



BRITISH COLUMBIA
CENTRE *for* EXCELLENCE
in HIV/AIDS

HIV MONITORING QUARTERLY REPORT **FOR VANCOUVER COASTAL HEALTH**

FOURTH QUARTER 2013



BC Centre for Disease Control
An agency of the Provincial Health Services Authority



Foreword

As part of the BC Centre for Excellence (BC-CFE) in HIV/AIDS's mandate to evaluate the outcomes of STOP HIV/AIDS programming in BC, we have developed quarterly HIV/AIDS monitoring reports. These reports provide up-to-date data on a variety of key HIV-related surveillance and treatment indicators. Selection of these indicators was achieved through a collaborative process with various Health Authority (HA) representatives. There are six reports in total, one for each HA and one for the province of BC as a whole. In addition, there is a technical report which explains how each HIV indicator is calculated. Data used in these reports come from the British Columbia Centre for Disease Control (BCCDC), MSP billings, hospitalization data from the Discharge Abstract Database, the Sunquest Laboratory database at the Provincial Public Health Microbiology and Reference Laboratory, Providence Health Care laboratory and the BC-CFE Drug Treatment Program (DTP) Database.

The objectives of these reports are to:

1. Provide timely HA-specific information on key HIV indicators which will guide and inform HIV leaders and innovators in the development of future HIV interventions and programs which will ultimately lead to decreasing the burden of HIV in BC. The indicators will reflect ongoing or past successful public health interventions and highlight areas in the HIV care spectrum which require further attention and support.
2. Highlight limitations in our current data due to incomplete or time lagged data and to develop future strategies to improve complete and timely data capture.

These reports are produced for the benefit of individual HAs. As such, we are enthusiastic about your involvement and cooperation regarding the development of these monitoring reports. Please forward your comments and queries to Irene Day, Director of Operations at the BC-CFE at iday@cfenet.ubc.ca.

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Acknowledgements and Contributions



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British Columbia Centre for Excellence in HIV/AIDS (BC-CFE): The BC-CFE is responsible for the conception, preparation and ongoing review of this quarterly report. The BC-CFE provides the data and outputs for Indicators 5 (Hiv Cascade of Care), 6 (Programmatic Compliance Score), 7 (New Antiretroviral Starts), 8 (CD4 Cell Count at ART Initiation), 9 (Active and Inactive Drug Treatment Program Participants), 10 (Antiretroviral Adherence Level), 11 (Resistance Testing Results by Resistance Category), 12 (AIDS-Defining Illness), and 13 (HIV-Related Mortality). The BC-CFE database provides PVL and CD4 cell count testing data, as well as ART use. All PVL measurements in BC are performed at the St Paul's Hospital virology laboratory, thus PVL data capture is 100%. An estimated 80% of all CD4 count measurements performed in the province are captured in the BC-CFE data holdings. The STOP HIV/AIDS Technical Monitoring Committee-BC-CFE is responsible for oversight of the monitoring report. Lillian Lourenco writes and compiles the monitoring report. Guillaume Colley, Dr. Viviane Lima and Nada Gataric perform analysis of Indicators 5–13. James Nakagawa is responsible for publishing and editing. This report was conceived and guided by Dr. Julio Montaner.



BC Centre for Disease Control
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British Columbia Centre for Disease Control (BCCDC): The BCCDC provides the data and outputs for Indicator 1 (Hiv Testing Episodes), Indicator 2 (Hiv Testing Rate), Indicator 3 (New Hiv Diagnoses), Indicator 4 (Stage of Hiv at Diagnosis) and Indicator 12 (AIDS-Defining Illness). The BCCDC is the single provincial agency that centralizes all HIV surveillance through the Public Health Microbiology and Reference Laboratory, which does more than 90% of all HIV screening tests in BC and all confirmatory testing. Theodora Consolacion and Dr. Mark Gilbert are responsible for outputs for Indicators 1–4.

Other Data Sources:

The above databases were supplemented with:

- (I) The BC Vital Statistics database which was used to calculate Indicator 5. The Hiv Cascade of Care and Indicator 13. Hiv-Related Mortality.
- (II) Linkage and preparation of the de-identified individual-level database used for calculating Indicator 5. The Hiv Cascade of Care was facilitated by the British Columbia Ministry of Health.
- (III) The Statistics Canada database: BC and HIV-positive population counts were acquired through the statistics Canada website to calculate HIV-specific mortality rates for Indicator 13. Hiv-Related Mortality.

Membership of the STOP HIV/AIDS Technical Monitoring Committee–BC-CfE

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The Seek and Treat for Optimal Prevention (STOP) HIV/AIDS BC Provincial Program: A Note on Monitoring and Interpreting HIV Indicators

The Seek and Treat for Optimal Prevention (STOP) of HIV/AIDS programme is a provincial initiative to improve HIV diagnosis and care delivery in BC through increased HIV-specific funding to all HSDA's across BC. The STOP provincial programme is an expansion of a four-year STOP pilot project which was implemented in two Health Service Delivery Areas in March 2010; the Vancouver HSDA which bears the largest burden of the HIV epidemic in the province and the Northern Interior HSDA which bears a high burden of HIV-related mortality. The STOP pilot project demonstrated the urgent need for improved efforts in early diagnosis of HIV and timely initiation of highly active antiretroviral therapy (HAART) initiation.

The expansion to a province-wide programme was announced on November 30th 2013 by the BC Ministry of Health with roll out of funding beginning on April 1st, 2013. This funding is intended to be used in the implementation and evaluation of HIV-related diagnosis and care initiatives within individual HA's. Goals of the project include: 1. A reduction in the number of new HIV infections in BC; 2. Improvements in the quality, effectiveness, and reach of HIV prevention services; 3. An increase in early diagnosis of HIV; 4. A reduction in AIDS cases and HIV-related mortality.

The goals of HA-led STOP-funded initiatives are to work toward achieving these goals. To these ends some outcome measures or indicators of progress have been drafted that should be considered in the design and implementation phases of these initiatives.

HIV Testing Episodes and Rates

In this section, the number of HIV test episodes and point of care (POC) HIV tests conducted each quarter in BC is shown. In general terms the goal is to increase the number of tests performed and to maximize testing efficiency. Test episodes are allocated by region according to where the test is performed.

Indicator 1. HIV Testing Episodes

Figure 1.1 HIV Test Episodes for Vancouver Coastal Health, 2009 Q1–2013 Q4

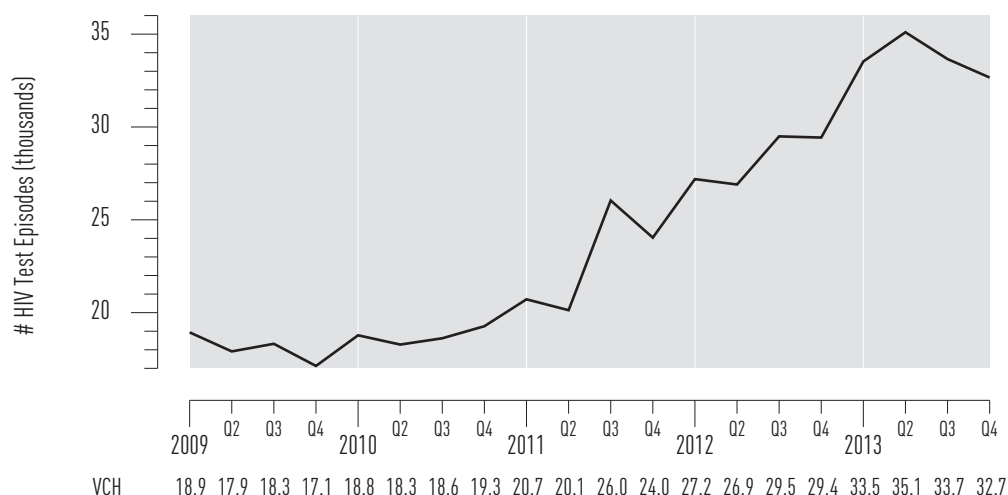
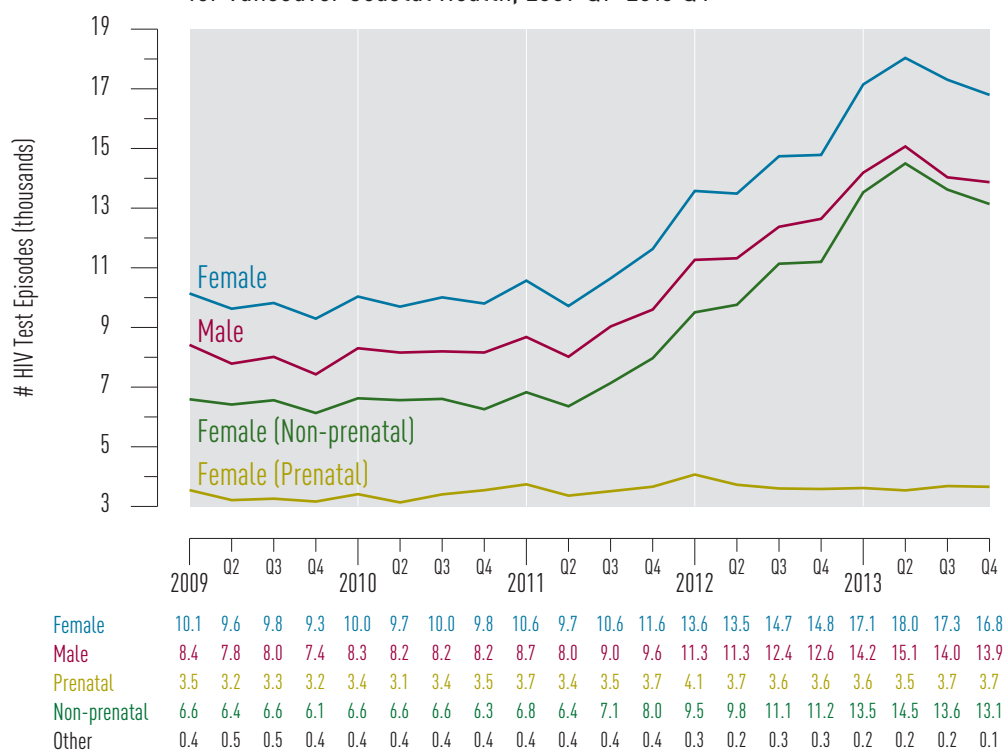


Figure 1.2 HIV Test Episodes by Gender and Prenatal Status for Vancouver Coastal Health, 2009 Q1–2013 Q4¹



1 NB: Testing does not include point of care tests.

Figure 1.3 HIV Test Episodes by Age Category for Vancouver Coastal Health, 2009 Q1–2013 Q4 ^{1,2}

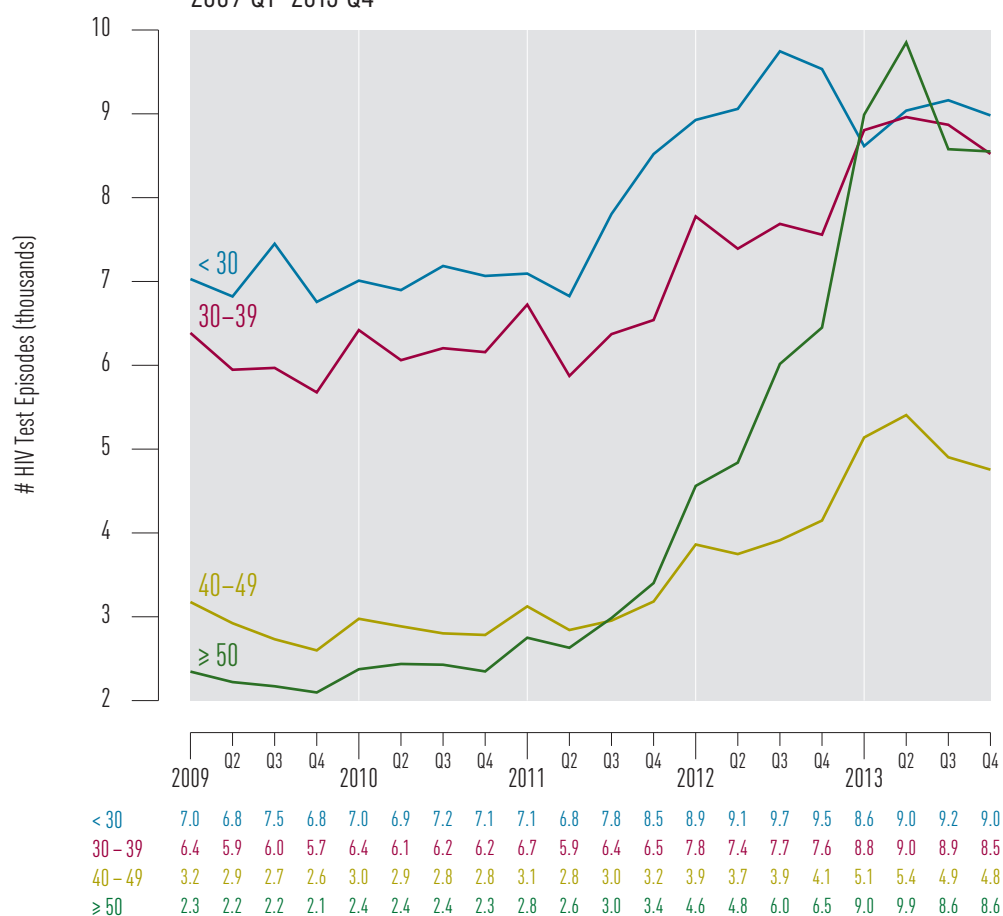
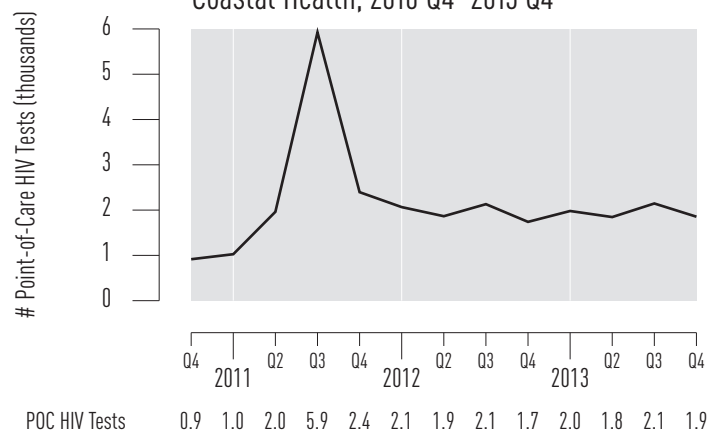


