44	24 (11.4)	17 (14.7)	309 (17.9)	76 (16.8)	287 (15.0)	713 (16.1)
45-49	28 (13.3)	6 (5.2)	249 (14.4)	66 (14.6)	197 (10.3)	546 (12.3)
50-54	18 (8.5)	5 (4.3)	123 (7.1)	33 (7.3)	172 (9.0)	351 (8.0)
55-59	11 (5.2)	2 (1.7)	83 (4.8)	18 (4.0)	117 (6.1)	231 (5.2)
60-64	10 (4.7)	2 (1.7)	58 (3.4)	24 (5.3)	77 (4.0)	171 (3.8)
65 +	16 (7.6)	0 (0.0)	55 (3.2)	16 (3.5)	40 (2.1)	127 (2.9)
(n)	211	116	1726	453	1919	4425
Missing	13 (5.8)	5 (4.1)	261 (13.1)	51 (10.1)	38 (1.9)	368 (7.7)
Total	224	121	1987	504	1957	4793

Table 3 shows the age distribution of respondents across sentinel sites. Respondents were asked to indicate their year of birth and were grouped into categories accordingly for this table.

With the exception of Winnipeg, the highest proportion of respondents across sites fell between the ages of 30 and 49 (54.0%). Nonetheless, a substantial proportion of respondents were between the ages of 15 and 29 (26.1%) and over the age of 50 (19.9%). In Winnipeg, the highest proportion of respondents was under twenty-nine (49.1%) and a much lower proportion was over fifty years of age (7.7%). Proportionately speaking, more young participants were recruited in Victoria and Winnipeg.

The mean and median age of all M-Track participants was 39 (range, 16-86, data not shown in table).

TABLE 4. Personal income before taxes from all sources (annual)

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
No reported income	6 (2.8)	6 (7.1)	50 (2.7)	8 (1.7)	65 (3.4)	135 (3.0)
\$1 - \$9,999	17 (8.1)	29 (34.1)	120 (6.5)	39 (8.2)	219 (11.5)	424 (9.4)
\$10,000 - \$19,999	53 (25.1)	15 (17.6)	201 (10.9)	54 (11.4)	353 (18.5)	676 (14.9)
\$20,000 - \$29,999	30 (14.2)	19 (22.4)	200 (10.8)	51 (10.8)	323 (16.9)	623 (13.8)
\$30,000 - \$39,999	36 (17.1)	6 (7.1)	259 (14.0)	52 (11.0)	364 (19.0)	717 (15.8)
\$40,000 - \$49,999	21 (10.0)	4 (4.7)	244 (13.2)	48 (10.1)	237 (12.4)	554 (12.2)
\$50,000 - \$59,999	12 (5.7)	2 (2.4)	187 (10.1)	55 (11.6)	149 (7.8)	405 (9.0)
\$60,000+	36 (17.1)	4 (4.7)	584 (31.7)	166 (35.1)	201 (10.5)	991 (21.9)
(n)	211	85	1845	473	1911	4525
Missing	13 (5.8)	3 (2.5)	142 (7.1)	31 (6.2)	46 (2.4)	235 (4.9)
Don't Know	—	30 (24.8)	—	—	—	30 (<1.0)
Refused	—	3 (2.5)	—	—	—	3 (<1.0)
Total	224	121	1987	504	1957	4793

TABLE 5. Highest level of education attained

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Elementary/primary school	19 (8.8)	62 (52.5)	114 (6.1)	27 (5.6)	57 (3.0)	279 (6.9)
Secondary/high school	100 (46.5)	42 (35.6)	600 (32.0)	142 (29.4)	550 (28.7)	1434 (31.1)
College/University	73 (34.0)	12 (10.2)	882 (47.0)	235 (48.7)	1091 (56.9)	2293 (49.8)
Graduate education	23 (10.7)	2 (1.7)	280 (14.9)	79 (16.4)	214 (11.2)	598 (13.0)
Other	—	—	—	—	5 (<1.0)	5 (<1.0)
(n)	215	118	1876	483	1917	4609
Missing	9 (4.0)	3 (2.5)	111 (5.6)	21 (4.2)	40 (2.0)	184 (3.8)
Total	224	121	1987	504	1957	4793

Respondents were asked to report their personal income from all sources before taxes in the year preceding the survey. As shown in Table 4, just over 30% of M-Track participants earned more than \$50,000 annually. In Winnipeg, however, fewer than 10% of respondents earned over \$50,000 in the year preceding the survey. Overall, 12.4% of men reported less than \$10,000 annually or reported no income.

Respondents were also asked to identify the highest level of education completed at the time of the survey. Table 5 shows that 6.9% of participants had completed elementary/primary school, 31.1% had completed secondary/high school, 49.8% had completed college/university and 13.0% had obtained a graduate degree.

Over sixty percent of the M-Track sample had attained a minimum of a college or university degree (62.8%).

Completion of a college or university degree ranged from a low of 10.2% in Winnipeg to a high of 56.9% in Montréal. Over ten percent of participants in Victoria, Toronto, Ottawa and Montréal had attained a graduate degree.

TABLE 6. Language first learned and still understood today

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
English	188 (87.9)	105 (88.2)	1357 (76.4)	298 (65.2)	237 (12.4)	2185 (48.7)
French	14 (6.5)	2 (1.7)	157 (8.8)	123 (26.9)	1552 (80.9)	1848 (41.2)
Other	12 (5.6)	12 (10.1)	263 (14.8)	36 (7.9)	129 (6.7)	452 (10.1)
(n)	214	119	1777	457	1918	4485
Missing	10 (4.5)	1 (<1.0)	210 (10.6)	47 (9.3)	39 (2.0)	307 (6.4)
Refused	—	1 (<1.0)	—	—	—	1 (<1.0)
Total	224	121	1987	504	1957	4793

Respondents were asked to indicate the language they had first learned and still understand today. Table 6 shows that approximately half of the overall sample spoke English as their first language. A substantial proportion of the overall sample spoke French as their first language. This reflects the large number of native French speakers from the Montréal site (80.9%) as well as the high number of respondents from Ottawa who identified French as their first language (26.9%). In Toronto, nearly fifteen percent of respondents identified a first language other than English or French.

TABLE 7. Single ethnic or cultural origin respondent most strongly identified with

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
North American	135 (75.0)	36 (39.6)	898 (58.8)	301 (78.6)	1555 (83.8)	2925 (72.4)
East and Southeast Asian	3 (1.7)	0 (0.0)	129 (8.4)	11 (2.8)	26 (1.4)	169 (4.2)
Southern European	3 (1.7)	1 (1.1)	71 (4.6)	10 (2.6)	54 (2.9)	139 (3.4)
Latin American	3 (1.7)	0 (0.0)	62 (4.0)	4 (1.0)	67 (3.6)	136 (3.4)
British Isles	12 (6.7)	5 (5.5)	88 (5.7)	24 (6.3)	6 (<1.0)	135 (3.3)
Aboriginal	13 (7.2)	45 (49.4)	27 (1.8)	7 (1.8)	19 (1.0)	111 (2.8)
African/Caribbean	1 (<1.0)	0 (0.0)	77 (5.0)	4 (1.0)	23 (1.2)	105 (2.6)
Other	10 (5.6)	4 (4.4)	179 (11.7)	22 (5.7)	106 (5.7)	321 (7.9)
(n)	180	91	1531	383	1856	4041
Non-classifiable	29 (12.9)	11 (9.1)	273 (13.7)	85 (16.9)	0 (0.0)	398 (8.3)
Missing	15 (6.7)	19 (15.7)	183 (9.2)	36 (7.1)	101 (5.2)	354 (7.4)
Total	224	121	1987	504	1957	4793

Table 7 shows that the majority of M-Track participants most strongly identified as North American (72.4%), ranging from a high of 83.8% in Montréal to a low of 39.6% in Winnipeg. Overall, 2.8% of participants most strongly identified as Aboriginal; however, six percent of the overall sample reported some Aboriginal ancestry (data not shown). In Winnipeg, nearly half of the participants most strongly identified as Aboriginal (49.4%).

Other commonly reported ethnicities included East and Southeast Asian (4.2%), Southern European (3.4%), Latin American (3.4%), British Isles (3.3%) and African/Caribbean (2.6%), with some variation across sentinel sites. In Toronto and Ottawa, a special effort was made to contact and provide information to a variety of community groups, which reflected the diversity of the MSM community in these cities. Promotional materials were also adapted to target specific ethnic or cultural groups including Black/Africans, East/Southeast Asians, South Asians, Portuguese, Brazilians, Latinos and Aboriginal peoples (First Nations, Métis and Inuit). These efforts are reflected in the distribution of ethnicities in both sites.

Collecting data on ethnicity presents many challenges, which are reflected in the numbers presented in Table 7, where 8.3% of all participants in M-Track provided responses on the ethnicity question that were not classifiable using Canadian census guidelines (see section 3.2.7.1 for details on data processing). Similarly, the “other” ethnicity category accounted for approximately eight percent of the sample, and it includes participants who most strongly identified as “Other European”, West Asian, South Asian, Arab or Oceanic.

TABLE 8. Sexual identity of respondents

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Gay	171 (78.4)	53 (45.3)	1645 (85.2)	420 (86.4)	1540 (80.0)	3829 (81.8)
Bisexual	26 (11.9)	32 (27.4)	200 (10.3)	41 (8.4)	350 (18.2)	649 (13.9)
Straight	1 (<1.0)	11 (9.4)	35 (1.8)	8 (1.6)	28 (1.4)	83 (1.8)
Two-Spirit	4 (1.8)	16 (13.7)	27 (1.4)	6 (1.2)	8 (<1.0)	61 (1.3)
Other	16 (7.3)	5 (4.3)	26 (1.3)	11 (2.3)	—	58 (1.2)
(n)	218	117	1933	486	1926	4680
Missing	6 (2.7)	1 (<1.0)	54 (2.7)	18 (3.6)	31 (1.6)	110 (2.3)
Refused	—	3 (2.5)	—	—	—	3 (<1.0)
Total	224	121	1987	504	1957	4793

M-Track respondents were asked to define their sexual orientation. Table 8 shows that a substantial proportion of respondents reported their sexual orientation as gay (81.8%), ranging from a low of 45.3% in Winnipeg to a high of 86.4% in Ottawa. An additional 13.9% self-identified as bisexual. Others identified as straight (1.8%), two-spirit (1.3%) or "other" (1.2%). Notably, almost thirty percent of men who participated in Winnipeg self-identified as bisexual, 9.4% as straight and 13.7% as two-spirit, which illustrates the heterogeneity across sentinel sites with respect to socio-demographic characteristics.

4.3 SEXUAL LIFE AND OTHER PRACTICES

M-Track participants were asked specific questions about sexual behaviours and other practices (e.g., drug use) associated with an increased risk of contracting and transmitting HIV, HCV and other STBBI. Questions generally focused on behaviours within the previous six months with all sex partner types, including independent questions on regular, casual and commercial sex partners, as well as questions on their sexual partner's serostatus. However, participants were not asked about their relationship status (e.g., married, common-law, single, etc.) or about sexual behaviours with exclusive sex partners. While there is some information on the context of sexual partnerships, the level of detail is limited. For example, many who reported not always using a condom could have been involved in a monogamous relationship.

Section 4.3.1 includes general information related to sexual partnerships, such as the number of partners, settings for finding new sexual partners, condom use during the last sexual encounter (LSE) and any unprotected anal intercourse (UAI) in the past six months. Section 4.3.2 presents data on the number of regular sexual partners reported by respondents, as well as condom use with regular partners of positive, negative and unknown HIV status. Section 4.3.3 presents similar data for casual partners. Data on sex with female partners are presented in sections 4.3.4 and commercial sex involvement in section 4.3.5.

4.3.1 GENERAL SEX LIFE

TABLE 9. Public settings used for finding sexual partners, past six months

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Bars^a	84 (38.0)	74 (64.9)	980 (51.1)	240 (48.8)	1233 (64.8)	2611 (56.2)
(n)	221	114	1917	492	1902	4646
Missing	3 (1.3)	7 (5.8)	70 (3.6)	12 (2.4)	55 (2.8)	147 (3.1)
Total	224	121	1987	504	1957	4793
Saunas/baths	51 (23.1)	24 (24.4)	802 (41.8)	135 (27.4)	847 (45.5)	1859 (40.5)
(n)	221	98	1917	492	1863	4591
Missing	3 (1.3)	23 (19.0)	70 (3.5)	12 (2.4)	94 (4.8)	202 (4.2)
Total	224	121	1987	504	1957	4793
Internet (chat rooms/ personal ads)	97 (43.9)	29 (29.9)	819 (42.7)	204 (41.5)	636 (35.4)	1785 (39.4)
(n)	221	97	1917	492	1799	4526
Missing	3 (1.3)	24 (19.8)	70 (3.5)	12 (2.4)	158 (8.1)	267 (5.6)
Total	224	121	1987	504	1957	4793
Social Venues^b	77 (34.8)	24 (24.0)	544 (28.4)	132 (26.8)	351 (17.9)	1128 (24.1)
(n)	221	100	1917	492	1957	4687
Missing	3 (1.3)	21 (17.4)	70 (3.5)	12 (2.4)	0 (0.0)	106 (2.2)
Total	224	121	1987	504	1957	4793
Public settings^c	49 (21.9)	24 (24.7)	404 (20.3)	96 (19.0)	429 (24.7)	1002 (22.0)
(n)	224	97	1987	504	1736	4548
Missing	0 (0.0)	24 (19.8)	0 (0.0)	0 (0.0)	221 (11.3)	245 (5.1)
Total	224	121	1987	504	1957	4793

TABLE 9. Public settings used for finding sexual partners, past six months (CON'T)

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Coffee shops	23 (10.4)	12 (12.6)	200 (10.4)	50 (10.2)	363 (21.1)	648 (14.6)
(n)	221	95	1917	492	1724	4449
Missing	3 (1.3)	26 (21.5)	70 (3.5)	12 (2.4)	233 (11.9)	344 (7.2)
Total	224	121	1987	504	1957	4793
Telephone chat line/ personal ads^d	39 (17.6)	26 (26.5)	292 (15.2)	57 (11.6)	146 (8.6)	560 (12.6)
(n)	221	98	1917	492	1703	4431
Missing	3 (1.3)	23 (19.0)	70 (3.5)	12 (2.4)	254 (13.0)	362 (7.6)
Total	224	121	1987	504	1957	4793
Rave/circuit parties	12 (5.4)	22 (22.4)	168 (8.8)	30 (6.1)	206 (12.1)	438 (9.9)
(n)	221	98	1917	492	1699	4427
Missing	3 (1.3)	23 (19.0)	70 (3.5)	12 (2.4)	258 (13.2)	366 (7.6)
Total	224	121	1987	504	1957	4793
Sex parties	18 (8.1)	16 (16.5)	201 (10.5)	32 (6.5)	125 (7.4)	392 (8.9)
(n)	221	97	1917	492	1686	4413
Missing	3 (1.3)	24 (19.8)	70 (3.5)	12 (2.4)	271 (13.8)	380 (7.9)
Total	224	121	1987	504	1957	4793

^a Includes gay and straight bars, and after hours clubs/parties

^b Includes community organizations, recreational groups, community events for gays and lesbians, and health clubs/gyms (Please note: Montréal did not ask about health clubs).

^c Includes bicycle paths, parks, and public restrooms

^d Note: Montréal did not ask about personal ads

Respondents were asked to identify locations where they had sought out sex in the previous six months, as well as the frequency. Table 9 describes the number and proportion of respondents who reported seeking sex in public places.

M-Track participants commonly reported seeking sex in a variety of social and public settings in the six months preceding the survey. For example, a majority reported looking for sex in bars (56.2%), ranging from a low of 38.0% in Victoria to a high of 64.9% in Winnipeg.

Many respondents reported seeking sex in saunas or baths (40.5%), ranging from a low of 23.1% in Victoria to a high of 45.5% in Montréal. The Internet was another common venue (39.4%), ranging from a low of 29.9% in Winnipeg to a high of 43.9% in Victoria. Some men who sought sex in saunas and on the Internet reported doing so more than once per month (saunas 36%; Internet 57%) [Data not shown].

Nearly a quarter of men also reported seeking sex in other social venues, such as community organizations or events, gay associations, health clubs and other recreational groups (24.1%) as well as in public settings, such as parks, bicycle paths and public restrooms (22%).

Seeking sex in coffee shops (14.6%), telephone chat lines or personal ads (12.6%), rave or circuit parties (9.9%) and sex parties (8.9%) were less commonly reported.

Some of the venues included in Table 9 were also used as recruitment sites. Thus, variations across sites in the number and proportion of those who reported looking for sex in public settings might partly reflect differences in recruitment strategies across sentinel sites. The findings presented in Table 9 may also partly reflect differences in the availability of venues, since some participating sites have more bars and saunas than other sites.

TABLE 10. Number of male sex partners (oral or anal), past six months

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
None	29 (13.3)	13 (11.6)	247 (13.0)	50 (10.2)	136 (7.0)	475 (10.2)
One	77 (35.3)	22 (19.6)	458 (24.1)	152 (31.1)	468 (24.1)	1177 (25.3)
2 to 5	60 (27.5)	39 (34.8)	596 (31.4)	164 (33.5)	631 (32.6)	1490 (32.0)
6 to 9	28 (12.8)	18 (16.1)	204 (10.8)	40 (8.2)	237 (12.2)	527 (11.3)
10 to 19	16 (7.4)	9 (8.0)	186 (9.8)	35 (7.2)	189 (9.8)	435 (9.3)
20 or more	8 (3.7)	11 (9.8)	206 (10.9)	48 (9.8)	238 (12.3)	511 (11.0)
Did not specify number of partners	—	—	—	—	39 (2.0)	39 (<1.0)
(n)	218	112	1897	489	1938	4654
Missing	6 (2.7)	8 (6.6)	90 (4.5)	15 (3.0)	19 (1.0)	138 (2.9)
Don't Know	—	1 (<1.0)	—	—	—	1 (<1.0)
Total	224	121	1987	504	1957	4793

Table 10 presents the number of male sex partners (oral or anal) that men reported in the six months prior to the survey. While roughly a quarter of M-Track participants reported only one sex partner in the previous six months, the majority of men reported multiple male sex partners (oral and/or anal sex) in the six months preceding the survey (64.5%),^x ranging from a low of 51.4% in Victoria to a high of 68.7% in Winnipeg. An additional 10% reported no male sex partners in the previous six months. In Montréal 2.0% of respondents reported sex with a man in the previous six months, but they did not specify the number of partners.

TABLE 11. Number of male anal sex partners, past six months

(ELIGIBLE: Respondents who reported sex with a male partner in the past six months)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
None ^a	41 (22.3)	30 (36.1)	388 (26.3)	117 (28.1)	943 (56.2)	1519 (39.6)
One	70 (38.0)	15 (18.1)	406 (27.5)	137 (32.9)	195 (11.6)	823 (21.5)
2 to 5	55 (29.9)	24 (28.9)	433 (29.4)	117 (28.1)	255 (15.2)	884 (23.0)
6 to 9	14 (7.6)	8 (9.6)	49 (3.3)	19 (4.6)	86 (5.1)	176 (4.6)
10 or more	4 (2.2)	6 (7.2)	198 (13.4)	27 (6.5)	199 (11.9)	434 (11.3)
(n)	184	83	1474	417	1678	3836
Missing	5 (2.6)	14 (14.0)	176 (10.7)	22 (5.0)	124 (6.9)	341 (8.2)
Don't Know	—	1 (1.0)	—	—	—	1 (<1.0)
Refused	—	2 (2.0)	—	—	—	2 (<1.0)
Total	189	100	1650	439	1802	4180

^a Includes respondents who had oral sex with a male partner in the past 6 months;
Note: Some respondents who previously reported anal sex with a male partner(s) in the past six months (data not shown) subsequently provided responses on this question that were recorded as "None".

Respondents who reported having any sex (oral or anal) with a male sex partner in the previous six months (Table 10) were asked to specify whether they had anal sex with a male partner in the past six months and, if so, with how many men they had anal sex. Table 11 describes the number of anal sex partners reported by participants in the six months preceding the survey.

The majority of M-Track participants who had sex (oral or anal) with a man in the six months prior to the survey also reported having engaged in anal sex with at least one man in the previous six months (60.4%), ranging from a low of 43.8% in Montréal to a high of 77.7% in Victoria. Nearly forty percent of men did not report engaging in anal sex in the previous six months. Similarly, nearly forty percent of men reported multiple male anal sex partners in the previous six months.

Over ten percent of men in Toronto (13.4%) and Montréal (11.9%) reported ten or more anal sex partners in the six months prior to the survey.

TABLE 12. Condom use by either partner at last anal sex, past six months

(ELIGIBLE: Respondents who reported anal sex with a male partner in the past six months)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Yes	70 (48.6)	38 (73.1)	748 (64.1)	169 (56.7)	779 (66.9)	1804 (63.9)
No	74 (51.4)	14 (26.9)	419 (35.9)	129 (43.3)	385 (33.1)	1021 (36.1)
(n)	144	52	1167	298	1164	2825
Missing	3 (2.0)	7 (11.1)	35 (2.9)	8 (2.6)	45 (3.7)	98 (3.3)
Don't Know	—	3 (4.8)	—	—	—	3 (<1.0)
Refused	—	1 (1.6)	—	—	—	1 (<1.0)
Total	147	63	1202	306	1209	2927

TABLE 13. Any unprotected anal intercourse (UAI) in the past six months

(ELIGIBLE: Respondents who reported anal sex with a male partner in the past six months)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Yes	109 (74.7)	35 (60.3)	643 (55.0)	180 (59.8)	585 (48.9)	1552 (54.1)
No	37 (25.3)	23 (39.7)	526 (45.0)	121 (40.2)	611 (51.1)	1318 (45.9)
(n)	146	58	1169	301	1196	2870
Missing	1 (<1.0)	3 (4.8)	33 (2.7)	5 (1.6)	13 (1.1)	55 (1.9)
Don't Know	—	1 (1.6)	—	—	—	1 (<1.0)
Refused	—	1 (1.6)	—	—	—	1 (<1.0)
Total	147	63	1202	306	1209	2927

Men who reported having had anal sex with a male sex partner in the previous six months were asked whether they or their partner had used a condom the last time they had anal sex. Table 12 presents findings on condom use by either partner at the last occurrence of anal sex in the previous six months. Just over sixty percent of men reported using a condom the last time they had anal sex, ranging from a low of 48.6% in Victoria to a high of 73.1% in Winnipeg.

Men who reported having had anal sex with a male partner in the six months prior to the survey were also asked whether they had had UAI in the past six months (Table 13). Approximately fifty-five percent of men reported at least one UAI event with another man in the past six months, ranging from a low of 48.9% in Montréal to a high of 74.7% in Victoria.

4.3.2 REGULAR SEX PARTNERS

Respondents who reported sex with a male partner in the previous six months were also asked more detailed questions about sexual activities with regular sex partners during the same timeframe. A regular partner was defined as a man with whom the respondent had sex with at least twice. A regular partner can be a life partner, a boyfriend, a lover, etc., but does not include men to whom the respondent gave or received money, drugs or other goods or services in exchange for sex.

TABLE 14. Number of regular male sex partners, past six months

(ELIGIBLE: Respondents who reported sex with a male partner in the past six months)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
None	39 (21.1)	31 (32.0)	306 (19.8)	72 (17.3)	360 (20.4)	808 (20.2)
One	99 (53.5)	34 (35.1)	690 (44.7)	216 (51.9)	744 (42.2)	1783 (44.5)
Multiple	47 (25.4)	32 (33.0)	546 (35.4)	128 (30.8)	588 (33.4)	1341 (33.5)
Did not specify number of partners	—	—	—	—	71 (4.0)	71 (1.8)
(n)	185	97	1542	416	1763	4003
Missing	4 (2.1)	3 (3.0)	108 (6.5)	23 (5.2)	39 (2.2)	177 (4.2)
Total	189	100	1650	439	1802	4180

M-Track participants who reported a male sex partner in the previous six months were asked to indicate, from a list of ranges, how many regular male partners they had sex with (oral or anal) in the past six months (Table 14). Among these men, nearly eighty percent reported having sex with a regular male sex partner in the previous six months. Nearly half of the men reported only one regular sex partner (44.5%). An additional 33.5% of men reported multiple (> 1) regular male sex partners, ranging from a low of 25.4% in Victoria to a high of 35.4% in Toronto.

4.3.2.1 CONDOM USE WITH REGULAR SEX PARTNERS

The M-Track survey asked several questions about condom use with regular sex partners of varying HIV serotypes. Respondents were also asked to self-report their own HIV status based on the result of their most recent HIV test. Tables 15-17 present self-reported HIV status and condom use (i.e., how often a condom was used) with regular HIV negative and HIV positive partners and partners with unknown HIV status. Tables 15-17 present aggregated data for the national M-Track sample, rather than by site, on account of the interpretive complexities and the small overall sample sizes across all sites.

TABLE 15. Condom use during insertive and receptive anal sex with an HIV negative regular partner(s), by respondent's self-reported HIV status, past six months

(ELIGIBLE: Respondents who reported insertive and/or receptive anal sex respectively with regular HIV negative partner(s) in the past six months)

	SELF-REPORTED HIV STATUS ^a			
	HIV Positive n (%)	HIV Negative n (%)	Status Unknown ^b n (%)	Total n (%)
Condom Use:				
Insertive anal sex				
Consistent ^c	49 (46.7)	375 (37.1)	64 (37.2)	488 (37.9)
Inconsistent ^d	56 (53.3)	637 (62.9)	108 (62.8)	801 (62.1)
(n)	105	1012	172	1289
Missing	2 (1.9)	42 (4.0)	4 (2.3)	48 (3.6)
Total	107	1054	176	1337
Receptive anal sex				
Consistent ^c	48 (41.7)	325 (36.2)	61 (37.0)	434 (36.8)
Inconsistent ^d	67 (58.3)	574 (63.8)	104 (63.0)	745 (63.2)
(n)	115	899	165	1179
Missing	6 (5.0)	39 (4.2)	2 (1.2)	47 (3.8)
Total	121	938	167	1226

^a Excludes respondents who did not self-report their HIV status^b Includes respondents who have never been tested for HIV^c Consistent: Condom was used "All the time"^d Inconsistent: Condom was used "Never", "Rarely", "Sometimes", "Most of the time" or "Almost every time"

Among respondents who self-reported their HIV status, and who had insertive anal sex with a regular HIV negative partner, 37.9% overall used a condom consistently; with respect to receptive anal sex, 36.8% overall used a condom consistently.

Consistent condom use was reported to be higher in serodiscordant partnerships. Among self-reported HIV positive men who had insertive anal sex with a regular HIV negative partner, nearly half (46.7%) reported consistent condom use.

Among self-reported HIV positive men who had receptive anal sex with a regular HIV negative partner, 41.7% reported consistent condom use.

A small majority of men reported inconsistent condom use during anal sex with a serodiscordant partner. It is important to note, however, that “inconsistent” condom use included men who reported using a condom “never”, “rarely”, “sometimes”, “most of the time” and “almost every time”. Among self-reported HIV positive men reporting inconsistent condom use, approximately forty percent reported using a condom “most of the time” and 33% “almost every time” during both insertive and receptive anal sex [n=22 and 22 respectively, data not shown in table].

TABLE 16. Condom use during insertive and receptive anal sex with an HIV positive regular partner(s), by respondent’s self-reported HIV status, past six months

(ELIGIBLE: Respondents who reported insertive and/or receptive anal sex respectively with regular HIV positive partner(s) in the past six months)

	SELF-REPORTED HIV STATUS ^a			
	HIV Positive n (%)	HIV Negative n (%)	Status Unknown ^b n (%)	Total n (%)
Condom Use:				
Insertive anal sex				
Consistent ^c	26 (19.3)	78 (57.4)	5 (23.8)	109 (37.3)
Inconsistent ^d	109 (80.7)	58 (42.6)	16 (76.2)	183 (62.7)
(n)	135	136	21	292
Missing	3 (2.2)	5 (3.5)	3 (12.5)	11 (3.6)
Total	138	141	24	303
Receptive anal sex				
Consistent ^c	26 (19.8)	62 (65.3)	3 (20.0)	91 (37.8)
Inconsistent ^d	105 (80.1)	33 (34.7)	12 (80.0)	150 (62.2)
(n)	131	95	15	241
Missing	3 (2.2)	3 (3.1)	4 (21.1)	10 (39.8)
Total	134	98	19	251

^a Excludes respondents who did not self-report their HIV status

^b Includes respondents who have never been tested for HIV

^c Consistent: Condom was used “All the time”

^d Inconsistent: Condom was used “Never”, “Rarely”, “Sometimes”, “Most of the time” or “Almost every time”

Similar to Table 15, among respondents who self-reported their HIV status, and who had insertive anal sex with a regular HIV positive partner, 37.3% overall used a condom consistently; for receptive anal sex, 37.8% overall used a condom consistently.

Again, a higher proportion of men reported consistent condom use in a serodiscordant partnership. Among self-reported HIV negative men who had insertive anal sex with a regular HIV positive partner, more than half (57.4%) reported consistent condom use. Among self-reported HIV negative men who had receptive anal sex with a regular HIV positive partner, almost two-thirds reported consistent condom use (65.3%). Of HIV negative men who reported inconsistent condom use with an HIV positive partner, 27.5% used a condom “most of the time” or “almost every time” during insertive anal sex and 21.2% used a condom “most of the time” or “almost every time” during receptive anal sex [n=16 and 7 respectively, data not shown in table].

TABLE 17. Condom use during insertive and receptive anal sex with a regular partner of unknown status, by respondent's self-reported HIV status, past six months

(ELIGIBLE: Respondents who reported insertive and/or receptive anal sex respectively with regular partner(s) of unknown HIV status in the past six months)

	SELF-REPORTED HIV STATUS ^a			
	HIV Positive n (%)	HIV Negative n (%)	Status Unknown ^b n (%)	Total n (%)
Condom Use:				
Insertive anal sex				
Consistent ^c	29 (28.7)	236 (52.2)	34 (40.0)	299 (46.9)
Inconsistent ^d	72 (71.3)	216 (47.8)	51 (60.0)	339 (53.1)
(n)	101	452	85	638
Missing	1 (<1.0)	19 (4.0)	2 (2.3)	22 (3.3)
Total	102	471	87	660
Receptive anal sex				
Consistent ^c	23 (21.5)	192 (55.8)	37 (45.7)	252 (47.4)
Inconsistent ^d	84 (78.5)	152 (44.2)	44 (54.3)	280 (52.6)
(n)	107	344	81	532
Missing	1 (<1.0)	14 (3.9)	1 (1.2)	16 (2.9)
Total	108	358	82	548

^a Excludes respondents who did not self-report their HIV status^b Includes respondents who have never been tested for HIV^c Consistent: Condom was used "All the time"^d Inconsistent: Condom was used "Never", "Rarely", "Sometimes", "Most of the time" or "Almost every time"

Among respondents who self-reported their HIV status, and who had insertive anal sex with a partner of unknown HIV status, just less than half reported using a condom consistently (46.9%); for receptive anal sex, 47.4% overall used a condom consistently.

Of those who reported inconsistent condom use with a partner of unknown HIV status, approximately 37% overall used a condom "most of the time" or "almost every time" during insertive anal sex, and 36.1% used a condom "most of the time" or "almost every time" during receptive anal sex [n=124 and 101 respectively, data not show in table].

4.3.3 CASUAL PARTNERSHIPS

Respondents who reported sex with a male partner in the previous six months were also asked more detailed questions about sexual activities with casual sex partners. A casual partner was defined as a man with whom the respondent had sex with only once (e.g., a "one night stand" or an encounter in a bathhouse). Casual partners do not include men to whom the respondent gave or received money, drugs or other goods or services in exchange for sex.

TABLE 18. Number of casual sex partners, past six months

(ELIGIBLE: Respondents who reported sex with a male partner in the past six months)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
None	46 (25.1)	25 (25.8)	381 (24.3)	134 (31.7)	330 (18.6)	916 (22.7)
One	41 (22.4)	14 (14.4)	176 (11.2)	59 (13.9)	270 (15.2)	560 (13.9)
2 to 5	56 (30.6)	32 (33.0)	483 (30.8)	121 (28.6)	529 (29.9)	1221 (30.2)
6 to 9	18 (9.8)	13 (13.4)	166 (10.6)	40 (9.5)	194 (11.0)	431 (10.7)
10 or more	22 (12.0)	13 (13.4)	363 (23.1)	69 (16.3)	412 (23.3)	879 (21.7)
Did not specify number of partners	—	—	—	—	36 (2.0)	36 (<1.0)
(n)	183	97	1569	423	1771	4043
Missing	6 (3.2)	3 (3.0)	81 (4.9)	16 (3.6)	31 (1.7)	137 (3.3)
Total	189	100	1650	439	1802	4180

Respondents were asked to indicate (from a list of ranges) how many casual male partners they had sex with (oral or anal) in the previous six months (Table 18). Among men who reported sex with a male partner in the past six months, approximately three quarters reported sex with a casual male partner during the same period (77.3%) and the majority reported multiple casual partners (63.4%). Higher volumes of casual partners were also reported by some men. For example, in Montréal and Toronto, 23.3% and 23.1% respectively reported 10 or more casual partners in the previous six months.

4.3.3.1 CONDOM USE WITH CASUAL SEX PARTNERS

TABLE 19. Condom use with casual male partners, past six months

(ELIGIBLE: Respondents who reported insertive and/or receptive anal sex respectively, with a casual male partner in the past six months)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Condom Use:						
Insertive anal sex						
Consistent ^a	31 (38.3)	16 (43.2)	318 (48.0)	79 (50.3)	348 (46.5)	792 (47.0)
Inconsistent ^b	50 (61.7)	21 (56.8)	345 (52.0)	78 (49.7)	400 (53.5)	894 (53.0)
(n)	81	37	663	157	748	1686
Missing	0 (0.0)	2 (5.1)	24 (3.5)	2 (1.3)	17 (2.2)	45 (2.6)
Total	81	39	687	159	765	1731
Receptive anal sex						
Consistent ^a	26 (42.6)	18 (52.9)	262 (49.0)	82 (56.2)	306 (49.2)	694 (49.6)
Inconsistent ^b	35 (57.4)	16 (47.1)	273 (51.0)	64 (43.8)	316 (50.8)	704 (50.4)
(n)	61	34	535	146	622	1398
Missing	2 (3.2)	3 (8.1)	31 (5.5)	7 (4.6)	7 (1.1)	50 (3.5)
Total	63	37	566	153	629	1448

^a Consistent: Condom was used "All the time"

^b Inconsistent: Condom was used "Never", "Rarely", "Sometimes", "Most of the time" or "Almost every time"

Men who reported having casual sex partners were asked whether they had insertive and receptive anal sex with their casual male partner in the previous six months and, if so, how often a condom was used. Table 19 shows that nearly half of all men with a casual partner used a condom consistently during insertive (47.0%) and receptive (49.6%) anal sex. Consistent condom use during insertive anal sex with a casual partner ranged from a low of 38.3% in Victoria to a high of 50.3% in Ottawa. Similarly, consistent condom use during receptive anal sex ranged from a low of 42.6% in Victoria to a high of 56.2% in Ottawa.

TABLE 20. Self-reported HIV status and any unprotected anal sex with a casual sex partner by assumptions or knowledge of partner's HIV status

(ELIGIBLE: Respondents who reported having sex with at least one casual male partner in the past six months)

	SELF-REPORTED HIV STATUS ^a			
	HIV Positive n (%)	HIV Negative n (%)	Status Unknown ^b n (%)	Total n (%)
Any UAI with casual partner:				
Who you knew at the time was HIV positive	132 (41.8)	59 (3.6)	11 (3.2)	202 (8.9)
(n)	316	1621	339	2276
Missing	8 (2.5)	46 (2.8)	9 (2.6)	63 (2.7)
Total	324	1667	348	2339
Who you knew at the time was HIV negative	63 (20.7)	253 (15.5)	41 (12.1)	357 (15.7)
(n)	304	1632	339	2275
Missing	20 (6.2)	35 (2.1)	9 (2.6)	64 (2.7)
Total	324	1667	348	2339
Whose HIV status you did not know at the time	127 (41.0)	278 (17.1)	49 (14.4)	454 (19.9)
(n)	310	1627	340	2277
Missing	14 (4.3)	40 (2.4)	8 (2.3)	62 (2.7)
Total	324	1667	348	2339

^a Excludes respondents who did not self-report their HIV status^b Includes respondents who have never been tested for HIV

Table 20 presents participants' self-reported HIV status and any UAI with a casual sex partner, cross-tabulated by the respondents' assumptions about their partner's HIV status. Table 20 presents aggregated findings for the national M-Track sample, rather than by site, on account of the interpretive complexities and the small sample sizes across most sites.

Among men who reported a casual sex partner in the six months prior to the study, approximately fifteen percent overall reported UAI with an HIV negative partner, and almost twenty percent reported UAI with a partner of unknown HIV status.

Among men who self-reported being HIV positive, and who had sex with a casual partner in the previous six months, approximately twenty percent reported UAI with a partner believed to be HIV negative.

Of self-reported HIV negative men, fewer than five percent reported any UAI in the previous six months with a casual partner whom they believed was HIV positive.