Figure 1.4 Point-of-Care HIV Tests for Vancouver Coastal Health, 2010 Q4–2013 Q4



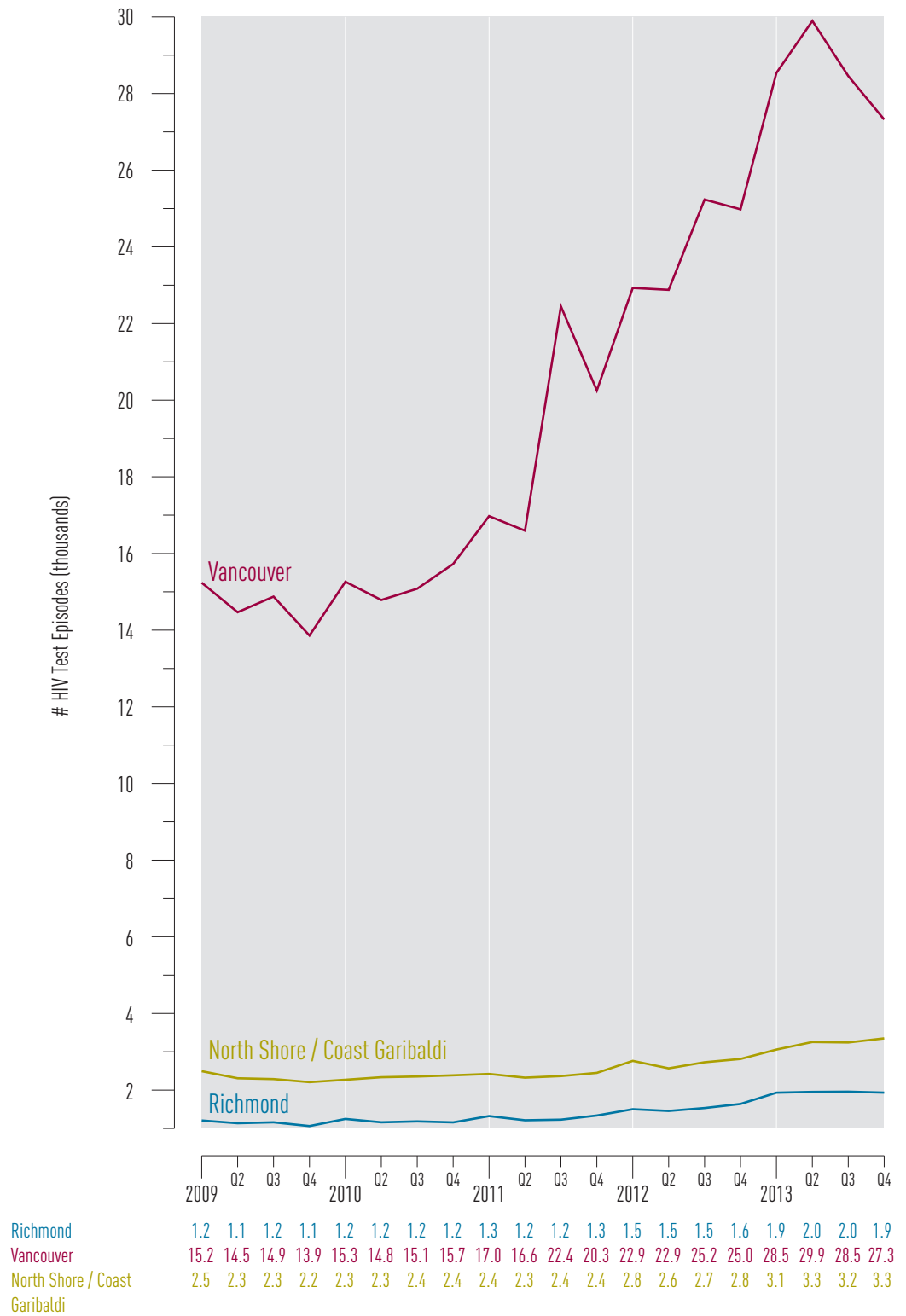
² Data Source: The BC Public Health Microbiology and Reference Laboratory (BCPHMRL) courtesy of the BC Centre for Disease Control (BCCDC).

Limitations:

- 1 Repeat tests in individuals who test using various identifiers may not be identified and these individuals may be counted more than once.
- 2 POC testing data is available from the fourth quarter of 2010 and onwards.

Figure 1.5

HIV Test Episodes for Vancouver Coastal Health, 2009 Q1–2013 Q4



Indicator 2. HIV Testing Rates

Figure 2.1 Rate of HIV Testing for Vancouver Coastal Health and HSDAs, 2009–2013 ¹

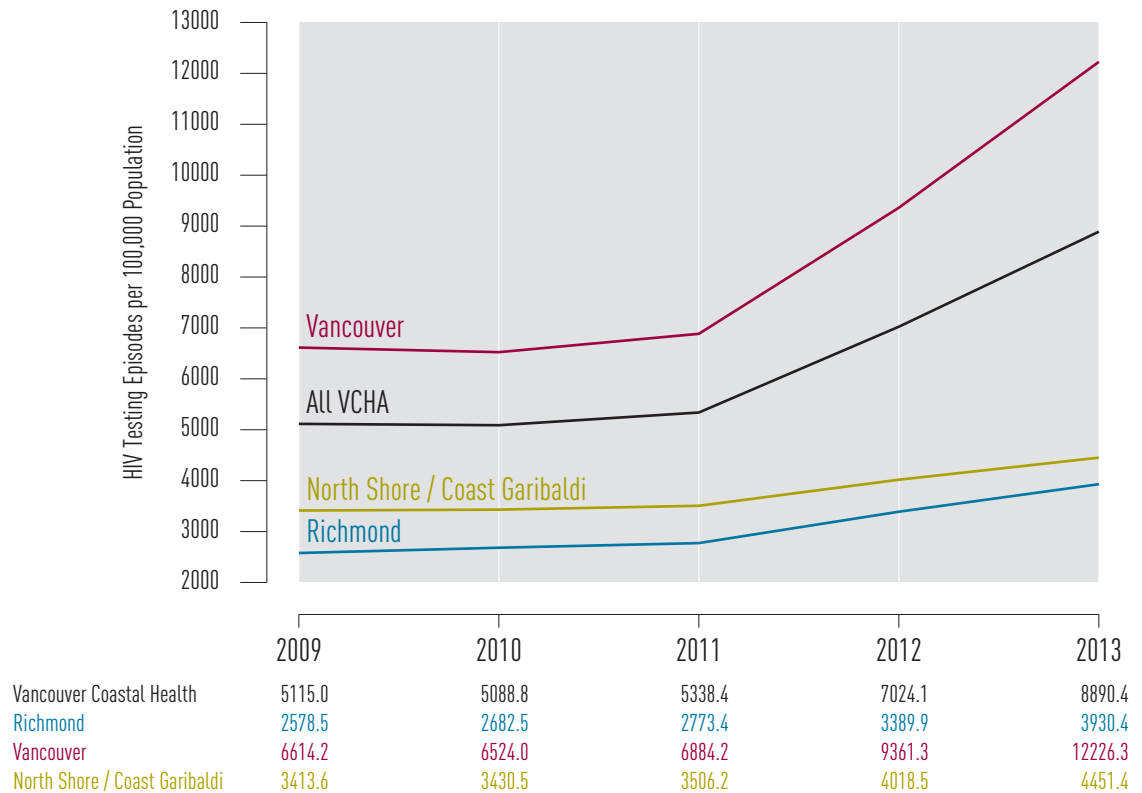


Figure 2.2 Rate of HIV Testing by Gender for Vancouver Coastal Health, 2009–2013 ¹

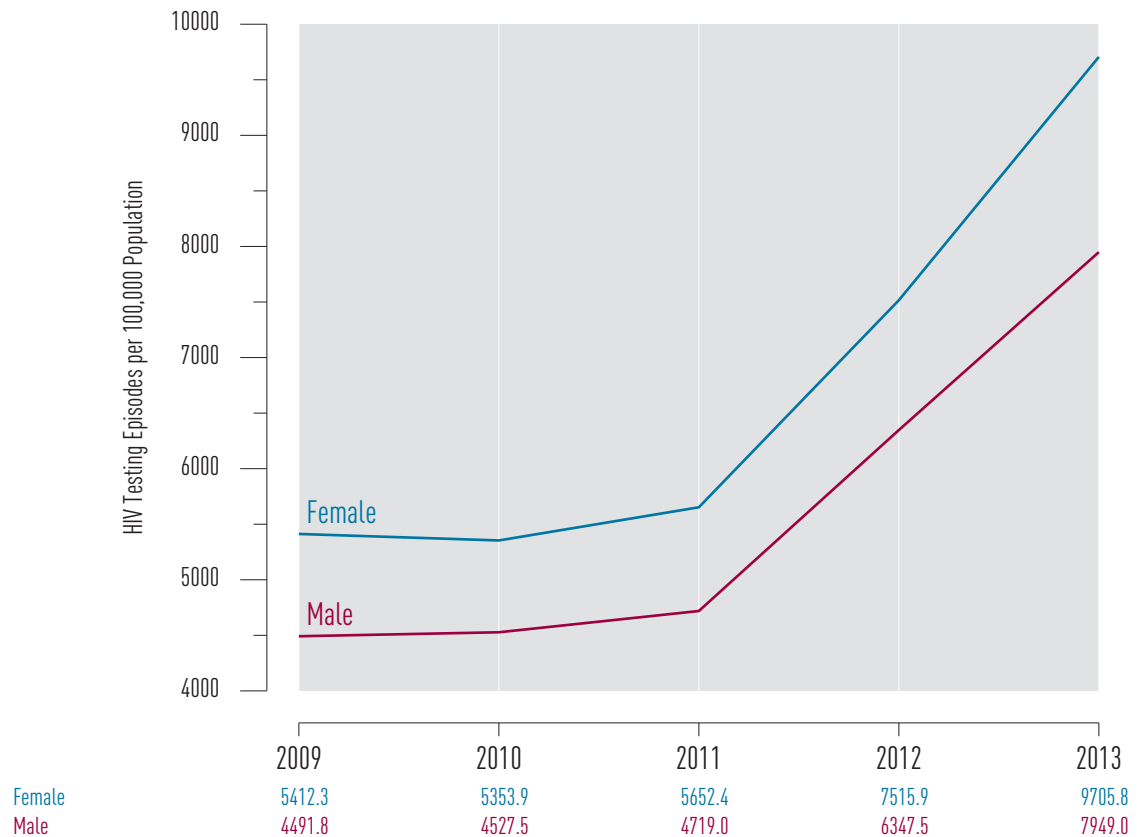
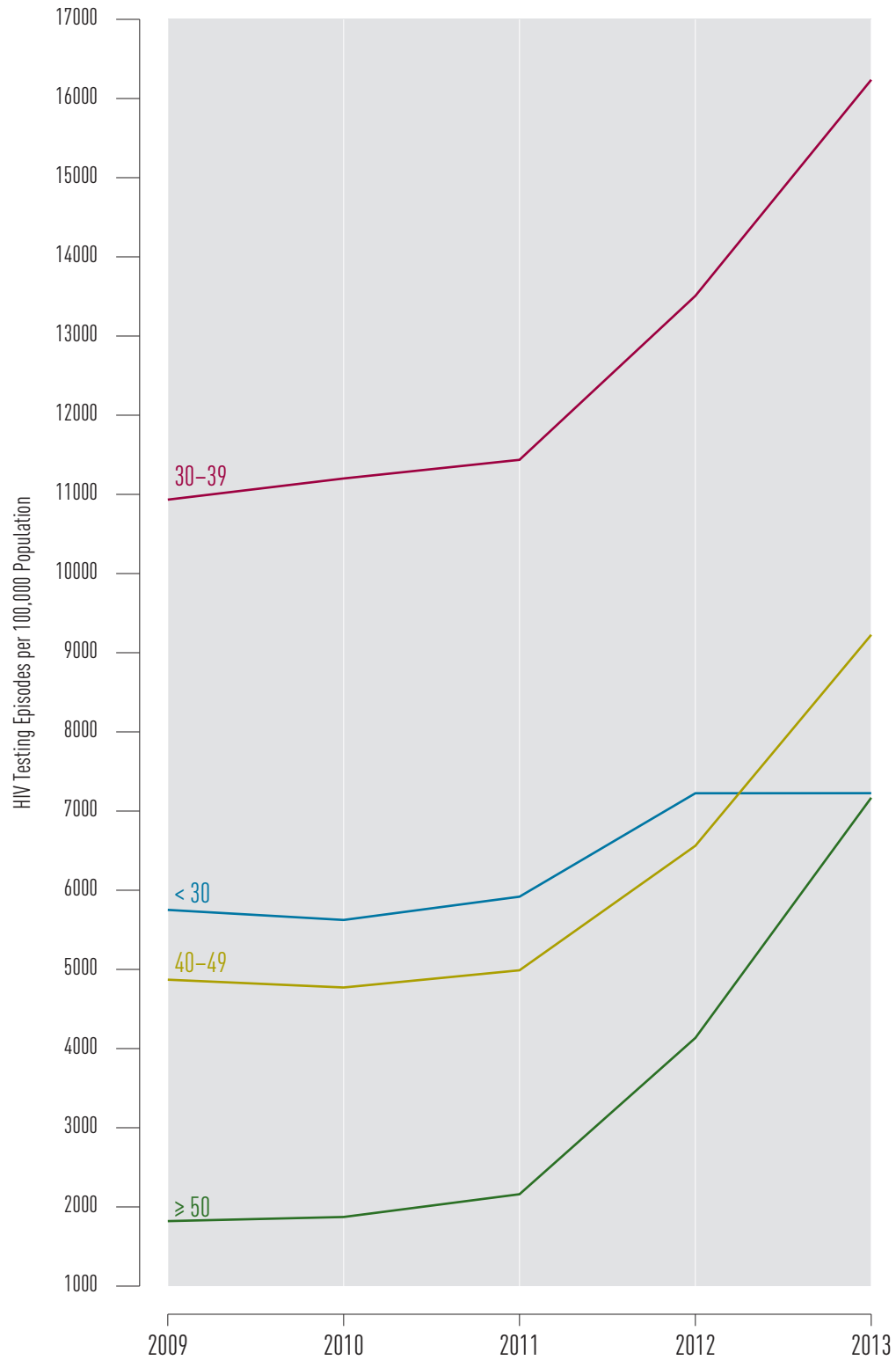


Figure 2.3 Rate of HIV Testing by Age Category for Vancouver Coastal Health, 2009–2013 ¹



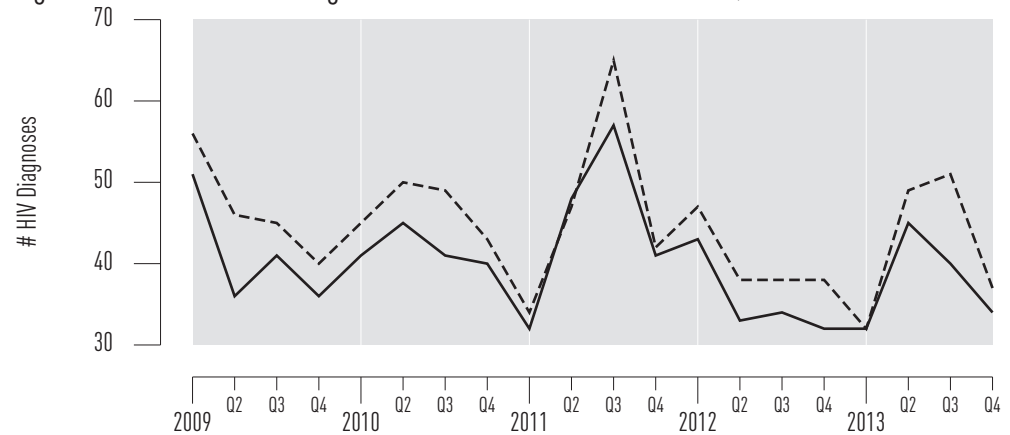
< 30	5751.6	5624.5	5918.6	7224.9	7226.0
30-39	10933.2	11200.7	11436.2	13507.3	16236.2
40-49	4870.1	4771.7	4988.9	6561.4	9226.0
≥ 50	1820.7	1872.9	2160.4	4134.6	7168.3

New HIV Diagnoses

Trends in HIV diagnoses by gender and exposure category are described. Interpreting HIV diagnoses must be done with consideration that trends are influenced by both changes in testing rate as well as changes in transmission rates. It is important to note that new HIV diagnoses cases and rates are not synonymous with HIV incidence as a person may have become infected with HIV long before they tested positive for HIV. However, as there is no reliable method for measuring HIV incidence we follow trends in HIV diagnoses.

Indicator 3. New HIV Diagnoses

Figure 3.1 New HIV Diagnoses for Vancouver Coastal Health, 2009 Q1–2013 Q4 ³



Vancouver Coastal Health	By Client Residence	51	36	41	36	41	45	41	40	32	48	57	41	43	33	34	32	32	45	40	34
	By Provider Address	56	46	45	40	45	50	49	43	34	47	65	42	47	38	38	38	32	49	51	37

Figure 3.2 New HIV Diagnoses for Vancouver Coastal Health by Gender, 2009 Q1–2013 Q4

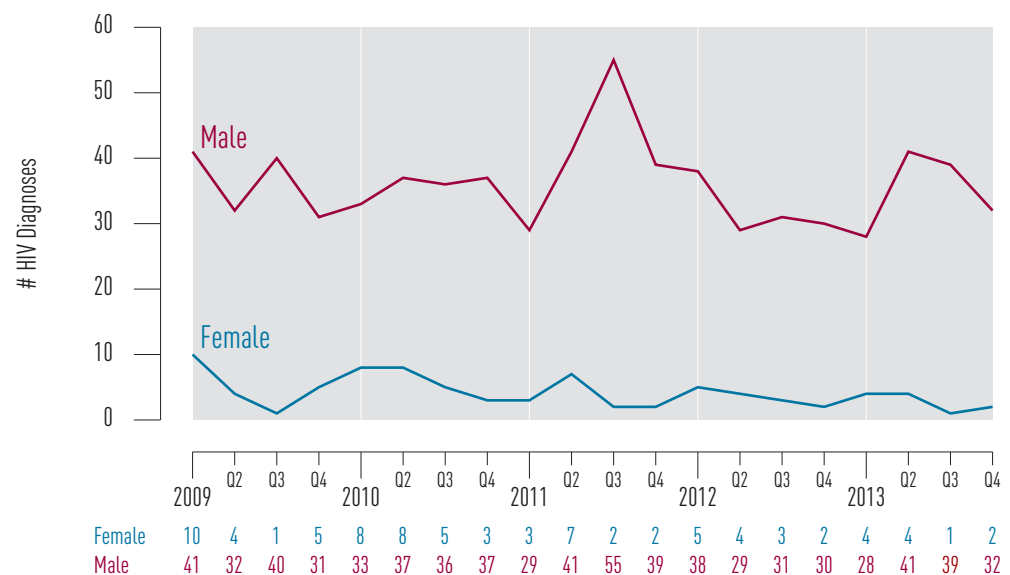


Figure 3.3 New HIV Diagnoses for Vancouver Coastal Health by Age Category, 2009 Q1–2013 Q4

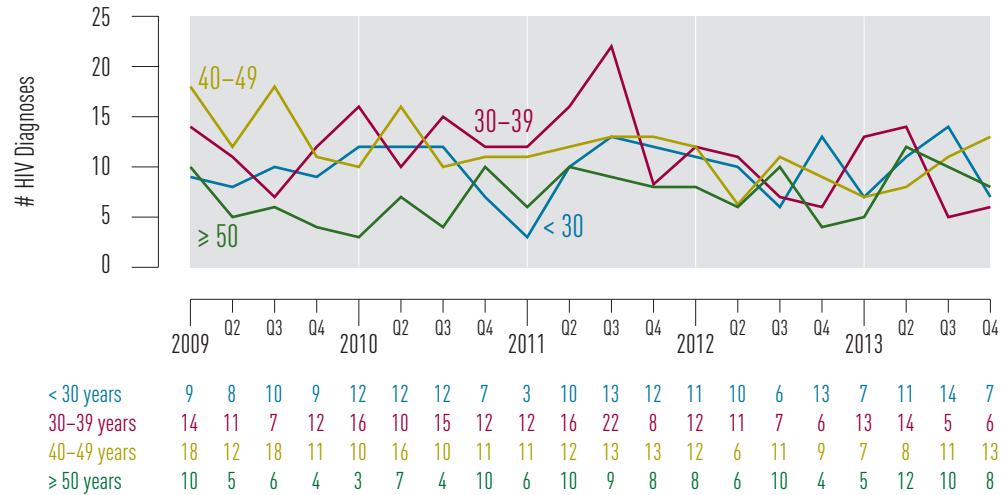
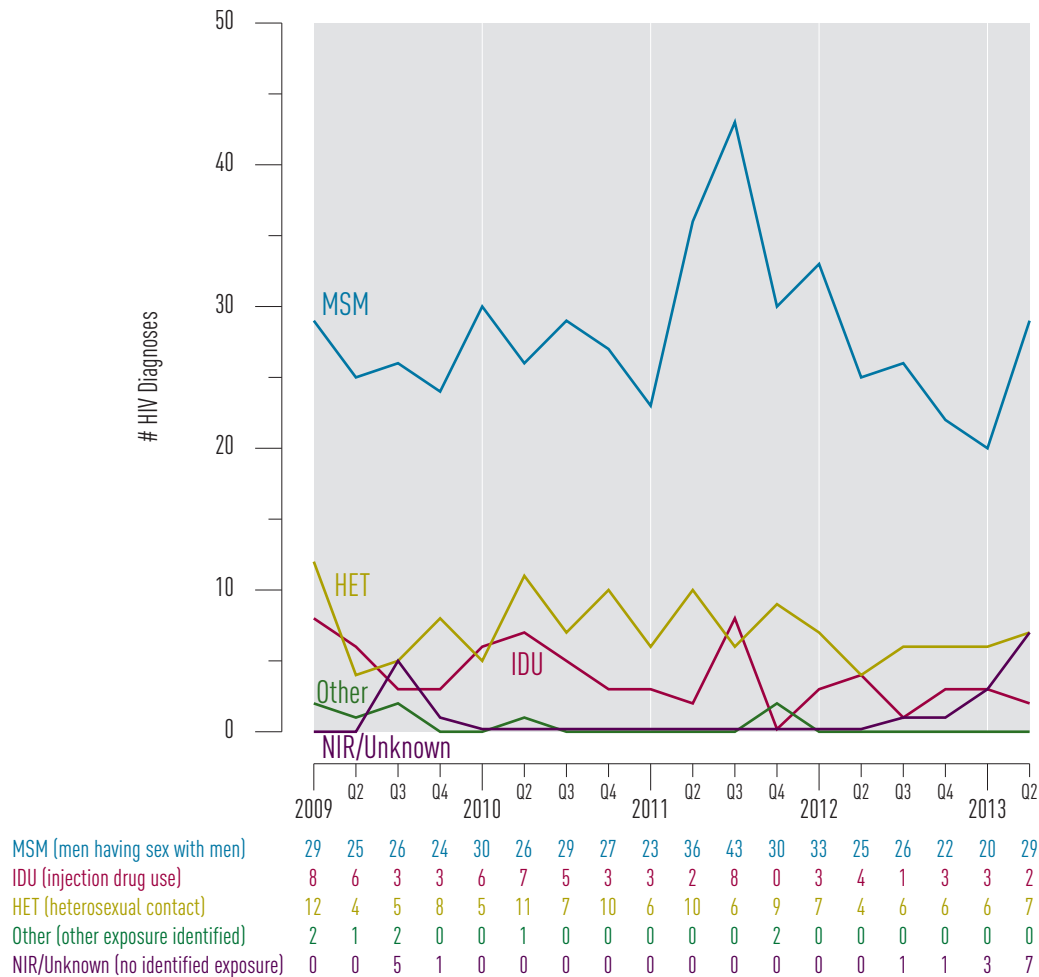


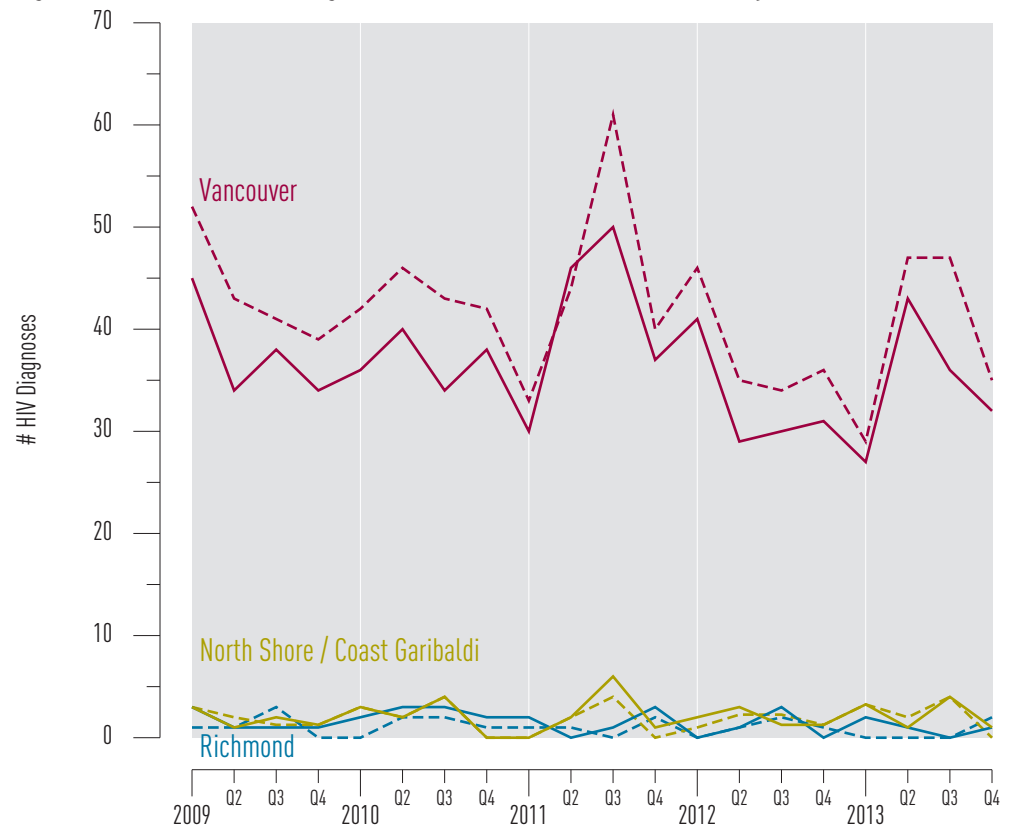
Figure 3.4 New HIV Diagnoses for Vancouver Coastal Health by Exposure Category, 2009 Q1–2013 Q2⁴



⁴ BCCDC: Data lags by 6 months.