4.3.4 SEX WITH FEMALE PARTNERS

TABLE 21. Number of female sex partners, past six months

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
None	184 (84.0)	84 (69.4)	1718 (90.5)	439 (92.2)	1645 (86.7)	4070 (88.2)
One	21 (9.6)	16 (13.2)	97 (5.1)	21 (4.4)	136 (7.2)	291 (6.3)
Multiple partners	14 (6.4)	21 (17.4)	84 (4.4)	16 (3.4)	116 (6.1)	251 (5.5)
(n)	219	121	1899	476	1897	4612
Missing	5 (2.2)	0 (0.0)	88 (4.4)	28 (5.6)	60 (3.1)	181 (3.8)
Total	224	121	1987	504	1957	4793

Table 21 shows the number of female sex partners reported by M-Track respondents in the six months prior to the survey. A small minority of men reported female partners (11.8%). Overall, 88.2% of men did not report a female partner; Winnipeg was a notable exception where nearly a third of men reported female partners (30.6%).

4.3.5 SEX IN EXCHANGE FOR MONEY, DRUGS OR OTHER GOODS AND SERVICES

TABLE 22. Commercial sex involvement (oral or anal sex), past six months

(ELIGIBLE: Respondents who reported sex with a male partner in the past six months)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Gave money, drugs, or any other good or service in exchange for sex	13 (7.1)	3 (3.4)	153 (9.8)	43 (10.3)	199 (11.3)	411 (10.2)
(n)	184	88	1562	417	1760	4011
Missing	5 (2.6)	11 (11.0)	88 (5.3)	22 (5.0)	42 (2.3)	168 (4.0)
Refused	—	1 (1.0)	—	—	—	1 (<1.0)
Total	189	100	1650	439	1802	4180
Received money, drugs, or any other good or service in exchange for sex	10 (5.4)	33 (36.7)	131 (8.4)	30 (7.2)	199 (11.3)	403 (10.1)
(n)	184	90	1561	416	1755	4006
Missing	5 (2.6)	9 (9.0)	89 (5.4)	23 (5.2)	47 (2.6)	173 (4.1)
Refused	—	1 (1.0)	—	—	—	1 (<1.0)
Total	189	100	1650	439	1802	4180

Respondents were asked about their involvement in the commercial sex trade in the previous six months, which was defined as having given or received money, drugs or other goods or services in exchange for oral or anal sex with a male partner. Overall, 10.2% of M-Track respondents reported giving money, drugs, or other goods or services in exchange for sex in the six months preceding the study; the proportion ranged from a low of 3.4% in Winnipeg to a high of 11.3% in Montréal.

Similarly, 10.1% of respondents reported receiving money, drugs or other goods or services in exchange for sex. Variations across sites were more pronounced, however, ranging from a low of 5.4% in Victoria to a high of 36.7% in Winnipeg.

4.4 RECREATIONAL DRUG USE

Drug use before or during sex has been associated with higher risk sexual behaviours, and injection drug use is an important risk factor in the acquisition of HIV and the primary mode of transmission for HCV. To assess patterns and trends in the use of recreational drug use among MSM in Canada, participants were asked about their lifetime use of recreational drugs and their drug use behaviour in the previous six months. However, questions on recreational drug use in the context of specific sexual risk behaviours (e.g., condom use) were not asked, nor were questions on specific injection practices (e.g., lending and borrowing previously used syringes).

TABLE 23. Reported drug use two hours before or during sex, in the past six months

(ELIGIBLE: Respondents who reported sex with a male partner in the past six months)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Alcohol						
Never	51 (27.3)	4 (4.9)	405 (27.0)	116 (28.0)	430 (25.1)	1006 (25.8)
Less than half the time	87 (46.5)	35 (43.2)	611 (40.7)	171 (41.2)	799 (46.7)	1703 (43.7)
More than half the time	49 (26.2)	42 (51.9)	484 (32.3)	128 (30.8)	481 (28.1)	1184 (30.4)
(n)	187	81	1500	415	1710	3893
Missing	2 (1.1)	19 (19.0)	150 (9.1)	24 (5.5)	92 (5.1)	287 (6.9)
Total	189	100	1650	439	1802	4180
Sexual Enhancers^a						
Never	133 (71.1)	30 (50.0)	831 (55.7)	260 (62.7)	1058 (62.8)	2312 (60.2)
Less than half the time	39 (20.9)	20 (33.3)	368 (24.7)	99 (23.9)	410 (24.3)	936 (24.4)
More than half the time	15 (8.0)	10 (16.7)	292 (19.6)	56 (13.5)	218 (12.9)	591 (15.4)
(n)	187	60	1491	415	1686	3839
Missing	2 (1.1)	40 (40.0)	159 (9.6)	24 (5.5)	116 (6.4)	341 (8.2)
Total	189	100	1650	439	1802	4180
Marijuana / hash / pot / grass						
Never	117 (62.6)	14 (18.7)	951 (63.8)	279 (67.2)	1022 (61.0)	2383 (62.0)
Less than half the time	41 (21.9)	33 (44.0)	332 (22.3)	86 (20.7)	405 (24.2)	897 (23.3)
More than half the time	29 (15.5)	28 (37.3)	208 (14.0)	50 (12.0)	248 (14.8)	563 (14.7)
(n)	187	75	1491	415	1675	3843
Missing	2 (1.1)	25 (25.0)	159 (9.6)	24 (5.5)	127 (7.0)	337 (8.1)
Total	189	100	1650	439	1802	4180
Cocaine / crack / free base						
Never	166 (88.8)	31 (50.0)	1263 (84.7)	377 (90.8)	1320 (79.1)	3157 (75.5)
Less than half the time	15 (8.0)	18 (29.0)	184 (12.3)	29 (7.0)	240 (14.4)	486 (11.6)
More than half the time	6 (3.2)	13 (21.0)	44 (3.0)	9 (2.2)	108 (6.5)	180 (4.3)
(n)	187	62	1491	415	1668	3823
Missing	2 (1.1)	38 (38.0)	159 (9.6)	24 (5.5)	134 (7.4)	357 (8.5)
Total	189	100	1650	439	1802	4180
Heroin / Other Opioids						
Never	179 (95.7)	48 (88.9)	1460 (97.9)	408 (98.3)	1613 (97.1)	3708 (97.3)
Less than half the time	7 (3.7)	5 (9.3)	24 (1.6)	7 (1.7)	33 (2.0)	76 (2.0)
More than half the time	1 (<1.0)	1 (1.9)	7 (<1.0)	0 (0.0)	16 (1.0)	25 (<1.0)
(n)	187	54	1491	415	1662	3809
Missing	2 (1.1)	46 (46.0)	159 (9.6)	24 (5.5)	140 (7.8)	371 (8.9)
Total	189	100	1650	439	1802	4180
Other Recreational Drugs^b						
Never	161 (86.1)	38 (69.1)	1193 (80.0)	350 (84.3)	1272 (75.8)	3014 (78.8)
Less than half the time	25 (13.4)	10 (18.2)	215 (14.4)	52 (12.5)	314 (18.7)	616 (16.1)
More than half the time	1 (<1.0)	7 (12.7)	83 (5.6)	13 (3.1)	93 (5.5)	197 (5.1)
(n)	187	55	1491	415	1679	3827
Missing	2 (1.1)	45 (45.0)	159 (9.6)	24 (5.5)	123 (6.8)	353 (8.4)
Total	189	100	1650	439	1802	4180

^a Enhancers include poppers and Viagra^b Other Recreational Drugs includes Special K, Ecstasy, Crystal Meth, GHB, Psychedelics and other Amphetamines

Respondents who had sex with a male partner in the previous six months were asked if they had used a variety of substances two hours before or during sex (oral or anal) with a male partner, and if so, how often. Approximately eighty-three percent had used one or more recreational substances (including alcohol) before or during sex in the previous six months and sixty-one percent had done so excluding alcohol [data not shown in table].

The most frequently used drugs were alcohol (74.1%), sexual enhancers—defined here as poppers and Viagra (39.8%)—and marijuana (38.0%). Other less frequently used substances included cocaine/crack/freebase (15.9%) and heroin or other opioids (<3.0%). “Other recreational drugs” includes special K, ecstasy, crystal meth, GHB, psychedelics and other amphetamines, which were reported by 21.2% of men.

In general, substance use was higher among participants in Winnipeg than in other participating sentinel sites.

TABLE 24. History of injection drug use

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Cocaine						
Ever	23 (10.6)	28 (24.1)	104 (5.4)	23 (4.7)	89 (4.7)	267 (5.8)
More than 6 months ago	18 (8.3)	15 (12.9)	76 (4.0)	15 (3.1)	47 (2.5)	171 (3.7)
In the past 6 months	5 (2.3)	13 (11.2)	28 (1.4)	8 (1.6)	42 (2.2)	96 (2.1)
(n)	218	116	1922	491	1875	4622
Missing	6 (2.7)	4 (3.3)	65 (3.3)	13 (2.6)	82 (4.2)	170 (3.6)
Refused	—	1 (<1.0)	—	—	—	1 (<1.0)
Total	224	121	1987	504	1957	4793
Steroids						
Ever	8 (3.7)	3 (2.7)	85 (4.4)	13 (2.6)	59 (3.2)	168 (3.6)
More than 6 months ago	4 (1.8)	3 (2.7)	47 (2.4)	10 (2.0)	34 (1.8)	98 (2.1)
In the past 6 months	4 (1.8)	0 (0.0)	38 (2.0)	3 (<1.0)	25 (1.3)	70 (1.5)
(n)	218	112	1922	491	1863	4606
Missing	6 (2.7)	8 (6.6)	65 (3.3)	13 (2.6)	94 (4.8)	186 (3.9)
Refused	—	1 (<1.0)	—	—	—	1 (<1.0)
Total	224	121	1987	504	1957	4793
Crystal Methamphetamine^a						
Ever	10 (4.6)	20 (17.0)	49 (2.5)	9 (1.8)	—	88 (3.2)
More than 6 months ago	7 (3.2)	10 (8.5)	31 (1.6)	8 (1.6)	—	56 (2.0)
In the past 6 months	3 (1.4)	10 (8.5)	18 (<1.0)	1 (<1.0)	—	32 (1.2)
(n)	218	117	1922	491	—	2748
Missing	6 (2.7)	3 (2.5)	65 (3.3)	13 (2.6)	—	87 (3.1)
Refused	—	1 (<1.0)	—	—	—	1 (<1.0)
Total	224	121	1987	504	—	2836
Heroin						
Ever	9 (4.1)	10 (8.8)	38 (2.0)	7 (1.4)	45 (2.4)	109 (2.4)
More than 6 months ago	8 (3.7)	7 (6.1)	33 (1.7)	6 (1.2)	22 (1.2)	76 (1.6)
In the past 6 months	1 (<1.0)	3 (2.6)	5 (<1.0)	1 (<1.0)	23 (1.2)	33 (<1.0)
(n)	218	114	1922	491	1869	4614
Missing	6 (2.7)	6 (5.0)	65 (3.3)	13 (2.6)	88 (4.5)	178 (3.7)
Refused	—	1 (<1.0)	—	—	—	1 (<1.0)
Total	224	121	1987	504	1957	4793

TABLE 24. History of injection drug use (CON'T)

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Injected any drug^b						
Ever	33 (15.1)	40 (33.6)	224 (11.7)	42 (8.5)	140 (7.4)	479 (10.3)
More than 6 months ago	19 (8.7)	23 (19.3)	134 (7.0)	23 (4.7)	71 (3.8)	270 (5.8)
In the past 6 months	14 (6.4)	17 (14.3)	90 (4.7)	19 (3.9)	69 (3.7)	209 (4.5)
(n)	218	119	1923	492	1888	4640
Missing	6 (2.7)	1 (<1.0)	64 (3.2)	12 (2.4)	69 (3.5)	152 (3.2)
Refused	—	1 (<1.0)	—	—	—	1 (<1.0)
Total	224	121	1987	504	1957	4793

^a Montréal respondents were not asked about crystal methamphetamine.^b Includes cocaine, steroids, crystal methamphetamine and heroin and all other substances provided as text responses in "Other".

Participants were asked whether they had ever injected cocaine, crystal methamphetamine, heroin, steroids or any other drug, and whether they had injected in the previous six months. Table 24 presents the proportion and number of respondents who reported a history of injection drug use.

Overall, 10.3% of participants reported a history of injecting drugs; 4.5% of participants reported injecting some drug in the past six months. The most commonly reported drug ever injected was cocaine, reported by 5.8% of all participants, ranging from a low of 4.7% in both Ottawa and Montréal, to a high of 24.1% in Winnipeg.

Fewer men reported a history of injecting steroids (3.6%), crystal methamphetamine (3.2%) or heroin (2.4%). An even smaller number of men reported injecting these drugs in the previous six months: 2.1% (cocaine), 1.5% (steroids), 1.2% (crystal methamphetamine) and < 1.0% (heroin).

As with substance use before or during sex, the use of injection drugs was generally higher among participants in Winnipeg than in any other participating sentinel sites.

4.5 HIV TESTING, PREVALENCE, AWARENESS, AND TREATMENT HISTORY

This section presents data on HIV testing patterns, including reasons for not being tested for HIV, as well as data on HIV prevalence (both self-reported and based on DBS samples) and awareness and history of HIV treatment among those who reported being HIV positive. M-Track measures the seroprevalence of HIV among participants based on laboratory testing of the anonymous DBS samples provided (for details on biological sample testing, please see section 3.2.6.2). Survey respondents were also asked to self-report the result of their most recent HIV test. Awareness of one's HIV positive status was calculated by comparing the self-reported HIV status of participants (questionnaire) with their HIV serostatus from the biological sample (i.e., from DBS testing).

4.5.1 HIV TESTING HISTORY

TABLE 25. HIV testing history

(ELIGIBLE: All people surveyed and self-reported HIV negative respondents who reported having ever been tested for HIV respectively)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Ever tested for HIV	193 (90.2)	49 (72.1)	1606 (87.7)	411 (87.8)	1610 (84.6)	3869 (86.2)
(n)	214	68	1832	468	1904	4486
Missing	8 (3.6)	35 (28.9) ^a	126 (6.3)	31 (6.2)	34 (1.7)	234 (4.9)
Don't Know	2 (<1.0)	11 (9.1)	29 (1.5)	5 (1.0)	19 (1.0)	66 (1.4)
Refused	—	7 (5.8)	—	—	—	7 (<1.0)
Total	224	121	1987	504	1957	4793
Tested for HIV in the past 2 years	110 (72.1)	28 (82.4)	797 (77.5)	203 (73.0)	881 (73.9)	2010 (75.2)
(n)	140	34	1029	278	1192	2673
Missing	25 (15.2)	1 (2.9)	245 (19.2)	53 (16.0)	105 (8.1)	429 (13.8)
Total	165	35	1274	331	1297	3102

^a Differences in the overall question format, particularly in response categories, likely account for the higher level of missing data in Winnipeg.

M-Track participants were asked if they had ever been tested for HIV and, if so, for the date of their last test. Table 25 provides data on the number and proportion of all participants who had ever been tested for HIV as well as the number and proportion of self-reported HIV negative men who reported being tested for HIV in the past two years. Most participants reported having been tested for HIV (86.2%), ranging from a low of 72.1% in Winnipeg to a high of 90.2% in Victoria. Similarly, a large proportion of those men who reported that their most recent HIV test was negative had been tested in the two years preceding the survey (75.2%), ranging from a low of 72.1% in Victoria to a high of 82.4% in Winnipeg.

TABLE 26. Reasons for never having been tested for HIV

(ELIGIBLE: Respondents who reported never having been tested for HIV)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
I am at low risk for HIV infection	13 (61.9)	9 (47.4)	107 (47.3)	34 (59.6)	171 (58.2)	334 (54.1)
(n)	21	19	226	57	294	617
Total	21	19	226	57	294	617
Afraid to get tested	4 (19.0)	7 (36.8)	59 (26.1)	12 (21.1)	88 (29.9)	170 (27.6)
(n)	21	19	226	57	294	617
Total	21	19	226	57	294	617
I think I know my status	3 (14.3)	3 (15.8)	55 (24.3)	22 (38.6)	82 (27.9)	165 (26.7)
(n)	21	19	226	57	294	617
Total	21	19	226	57	294	617
I want to be tested, I just haven't done it yet ^a	6 (28.6)	5 (26.3)	38 (16.8)	14 (24.6)	—	63 (19.5)
(n)	21	19	226	57	—	323
Total	21	19	226	57	—	323
Being HIV positive could affect my personal or professional life	2 (9.5)	3 (15.8)	19 (8.4)	11 (19.3)	35 (11.9)	70 (11.3)
(n)	21	19	226	57	294	617
Total	21	19	226	57	294	617
I never thought about it	3 (14.3)	4 (21.1)	21 (9.3)	7 (12.3)	33 (11.2)	68 (11.0)
(n)	21	19	226	57	294	617
Total	21	19	226	57	294	617

TABLE 26. Reasons for never having been tested for HIV (CON'T)

(ELIGIBLE: Respondents who reported never having been tested for HIV)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
I am healthy so I don't need to be tested	2 (9.5)	3 (15.8)	19 (8.4)	8 (14.0)	25 (8.5)	57 (9.2)
(n)	21	19	226	57	294	617
Total	21	19	226	57	294	617
Problems getting tested	0 (0.0)	2 (10.5)	9 (4.0)	7 (12.3)	17 (5.8)	35 (5.7)
(n)	21	19	226	57	246	569
Total	21	19	226	57	294	617
I don't think I can get HIV	1 (4.8)	1 (5.3)	7 (3.1)	2 (3.5)	22 (7.5)	33 (5.3)
(n)	21	19	226	57	294	617
Total	21	19	226	57	294	617
If I tested positive, nothing can be done	0 (0.0)	3 (15.8)	7 (3.1)	2 (3.5)	13 (4.4)	25 (4.1)
(n)	21	19	226	57	294	617
Total	21	19	226	57	294	617
I don't think the test is always right	0 (0.0)	1 (5.6)	3 (1.3)	1 (1.8)	7 (2.4)	12 (1.9)
(n)	21	19	226	57	294	617
Total	21	19	226	57	294	617

^a This response category was not an option in the Montréal survey.
 Note: Where appropriate, original response categories have been aggregated.
 Note: Missing values could not be determined due to the method of data collection.