MSM=men who have sex with men; IDU= injection drug user; HET=heterosexual. NIR=No identified risk/exposure.

Figure 3.5 New HIV Diagnoses for Vancouver Coastal Health by HSDA, 2009 Q1–2013 Q4



Richmond	By Client Residence	3	1	1	1	2	3	3	2	2	0	1	3	0	1	3	0	2	1	0	1
	By Provider Address	1	1	3	0	0	2	2	1	1	1	0	2	0	1	2	1	0	0	0	2
Vancouver	By Client Residence	45	34	38	34	36	40	34	38	30	46	50	37	41	29	30	31	27	43	36	32
	By Provider Address	52	43	41	39	42	46	43	42	33	44	61	40	46	35	34	36	29	47	47	35
North Shore / Coast Garibaldi	By Client Residence	3	1	2	1	3	2	4	0	0	2	6	1	2	3	1	1	3	1	4	1
	By Provider Address	3	2	1	1	3	2	4	0	0	2	4	0	1	2	2	1	3	2	4	0

"By Provider Address" is graphed as dashed line in same colour.

Stage of HIV infection at diagnosis

Classification of stage of HIV infection, in the absence of information regarding recent testing history, is reliant on clinical information available at the time of diagnosis, including first CD4+ cell count, laboratory results suggestive of acute HIV infection, and clinical presentation with an AIDS-defining illness (Table 1). The benefits of Treatment as Prevention (TasP) are maximized when antiretroviral therapy (ART) is initiated at high CD4 cell counts. Accordingly, it is preferable that individuals newly diagnosed with HIV be in the early stages of HIV infection (stage 0 or 1) to allow for early ART initiation.

N.B. Interpretation of stage of HIV infection at diagnosis should proceed with caution. Early increases in diagnosis at late stage (i.e., low CD4 counts) may represent a “catching up” of previously missed long term infected individuals rather than a trend toward diagnosis at later stage of infection.

Indicator 4. Stage of HIV Infection at Diagnosis

Table 1 Staging Classifications of Infection at Time of HIV Diagnosis Based on CDC HIV Surveillance Case Definitions

Stage	Criteria		
0	Laboratory criteria met for acute HIV infection, or previous negative or indeterminate HIV test within 180 days of first confirmed positive HIV test.		
1	Stage 0 not met	CD4 ≥500	No AIDS case report
2a		CD4 350–499	
2b		CD4 200–349	
3		(CD4 <200	AIDS case report)
Unknown		No available CD4	No AIDS case report

Figure 4.1 Stage of HIV Infection at Diagnosis for Vancouver Coastal Health, 2010–2013⁵

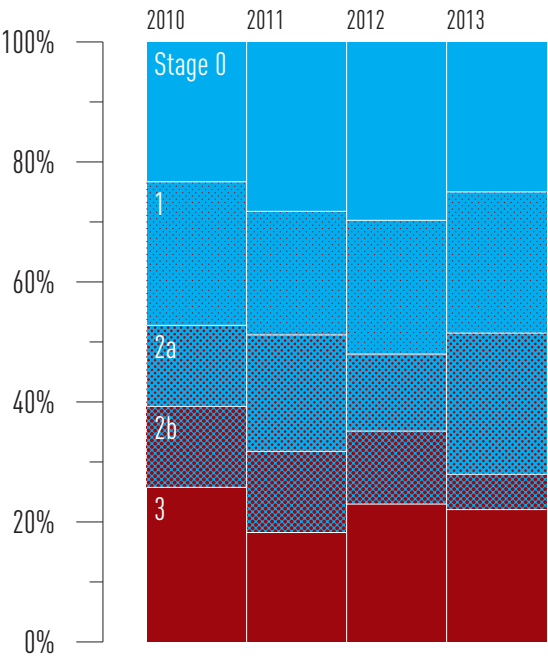
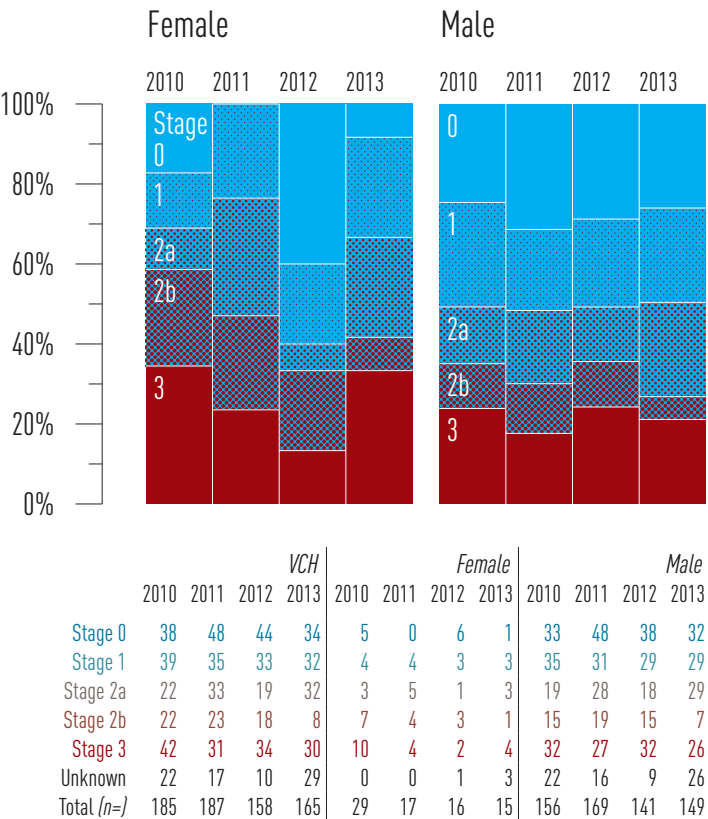


Figure 4.2 Stage of HIV Infection at Diagnosis by Gender for Vancouver Coastal Health, 2010–2013⁵



5 Data Source: BCCDC

Figure 4.3 Stage of HIV Infection at Diagnosis by Age Category for Vancouver Coastal Health, 2010–2013 ⁵

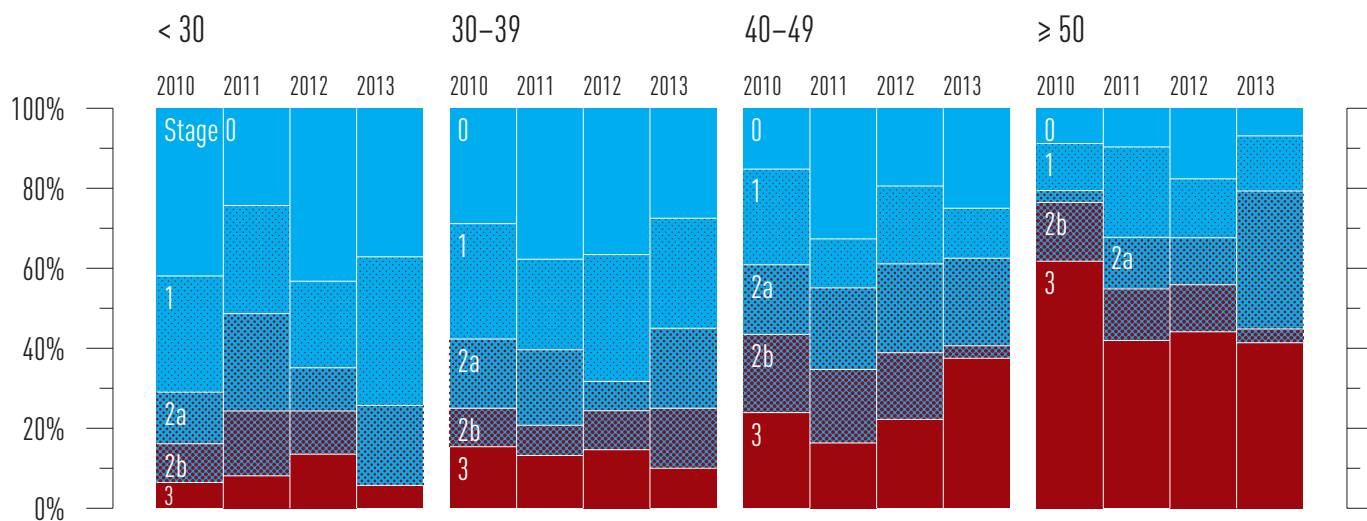
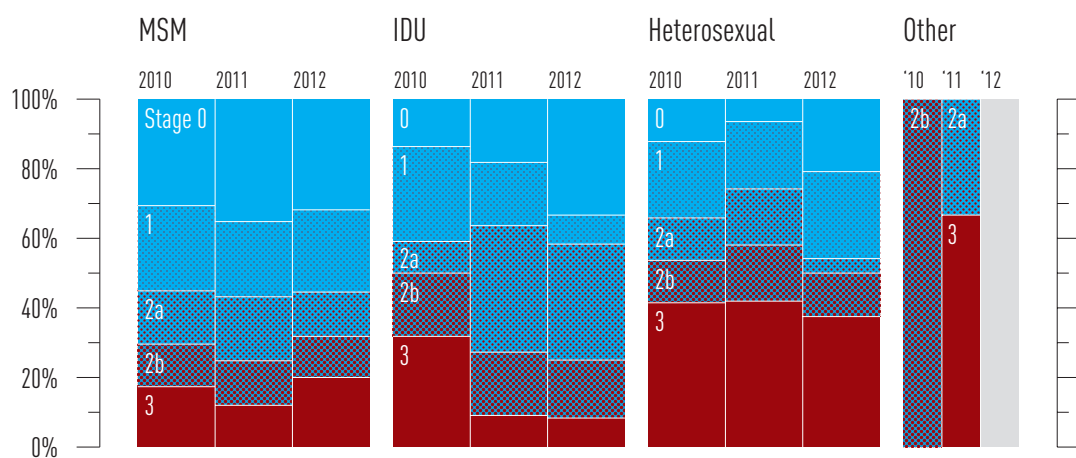


Figure 4.4 Stage of HIV Infection at Diagnosis by Exposure Category for Vancouver Coastal Health, 2010–2012 ^{5,6}



	< 30 years				30–39 years				40–49 years				≥ 50 years				MSM			IDU			HET			Other			NIR /Unknown		
	2010	'11	'12	'13	'10	'11	'12	'13	'10	'11	'12	'13	'10	'11	'12	'13	'10	'11	'12	'10	'11	'12	'10	'11	'12	'10	'11	'12	'10	'11	'12
Stage 0	13	9	16	13	15	20	15	11	7	16	7	8	3	3	6	2	30	44	35	3	2	4	5	2	5	0	0	0	0	0	0
Stage 1	9	10	8	13	15	12	13	11	11	6	7	4	4	7	5	4	24	27	26	6	2	1	9	6	6	0	0	0	0	0	0
Stage 2a	4	9	4	7	9	10	3	8	8	10	8	7	1	4	4	10	15	23	14	2	4	4	5	5	1	0	1	0	0	0	0
Stage 2b	3	6	4	0	5	4	4	6	9	9	6	1	5	4	4	1	12	16	13	4	2	2	5	5	3	1	0	0	0	0	0
Stage 3	2	3	5	2	8	7	6	4	11	8	8	12	21	13	15	12	17	15	22	7	1	1	17	13	9	0	2	0	1	0	2
Unknown	8	4	5	4	10	7	2	9	3	2	0	7	1	4	3	9	17	13	8	1	2	0	3	1	1	0	1	0	1	0	1
Total (n=)	39	41	42	39	62	60	43	49	49	51	36	39	35	35	37	38	115	138	118	23	13	12	44	32	25	1	4	0	2	0	3

6 MSM=men who have sex with men; IDU= injection drug user; HET=heterosexual. NIR=No identified risk/exposure.

Indicator 5. HIV Cascade of Care

The success of seek, test, treat and retain (STTR) strategies like STOP is reliant on early diagnosis of HIV, linking newly diagnosed HIV-positive persons with ongoing care, retaining persons in HIV-care; initiating ART based on best evidenced practices and maintaining optimal ART adherence to ensure a suppressed viral load. These stages of HIV-care can be summarized as: 1. HIV diagnosis, 2. Linkage to HIV care, 3. Retention in HIV care, 4. On ART and 5. Achieving a suppressed VL; collectively, they are referred to as the cascade of care. Leakage between any of these stages of HIV-care means a reduction in the potential of ART as a benefit to the HIV-positive individual and as an HIV transmission prevention method on a population level. Thus, when interpreting trends in the cascade of care, we strive to see increases along each step of the cascade of care (ie. reduced attrition) with the ultimate goal being 100% within each stage of the cascade. Monitoring the Cascade of Care provides a picture as to where deficiencies lie in the delivery and uptake of HIV-care. In this section we present the cascade of care for the year 2012 in BC overall and stratified by sex and age for each Health Authority.

Figure 5.1 Estimated Cascade of Care for Vancouver Coastal Health, 2013 ⁷

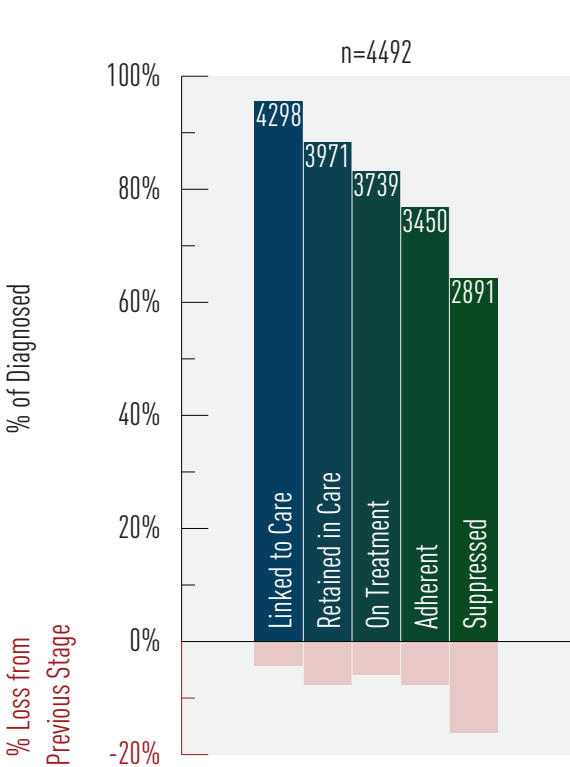
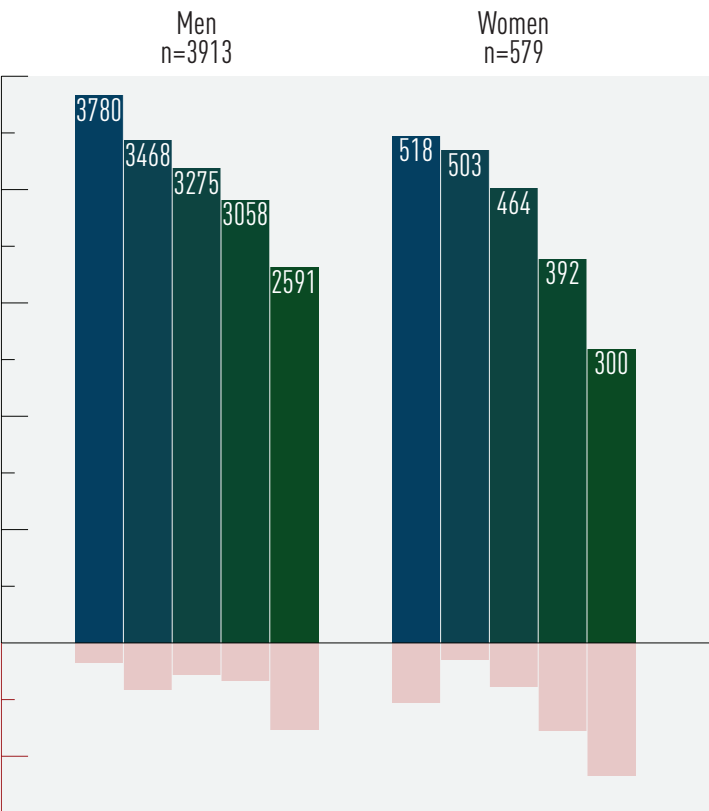


Figure 5.2 Estimated Cascade of Care for Vancouver Coastal Health by Gender, 2013 ⁸



7,8 Data is for the period 2013 Q1–2013 Q4.

Data Sources:

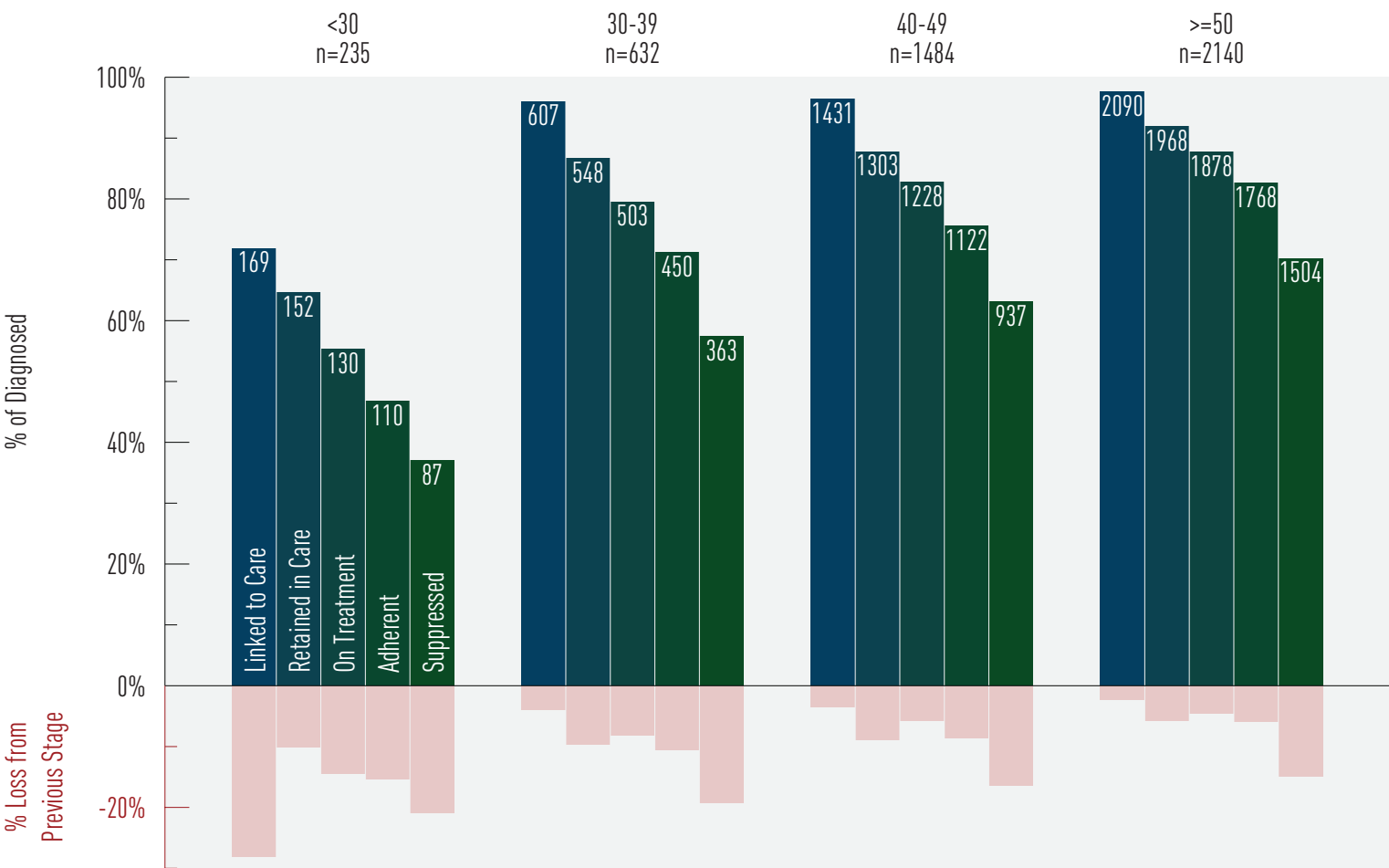
1 British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).

2 Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).

Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider. If the most recent HA of residence is not updated then the designated HA may be incorrect.

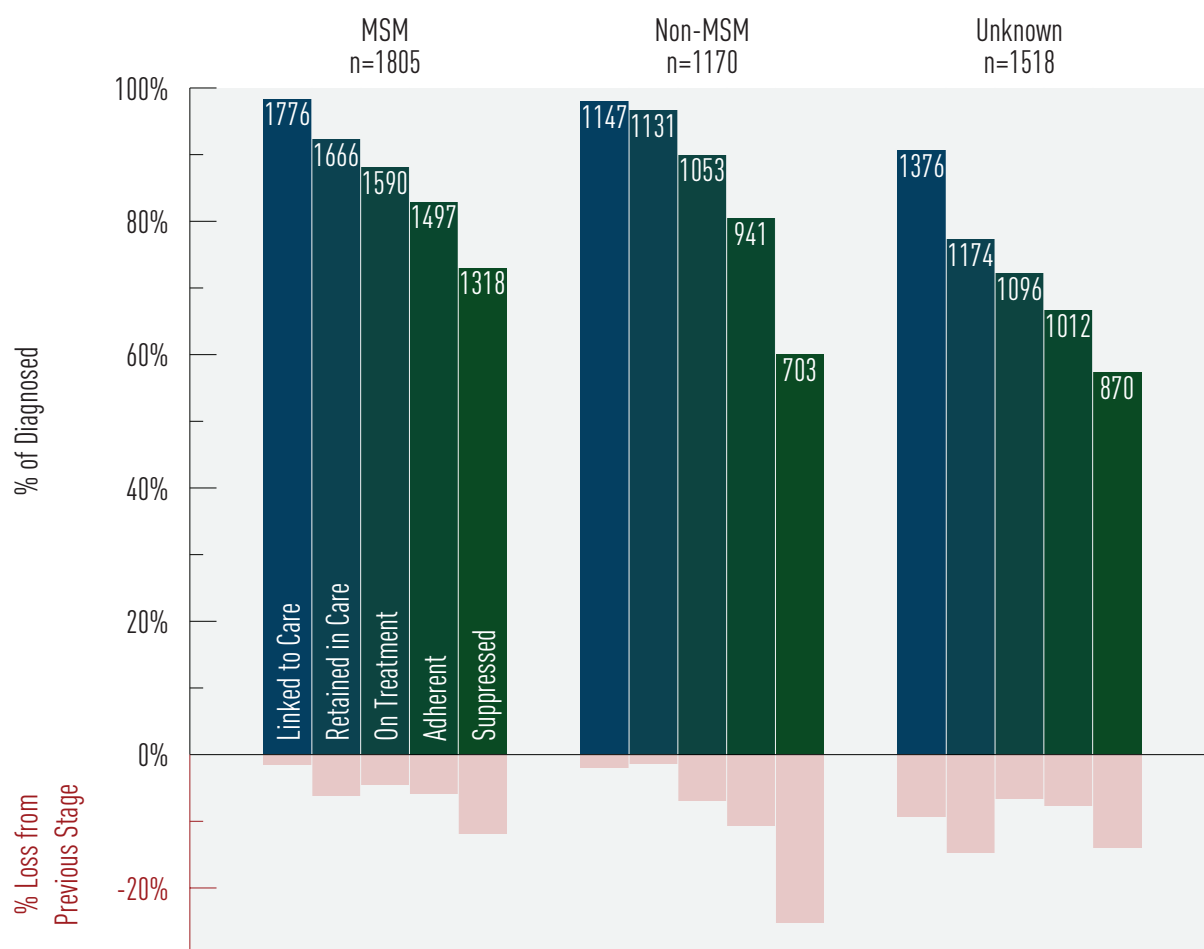
NB: Transgender has been assigned to their biological sex.

Figure 5.3 Estimated Cascade of Care for Vancouver Coastal Health by Age Category, 2013 ⁹



⁹ Data is for the period 2013 Q1–2013 Q4.
Data Sources:
1 British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
2 Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).
Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider.
If the most recent HA of residence is not updated then the designated HA may be incorrect.

Figure 5.4 Estimated Cascade of Care for Vancouver Coastal Health by MSM Status, 2013 ¹⁰



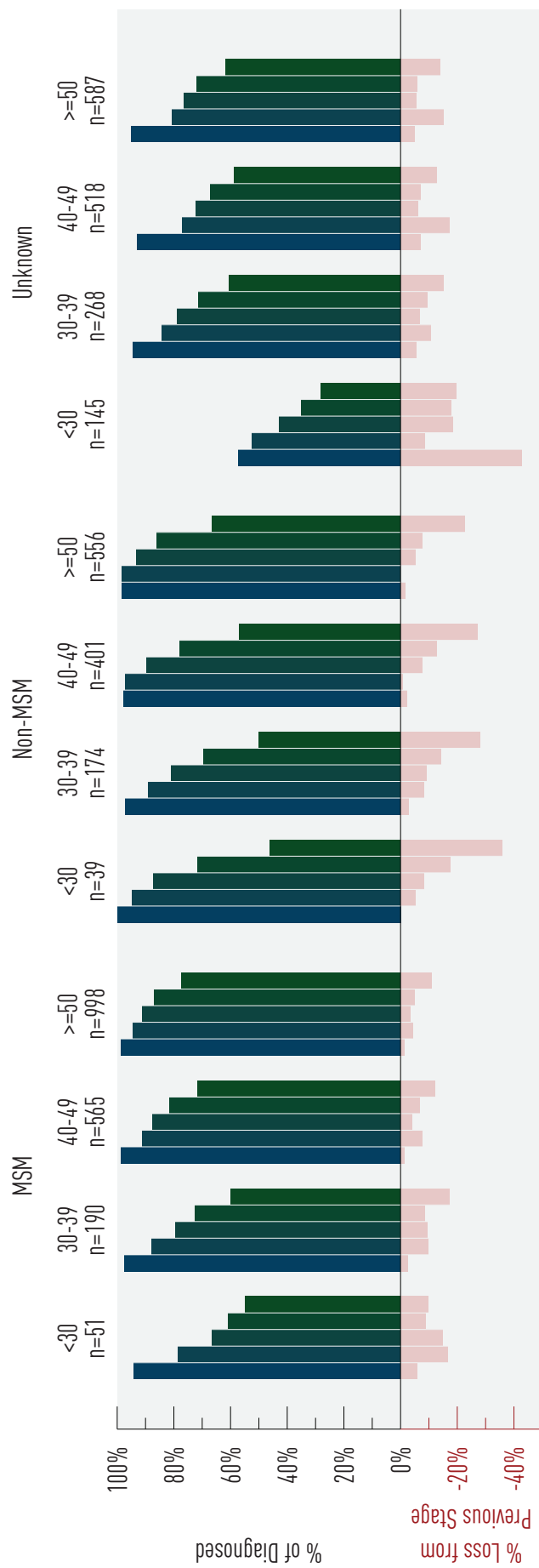
¹⁰ Data is for the period 2013 Q1–2013 Q4.