TABLE 27. Reasons for not having been tested for HIV in the past two years among self-reported HIV negative men

(ELIGIBLE: Respondents who reported not having been tested for HIV in the past two years, and who were self-reported HIV negative)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Total ^a n (%)
I am at low risk of HIV infection	21 (53.8)	2 (33.3)	133 (57.3)	53 (70.7)	209 (59.4)
(n)	39	6	232	75	352
Total	39	6	232	75	352
I think I know my status	11 (28.2)	1 (16.7)	67 (28.9)	24 (32.0)	103 (29.3)
(n)	39	6	232	75	352
Total	39	6	232	75	352
I want to be tested, just haven't done it yet	5 (12.8)	0 (0.0)	39 (16.8)	15 (20.0)	59 (16.8)
(n)	39	6	232	75	352
Total	39	6	232	75	352
Afraid to get tested	1 (2.6)	0 (0.0)	43 (18.5)	8 (10.7)	52 (14.8)
(n)	39	6	232	75	352
Total	39	6	232	75	352
Being HIV positive could affect personal or professional life	2 (5.1)	0 (0.0)	32 (13.8)	5 (6.7)	39 (11.1)
(n)	39	6	232	75	352
Total	39	6	232	75	352

TABLE 27. Reasons for not having been tested for HIV in the past two years among self-reported HIV negative men (CON'T)

(ELIGIBLE: Respondents who reported not having been tested for HIV in the past two years, and who were self-reported HIV negative)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Total ^a n (%)
I am healthy so I don't need to be tested	1 (2.6)	0 (0.0)	22 (9.5)	5 (6.7)	28 (8.0)
(n)	39	6	232	75	352
Total	39	6	232	75	352
I don't think I can get HIV	0 (0.0)	0 (0.0)	13 (5.6)	3 (4.0)	16 (4.5)
(n)	39	6	232	75	352
Total	39	6	232	75	352
I never thought about it	0 (0.0)	0 (0.0)	6 (2.6)	6 (8.0)	12 (3.4)
(n)	39	6	232	75	352
Total	39	6	232	75	352
Problems getting tested	0 (0.0)	0 (0.0)	3 (1.3)	3 (4.0)	6 (1.7)
(n)	39	6	232	75	352
Total	39	6	232	75	352
If I tested positive, nothing can be done	1 (2.6)	0 (0.0)	5 (2.2)	1 (1.3)	7 (2.0)
(n)	39	6	232	75	352
Total	39	6	232	75	352
I don't think the test is always right	0 (0.0)	0 (0.0)	4 (1.7)	0 (0.0)	4 (1.1)
(n)	39	6	232	75	352
Total	39	6	232	75	352

^a Montréal is not included in this table, as participants were not asked these questions.

Note: Where appropriate, original response categories have been aggregated.

Note: Missing values could not be determined due to the method of data collection.

M-Track respondents who reported never having been testing for HIV were asked to identify their reasons from a pre-defined list. Respondents were able to select multiple responses.^{xi}

The majority of those who had never been tested for HIV indicated that they considered themselves to be at low risk of HIV infection (54.1 %), ranging from a low of 47.3% in Toronto to a high of 61.9% in Victoria. Other commonly selected reasons included having a fear of testing, reported by almost thirty percent of men, and already knowing one's status, reported by over a quarter of men.

Self-reported HIV negative men who had not been tested for HIV in the past two years were also asked to identify reasons for not being tested from the same pre-defined list (Table 27). A majority of self-reported HIV negative men who had not been tested for HIV in the past two years indicated that they considered themselves to be at low of risk of HIV infection (59.4%). Knowing one's status as a reason for not being tested in the past two years was reported by nearly thirty percent of men.

4.5.2 HIV PREVALENCE AND AWARENESS OF STATUS

TABLE 28. Self-reported HIV status

(ELIGIBLE: Respondents who have been tested for HIV)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Positive	24 (12.5)	18 (33.3)	262 (16.7)	52 (12.9)	182 (11.5)	538 (14.2)
Negative	165 (85.9)	35 (64.8)	1274 (81.0)	331 (82.1)	1297 (82.2)	3102 (81.7)
Status Unknown ^a	3 (1.6)	1 (1.9)	36 (2.3)	20 (5.0)	99 (6.3)	159 (4.2)
(n)	192	54	1572	403	1578	3799
Missing	1 (<1.0)	5 (8.5)	34 (2.1)	8 (1.9)	32 (2.0)	80 (2.1)
Total	193	59	1606	411	1610	3879

^a Includes respondents who indicated that they did not know the result of their last test and respondents who did not receive the result of their last HIV test.

Respondents who reported having been tested for HIV were also asked the result of their most recent HIV test. Table 28 presents data on the number and proportions of M-Track participants who self-reported being HIV positive, HIV negative or didn't know their HIV-status.

The vast majority self-reported that the result of their most recent HIV test was negative (81.7%), ranging from a low of 64.8% in Winnipeg to a high of 85.9% in Victoria. Slightly less than fifteen percent of men self-reported that the result of their most recent HIV test was positive (14.2%), ranging from a low of 11.5% in Montréal to a high of 33.3% in Winnipeg. Fewer than five percent reported that they did not know the result of their most recent HIV test or that they had not received the test results.

TABLE 29. Seroprevalence of HIV and awareness of HIV positive status

(ELIGIBLE FOR SEROPREVALENCE: Respondents who provided a biological sample of sufficient quantity for laboratory testing.)

(ELIGIBLE FOR AWARENESS: Respondents who provided a biological sample of sufficient quantity for laboratory testing and self-reported their HIV status)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Seroprevalence of HIV^a						
Positive	25 (13.6)	18 (18.9)	182 (23.1)	33 (11.1)	243 (12.5)	501 (15.1)
Negative	159 (86.4)	77 (81.1)	607 (76.9)	264 (88.9)	1701 (87.5)	2808 (84.9)
(n)	184	95	789	297	1944	3309
Awareness of HIV positive Status^b						
Aware	21 (87.5)	13 (86.7)	148 (85.1)	24 (80.0)	179 (76.8)	385 (80.9)
Unaware	3 (12.5)	2 (13.3)	26 (14.9)	6 (20.0)	54 (23.2)	91 (19.1)
(n)	24	15	174	30	233	476

^a A positive result indicates a current HIV infection (based on DBS test results).

^b Respondents who had a positive HIV lab result based on the DBS testing (biological sample) and who reported that their last HIV test result was positive were classified as being "Aware of their HIV positive status". Respondents who had never been tested or who did not receive the result of their last test as well as respondents who did not know the result of their last test or who reported that their last HIV test was negative but had a positive HIV lab result based on the DBS testing (biological sample) were classified as being "Unaware of their HIV positive status".

Respondents were asked to provide a DBS sample anonymously for HIV testing (for details, please see section 3.2.6.2). Of the 4793 men who completed a questionnaire— representing the baseline analytical sample for this report— approximately seventy percent provided a DBS sample of sufficient quantity for testing. An additional 11 participants provided a DBS sample that was of insufficient quantity for testing (for further details on sample size and provision of DBS sample, please refer to Table 1).

Among M-Track participants who provided a biological sample of sufficient quantity for laboratory testing, the overall prevalence of HIV was 15.1%, ranging from a low of 11.1% in Ottawa, to a high of 23.1% in Toronto. Just over eighty percent of HIV positive men were aware of their HIV positive status, ranging from a low of 76.8% in Montréal, to a high of 87.5% in Victoria.

4.5.3 HIV TREATMENT HISTORY

TABLE 30. HIV treatment history

(ELIGIBLE: Respondents who self-reported being HIV positive)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Use of anti-HIV medication						
Any use, either to prevent or treat HIV infection						
Yes	20 (83.3)	13 (72.2)	192 (75.6)	34 (66.7)	139 (76.8)	398 (75.4)
No	4 (16.7)	5 (27.8)	62 (24.4)	17 (33.3)	42 (23.2)	130 (24.6)
(n)	24	18	254	51	181	528
Missing	0 (0.0)	0 (0.0)	6 (2.3)	1 (2.0)	1 (<1.0)	8 (1.5)
Don't Know	0 (0.0)	0 (0.0)	2 (<1.0)	0 (0.0)	0 (0.0)	2 (<1.0)
Total	24	18	262	52	182	538
Currently on HIV treatment						
Yes	14 (58.3)	9 (52.9)	176 (70.7)	25 (50.0)	117 (66.1)	341 (66.0)
No	10 (41.7)	8 (47.1)	73 (29.3)	25 (50.0)	60 (33.9)	176 (34.0)
(n)	24	17	249	50	177	517
Missing	0 (0.0)	1 (5.6)	10 (3.8)	2 (3.9)	5 (2.8)	18 (3.4)
Don't Know	0 (0.0)	-	3 (1.2)	0 (0.0)	—	3 (<1.0)
Total	24	18	262	52	182	538

Table 30 provides an overview of HIV treatment history among M-Track participants who self-reported being HIV positive. Respondents were asked whether they had ever taken anti-HIV medication, either to prevent or to treat an HIV infection and, if so, whether they were currently taking anti-HIV medication. Approximately seventy-five percent of self-reported HIV positive participants reported a history of taking HIV medication, and a smaller proportion reported that they were currently on HIV treatment (66.0%). The proportion of self-reported HIV positive participants who had taken anti-HIV medication (either to prevent or treat HIV infection) varied across participating sites, ranging from a low of 66.7% in Ottawa to a high of 83.3% in Victoria. The proportion of respondents currently on HIV treatment ranged from a low of 50.0% in Ottawa to a high of 70.7% in Toronto.

4.6 OTHER SEXUALLY TRANSMITTED AND BLOOD-BORNE INFECTIONS

M-Track participants were surveyed about their STBBI testing history, including HCV, gonorrhoea and syphilis. They were also asked to self-report any previous STBBI diagnoses. DBS samples provided by M-Track participants were tested for the presence of antibodies against HCV and syphilis (for details on biological sample testing, please see section 3.2.6.2). This section presents results on STBBI testing history, and self-reported diagnoses of STBBI. This section also presents data on the seroprevalence of HCV and syphilis, as well as data on concurrent seroprevalence of these infections with HIV, based on results from the laboratory testing of DBS samples.

4.6.1 STBBI TESTING HISTORY

TABLE 31. STBBI testing history

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Ever tested for:						
HCV						
Yes	138 (73.4)	36 (60.0)	1092 (66.5)	277 (66.1)	1201 (67.1)	2744 (66.9)
No	50 (26.6)	24 (40.0)	549 (33.5)	142 (33.9)	590 (32.9)	1355 (33.1)
(n)	188	60	1641	419	1791	4099
Missing	9 (4.0)	42 (34.7)	112 (5.6)	21 (4.2)	39 (2.0)	223 (4.7)
Don't Know	27 (12.1)	12 (9.9)	234 (11.8)	64 (12.7)	127 (6.5)	464 (9.7)
Refused	—	7 (5.8)	—	—	—	7 (<1.0)
Total	224	121	1987	504	1957	4793
Gonorrhea						
Yes	129 (67.5)	32 (52.5)	1241 (71.9)	302 (67.7)	1098 (61.5)	2802 (66.6)
No	62 (32.5)	29 (47.5)	485 (28.1)	144 (32.3)	688 (38.5)	1408 (33.4)
(n)	191	61	1726	446	1786	4210
Missing	9 (4.0)	37 (30.6)	89 (4.5)	16 (3.2)	46 (2.4)	197 (4.1)
Don't Know	24 (10.7)	15 (12.4)	172 (8.7)	42 (8.3)	125 (6.4)	378 (7.9)
Refused	—	8 (6.6)	—	—	—	8 (<1.0)
Total	224	121	1987	504	1957	4793
Syphilis						
Yes	115 (65.0)	26 (39.4)	1187 (68.4)	288 (65.2)	1017 (57.1)	2633 (62.6)
No	62 (35.0)	40 (60.6)	549 (31.6)	154 (34.8)	765 (42.9)	1570 (37.4)
(n)	177	66	1736	442	1782	4203
Missing	10 (4.5)	32 (26.4)	104 (5.2)	19 (3.8)	44 (2.2)	209 (4.4)
Don't Know	37 (16.5)	16 (13.2)	147 (7.4)	43 (8.5)	131 (6.7)	374 (7.8)
Refused	—	7 (5.8)	—	—	—	7 (<1.0)
Total	224	121	1987	504	1957	4793

TABLE 32. Frequency of STBBI testing in the past two years

(ELIGIBLE: Respondents who reported ever having been tested for HCV, gonorrhea, and syphilis respectively)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
HCV						
Not tested	38 (31.4)	1 (5.6)	183 (20.2)	60 (24.3)	1 (<1.0)	283 (13.4)
1 time	36 (29.8)	9 (50.0)	383 (42.2)	90 (36.4)	395 (48.2)	913 (43.2)
2 times	23 (19.0)	3 (16.7)	196 (21.6)	54 (21.9)	242 (29.5)	518 (24.5)
3-5 times	16 (13.2)	5 (27.8)	113 (12.5)	35 (14.2)	143 (17.5)	312 (14.8)
> 5 times	8 (6.6)	0 (0.0)	33 (3.6)	8 (3.2)	38 (4.5)	87 (4.1)
(n)	121	18	908	247	819	2113
Missing	17 (12.3)	18 (50.0) ^a	184 (16.8)	30 (10.8)	382 (31.8)	631 (23.0)
Total	138	36	1092	277	1201	2744
Gonorrhea						
Not tested	41 (34.7)	2 (10.0)	275 (25.9)	73 (26.3)	1 (<1.0)	392 (17.1)
1 time	35 (29.7)	8 (40.0)	329 (31.0)	86 (30.9)	324 (39.5)	782 (34.0)
2 times	16 (13.6)	5 (25.0)	266 (25.1)	61 (21.9)	266 (32.4)	614 (26.7)
3-5 times	19 (16.1)	5 (25.0)	164 (15.5)	50 (18.0)	189 (23.0)	427 (18.6)
> 5 times	7 (5.9)	0 (0.0)	27 (2.5)	8 (2.9)	41 (5.0)	83 (3.6)
(n)	118	20	1061	278	821	2298
Missing	11 (8.5)	12 (37.5) ^a	180 (14.5)	24 (7.9)	277 (25.2)	504 (18.0)
Total	129	32	1241	302	1098	2802
Syphilis						
Not tested	35 (33.7)	1 (6.7)	201 (19.0)	56 (20.9)	1 (<1.0)	294 (13.1)
1 time	28 (26.9)	7 (46.7)	377 (35.6)	83 (31.0)	332 (41.4)	827 (36.8)
2 times	20 (19.2)	3 (20.0)	275 (26.0)	69 (25.7)	261 (32.5)	628 (27.9)
3-5 times	16 (15.4)	4 (26.7)	173 (16.4)	53 (19.8)	169 (21.1)	415 (18.5)
> 5 times	5 (4.8)	0 (0.0)	32 (3.0)	7 (2.6)	39 (4.9)	83 (3.7)
(n)	104	15	1058	268	802	2247
Missing	11 (9.6)	11 (42.3) ^a	129 (10.9)	20 (6.9)	215 (21.1)	386 (14.7)
Total	115	26	1187	288	1017	2633

^a Differences in the overall question format, particularly in response categories, likely account for the higher level of missing data in Winnipeg.

Respondents were asked if they had ever been tested for HCV, gonorrhea and syphilis (Table 31). Overall, a similar proportion of respondents reported having been tested for HCV (66.9%), gonorrhea (66.6%) and syphilis (62.6%). The proportion who reported ever being tested for HCV ranged from a low of 60.0% in Winnipeg to a high of 73.4% in Victoria. For gonorrhea, proportions ranged from 52.5% in Winnipeg to 71.9% in Toronto, and for syphilis the range was 39.4% in Winnipeg to 68.4% in Toronto.

Respondents who reported ever having been tested for each of the infections presented in Table 31 were asked how frequently they had been tested in the past two years (Table 32). The majority of respondents who had ever been tested had also been tested at least once in the past two years, ranging from 82.9% for gonorrhea to 86.9% for syphilis. Approximately half of all respondents who had ever been tested had been tested two or more times in the past two years for each pathogen (43.4% for HCV, 48.9% for gonorrhea and 50.1% for syphilis).

Testing frequency varied across sites and the proportion reporting having been tested at least once in the past two years was consistently lowest in Victoria (65.3% for gonorrhea to 68.6% for HCV) and consistently highest in Montréal (99.9% for all three infections). However, high levels of missing data for these questions limit the interpretation of these findings. "Don't Know" was not a response option for the question on testing frequency, which may have also adversely impacted response rates, since respondents who did not know how frequently they had been tested did not provide any information.

4.6.2 SELF-REPORTED STBBI HISTORY AND HCV AND SYPHILIS LIFETIME SEROPREVALENCE

TABLE 33. Self-reported history of STBBI diagnoses

(ELIGIBLE: All people surveyed)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Gonorrhea						
Yes	32 (14.9)	14 (12.6)	423 (23.2)	70 (14.8)	406 (21.9)	945 (21.1)
No	183 (85.1)	97 (87.4)	1402 (76.8)	404 (85.2)	1451 (78.1)	3537 (78.9)
(n)	215	111	1825	474	1857	4482
Missing	9 (4.0)	10 (8.3)	162 (8.2)	30 (6.0)	100 (5.1)	311 (6.5)
Total	224	121	1987	504	1957	4793
Genital or Anal Warts						
Yes	33 (15.3)	6 (5.6)	302 (16.5)	69 (14.6)	312 (16.9)	722 (16.2)
No	182 (84.7)	101 (94.4)	1523 (83.5)	405 (85.4)	1530 (83.1)	3741 (83.8)
(n)	215	107	1825	474	1842	4463
Missing	9 (4.0)	14 (11.6)	162 (8.2)	30 (6.0)	115 (5.9)	330 (6.9)
Total	224	121	1987	504	1957	4793
Chlamydia						
Yes	17 (7.9)	15 (13.4)	231 (12.7)	44 (9.3)	193 (10.5)	500 (11.2)
No	198 (92.1)	97 (86.6)	1594 (87.3)	430 (90.7)	1637 (89.5)	3956 (88.8)
(n)	215	112	1825	474	1830	4456
Missing	9 (4.0)	9 (7.4)	162 (8.2)	30 (6.0)	127 (6.5)	337 (7.0)
Total	224	121	1987	504	1957	4793
Hepatitis B						
Yes	13 (6.0)	7 (6.7)	133 (7.3)	27 (5.7)	152 (8.3)	332 (7.5)
No	202 (94.0)	98 (93.3)	1692 (92.7)	447 (94.3)	1669 (91.7)	4108 (92.5)
(n)	215	105	1825	474	1821	4440
Missing	9 (4.0)	16 (13.2)	162 (8.2)	30 (6.0)	136 (6.9)	353 (7.4)
Total	224	121	1987	504	1957	4793
Genital Herpes						
Yes	14 (6.5)	3 (2.9)	120 (6.6)	36 (7.6)	121 (6.6)	294 (6.6)
No	201 (93.5)	99 (97.1)	1705 (93.4)	438 (92.4)	1704 (93.4)	4147 (93.4)
(n)	215	102	1825	474	1825	4441
Missing	9 (4.0)	19 (15.7)	162 (8.2)	30 (6.0)	132 (6.7)	352 (7.3)
Total	224	121	1987	504	1957	4793
Syphilis						
Yes	13 (6.0)	8 (7.4)	157 (8.6)	26 (5.5)	87 (4.7)	291 (6.5)
No	202 (94.0)	100 (92.6)	1668 (91.4)	448 (94.5)	1749 (95.3)	4167 (93.5)
(n)	215	108	1825	474	1836	4458
Missing	9 (4.0)	13 (10.7)	162 (8.2)	30 (6.0)	121 (6.2)	335 (7.0)
Total	224	121	1987	504	1957	4793
Hepatitis A^a						
Yes	9 (4.2)	9 (8.7)	121 (6.6)	23 (4.9)	90 (5.0)	252 (5.7)
No	206 (95.8)	95 (91.3)	1704 (93.4)	451 (95.1)	1718 (95.0)	4174 (94.3)
(n)	215	104	1825	474	1808	4426
Missing	9 (4.0)	17 (14.0)	162 (8.2)	30 (6.0)	149 (7.6)	367 (7.7)
Total	224	121	1987	504	1957	4793

^a Hepatitis A is an enteric pathogen that can be transmitted sexually via oral-anal contact¹⁹

All respondents were asked whether they had ever been told by a doctor or nurse that they had any one of the infections listed in Table 33. Overall, participants' self-reported lifetime history of these infections varied from 5.7% for hepatitis A to 21.1% for gonorrhoea. Self-reported history varied across sites as well. Self-reported gonorrhoea ranged from 12.6% in Winnipeg to 23.2% in Toronto. For the other infections, lifetime self-reported history of genital or anal warts ranged from 5.6% in Winnipeg to 16.9% in Montréal; chlamydia ranged from 7.9% in Victoria to 13.4% in Winnipeg; genital herpes ranged from 2.9% in Winnipeg to 7.6% in Ottawa, and syphilis from 4.7% in Montréal to 8.6% in Toronto. A history of hepatitis A was reported by a low of 4.2% in Victoria and a high of 8.7% in Winnipeg, and hepatitis B ranged from 5.7% in Ottawa to 8.3% in Montréal.