Data Sources:

- 1 British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
- 2 Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).

Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider. If the most recent HA of residence is not updated then the designated HA may be incorrect.

Figure 5.5 Estimated Cascade of Care for Vancouver Coastal Health by Age Category and MSM Status¹¹



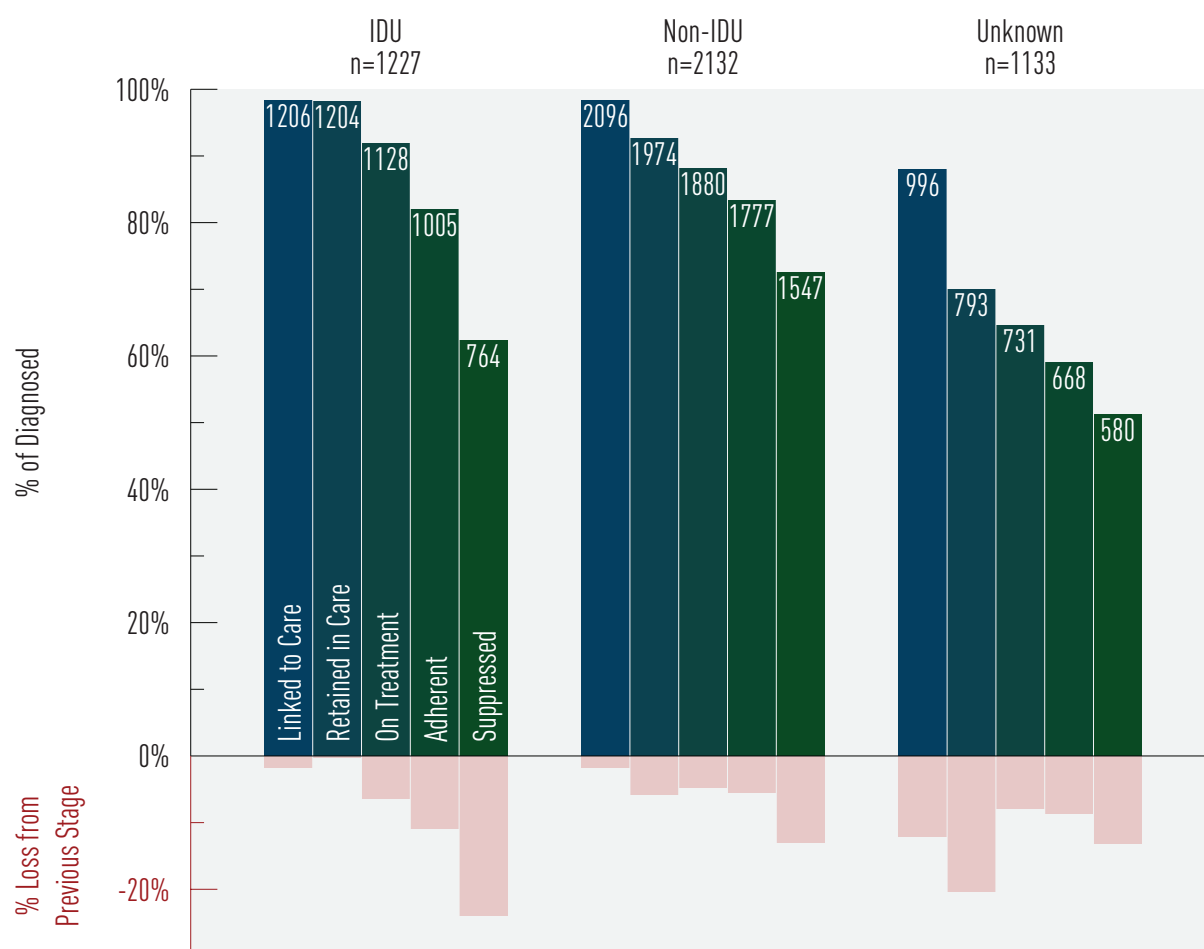
¹¹ Data is for the period 2013 Q1–2013 Q4.

Data Sources:

- 1 British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
- 2 Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).

Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider. If the most recent HA of residence is not updated then the designated HA may be incorrect.

Figure 5.6 Estimated Cascade of Care for Vancouver Coastal Health by History of IDU, 2013¹²



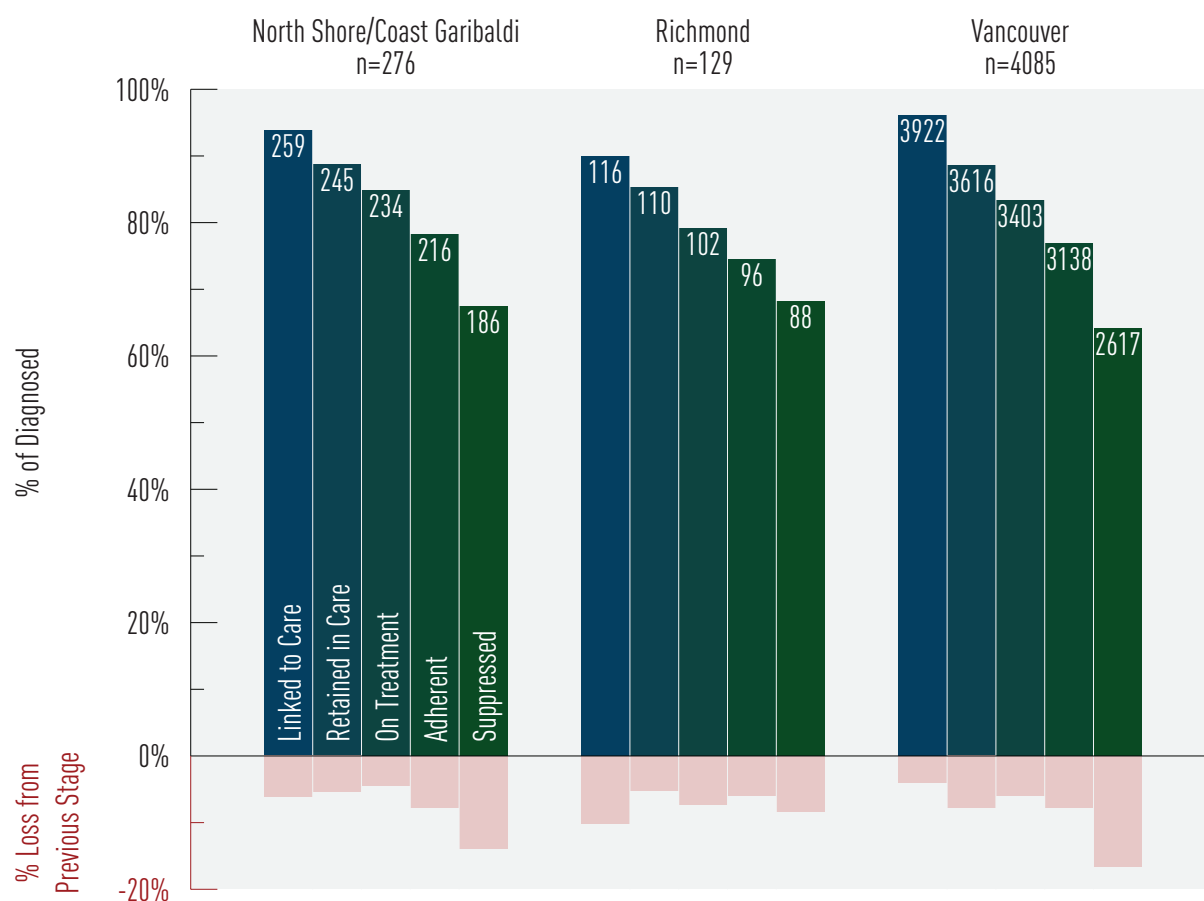
¹² Data is for the period 2013 Q1–2013 Q4.

Data Sources:

- 1 British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
- 2 Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).

Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider. If the most recent HA of residence is not updated then the designated HA may be incorrect.

Figure 5.7 Estimated Cascade of Care for Vancouver Coastal Health by HSDA, 2013¹³



¹³ Data is for the period 2013 Q1–2013 Q4.

Data Sources:

- 1 British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
- 2 Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).

Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider. If the most recent HA of residence is not updated then the designated HA may be incorrect.

Indicator 6. The Programmatic Compliance Score (PCS)

The Programmatic Compliance Score (PCS) is a summary measure of risk of future death, immunologic failure and virologic failure from all causes for people who are starting ART for the first time. It is composed of patient- and physician-driven effects. PCS scores range from 0–6 with higher scores indicative of poorer health outcomes and greater risk of death. Table 1 provides mortality, immunologic failure and virologic failure probabilities for given PCS scores. We interpret an individual with a $PCS \geq 4$ as being 22 times more likely to die, almost 10 times more likely to have immunologic failure and nearly 4 times as likely to demonstrate virologic failure compared to those individuals with a PCS score of 0. A detailed description of how the PCS score is calculated and its validation can be found in the technical report. In short, PCS scores are calculated by summing the results (yes=1, no=0) of six un-weighted non-performance indicators based on IAS–USA treatment guidelines:

1. having <3 CD4 cell count tests in the first year after starting antiretroviral therapy (ART);
2. having <3 plasma viral load (VL) tests in the first year after starting ART;
3. not having drug resistance testing done prior to starting ART;
4. starting on a non-recommended ART regimen;
5. starting therapy with $CD4 < 200$ cells/ μ L; and
6. not achieving viral suppression within 9 months since ART initiation.

In this section we provide PCS scores and their components over time for the province of BC. A decline to 0%, (i.e., all individuals having a score of 0) is the eventual goal.

Table 2. The Probability of Mortality, Immunologic Failure and Virologic Failure based on the Programmatic Compliance Score

Programmatic Compliance Score	Mortality Risk Ratio (95% Confidence Interval)	Immunologic Failure Risk Ratio (95% CI)	Virologic Failure Risk Ratio (95% CI)
0 (Best score)	1 (–)	1 (–)	1 (–)
1	3.81 (1.73–8.42)	1.39 (1.04–1.85)	1.32 (1.05–1.67)
2	7.97 (3.70–17.18)	2.17 (1.54–3.04)	1.86 (1.46–2.38)
3	11.51 (5.28–25.08)	2.93 (1.89–4.54)	2.98 (2.16–4.11)
4 or more (Worst score)	22.37 (10.46–47.84)	9.71 (5.72–16.47)	3.80 (2.52–5.73)

Reference: Lima VD, Le A, Nosyk B, Barrios R, Yip B, et al. (2012) Development and Validation of a Composite Programmatic Assessment Tool for HIV Therapy. PLoS ONE 7(11): e47859. doi:10.1371/journal.pone.0047859

Figure 6.1 PCS Components for Vancouver Coastal Health, 2011–2013 ¹⁴

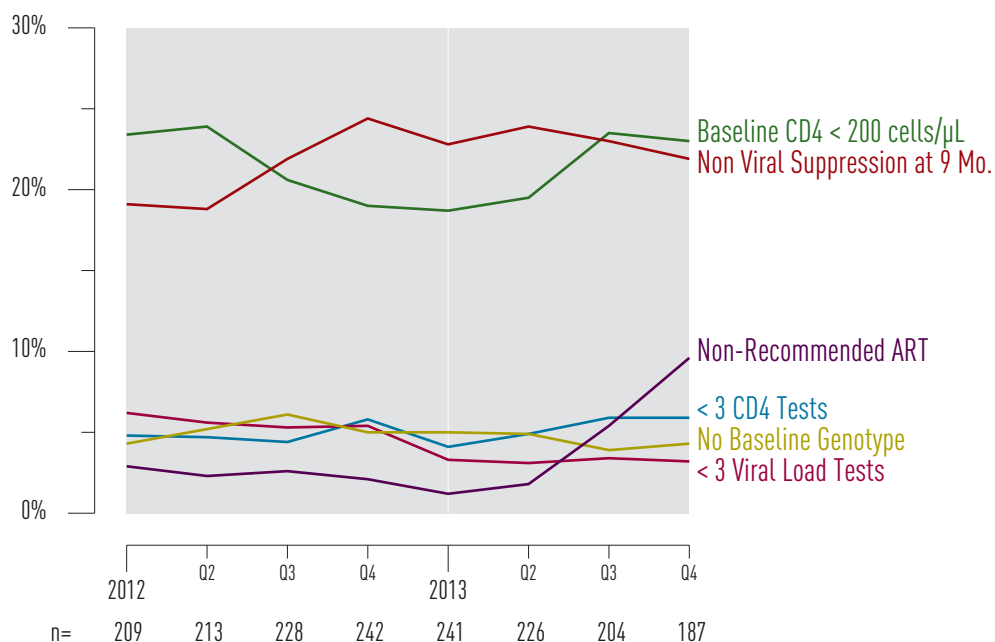
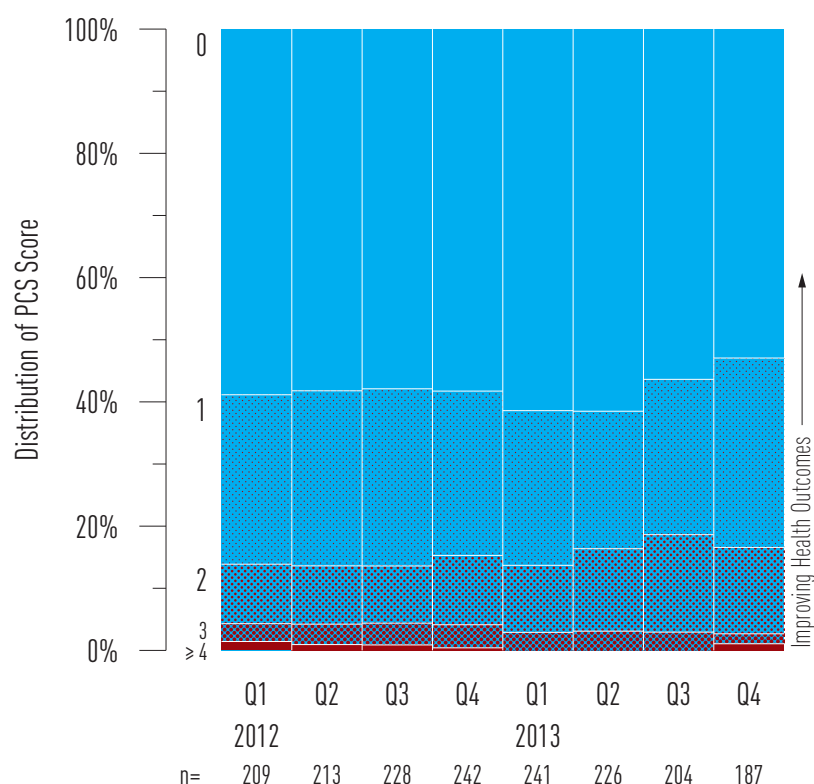


Figure 6.2 Historical Trends for PCS Score for Vancouver Coastal Health, 2011 Q1–2013 Q4 ¹⁵



NB: A score of 0 is the best score and a score of 4 or more is the worst score.