TABLE 34. Self-reported result of most recent HCV test

(ELIGIBLE: Respondents who reported ever having been tested for HCV)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Positive	7 (5.2)	5 (15.2)	54 (5.2)	9 (3.4)	74 (6.3)	149 (5.7)
Negative	123 (90.4)	28 (84.8)	930 (90.4)	232 (88.5)	977 (83.3)	2290 (87.0)
Status Unknown ^a	6 (4.4)	0 (0.0)	45 (4.4)	21 (8.0)	122 (10.4)	194 (7.4)
(n)	136	33	1029	262	1173	2633
Missing	2 (1.5)	3 (8.3)	63 (5.8)	15 (5.4)	28 (2.3)	111 (4.0)
Total	138	36	1092	277	1201	2744

^a "Status Unknown" includes respondents who did not receive the results of their last HCV test, as well as those who did not know the results of their last HCV test.

Respondents who reported ever having been tested for HCV were also asked to report the result of their most recent test (Table 34). Overall, 5.7% of respondents said that their last HCV test was positive, which ranged from 3.4% in Ottawa to 15.2% in Winnipeg.

TABLE 35. Seroprevalence of syphilis and HCV

(ELIGIBLE: Respondents who provided a biological sample of sufficient quantity for testing)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Syphilis^a						
Positive	7 (3.8)	3 (3.3)	78 (10.0)	19 (6.6)	98 (5.1)	205 (6.3)
Negative	177 (96.2)	88 (96.7)	700 (90.0)	270 (93.4)	1819 (94.4)	3054 (93.4)
Indeterminate	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	10 (<1.0)	10 (<1.0)
Total	184	91	778	289	1927	3269
HCV^b						
Positive	5 (2.7)	18 (19.4)	38 (4.9)	6 (2.0)	106 (5.5)	173 (5.3)
Negative	179 (97.3)	75 (80.6)	742 (95.1)	287 (98.0)	1836 (94.5)	3119 (94.7)
Total	184	93	780	293	1942	3292

^a A positive result indicates past or present syphilis infection.

^b A positive result indicates past or present HCV infection, and does not discriminate acute from chronic or resolved infections.

Respondents were asked to provide a DBS sample which was tested for HCV and for syphilis. Of those who provided samples that were adequate for testing 6.3% overall tested positive for antibodies to syphilis, ranging from 3.3% in Winnipeg to 10.0% in Toronto. Overall, 5.3% of samples tested positive for HCV antibodies, with a range of 2.0% in Ottawa to 19.4% in Winnipeg.

TABLE 36. HIV and HCV co-seropositivity

(ELIGIBLE: Respondents who provided a biological sample of sufficient quantity for testing for both HIV and HCV)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Seroprevalence^a						
HIV negative/HCV negative	157 (85.3)	65 (69.9)	584 (75.0)	261 (89.1)	1627 (83.8)	2694 (81.9)
HIV positive/HCV negative	22 (12.0)	10 (10.8)	157 (20.2)	26 (8.9)	209 (10.8)	424 (12.9)
HIV negative/HCV positive	2 (1.1)	10 (10.8)	16 (2.1)	1 (< 1.0)	72 (3.7)	101 (3.1)
HIV positive/HCV positive (HIV/HCV co-seropositive)	3 (1.6)	8 (8.6)	22 (2.8)	5 (1.7)	34 (1.8)	72 (2.2)
Total	184	93	779	293	1942	3291

^a A positive HIV result indicates a current HIV infection; a positive HCV result indicates past or present HCV infection, and does not discriminate acute from chronic or resolved infections.

TABLE 37. HIV and syphilis co-seropositivity

(ELIGIBLE: Respondents who provided a biological sample of sufficient quantity for testing for both HIV and syphilis)

	Victoria n (%)	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total n (%)
Seroprevalence^a						
HIV negative/syphilis negative	154 (83.7)	70 (77.8)	567 (72.9)	244 (84.4)	1626 (84.4)	2661 (81.5)
HIV positive/syphilis negative	23 (12.5)	17 (18.9)	133 (17.1)	26 (9.0)	192 (10.0)	391 (12.0)
HIV negative/syphilis positive	5 (2.7)	3 (3.3)	34 (4.4)	14 (4.8)	56 (2.9)	112 (3.4)
HIV positive/syphilis positive (HIV/syphilis co-seropositive)	2 (1.1)	0 (0.0)	44 (5.7)	5 (1.7)	42 (2.2)	93 (2.9)
Total	184	90	778	289	1926^b	3267

^a A positive HIV result indicates a current HIV infection; a positive syphilis result indicates past or present syphilis infection.

^b Total denominator includes 10 respondents who provided a DBS of sufficient quantity for testing, but whose syphilis lab result was "indeterminate". Therefore, these respondents are included in the denominator, but are not included in any of the categories presented in this table.

Table 36 and Table 37 present data on HIV and HCV co-seropositivity and HIV and syphilis co-seropositivity among men who provided a DBS sample of sufficient quantity for testing of both pathogens.

Table 36 indicates that most men were seronegative for both HIV and HCV (81.9%), ranging from a low of 69.9% in Winnipeg to a high of 89.1% in Ottawa. A very small proportion of men were seropositive for both HIV and HCV (2.2%), ranging from a low of 1.6% in Victoria to a high of 8.6% in Winnipeg. Generally, findings were similar across sites, with the exception of Winnipeg, where the proportion of men who were seropositive for both HIV and HCV was highest and the proportion of men who were seronegative for both HIV and HCV was lowest.

Table 37 also shows that most men were seronegative for both HIV and syphilis (81.5%), ranging from a low of 72.9% in Toronto to a high of 84.4% in Ottawa and Montréal. Approximately three percent were seropositive for both HIV and syphilis, ranging from a low of 0% in Winnipeg to a high of 5.7% in Toronto.

4.7 KNOWLEDGE AND ASSUMPTIONS OF HIV, HCV AND OTHER STBBI

Accurate information about the transmission and prevention of HIV and other STBBI can empower individuals to adopt healthier sexual practices and reduce the risks associated with certain sexual and drug-taking behaviours. This section presents data on the participants' assumptions about HIV and other STBBI, focusing on myths and misconceptions.

TABLE 38. Knowledge and assumptions regarding the transmission of HIV, HCV and other STBBI

(ELIGIBLE: All people surveyed)

	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total ^b n (%)
Having sex with one faithful, uninfected partner can reduce the risk of HIV transmission^a					
Yes	80 (69.0)	1542 (83.0)	415 (87.2)	—	2037 (83.2)
No	28 (24.1)	281 (15.1)	57 (12.0)	—	366 (14.9)
Don't Know	8 (6.9)	35 (1.9)	4 (<1.0)	—	47 (1.9)
(n)	116	1858	476	—	2450
Missing	3 (2.5)	129 (6.5)	28 (5.6)	—	160 (6.1)
Refused	2 (1.7)	—	—	—	2 (<1.0)
Total	121	1987	504	—	2612
People can protect themselves from HIV, the virus that causes AIDS, by using a condom correctly every time they have anal sex					
Yes	95 (80.5)	1751 (93.7)	445 (92.7)	1581 (83.7)	3872 (88.9)
No	19 (16.1)	92 (4.9)	27 (5.6)	214 (11.3)	352 (8.1)
Don't Know	4 (3.4)	26 (1.4)	8 (1.7)	93 (4.9)	131 (3.0)
(n)	118	1869	480	1888	4355
Missing	2 (1.7)	118 (5.9)	24 (4.8)	69 (3.5)	213 (4.7)
Refused	1 (<1.0)	—	—	—	1 (<1.0)
Total	121	1987	504	1957	4569
Syphilis can be transmitted through unprotected oral sex					
Yes	85 (72.7)	1554 (83.9)	382 (80.3)	1387 (73.0)	3408 (78.4)
No	11 (9.4)	61 (3.3)	12 (2.5)	131 (6.9)	215 (4.9)
Don't Know	21 (17.9)	238 (12.8)	82 (17.2)	383 (20.1)	724 (16.7)
(n)	117	1853	476	1901	4347
Missing	4 (3.3)	134 (6.7)	28 (5.6)	56 (2.9)	222 (4.9)
Total	121	1987	504	1957	4569

^a This response category was not an option in the Montréal survey.^b Victoria is not included in this table, as participants were not asked these questions.

Note: Correct responses are shown in bold

To help assess knowledge about the transmission of HIV and other STBBI among MSM, all M-Track participants (with the exception of those who participated in Victoria), were asked to indicate if they agreed with the statements regarding the transmission of HIV and other STBBI listed in Table 38. Most men correctly answered that “Having sex with one faithful, uninfected partner can reduce the risk of HIV transmission” (83.2%), that “People can protect themselves from HIV, the virus that causes AIDS, by using a condom correctly every time they have anal sex” (88.9%), and that “Syphilis can be transmitted through unprotected oral sex” (78.4%). Still, 16.8%, 11.1% and 21.6% either answered these questions incorrectly or did not know the answer. Knowledge regarding the transmission of HIV and other STBBI was similar across participating sites, with the exception of Winnipeg, where the proportion of men who identified the correct response was consistently lower than in other sites.

TABLE 39. Myths and misconceptions about HIV, HCV and other STBBI

(ELIGIBLE: All people surveyed)

	Winnipeg n (%)	Toronto n (%)	Ottawa n (%)	Montréal n (%)	Total ^b n (%)
A healthy-looking person can have HIV^a					
Yes	102 (85.7)	1762 (94.4)	456 (95.4)	—	2320 (94.1)
No	12 (10.1)	86 (4.6)	17 (3.6)	—	115 (4.7)
Don't Know	5 (4.2)	19 (1.0)	5 (1.0)	—	29 (1.2)
(n)	119	1867	478	—	2464
Missing	2 (1.7)	120 (6.0)	26 (5.2)	—	148 (5.7)
Total	121	1987	504	—	2612
There is treatment currently available for HCV					
Yes	70 (58.8)	640 (34.7)	128 (26.8)	517 (27.4)	1355 (31.3)
No	23 (19.3)	574 (31.1)	156 (32.6)	733 (38.9)	1486 (34.3)
Don't Know	26 (21.8)	633 (34.3)	194 (40.6)	634 (33.7)	1487 (34.4)
(n)	119	1847	478	1884	4328
Missing	2 (1.7)	140 (7.0)	26 (5.2)	73 (3.7)	241 (5.3)
Total	121	1987	504	1957	4569
I would always have symptoms if I was infected with HCV					
Yes	29 (24.4)	316 (17.1)	55 (11.5)	534 (28.2)	934 (21.5)
No	60 (50.4)	1186 (64.2)	330 (69.0)	960 (50.8)	2536 (58.5)
Don't Know	30 (25.2)	346 (18.7)	93 (19.5)	397 (21.0)	866 (20.0)
(n)	119	1848	478	1891	4336
Missing	2 (1.7)	139 (7.0)	26 (5.2)	66 (3.4)	233 (5.1)
Total	121	1987	504	1957	4569
I would always have symptoms if I contracted an STI					
Yes	26 (21.8)	263 (14.2)	40 (8.4)	437 (23.1)	766 (17.6)
No	71 (59.7)	1445 (77.9)	407 (85.3)	1309 (69.1)	3232 (74.4)
Don't Know	22 (18.5)	147 (7.9)	30 (6.3)	147 (7.8)	346 (8.0)
(n)	119	1855	477	1893	4344
Missing	2 (1.7)	132 (6.6)	27 (5.4)	64 (3.3)	225 (4.9)
Total	121	1987	504	1957	4569

^a This response category was not an option in the Montréal survey.^b Victoria is not included in this table as participants were not asked these questions.

Note: Correct responses are shown in bold

With the exception of Victoria, all M-Track participants were also asked to indicate if they agreed with the statements on specific myths and misconceptions regarding HIV and other STBBI listed in Table 39. Almost all men correctly answered that “A healthy-looking person can have HIV” (94.1%). Nearly three quarters of men also knew that they would not necessarily have symptoms if they contracted an STI (74.4%); a smaller proportion correctly answered that they would not necessarily have symptoms if they were infected with HCV (58.5%). A significant proportion (68.7%) of men did not believe, or did not know, that treatment is currently available for HCV. A notable exception across sites was in Winnipeg, where a majority of participants were aware that treatment is available for HCV (58.8%).

5. DISCUSSION

5.1 SUMMARY OF FINDINGS

The findings presented in this report provide an important baseline for monitoring trends in the prevalence of HIV, HCV and syphilis, as well as testing patterns and changes in behaviours associated with the acquisition and transmission of these pathogens among MSM from participating surveillance sites across Canada. This final section presents a general summary of the surveillance findings from Phase 1 of M-Track (sections 5.1.1-5.1.6). It also highlights important strengths and limitations of M-Track (section 5.2) and provides a brief overview of next steps for M-Track (section 5.3).

5.1.1 PARTICIPANT OVERVIEW AND SOCIO-DEMOGRAPHIC CHARACTERISTICS

The M-Track questionnaire collected data on the socio-demographic characteristics of participants. When considered along with the data on recruitment venues, the socio-demographic data help characterize the participants included in this report, and help inform the interpretation of results related to risk behaviours and biological testing results for HIV, HCV and syphilis. The type and number of venues used to recruit men for M-Track varied across sentinel sites. Nearly half of all men who participated in Phase 1 of M-Track were recruited in bars and a considerable number were also recruited at events, from associations and in bathhouses. Differences across sites with respect to the distribution of recruitment venues likely account for some of the variations in findings across sites as different venues appeal to different segments of the population.

The socio-demographic profile of participants in Phase 1 of M-Track is similar to that of participants in other studies focused on MSM in Canada, and to MSM who participated in the National HIV Behavioral Surveillance System (NHBS) in the United States.^{20,21,23} A majority of M-Track respondents were between the ages of 30 and 49 (54%) with fewer between the ages of 15 and 29 (26%) or over the age of 50 (20%). The mean and median age of all M-Track participants was 39. As others have noted, this common age distribution among samples of Canadian MSM is likely related to an increased ability with age to deal with the social stigma associated with being out in public at gay venues and events.²³

Age, personal income and education level are often correlated with one another. About one third of M-Track participants reported an annual personal income of \$50,000 or more, with 20% earning more than \$60,000 annually. However, over ten percent of men reported an annual personal income of \$10,000 or less or reported no income. With respect to highest level of education attained, approximately sixty percent of the M-Track sample had completed a minimum of a college or university degree. Cross-sectional studies of MSM in Canada have found that gay populations tend to be highly educated,^{21,23} especially relative to all Canadian males between the ages of 25 and 64. According to data from the 2006 Canadian Census, 44.8% of males aged 25 to 64 had completed a college/university degree.²⁵ Generally, M-Track respondents' personal income increased with age and education level (data not shown in report).

When asked about their ethnic and/or cultural ancestry, the majority of men most strongly identified as North American (72.4%). Overall, 2.8% of participants most strongly identified as Aboriginal; overall, however, 6% of the sample reported some Aboriginal ancestry (latter data not shown in report). In Winnipeg, nearly half of the participants most strongly identified as Aboriginal (49.4%). Other more commonly reported ethnicities among participants included: East and Southeast Asian (4.2%), Southern European (3.4%), Latin American (3.4%), British Isles (3.3%) and African/Caribbean (2.6%), with some variation across sentinel sites. Approximately half of the overall sample spoke English as their first language. A substantial proportion of the sample spoke French as their first language, partly because of the large proportion of native French speakers who participated in Montréal (80.9%), and the high number of respondents from Ottawa who identified French as their first language (26.9%).

The vast majority of men who participated in M-Track self-reported their sexual orientation as gay (82%) and an additional 14% as bisexual.

The socio-demographic characteristics of M-Track participants were generally comparable across participating sentinel sites. Winnipeg was anomalous, since it appears to have captured men of comparatively lower socio-economic status.

5.1.2 SEXUAL LIFE AND OTHER PRACTICES

Recent research indicates that certain subgroups of MSM continue to be at considerable risk of HIV infection by engaging in risky sexual practices, such as UAI with serodiscordant partners or partners of unknown HIV status. Research further suggests that men who engage in one high-risk behaviour tend to engage in other higher-risk behaviours, forming clusters of men at higher risk of HIV infection and transmission. For example, men who partake in one higher-risk behaviour or who seek sex in higher-risk environments, such as in bathhouses, also tend to partake in or seek sex in other higher-risk environments, such as public settings and Internet sites.^{4,26-31}

Men who participated in M-Track commonly reported seeking out sex in a variety of social and public settings in the six months preceding the survey. For example, nearly a quarter of men reported looking for sex in social venues, such as community organizations/events, gay associations and other recreational groups (24%), as well as in public places, such as parks and public restrooms (22%). A large proportion of men also reported looking for sex in bars (56%), in saunas (41%) and on the Internet (39%) in the previous six months. Some Canadian researchers are examining the role of the Internet in the sex lives of MSM and how Internet-based partnerships may be related to unsafe sex.³² More research is required into the contextual factors that lead men to seek sex on the Internet and that influence their subsequent sexual encounters.³²

With respect to the number and proportion of men who reported seeking out sex in public settings, variations across sites may, in part, reflect differences in recruitment strategies across sentinel sites, since some public settings were used as recruitment sites. These findings may also reflect differences in the availability of venues, since some cities have more bars and saunas catering to gay men than others.

Research indicates that unprotected anal sex continues to be the most likely route of HIV transmission for most MSM.³³ Specific risk factors for HIV seroconversion include any anal-sex-related practices with a serodiscordant, casual or commercial sex partner,³³ as well as high numbers of casual partners.³³

The majority of participants in M-Track who had sex (oral or anal) with a man in the six months preceding the study also reported having anal sex with at least one man in the previous six months (60.4%), and nearly forty percent reported multiple male anal sex partners during the previous six months.

Respondents who reported sex with a male partner in the previous six months were also asked more detailed questions about sexual activities with regular, casual, commercial and female sex partners during the previous six months. Definitions of regular, casual and commercial sex partners tend to be similar but not identical across research studies, limiting direct comparisons. In Phase 1 of M-Track, a regular partner was defined as a man with whom the respondent had sex at least twice. A casual partner was defined as a man with whom the respondent had sex only once (e.g., a “one night stand” or an encounter in a bathhouse). Neither definition included men to whom the respondent gave or received money, drugs or other goods or services in exchange for sex (i.e., commercial sex partners).

Based on these definitions, nearly eighty percent of those who reported a male sex partner in the preceding six months reported having sex with a regular male sex partner. A similar proportion reported having sex with a casual male sex partner. Nearly half of the men, however, reported only one regular sex partner (44.5%) and an additional 33.5% of men reported multiple (> 1) regular male sex partners. The majority reported multiple casual partners (63.4%). These findings are consistent with recent research that has found that casual sex is common among MSM; these studies have noted, however, that the majority of men surveyed continue to practise safe sex.^{23,33,34} To some extent, the latter finding is consistent with the baseline M-Track data presented here. Just over sixty percent of men had used a condom the last time they had anal sex; but approximately fifty-five percent of men reported at least one event of UAI with another man during the previous six months (all partner types). Nearly half of all men with a casual partner surveyed in M-Track used a condom consistently (“all of the time”) during insertive sex (47.0%) and receptive anal sex (49.6%).

With respect to commercial sex involvement in the previous six months, roughly ten percent of men independently reported giving or receiving money, drugs or other goods/services in exchange for sex. A small minority also reported female partners (11.8%); the proportion reporting female sex partners was notably higher in Winnipeg, where nearly a third reported female partners (30.6%).

Variations were expected in the number and type of sex partners in a surveillance system of this scope. This results from a combination of factors, including but not limited to: differences in sampling methods, the relative size of the gay community within any given sentinel site, the availability of venues specifically catering to gay men within the community and differences in the sexual behaviours within and across sites.

UAI (especially receptive UAI) with a partner of unknown or HIV positive status continues to be reported as the main risk factor for HIV seroconversion among MSM.^{31,33,35,36}

The proportion of men reporting consistent condom use with a regular serodiscordant partner over the previous six months was generally higher than consistent condom use with a regular seroconcordant partner. In their brief synopsis of findings from a subsample of partnered men who took part in the *Men, Sex and Love* Web study, Lebouché et al. (2008) reported that HIV discordant couples were significantly more likely to consistently use condoms during anal sex. By contrast, partnerships of unknown concordance were not associated with consistent condom use.³⁷ Among self-reported HIV positive M-Track participants who had insertive anal sex with a regular HIV negative partner, nearly half (46.7%) reported consistent condom use. Similarly, the majority of self-reported HIV negative men who had receptive anal sex with a regular HIV positive partner reported consistent condom use (65.3%). Nearly half (46.9%) of respondents who self-reported their HIV status, and who had insertive anal sex with a regular partner of unknown HIV status, reported using a condom consistently; for receptive anal sex, 47.4% overall used a condom consistently.

Among men who self-reported being HIV positive, and had sex with a casual partner in the previous six months, approximately twenty percent reported any UAI with a partner believed to be HIV negative. Of self-reported HIV negative men, fewer than five percent reported any UAI in the previous six months with a casual partner whom they believed was HIV positive.

While many studies report that MSM continue to engage in high-risk behaviour, a growing body of research indicates that many MSM have safe sex most of the time.^{23,38,39} This finding is supported by the baseline M-Track data presented here. Nonetheless, this report shows that those who report UAI with both regular and casual partners represent a significant subpopulation at particular risk of acquiring and transmitting HIV and other STBBI.

These findings will be compared against future phases of M-Track data on sexual behaviour and used to monitor changes in behaviour over time, providing further insight into the impact of HIV and other STBBI prevention programs and policies across all levels of government. For example, differences may emerge over time in the way men seek out sexual partners, which may, in turn, lead to changes in the way prevention messages are delivered.

5.1.3 RECREATIONAL DRUG USE

Several hypotheses have been explored in an effort to explain why some men continue to practice unsafe sex. Recent publications reinforce the conclusion that HIV-related risk behaviours among MSM stem from a host of complex and interrelated factors. The use of recreational drugs during or prior to sex has recently been associated with UAI.^{24,31,40-44}

The use of non-injection drugs prior to or during sex was common among M-Track participants. Approximately eighty-three percent had used one or more recreational substances (including alcohol) within two hours of having sex in the previous six months, and sixty-one percent of men had used one or more recreational substance (excluding alcohol). The most frequently used drugs were alcohol (74.1%), sexual enhancers (39.8%) and marijuana (38.0%). Other less frequently used substances included cocaine/crack/freebase (15.9%), and heroin/other opioids (<3.0%). Use of "Other recreational drugs" including special K, ecstasy, crystal meth, GHB, psychedelics and other amphetamines, which were reported by 21.2% of men. In general, recreational drug use prior to or during sex was higher among participants in Winnipeg than in other participating sentinel sites.

Recreational drugs likely play a role in the transmission of HIV and other STBBI among MSM in Canada. M-Track's data do not explain how recreational substance use affects sexual risk taking; yet the report's findings concur with previous research that suggests recreational drug use prior to or during sex is relatively common among MSM.^{21,23} A more comprehensive understanding of how drug use mediates sexual risk would require more targeted research projects.⁴²

Participants in M-Track were also asked about their use of injection drugs outside the context of sexual activity. Injection drug use was uncommon among M-Track respondents. Overall, 10.3% of participants reported a history of injection drug use and 4.5% of participants reported injecting drugs within the previous six months. Cocaine was the most frequently cited injection drug, reported by 5.8% of all participants. Fewer reported a history of injecting steroids (3.6%), crystal methamphetamine (3.2%) or heroin (2.4%). An even smaller number of men reported injecting drugs in the previous six months: 2.1% (cocaine), 1.5% (steroids), 1.2% (crystal methamphetamine) and less than 1.0% (heroin).

As with substance use before or during sex, reported lifetime histories of injection drug use were generally higher among participants in Winnipeg than in other participating sentinel sites. Although M-Track did not survey needle sharing practices, existing research suggests that MSM-IDU are at a particularly high risk of acquiring and transmitting both HIV and HCV.^{28,29} The prevalence of HIV and related risk behaviours (e.g., borrowing needles previously used by someone else) is higher among MSM-IDU than other MSM and IDU.^{28,29} Targeting MSM-IDU for HIV prevention programs is essential, since they may serve as an important bridge between high and low HIV prevalence populations in virtue of their sexual and drug-using relationships with other MSM and/or IDU and/or heterosexual women.⁴⁵

M-Track can monitor drug use patterns and emerging trends among MSM in participating sentinel sites across Canada over time. Its data can, in turn, be used to fine-tune existing programs and develop new HIV prevention messages designed for MSM, particularly for those who also use recreational drugs.

5.1.4 HIV TESTING, PREVALENCE, AWARENESS AND TREATMENT HISTORY

National routine HIV surveillance data from 2008 reveals that the MSM exposure category continued to account for the largest proportion of HIV positive test reports among adults, representing 45.1% of all reported positive tests.⁶ Furthermore, estimates of the number of new HIV infections attributable to the MSM exposure category also accounted for the highest proportion of new infections in 2008, representing 44% of estimated new infections.⁷

The seroprevalence of HIV among M-Track participants was high. The prevalence of HIV was 15.1% among participants who provided a DBS sample of sufficient quantity for testing and completed a questionnaire, ranging from a low of 11.1% in Ottawa to a high of 23.1% in Toronto.

Of those whose biological sample (DBS) tested positive for HIV, 19.1% were unaware of their HIV positive status. While this figure is lower than the overall estimated percentage of Canadians unaware of their HIV positive status (26%), it indicates that 91 M-Track participants were unaware of their HIV positive status.⁷

It is important to reach undiagnosed men so that they may take advantage of available treatment strategies and receive appropriate counselling to prevent the further spread of HIV. The transmission rate of HIV among undiagnosed individuals is likely higher than it is for those who have been tested and diagnosed.⁴⁶ Moreover, the frequency of high-risk sexual behaviour may be reduced substantially after HIV diagnosis.⁴⁷ Research further suggests that some MSM are using strategies such as “serosorting” to mitigate their risk of acquiring HIV.^{33,48-50} The effectiveness of these strategies, however, is still controversial.^{33,50} Among men who report UAI, some may be successfully serosorting (and thus not transmitting HIV).⁴⁴ However, some may adopt risk-reduction strategies based on erroneous information about their or their partner’s sero-status,³⁷ one of the risks of this strategy.

To help stem the HIV/AIDS epidemic, it is important to increase the number and proportion of people living with HIV who receive testing and know their serostatus.⁴⁶ Regular HIV testing among MSM is crucial to ensuring that men are aware of their HIV status. PHAC is currently developing *Guidelines for HIV Testing in Canada* with the goal of increasing the number of persons aware of their HIV infection.

M-Track findings reinforce previous surveys that have shown that HIV testing is relatively high among MSM in Canada.^{51,52} The vast majority of M-Track participants reported having been tested for HIV (86.2%); and among self-reported HIV negative men, a large proportion had also been tested for HIV in the two years preceding survey participation (75.2%).

A large proportion of men who had never been tested for HIV indicated that they had not been tested because they considered themselves to be at a low risk of HIV infection (54.1%). Other common reasons included having a fear of testing, reported by almost thirty percent of men, and already knowing one’s status, reported by over a quarter of men. Reasons for not being tested in the past two years were similar among self-reported HIV negative men: 59.4% reported that they had not recently been tested because they considered themselves to be at a low of risk of HIV infection, while 29.3% reported that they already knew their status. Future M-Track analyses will need to examine whether men who perceive themselves to be at low risk of HIV infection are in fact at lower risk, based on their reported risk behaviours.

Offering counselling at the time of HIV testing can also be beneficial regardless of the result. It provides critical information about how to reduce the risk of HIV infection for HIV negative individuals and it provides an opportunity to discuss HIV treatment for individuals found to be HIV positive. In M-Track, approximately three quarters of self-reported HIV positive participants reported a history of taking HIV medication, while a smaller proportion reported currently taking treatment for HIV (66.0%). Treatment not only benefits the individual infected with HIV but it may also help reduce the potential for onward transmission.^{53,54}

M-Track data will prove essential for ongoing monitoring of patterns and trends related to HIV testing, prevalence, awareness and treatment history among MSM from participating surveillance sites across Canada.

5.1.5 HCV, SYPHILIS AND OTHER STBBI

The majority of respondents reported having been tested at some point for HCV (66.9%), gonorrhoea (66.6%) and syphilis (62.6%), and over eighty percent had been tested within the past two years. While these findings are encouraging, the proportion of men who have been tested at least once for these three pathogens is considerably lower than the proportion of participants who had ever been tested for HIV. Reasons for not being tested for other STBBI were not elicited from the survey. Thus, it is difficult to determine why these rates are lower than for HIV.

The differences between testing patterns for HIV and HCV and other STBBI highlight the importance of screening MSM who engage in risky sexual practices for a range of infections beyond HIV. Co-infection of HIV and other STBBI can result in severe consequences. Gonococcal and syphilis infections (among others) enhance the transmission of HIV,^{8,55,56} while HIV accelerates the progression of HCV in co-infected individuals.⁸ In addition, although there is a low risk of sexual transmission of HCV generally, there is growing evidence from several countries of the sexual transmission of HCV

among HIV-infected MSM.^{8,10,57} The *Canadian Guidelines on Sexually Transmitted Infections* recommend prevention counselling with MSM that emphasizes a personal risk assessment with a client-centred focus and avoids assumptions about risk practices based on sexual orientation.⁵⁵ Men who have had unprotected sex with another man in the preceding year should be screened for all STI, for HIV (unless known to be seropositive) and for hepatitis A and B. Counselling should also take into account the broader context of sexual health and cover topics such as intimacy, mental health and partner violence, among others.⁵⁵

Variations in testing rates across sites may be attributable to different recruitment strategies, questionnaire formats and the underlying populations sampled. There was a high level of missing data on STBBI testing variables at the Winnipeg site. The probable reason was a lack of clarity in the way the questions were asked. The response “Don’t Know” was not an option for the question on testing frequency, which may have also adversely impacted response rates, since respondents who did not know how frequently they had been tested provided no information.

The proportion of respondents who reported that they had been diagnosed with a variety of STBBI varied depending on the infection. Results from the laboratory testing of DBS samples indicated a high seroprevalence of both syphilis (6.3%) and HCV (5.3%) relative to the general population. Although there are no Canadian estimates of syphilis prevalence in the general population, the rate of infectious syphilis in males reported to PHAC in 2008 was 7.3 per 100,000.⁵⁵ A modelling study commissioned by PHAC estimated a prevalence rate of HCV in Canada for 2007 of under two percent in males in the various age groups covered by M-Track, ranging from 0.098% in males aged 15-19 years to 1.52% in males aged 55-59.⁵⁸ It is important to note, however, that the laboratory tests for syphilis and HCV conducted on the DBS samples only indicate past or present infection. These tests cannot determine whether the individual is currently infected with either pathogen. There is also a possibility of false positives. The particularly high seroprevalence of HCV in Winnipeg (19.4%) is likely partially explained by the high proportion of injection drug use reported by men who participated at this site.

Laboratory testing for HCV and syphilis using DBS samples is unable to detect current HIV and HCV co-infection. The proportions of participants seropositive for both HIV and HCV (2.2%), and for HIV and syphilis (2.9%), therefore, do not reflect current co-infection with these pathogens. As a result, it is difficult to interpret the co-seropositive cases detected in M-Track. Still, the data suggest the possibility of multiple infections among participating MSM, which may compromise treatment responses and health outcomes. HCV infection among HIV positive MSM has been referred to as “an expanding epidemic.”⁵⁹ It is associated with rough sexual practices, drug use prior to sex, and the presence of genital ulcerative disease, regardless of injection drug use history.^{8,10,57} These findings may be biased by unreported histories of injection drug use, but research nonetheless supports an increased risk of sexual transmission of HCV among HIV-infected individuals, particularly MSM. HIV serosorting may result in UAI among HIV-infected MSM and, in turn, a concomitant risk of HCV transmission.^{8,10,57} These data re-emphasize the need for public health messaging to reiterate that HIV serosorting does not prevent the transmission of other STBBI.

Routine national surveillance data for STBBI do not collect information on risk factors or exposure categories and enhanced surveillance studies outside of Canada tend to focus on HIV infection alone. It is difficult, therefore, to estimate the prevalence of syphilis, HCV, and other STBBI among MSM outside of M-Track. Nonetheless, routine surveillance data indicate that rates of infectious syphilis were six to seven times higher in males than in females in Canada for the time period corresponding to Phase 1 of M-Track (2005-2007). This figure is consistent with reports of syphilis outbreaks amongst MSM.^{55,60} Reports of various STBBI have risen among MSM in Canada since the mid-1990s and there have been recent outbreaks of lymphogranuloma venereum (LGV) among MSM in Canada with high rates of HIV co-infection.^{55,61} The Ontario Men’s Survey, which measured self-reported STBBI diagnoses among other things, found that 1.7% of respondents reported having had HCV and 2.6% reported having had syphilis.²¹

5.1.6 KNOWLEDGE AND ASSUMPTIONS OF HIV, HCV AND OTHER STBBI

The majority of respondents could correctly answer knowledge-related questions on the prevention and transmission of HIV and other STBBI. However, up to a fifth either answered the questions incorrectly or did not know the answer, highlighting gaps in knowledge that need to be addressed by public health officials and health care providers. Knowledge about HIV was higher than other STBBI. While nearly all respondents understood that persons infected with HIV could look healthy, a smaller proportion understood that other STBBI could be asymptomatic, and only a third of respondents were aware of available treatment for HCV.

Myths and misconceptions regarding the transmission of HIV still exist among some subgroups of MSM.⁶² Thus, as Adam et al. (2008) have recently suggested, prevention messages are still valuable, since “there are always new men entering into relations with other men, whether they arrive from the upcoming generation, immigration, or self-discovery” (p. 420).⁴ These authors note, however, that simply knowing the facts is not necessarily enough to bring about the behavioural changes that will lead to a consistent reduction in the transmission of HIV and other STBBI in MSM.⁴ The important implication for prevention programs is the uneven distribution of risk among MSM, which means that

prevention messages relevant to one group of men may lack resonance with others.⁴ Researchers have further argued that sexual health programs should offer culturally appropriate services in multiple languages through various media to meet the needs of diverse MSM.^{62,63} Some have specifically suggested the Internet as an important delivery tool for information about safer sex and the transmission and prevention of HIV and other STBBI among MSM.⁶⁴

5.2 STRENGTHS/LIMITATIONS

Making direct comparisons across findings is one of the important challenges facing the epidemiological study of HIV/AIDS among MSM in Canada. Pre-existing research shows considerable methodological variation. Studies have used different definitions, recruitment methods, eligibility criteria and statistical analyses have varied in both methods and power. As a result, drawing strong conclusions about trends in risk behaviours over time has so far been unfeasible.

The implementation of Phase 1 of M-Track has helped address this important limitation of previous research by using a core set of comparable behavioural measures for MSM across five participating sentinel sites in Canada. At the same time, the flexibility built into the M-Track system has also served the data needs of local and regional levels.

Another key strength of M-Track is its large sample size relative to other Canadian studies. Larger sample sizes provide greater statistical power, which will be crucial for future analyses of the differences between sub-groups with respect to risk behaviours and associated factors. Nonetheless, some participating sentinel sites achieved smaller sample sizes. The smaller number of participants in some sentinel sites means that a smaller number of men have a larger influence on the proportions presented within these sentinel sites when compared to sites with larger sample sizes.

M-Track primarily used venue-based sampling methods to overcome some of the inherent difficulties in accessing hard-to-reach populations. Given this, the surveillance findings are not representative of the entire target population in Canada. With the exception of the biological component, this report's findings are based on self-reported data, which are subject to social desirability bias. As a result, some socially undesirable behaviours may have been underreported, while socially desirable behaviours may have been overreported.

Every effort was made to ensure that a standard protocol and questionnaire were implemented across sentinel sites. However every community in Canada is different; thus, variations in survey timing and ease of recruitment resulted in some differences across sentinel sites. The data presented in this report are not based on a random sample, so variations across the sentinel sites may actually reflect variations in recruitment methods, sampling methods and/or eligibility criteria. Hence, the report's findings do not necessarily reflect differences in socio-demographic characteristics or behaviours among the general population of MSM in participating sites. No statistical procedures were used to compare findings across sentinel sites in this report. Caution should therefore be used when making comparisons across sentinel sites.