¹⁴ Data Source: British Columbia Centre for Excellence Drug Treatment Program (DTP) Database.
Limitations: CD4 cell count capture is approximately 80%.

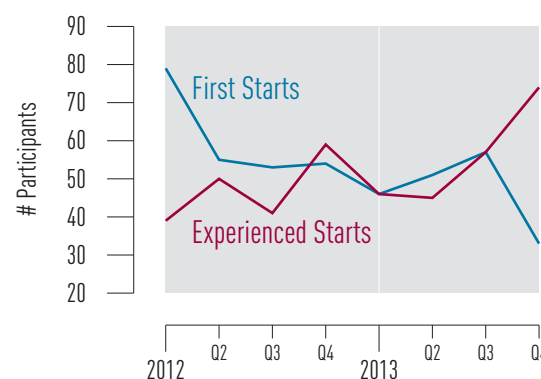
¹⁵ Data Source: British Columbia Centre for Excellence Drug Treatment Program (DTP) Database.
Each quarter's data is calculated as the sum of the 4 quarters leading up to it. e.g. 2012 Q1 is calculated from 2011 Q2 – 2012 Q1.

Antiretroviral Uptake

In this section we present trends in ART uptake, the number and proportion of new HIV treatment initiations and the number of active and inactive DTP participants. Trends in ART uptake should be interpreted under the consideration of changing BC HIV treatment guidelines. BC HIV treatment guidelines are updated regularly by the BC-CfE Therapeutic Guidelines Committee and reflect those of the International AIDS Society. Most recent changes were made in 2012 and HIV treatment is now recommended for all HIV-positive adults regardless of CD4 cell count; as evidence demonstrates that early initiation of HIV treatment maximizes both the individual's health outcomes as well as the potential of ART as a form of HIV transmission prevention at a population level. As such, trends in the number and proportion of persons on ART and new ART starts (in both naïve and experienced persons) are expected to increase over time at higher CD4 cell counts.

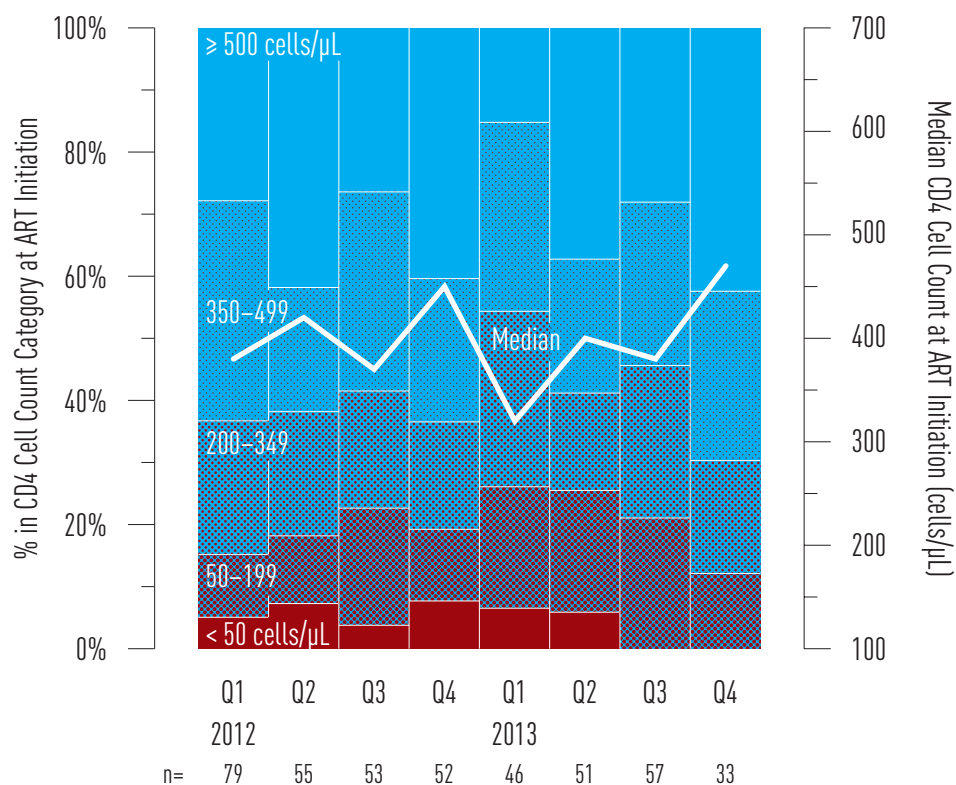
Indicator 7. New Antiretroviral Therapy Starts in Vancouver Coastal Health

Figure 7 BC-CfE Drug Treatment Program Enrollment: New ART Participants in Vancouver Coastal Health, 2012 Q1–2013 Q4 ¹⁶



Indicator 8. CD4 Cell Count at ART Initiation

Figure 8 CD4 Cell Count at ART Initiation of ART-Naïve DTP Participants in Vancouver Coastal Health, 2012 Q1–2013 Q4 ¹⁷



¹⁶ Data Source: Drug Treatment Program Database

Limitation: DTP participants are designated to an HA based on most current residence provided by the participant.

¹⁷ Data Source: Drug Treatment Program Database

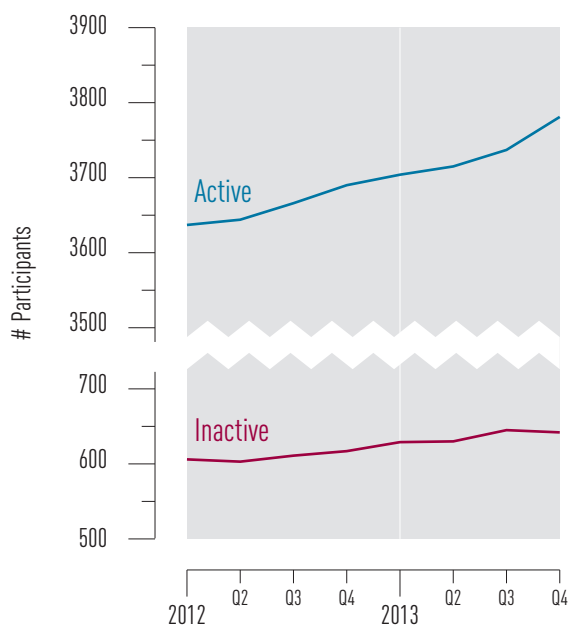
Limitations: CD4 cell count data is approximately 80% complete.

Indicator 9. Active and Inactive DTP Participants

Table 3. Distribution of People on ART for Vancouver Coastal Health, 2013 Q4 ¹⁶

Age	< 30	132
	30–39	523
	40–49	1242
	≥ 50	1884
Gender	Male	3321
	Female	460
Exposure	MSM	1589
	IDU	1116
Total		3781

Figure 9 Active and Inactive DTP Participants in Vancouver Coastal Health, 2012 Q1–2013 Q4 ¹⁹



¹⁸ Data Source: Drug Treatment Program Database

Limitation: DTP participants are designated to an HA based on most current residence provided by the participant.

Definitions:

'On antiretroviral therapy' defined as being on treatment in the current quarter

'Unknown/not stated' defined as being on treatment in the current quarter, and city of residence unknown

¹⁹ Active DTP participants: are those who are prescribed one or more drugs in the last six months.

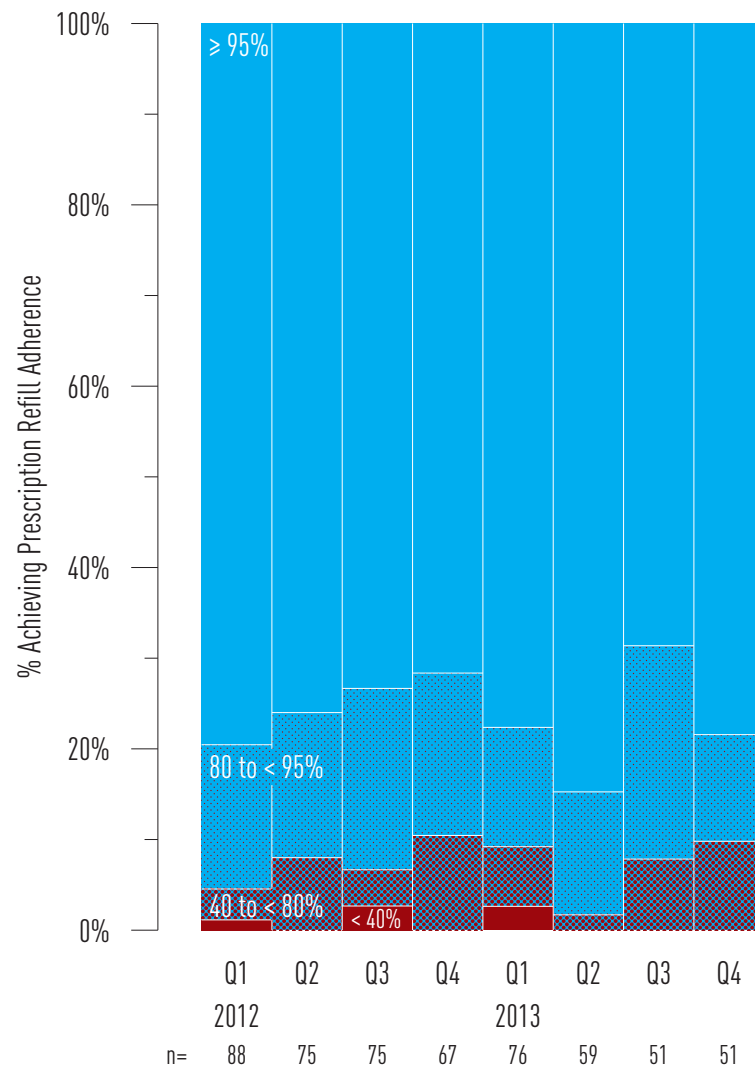
Inactive DTP Participants: Persons no longer prescribed drugs through the HIV/AIDS Drug Treatment Program in the last quarter.

Antiretroviral Adherence Level

In this section we present trends in prescription refill adherence levels for individuals in their first year of treatment. Given that the benefits of ART are compromised in the presence of imperfect ART adherence, we expect to see the proportion of persons on ART achieving **near perfect adherence** (ie. $\geq 95\%$) to increase with time. Furthermore, it is important that trends in the proportion of ART users achieving prescription refill adherence of $\geq 95\%$ keep pace with new ART starts and increase among those continuing on ART.

Indicator 10. Antiretroviral Adherence

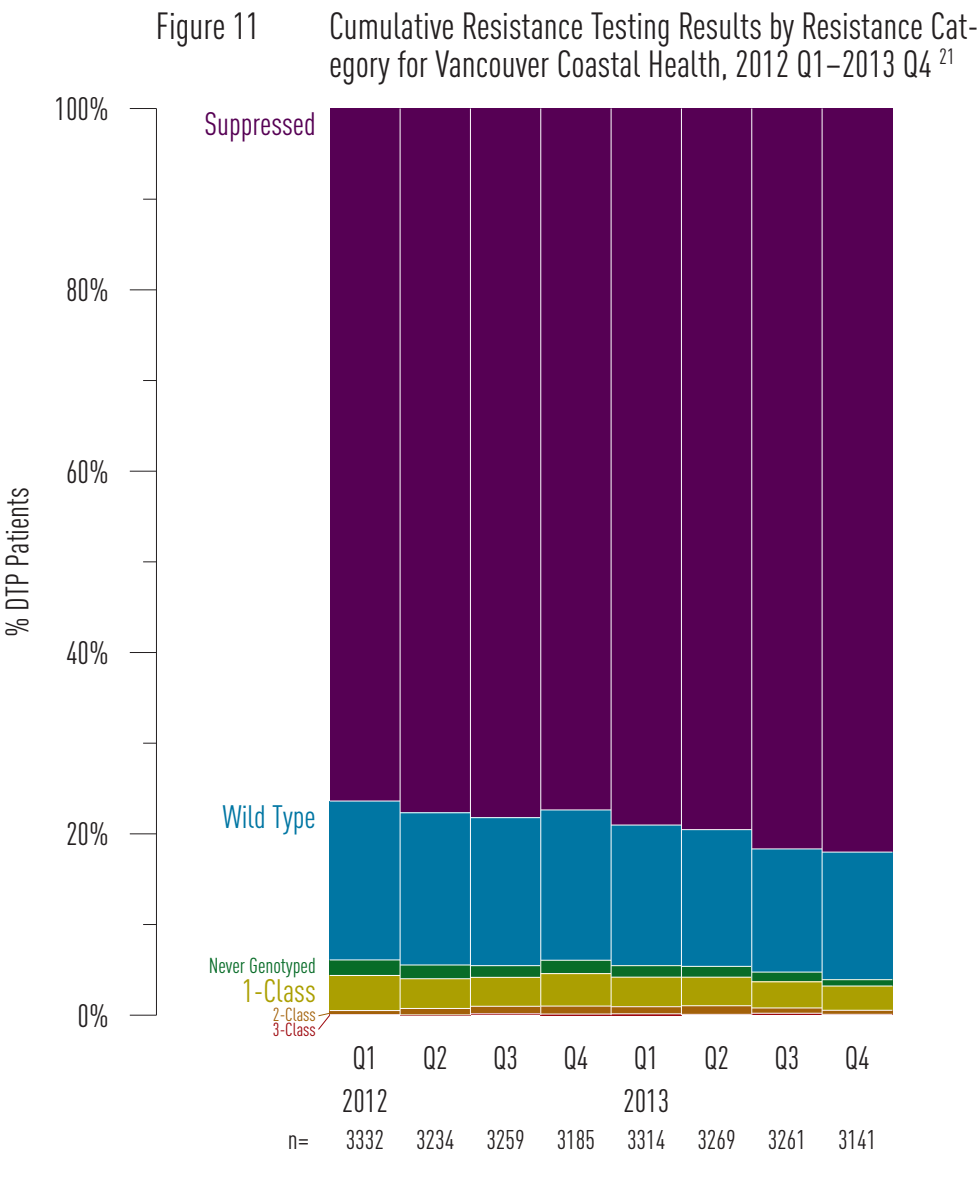
Figure 10 Distribution of Individuals by Adherence Level in 1st Year of Therapy, Based on Pharmacy Refill Compliance for Vancouver Coastal Health, 2012 Q1–2013 Q4²⁰



²⁰ Data Source: Drug Treatment Program Database
Limitation: Prescription refill adherence is used as a proxy for patient adherence.