Finally, M-Track's limitations with respect to cross-sectional study design, non-probability sampling, recall bias and self-reported behavioural patterns are not likely to affect the assessment of trends, if similar methodology is used over time.

5.3 CONCLUSIONS AND NEXT STEPS

PHAC is responsible for coordinating the federal response to HIV/AIDS, as described in *The Federal Initiative to Address HIV/AIDS in Canada*¹ and in *Leading Together: Canada Takes Action on HIV/AIDS*,² Canada's blueprint for action.

One of the key components of the FI is knowledge development, which includes the establishment of sentinel surveillance programs for vulnerable populations. The successful implementation of M-Track represents a realization of this commitment. As the primary source of data to assess trends in the occurrence of HIV, HCV and syphilis among MSM in Canada and changes in behaviours associated with the acquisition and transmission of these pathogens, M-Track data will be used to monitor progress towards achieving Canada's goal of preventing the acquisition and transmission of new HIV infections.

The implementation of M-Track in Canada also provided a means of building on previous research initiatives and complements many other efforts currently underway to address HIV/AIDS and other STBBI in Canada.

Results and feedback from Phase 1 of the M-Track surveillance system demonstrated that it was well received by participants and collaborating partners. The establishment of this surveillance system across Canada is critical for generating information regarding the planning and evaluation of the response to HIV and other STBBI among MSM in Canada. This system allows for the assessment of national, and to some extent, provincial and local trends in risk behaviours.

The M-Track surveillance system is the result of successful collaboration between federal, provincial and local governments, as well as other local organizations. The surveillance system will continue to support and account for sentinel site-specific priorities and concerns. The surveillance system will need to keep pace with cultural change and be flexible regarding information needs at local, provincial/territorial and national levels.

The information generated through M-Track is being used to address issues such as program planning and evaluation, and service delivery. However, its primary focus remains the assessment of risk behaviour over time among MSM in Canada.

The objective of this report was to present descriptive findings from Phase 1 M-Track surveys undertaken between 2005 and 2007 at sentinel sites from a national perspective.

Results from Phase 1 of M-Track have confirmed that the seroprevalence of HIV and syphilis remain high among MSM from participating sentinel sites across Canada. Many MSM are having safe sex, but the potential for the transmission of HIV and other STBBI among MSM in Canada still exists, since men who report UAI in various partnerships represent a significant subpopulation. Findings from Phase 1 of M-Track confirmed that testing for HIV among MSM is high, but that a portion of men who participated were unaware of their HIV positive status. Results indicated that knowledge of HCV and other STBBI among MSM may be lower than their knowledge about HIV. These knowledge gaps could potentially be addressed with appropriate health promotion messaging.

As MSM are a heterogeneous group a single prevention message or strategy is unlikely to succeed. Prevention messages must be tailored at the community level, in light of the apparent existence of distinct risk profiles among men who participated across sentinel sites. Policy and program development should reflect the different needs of HIV positive and negative men, thereby preventing HIV negative men from becoming infected with HIV, while providing both care and counselling to HIV positive men to avoid further transmission of HIV and other STBBI.

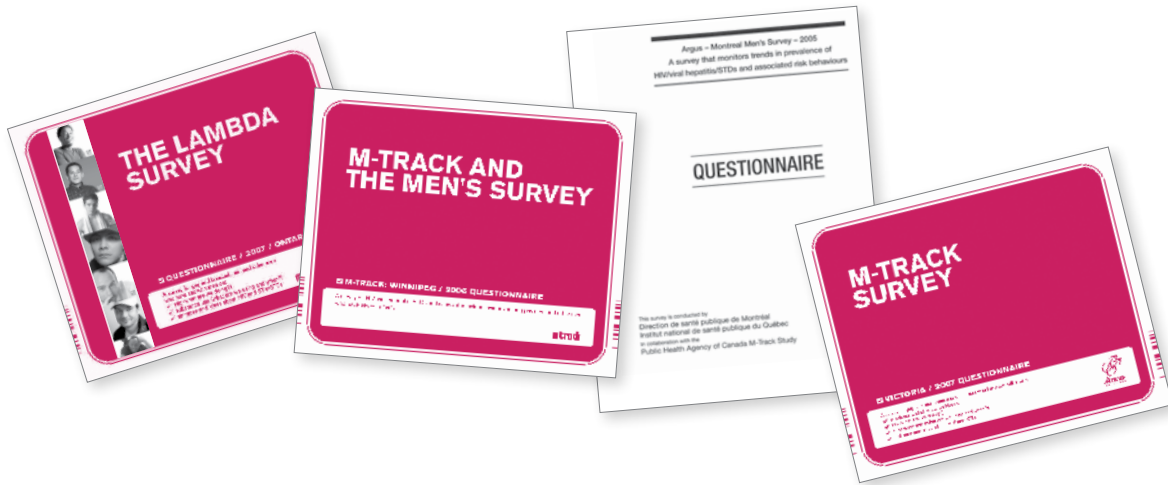
This report was intended to provide a comprehensive overview of the data from a national perspective for public health policy and program evaluation. The data in this report should also serve as a baseline for comparisons over time and for future more complex analyses.

Future M-Track analyses will look at specific questions and issues of interest to community members, researchers and policy and program analysts. Men from different socioeconomic and ethnic backgrounds, for example, may exhibit important differences in lifestyle choices (including sexual practices), as well as differences in HIV prevalence, testing and treatment history and general awareness of HIV. There may also be important predictors of risk behaviour that emerge from future analyses of M-Track data. Findings from future analyses will be presented at national meetings, through summary reports on PHAC's website and research papers. Conference posters and abstracts will also be disseminated for use in program and policy development.

Phase 2 of M-Track has been completed in Vancouver and Montréal. Current efforts are focused on ways to improve the M-Track surveillance system as PHAC and its partners work towards the implementation of Phase 3.

APPENDIX 1. EXAMPLE OF CORE M-TRACK SURVEY QUESTIONS (PHASE 1)

A core set of questions, with minor variations, was used across all sites in Phase 1 to enable comparability across sites. The following appendix provides a list of these core M-Track survey questions and corresponding response categories. Please note that the list provided does not reflect the formatting or look of the questionnaire provided to participants, nor does it include all of the instructions, definitions and transition statements on the questionnaire.



PRE-SURVEY ADMINISTRATIVE QUESTIONS

Site where interview took place:

- Montréal
- Toronto
- Victoria
- Winnipeg
- Ottawa

Questionnaire or survey number: _____

Date the interview took place: _____

Encrypt ID: _____

Venue where survey took place:

- Bar
- Coffee shop
- Bathhouse
- Event
- Association
- Fixed site
- Other, specify: _____

SECTION ONE. PERSONAL & SOCIAL BACKGROUND

1.1 In what year were you born? 19 ____

1.3 Do you live in (city name where survey is being conducted)?

- No. If you do not live in the area, where do you live? _____
- Yes

1.4 What are the first three characters of your postal code? ____ - ____ - ____

Format: Letter-Number-Letter (example: K1A)

1.5 What is the language you first learned and still understand?

- English
- French
- Other, specify: _____

1.6 What are the ethnic or cultural origins of your ancestors?

Canadian, English, French, Chinese, Italian, German, Scottish, East Indian, Irish, Cree, Mi'kmaq (Micmac), Metis, Inuit (Eskimo), Ukrainian, Dutch, Filipino, Polish, Portuguese, Jewish, Greek, Jamaican, Vietnamese, Lebanese, Chilean, Salvadorean, Somali, etc.

Specify as many origins as applicable: _____

1.7 Which single ethnic or cultural group do you most strongly identify with?

Canadian, English, French, Chinese, Italian, German, Scottish, East Indian, Irish, Cree, Mi'kmaq (Micmac), Metis, Inuit (Eskimo), Ukrainian, Dutch, Filipino, Polish, Portuguese, Jewish, Greek, Jamaican, Vietnamese, Lebanese, Chilean, Salvadorean, Somali, etc.

Specify: _____

1.9 What is the highest level of education that you have completed? Please check only one.

- Elementary/primary school
- Secondary/high school
- College or university – undergraduate level
- Graduate education (e.g. MA, PhD, MD degrees, etc)
- Other

1.10 Last year, what was your personal income from all sources, before taxes?

- No income
- \$1 - \$9,999
- \$10,000 - \$19,999
- \$20,000 - \$29,999
- \$30,000 - \$39,999
- \$40,000 - \$49,999
- \$50,000 - \$59,999
- \$60,000 +

1.12 How do you define yourself:

- Gay or homosexual
- Bisexual
- Straight or heterosexual
- Two spirited
- Other, specify: _____

SECTION TWO. DRUG USE & SEX LIFE

The next section of questions is about drug use and your sex life.

2.1a During the past 6 months, have you looked for sex in the following public settings?

2.1b If yes, how often:

	No	Yes	Less than once a month	Once a month	2-3 times a month	Once or more a week
A Gay bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B Straight bars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C Rave/circuit parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D After-hours clubs/parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E Sauna/baths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F Sex parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G Parks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H Public restrooms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I Bicycle paths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J Coffee shops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K Internet (personal ads)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L Community organizations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M Gay associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N Recreational groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O Telephone chat lines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P Community events for gays & lesbians	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q Personal ads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R Gym/health club	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S Other, specify:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.2 Have you ever injected:

	Never	Yes, but not in the past 6 months	Yes, in the past 6 months
A Steroids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B Heroin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C Cocaine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D Crystal meth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E Other, specify:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.3 During the past 6 months, how often did you use any of the following substances within 2 hours before sex or during sex (oral or anal) with a male partner:

A I did not have sex during the past 6 months GO to question 17

	Never	Less than half the time	More than half the time
B Alcohol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C Marijuana/hash/pot/grass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D Poppers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E Special K/ketamine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F Ecstasy/MDMA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G Other amphetamines/stimulants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H Viagra, levitra, cialis or other erectile drugs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I Cocaine/crack/free base	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J Heroin (smack)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K Other opiods (Percocet, dialudid, oxycontin)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L Crystal meth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M GHB ("G")	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N Tranquilizers or benzos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O Psychedelics (LSD, acid, mescaline, mushrooms)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P Other, specify:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.4 During the past 6 months, with how many women have you had sex (vaginal, oral or anal)?

- None
 Only 1
 2 to 5
 6 or more

SECTION THREE. MALE SEXUAL PARTNERS – GENERAL INFORMATION

3.1 During the past 6 months, with how many men have you had sex (oral or anal)?

- None
 Only 1
 2 to 5
 6 to 9
 10 to 19
 20 to 29
 30 to 39
 40 to 49
 50 or more

3.5a During the past 6 months, have you had anal sex with a man?

- No
- Yes

3.5b If yes (to question 3.5a): During the past 6 months, with how many men have you had anal sex?
Number of men (be as precise as possible)

Number: _____

3.6a During the past 6 months, have you had unprotected anal sex (no condom) with at least 1 man?

- No
- Yes

3.6b If yes (to question 3.6a) Have you had unprotected anal sex with at least 1 man: who you knew at the time was HIV positive?

- No
- Yes

3.6c If yes (to question 3.6a): Have you had unprotected anal sex with at least 1 man: whose HIV status you did not know at the time?

- No
- Yes

3.6d If yes (to questions 3.6a): Have you had unprotected anal sex with at least 1 man: who you knew at the time was HIV negative?

- No
- Yes

3.7 The last time you had anal sex with a man in the past 6 months did you or your partner use a condom?

- No
- Yes

SECTION FOUR. SEX WITH CASUAL MALE PARTNERS

4.1 During the past 6 months, with how many CASUAL MALE partners have you had sex (oral or anal)?

- None
- Only one
- 2 to 5
- 6 to 9
- 10 to 19
- 20 to 29
- 30 to 39
- 40 to 49
- 50 or more

4.2a During the past 6 months, did you have insertive anal sex with these partners?

- No
- Yes

4.2b If yes (to questions 4.2a), how often was a condom used:

- Never (0%)
- Rarely (<25%)
- Sometimes (25-49%)
- Most of the time (50-74%)
- Almost every time (75-99%)
- All the time (100%)

4.3a During the past 6 months, did you have receptive anal sex with these partners?

- No
- Yes

4.3b If yes (to question 4.3a), how often was a condom used:

- Never (0%)
- Rarely (<25%)
- Sometimes (25-49%)
- Most of the time (50-74%)
- Almost every time (75-99%)
- All the time (100%)

4.4a During the past 6 months, have you had unprotected anal sex (no condom) with at least 1 CASUAL MALE partner?

- No
- Yes

4.4b If yes (to question 4.4a), have you had unprotected anal sex (no condom) with at least 1 CASUAL MALE partner: who you knew at the time was HIV positive?

- No
- Yes

4.4c If yes (to question 4.4a), have you had unprotected anal sex (no condom) with at least 1 CASUAL MALE partner: whose HIV status you did not know at the time?

- No
- Yes

4.4d If yes (to question 4.4a), have you had unprotected anal sex (no condom) with at least 1 CASUAL MALE partner: who you knew at the time was HIV negative?

- No
- Yes

SECTION FIVE. SEX WITH REGULAR MALE PARTNERS

5.1 During the past 6 months, with how many REGULAR MALE partner(s) have you had sex (oral or anal)?

- None
- Only 1
- 2 to 5
- 6 or more

Sex with regular HIV positive male partners

5.2 During the past 6 months, have you had sex (oral or anal) with REGULAR HIV positive male partner(s)?

- No
- Yes

5.3a During the past 6 months, did you have insertive anal sex with these partners?

- No
- Yes

5.3b If yes (to question 5.3a) how often was a condom used?

- Never (0%)
- Rarely (<25%)
- Sometimes (25-49%)
- Most of the time (50-74%)
- Almost every time (75-99%)
- All the time (100%)

5.4a During the past 6 months, did you have receptive anal sex with these partners?

- No
- Yes

5.4b If yes (to question 5.4a), how often was a condom used?

- Never (0%)
- Rarely (<25%)
- Sometimes (25-49%)
- Most of the time (50-74%)
- Almost every time (75-99%)
- All the time (100%)

Sex with regular male partners of unknown HIV status

5.5 During the past 6 months, have you had sex (oral or anal) with REGULAR MALE partner(s) of unknown HIV status?

- No
- Yes

5.6a During the past 6 months, did you have insertive anal sex with these partners?

- No
- Yes

5.6b If yes (to question 5.6a), how often was a condom used?

- Never (0%)
- Rarely (<25%)
- Sometimes (25-49%)
- Most of the time (50-74%)
- Almost every time (75-99%)
- All the time (100%)

5.7a During the past 6 months, did you have receptive anal sex with these partners?

- No
- Yes

5.7b If yes (to question 5.7a), how often was a condom used?

- Never (0%)
- Rarely (<25%)
- Sometimes (25-49%)
- Most of the time (50-74%)
- Almost every time (75-99%)
- All the time (100%)

Sex with regular HIV negative male partners

5.8 During the past 6 months, have you had sex (oral or anal) with REGULAR MALE partner(s) of negative HIV status?

- No
- Yes

5.9a During the past 6 months, did you have insertive anal sex with these partners?

- No
- Yes

5.9b If yes (to question 5.9a), how often was a condom used?

- Never (0%)
- Rarely (<25%)
- Sometimes (25-49%)
- Most of the time (50-74%)
- Almost every time (75-99%)
- All the time (100%)

5.10a During the past 6 months, did you have receptive anal sex with these partners?

- No
- Yes

5.10b If yes (to question 5.10a), how often was a condom used?

- Never (0%)
- Rarely (<25%)
- Sometimes (25-49%)
- Most of the time (50-74%)
- Almost every time (75-99%)
- All the time (100%)

SECTION SIX. SEX IN EXCHANGE FOR GOODS & SERVICES

6.1 During the past 6 months, have you given money in exchange for sex?

- No
 Yes

6.2 During the past 6 months, have you given drugs in exchange for sex?

- No
 Yes

6.3 During the past 6 months, have you given other goods or services in exchange for sex (e.g. room, meal, etc)?

- No
 Yes

6.4 During the past 6 months, have you received money in exchange for sex?

- No
 Yes

6.5 During the past 6 months, have you received drugs in exchange for sex?

- No
 Yes

6.6 During the past 6 months, have you received other goods or services in exchange for sex (e.g. room, meal, etc)?

- No
 Yes

SECTION. HEALTH CARE, HIV, HEPATITIS & STI'S

7.1a Have you ever been tested for gonorrhea?

- No
 Yes
 I do not know

7.1b If yes (to question 7.1a), when was the last time that you were tested?

Date: _____

7.1c How many times have you been tested in the past 2 years?

Number of times: _____

7.2a Have you ever been tested for syphilis?

- No
 Yes
 I do not know

7.2b If yes (to questions 7.2a), when was the last time that you were tested?

Date: _____

7.2c How many times have you been tested in the past 2 years?

Number of times: _____

7.3a Have you ever been tested for Hepatitis C?

- No
- Yes
- I do not know

7.3b If yes (to question 7.3a), when was the last time that you were tested?

Date: _____

7.3c How many times have you been tested in the past 2 years?

Number of times: _____

7.3d What was the result of your last hepatitis C test?

- I was hepatitis C positive.
- I was hepatitis C negative.
- I did not receive the result.
- I do not know

7.3e If the result was positive, when was the first time that you tested positive for hepatitis C?

Date: _____

7.4a Have you ever been tested for HIV (AIDS virus)?

- No
- Yes
- I do not know

7.4b If yes (to question 7.4a), when was the last time that you were tested?

Date: _____

7.4c How many times have you been tested in the past 2 years?

Number of times: _____

7.4d What was the result of your last HIV test?

- I was HIV positive.
- I was HIV negative.
- I did not receive the result.
- I do not know

7.4e If the result was positive, when was the first time that you tested positive for HIV?

Date: _____

7.4f After you were tested HIV positive, were you ever tested for syphilis?

- No
- Yes
- I do not know

7.5a Have you ever taken anti-HIV medication, either to prevent or to treat HIV infection?

- No
- Yes, in the past 6 months (Toronto, Ottawa and Victoria)
- Yes, but not in the past 6 months (Toronto, Ottawa and Victoria)
- Yes, ever (Winnipeg and Montréal)
- I do not know

7.5b If yes (to question 7.5a), when did you first start taking anti-HIV medication?

Date: _____

7.6 Are you now taking anti-HIV medication?

- No
- Yes
- I do not know

7.7 If you have NOT been tested for HIV in the past 2 years: The following are reasons some people give for not being tested for HIV.

	No	Yes
I am at low risk for HIV infection	<input type="checkbox"/>	<input type="checkbox"/>
If I tested positive, nothing can be done	<input type="checkbox"/>	<input type="checkbox"/>
I am afraid of needles	<input type="checkbox"/>	<input type="checkbox"/>
I do not want to know	<input type="checkbox"/>	<input type="checkbox"/>
I don't think I can get HIV	<input type="checkbox"/>	<input type="checkbox"/>
I think I am HIV-positive	<input type="checkbox"/>	<input type="checkbox"/>
I think I am HIV-negative	<input type="checkbox"/>	<input type="checkbox"/>
I always have safer sex	<input type="checkbox"/>	<input type="checkbox"/>
I never thought about it	<input type="checkbox"/>	<input type="checkbox"/>
I am worried about the impact on my sex life	<input type="checkbox"/>	<input type="checkbox"/>
I don't think the test is always right	<input type="checkbox"/>	<input type="checkbox"/>
I did not have sex with an infected person	<input type="checkbox"/>	<input type="checkbox"/>
I am healthy so I don't need to be tested	<input type="checkbox"/>	<input type="checkbox"/>
I could not deal with knowing I was infected	<input type="checkbox"/>	<input type="checkbox"/>
I do not know where to get the test	<input type="checkbox"/>	<input type="checkbox"/>
I am afraid of having my name reported	<input type="checkbox"/>	<input type="checkbox"/>
I am worried about being discriminated against	<input type="checkbox"/>	<input type="checkbox"/>
It could affect my career or insurance	<input type="checkbox"/>	<input type="checkbox"/>
It could affect my relationships	<input type="checkbox"/>	<input type="checkbox"/>
I want to be tested just haven't done it yet	<input type="checkbox"/>	<input type="checkbox"/>
Doesn't matter if I'm infected because of my age	<input type="checkbox"/>	<input type="checkbox"/>
I don't have a doctor	<input type="checkbox"/>	<input type="checkbox"/>
Other, specify:	<input type="checkbox"/>	<input type="checkbox"/>

7.8 Have you been told by a doctor that you have or have had any of the following?

	No	Yes, in the past 6 months	Yes, between 6 and 12 months	Yes, more than 12 months ago
Gonorrhea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chlamydia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Genital or anal warts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Syphilis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Genital herpes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hepatitis A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hepatitis B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hepatitis unknown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had a disease but I forget the name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other STD, specify:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7.9a Have you ever been vaccinated against hepatitis B?

- No
 Yes
 I do not know

7.9b If yes (to question 7.9a), how many shots did you get (hepatitis B or combined hepatitis A and hepatitis B)?

- One shot
 Two shots
 Three shots
 I do not know

7.10a Have you ever been vaccinated against hepatitis A?

- No
 Yes
 I do not know

7.10b If yes (to question 7.10a), how many shots did you get (hepatitis A or combined hepatitis A and hepatitis B)?

- One shot
 Two shots
 Three shots
 I do not know

SECTION 8. OPINIONS ON HIV & KNOWLEDGE OF STIs

8.1 Indicate if you agree with the following statements.

	No	Yes
People can protect themselves from HIV by using a condom correctly every time they have anal sex.	<input type="checkbox"/>	<input type="checkbox"/>
Having sex with only one faithful uninfected partner can reduce the risk of HIV transmission.	<input type="checkbox"/>	<input type="checkbox"/>
A healthy looking person can have HIV.	<input type="checkbox"/>	<input type="checkbox"/>
Syphilis can be transmitted through unprotected oral sex.	<input type="checkbox"/>	<input type="checkbox"/>
I would always have symptoms if I contracted an STD.	<input type="checkbox"/>	<input type="checkbox"/>
I would always have symptoms if I was infected with hepatitis C.	<input type="checkbox"/>	<input type="checkbox"/>
There is treatment currently available for hepatitis C.	<input type="checkbox"/>	<input type="checkbox"/>

REFERENCES

- ¹ Public Health Agency of Canada. *The Federal Initiative to Address HIV/AIDS in Canada: Strengthening Federal Action in the Canadian Response to HIV/AIDS*. Public Health Agency of Canada; 2004.
- ² Canadian Public Health Association. *Leading Together: Canada Takes Action on HIV/AIDS (2005 - 2010)*. Canadian Public Health Association; 2005.
- ³ UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance. *Guidelines for Second Generation HIV Surveillance*. WHO/UNAIDS; 2000.
- ⁴ Adam BD, Husband W, Murray J, Maxwell J. Circuits, networks, and HIV risk management. *AIDS Education and Prevention*. October 2008;20(5):420-434.
- ⁵ Sullivan PS, Hamouda O, Delpech V, et al. Reemergence of the HIV Epidemic Among Men Who Have Sex With Men in North America, Western Europe, and Australia, 1996-2005. *Ann Epidemiol*. June 2009;19(6):423-431.
- ⁶ Public Health Agency of Canada. *HIV and AIDS in Canada: Surveillance Report to December 31, 2008*. Surveillance and Risk Assessment Division, Centre for Communicable Diseases and Infection Control, Public Health Agency of Canada; 2009.
- ⁷ Public Health Agency of Canada. *Summary: Estimates of HIV Prevalence and Incidence in Canada, 2008*. Surveillance and Risk Assessment Division. Centre for Communicable Diseases and Infection Control. Public Health Agency of Canada; 2009.
- ⁸ Van de Laar TJW, Matthew GV, Prins M, Danta M. Acute hepatitis C in HIV-infected men who have sex with men: an emerging sexually transmitted infection. *AIDS*. July 2010;24:1799-1812.
- ⁹ Tohme RA, Holmberg SD. Is sexual contact a major mode of hepatitis C virus transmission? *Hepatology*. October 2010;52(4):1497-1505.
- ¹⁰ Bottieau E, Apers L, Van Esbroeck M, Vandebroucke M, Florence E. Hepatitis C virus infection in HIV-infected men who have sex with men: sustained rising incidence in Antwerp, Belgium, 2001–2009. *Euro Surveill*. 2010;15(39):1-8.
- ¹¹ Public Health Agency of Canada. *HIV/AIDS Epi Updates, July 2010*. Surveillance and Risk Assessment Division, Centre for Communicable Diseases and Infection Control. Public Health Agency of Canada; 2010.
- ¹² Magnani R, Sabin K, Saidel T, Heckathorn D. Review of sampling hard-to-reach and hidden populations for HIV surveillance. *AIDS*. May 2005;19(Suppl 2):S67-S72.
- ¹³ Lambert G, Cox J, Tremblay F, Gadoury M-A et al. *ARGUS 2005: Summary of the survey on HIV, viral hepatitis and sexually transmitted and blood-borne infections (STBI) as well as on the associated risk behaviours among Montreal men who have sex with men (MSM)*. Montreal Public Health Department, Institut national de santé publique du Québec and the Public Health Agency of Canada; 2006.
- ¹⁴ Myers T, Remis R, Husbands W. *Lambda Survey: M-Track Ontario second generation surveillance. Technical Report*. [n.d.].
- ¹⁵ Public and Population Health Observatory, Vancouver Island Health Authority. *M-Track Survey Phase I, Final Report: Monitoring Trends in the Prevalence of HIV, Viral Hepatitis, Other Sexually Transmitted Infections, and Associated Risk Behaviours Among Gay, Bisexual, Transgendered and other Men who have Sex with Men*. Vancouver Island Health Authority; 2008.
- ¹⁶ Public Health Agency of Canada. Policy for the collection, use and dissemination of public health data. Unpublished document. 2009:1-20.
- ¹⁷ Fox-Wasylyshyn SM, El-Masri MM. Handling missing data in self-report measures. *Res Nurs Health*. December 2005;28(6):488-495.
- ¹⁸ Groves RM, Fowler FJ, Couper MP, Lepkowski JM, Singer E, Tourangeau R. *Survey Methodology*. New York: John Wiley & Sons; 2004:424.
- ¹⁹ *Control of Communicable Diseases Manual 19th ed. 2008*. Washington, DC: American Public Health Association; 2008.

- ²⁰ Centers for Disease Control and Prevention. Human immunodeficiency virus (HIV) risk, prevention and testing behaviors - United States, National HIV Behavioral Surveillance System: Men who have sex with men, November 2003-April 2005. *Surveillance Summaries. Morbidity and Mortality Weekly Report*. 2006;55(SS-6):1-16.
- ²¹ Myers T, Allman D, Calzavara L, Maxwell J, Remis R, Swantee C, et al. *Ontario Men's Survey, Final Report*. Toronto: University of Toronto, HIV Social, Behavioural and Epidemiological Studies Unit; 2004.
- ²² Trussler T. *2007 Sex Now Survey Report*. Community Based Research Centre; 2008.
- ²³ Trussler T, Marchand R, Gilbert M. *Sex now numbers rising: challenges for gay men's health*. Vancouver: Community-based Research Centre; 2006.
- ²⁴ Trussler T, Gilbert M, Marchand R, Moulton G, Ogilvie G, Rekart M. Pressured Into It: Social Influences On HIV Risk Among British Columbia's Gay Men [Abstract 401]. *Can J Infect Dis Med Microbiol*. 2006; 17 (Suppl A):58A.
- ²⁵ Statistics Canada. Highest level of educational attainment for the population aged 25 to 64, percentage distribution for males, for Canada, provinces and territories - 20% data. Education - data table. Web site. <http://www12.statcan.ca/census-recensement/2006/dp-pd/hlt/97-560/pages/page.cfm?Lang=E&Geo=PR&Code=01&Table=1&Data=Dist&Sex=2&StartRec=1&Sort=2&Display=Page>. Updated 2010. Accessed March 25, 2011.
- ²⁶ Ogilvie GS, Taylor DL, Trussler T, et al. Seeking sexual partners on the Internet: A marker for risky sexual behaviour in men who have sex with men. *Canadian Journal of Public Health*. 2008; 99(3):185-188.
- ²⁷ Le DH, Ho P, Poon M, et al. Characteristics of Asian Bathhouse Users [Abstract P357]. *Can J Infect Dis Med Microbiol*. 2009; 20(Suppl B):107B.
- ²⁸ Marshall BDL, Wood E, Li K, Kerr T. Elevated syringe borrowing among men who have sex with men: a prospective study. *J Acquir Immune Defic Syndr*. October 2007;46(2):248-252.
- ²⁹ McGuire M, Archibald CP, Fyfe M, et al. HIV risk profiles among MSM-IDU and MFSP-IDU: Results from a national enhanced HIV surveillance system [Abstract O094]. *Can J Infect Dis Med Microbiol*. 2009;20(Suppl B):38B.
- ³⁰ Taleski SJ, Myers T, Remis RS, et al. Delayed Condom Application during Receptive Anal Intercourse (DCA-R) among Men who have Sex with Men (MSM): Results from the Lambda Study [Abstract P215]. *Can J Infect Dis Med Microbiol*. 2009;20(Suppl B):72B.
- ³¹ Taleski SJ, Myers T, Remis RS, et al. Unprotected Anal Intercourse (UAI) with Casual Sex Partners Clusters with Other Risk Behaviours among Men who Have Sex with Men (MSM): Results from the Lambda Study [Abstract P214]. *Can J Infect Dis Med Microbiol*. 2009;20(Suppl B):71B.
- ³² Lombardo AP. The Internet in the Sexual Lives of MSM: Implications for Prevention [Abstract O054]. *Can J Infect Dis Med Microbiol*. 2009;20(Suppl B):27B.
- ³³ Lavoie E, Alary M, Remis RS, et al. Determinants of HIV seroconversion among men who have sex with men living in a low HIV incidence population in the era of highly active antiretroviral therapies. *Sex Transm Dis*. 2008;35(1):25-29.
- ³⁴ George C, Husbands WC, Adam B, et al. MABWANA: Who Are The Black Men Who Have Sex With Men In Toronto? [Abstract P232]. *Can J Infect Dis Med Microbiol*. 2008;19(Suppl A):80A.
- ³⁵ Allman D, Xu K, Myers T, et al. Delayed application of condoms with safer and unsafe sex: factors associated with HIV risk in a community sample of gay and bisexual men. *AIDS Care*. 2009;21(6):775-784.
- ³⁶ Blais M, Raymond S, Martin N, Morin E. Causal Heterogeneity in HIV-Risk Behaviors among Men who have Sex with Men (MSM): A Qualitative Study [Abstract P296]. *Can J Infect Dis Med Microbiol*. 2009;20(Suppl B):92B.
- ³⁷ Lebouché B, Blais M. Sexual HIV-Risk Reduction Strategies Based On Serostatus Knowledge Among Canadian MSM Couples [Abstract O047]. *Can J Infect Dis Med Microbiol*. 2008;19(Suppl A):27A.
- ³⁸ Godin G, Otis J, Naccache H, Jean R, Study Group Maya. Always Using Condoms With Partners Of Negative Or Unknown HIV Status Among Sexually Active MSM Living With HIV: A Prospective Study [Abstract O051]. *Can J Infect Dis Med Microbiol*. 2008;19(Suppl A):28A.

- ³⁹ George C. MaBwana Black Men's Study: HIV testing among Black men who have sex with men (BMSM) in Ontario [Abstract P202]. *Can J Infect Dis Med Microbiol.* 2009;20(Suppl B):69B.
- ⁴⁰ Lambert G, Cox J, Hottes TS, et al. Correlates of Unprotected Anal Sex at Last Sexual Episode: Analysis from a Surveillance Study of Men who have Sex with Men in Montreal. *AIDS Behav.* December 2009. doi: 10.1007/s10461-009-9605-3.
- ⁴¹ Tremblay F, Cox J, Otis J, et al. Different Patterns of Substance Use Means Different HIV Risk Behaviours: Using Latent Class Analysis (LCA) to Understand Substance Use and Sexual Risk Behaviours Among Men Who Have Sex With Men (MSM) in Montreal [Abstract O098]. *Can J Infect Dis Med Microbiol.* 2007;18(Suppl B):41B.
- ⁴² Haubrich D, Ryder K, Calla D, Calzavara L, Myers T. Self-Reported HIV Sexual Risk Events Among Men Who Have Sex With Men Enrolled In The Polaris HIV Seroconversion Study [Abstract 406]. *Can J Infect Dis Med Microbiol.* 2006;17(Suppl A):59A.
- ⁴³ Lampinen TM, Mattheis K, Chan K, Hogg RS. Nitrite inhalant use among young gay and bisexual men in Vancouver during a period of increasing HIV incidence. *BMC Public Health.* March 2007; 7(1). doi: 10.1186/1471-2458-7-35.
- ⁴⁴ Chiasson MA, Hirshfield S, Remien RH, Humberstone M, Wong T, Wolitski RJ. A comparison of on-line and off-line sexual risk in men who have sex with men: An event-based on-line survey. *J Acquir Immune Defic Syndr.* February 2007;44(2):235-243.
- ⁴⁵ Kral A, Lorvick J, Ciccarone D, et al. HIV prevalence & risk behaviors among men who have sex with men and inject drugs in San Francisco. *Journal of Urban Health.* 2005;82(1):i43-i50.
- ⁴⁶ Marks G, Crepaz N, Janssen RS. Estimating sexual transmission of HIV from persons aware and unaware that they are infected with the virus in the USA. *AIDS.* June 2006;20(10):1447-1450.
- ⁴⁷ Marks G, Crepaz N, Senterfitt JW, Janssen RS. Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: Implications for HIV prevention programs. *J Acquir Immune Defic Syndr.* August 2005;39(4):446-453.
- ⁴⁸ Gastaldo D, Holmes D, Lombardo A, O'Byrne P. Unprotected sex among men who have sex with men in Canada: exploring rationales and expanding HIV prevention. *Critical Public Health.* September 2009;19(3&4):399-416.
- ⁴⁹ Lavoie R, Otis J, Godin G. Sexual Risk-Taking and Level of Viral Load Among Montreal MSM: Is There Any Link? [Abstract O102]. *Can J Infect Dis Med Microbiol.* 2007;18(Suppl B):42B.
- ⁵⁰ Elford J. Changing patterns of sexual behavior in the era of highly active antiretroviral therapy. *Curr Opin Infect Dis.* February 2006;19(1):26-32.
- ⁵¹ Lambert G, Cox J, Tremblay F, et al. Recent HIV Testing Behaviour Among Men Having Sex With Men (MSM) In Montreal: Results From *The ARGUS 2005 Survey* [Abstract 313]. *Can J Infect Dis Med Microbiol.* 2006;17(Suppl A):45A.
- ⁵² Ferlatte O, Gilbert M, Trussler T, Marchand R, Ogilvie G, Taylor D. Predictors Of Recent HIV Testing In Men Who Have Sex With Men (MSM) In The Province Of British Columbia [Abstract P297]. *Can J Infect Dis Med Microbiol.* 2008;19(Suppl A):99A.
- ⁵³ Montaner JS, Lima VD, Barrios R, et al. Association of highly active antiretroviral therapy coverage, population viral load, and yearly new HIV diagnoses in British Columbia, Canada: A population-based study. *The Lancet.* August 2010; 376(9740): 532-539.
- ⁵⁴ Montaner JS, Hogg R, Wood E, et al. The case for expanding access to highly active antiretroviral therapy to curb the growth of the HIV epidemic. *The Lancet.* August 2006;368(9534):531-536.
- ⁵⁵ Public Health Agency of Canada. *Canadian Guidelines on Sexually Transmitted Infections. 2008 Ed.* Public Health Agency of Canada; 2008.
- ⁵⁶ Fleming DT, Wasserheit JN. From epidemiological synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. *Sex transm infect.* 1999;75(1):3-17.
- ⁵⁷ Tohme R, Holmberg S. Is sexual contact a major mode of hepatitis C virus transmission? *Hepatology.* June 2010;52(4): 1497-1505.
- ⁵⁸ Remis RS. *Modelling the incidence and prevalence of Hepatitis C infection and its sequelae in Canada, 2007.* Public Health Agency of Canada; 2009.

- ⁵⁹ Urbanus AT, van de Laar T, Stolte I, et al. Hepatitis C virus infections among HIV-infected men who have sex with men: an expanding epidemic. *AIDS*. 2009;23(12): F1-F7.
- ⁶⁰ Public Health Agency of Canada. Reported cases and rates of infectious syphilis by age group and sex, 1993 to 2009. Hepatitis C and STI Surveillance and Epidemiology Section, Community Acquired Infections Division, Centre for Communicable Diseases and Infection Control. Public Health Agency of Canada, 2010. Web site: http://www.phac-aspc.gc.ca/std-mts/sti-its_tab/syphilis-eng.php. Accessed March 25, 2011.
- ⁶¹ Kropp RY, Wong T. Emergence of lymphogranuloma venereum in Canada. *CMAJ*. June 2005;172(13):1674-1676.
- ⁶² Li A, Nambiar D, Bereket T, Poon M, Hart T, Murray J. Myths And Misconceptions Of HIV Infection: A Call For The HIV Sector To Respond To Ethno-Racial MSM'S Unmet Prevention Information Needs. *Can J Infect Dis Med Microbiol*. 2008;19(Suppl A):99A.
- ⁶³ Chihara S. Variasian Group Voices On Their Lives As Asian Men Who Have Sex With Men (MSM) In Vancouver, Canada [Abstract 404]. *Can J Infect Dis Med Microbiol*. 2006;17(Suppl A):59A.
- ⁶⁴ Lombardo AP. HIV Prevention in the Internet Age: Perspectives of MSM [Abstract P304]. *Can J Infect Dis Med Microbiol*. 2009;20(Suppl B):94B.