Indicator 11. Resistance Testing and Results

In this section, we present trends in cumulative resistance testing by resistance category: **Suppressed** (where a DTP participant's viral load is too low to be genotyped); **Wild Type** (where no HIV treatment resistances were discovered), **Never Genotyped**, and Resistances to **one**, **two** or **three** HIV treatment classes. Resistance testing prior to ART initiation is recommended in the BC HIV treatment primary care guidelines. Thus, it is expected that trends over time should find all persons enrolled in the DTP to have been genotyped. Trends over time should also show an increase in the proportion of DTP participants achieving a suppressed status and an increase in resistance testing should not lead to an increase in the number of ART resistances occurring.



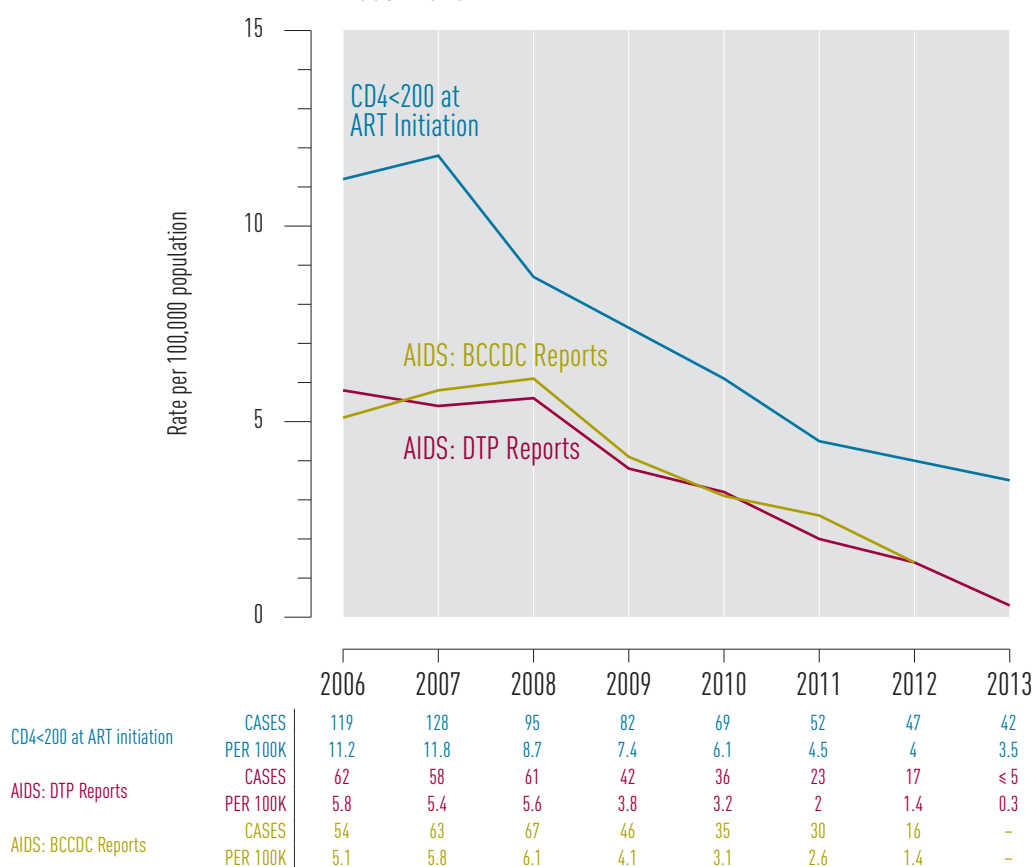
²¹ Data Source: Drug Treatment Program Database

Limitation: DTP participants are designated to an HA based on most current residence provided by the participant.

Indicator 12. AIDS-Defining Illness

Improvements in ART and the expansion of ART province-wide has led to very low numbers of recorded AIDS cases across BC. However, interpreting trends in AIDS cases is challenging as AIDS reporting is passive in BC and it is likely that they are under reported across all Health Authorities. In addition to under reporting, methods of reporting AIDS cases are inconsistent across HA's and do not truly reflect the current reality of new AIDS diagnoses. Efforts will need to be made to improve under and inconsistent reporting of AIDS cases across all HA's. The table below shows AIDS cases using three definitions. First, AIDS cases were defined as the number of physician-reported AIDS defining illness (ADI) in a given year. AIDS case reporting is a passive process; as such, we have plotted **DTP reported** AIDS cases as well as the proportion of persons **initiating ART with a CD4<200 cells/μL**.

Figure 12 AIDS Case Rate and Reports for Vancouver Coastal Health, 2006–2013²²

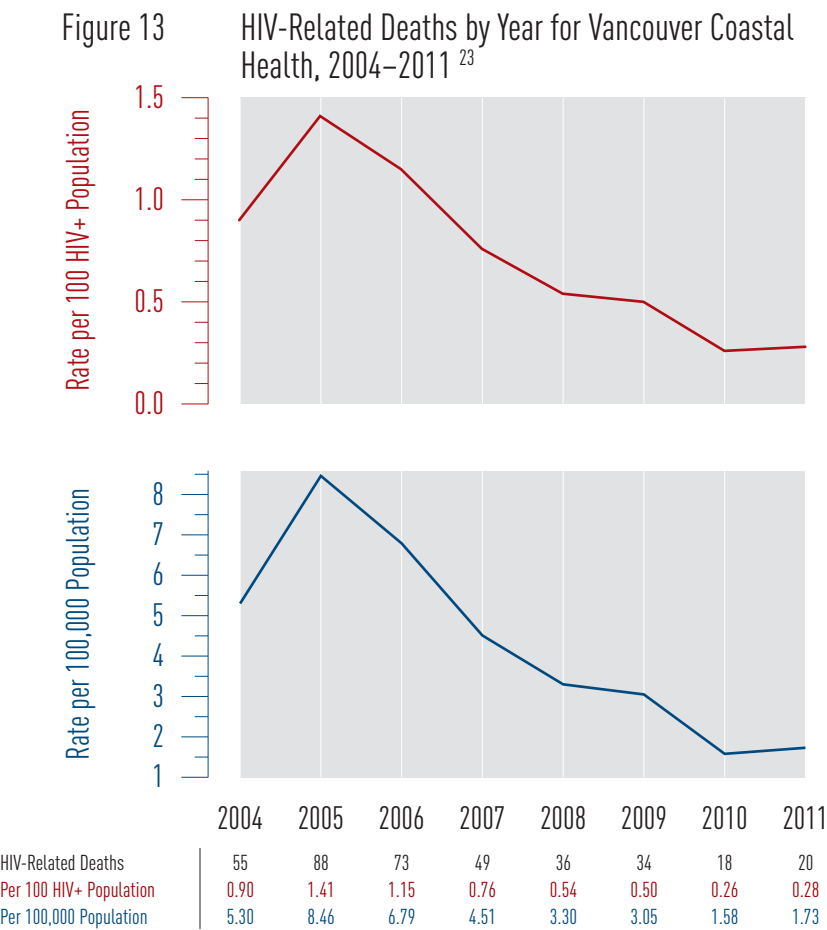


22 Data Source: Drug Treatment Program Database

Limitation: AIDS case reporting was investigated using 2 definitions: First, using AIDS cases reported in AIDS case report forms from the DTP, and second, using a CD4 cell count of <200 cells/μL at time of ART initiation using DTP data. AIDS case reporting is passive in BC, thus; AIDS case reporting is not well captured. The DTP sends out AIDS reporting forms to physicians annually. Interpreting AIDS case reports should be done with these limitations in mind. AIDS data is updated annually as very few AIDS cases reports are reported in general and trends would be difficult to notice if reported quarterly.

Indicator 13. HIV-Related Mortality

Evidence indicates that individuals who initiate treatment with recommended ART in a timely fashion may live near normal lifespans. Excess mortality among HIV positive persons is, therefore, an important measure of HIV care with a goal of minimizing HIV-related mortality in British Columbia.



23 Data Source: BC Vital Statistics

Limitation:

- 1. DTP participants are designated to an HA based on most current residence provided by the participant.
- 2. Mortality data is updated annually.
- 3. The most recent available data was used.

Appendices

Indicator 1: Test Episodes (thousands)		2009				2010				2011				2012				2013			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Vancouver Coastal Health		18.9	17.9	18.3	17.1	18.8	18.3	18.6	19.3	20.7	20.1	26.0	24.0	27.2	26.9	29.5	29.4	33.5	35.1	33.7	32.7
Gender	Female	10.1	9.6	9.8	9.3	10.0	9.7	10.0	9.8	10.6	9.7	10.6	11.6	13.6	13.5	14.7	14.8	17.1	18.0	17.3	16.8
	Male	8.4	7.8	8.0	7.4	8.3	8.2	8.2	8.2	8.7	8.0	9.0	9.6	11.3	11.3	12.4	12.6	14.2	15.1	14.0	13.9
	Other	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.1
Female (Prenatal)		3.5	3.2	3.3	3.2	3.4	3.1	3.4	3.5	3.7	3.4	3.5	3.7	4.1	3.7	3.6	3.6	3.6	3.5	3.7	3.7
Female (Non-prenatal)		6.6	6.4	6.6	6.1	6.6	6.6	6.6	6.3	6.8	6.4	7.1	8.0	9.5	9.8	11.1	11.2	13.5	14.5	13.6	13.1
Age	< 30	7.0	6.8	7.5	6.8	7.0	6.9	7.2	7.1	7.1	6.8	7.8	8.5	8.9	9.1	9.7	9.5	8.6	9.0	9.2	9.0
	30–39	6.4	5.9	6.0	5.7	6.4	6.1	6.2	6.2	6.7	5.9	6.4	6.5	7.8	7.4	7.7	7.6	8.8	9.0	8.9	8.5
	40–49	3.2	2.9	2.7	2.6	3.0	2.9	2.8	2.8	3.1	2.8	3.0	3.2	3.9	3.7	3.9	4.1	5.1	5.4	4.9	4.8
	≥ 50	2.3	2.2	2.2	2.1	2.4	2.4	2.4	2.3	2.8	2.6	3.0	3.4	4.6	4.8	6.0	6.5	9.0	9.9	8.6	8.6
POC HIV Tests									0.9	1.0	2.0	5.9	2.4	2.1	1.9	2.1	1.7	2.0	1.8	2.1	1.9
Richmond		1.2	1.1	1.2	1.1	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.3	1.5	1.5	1.5	1.6	1.9	2.0	2.0	1.9
Vancouver		15.2	14.5	14.9	13.9	15.3	14.8	15.1	15.7	17.0	16.6	22.4	20.3	22.9	22.9	25.2	25.0	28.5	29.9	28.5	27.3
North Shore / Coast Garibaldi		2.5	2.3	2.3	2.2	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.4	2.8	2.6	2.7	2.8	3.1	3.3	3.2	3.3

Indicator 2: Rate of HIV Testing per 100,000

		2009	2010	2011	2012	2013
Vancouver Coastal Health		5115.0	5088.8	5338.4	7024.1	8890.4
Richmond		2578.5	2682.5	2773.4	3389.9	3930.4
Vancouver		6614.2	6524.0	6884.2	9361.3	12226.3
North Shore / Coast Garibaldi		3413.6	3430.5	3506.2	4018.5	4451.4
Gender	Female	5412.3	5353.9	5652.4	7515.9	9705.8
	Male	4491.8	4527.5	4719.0	6347.5	7949.0
Age	< 30	5751.6	5624.5	5918.6	7224.9	7226.0
	30–39	10933.2	11200.7	11436.2	13507.3	16236.2
	40–49	4870.1	4771.7	4988.9	6561.4	9226.0
	≥ 50	1820.7	1872.9	2160.4	4134.6	7168.3

Indicator 3: New HIV Diagnoses		2009				2010				2011				2012				2013			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Vancouver Coastal Health	By Client Residence	51	36	41	36	41	45	41	40	32	48	57	41	43	33	34	32	32	45	40	34
	By Provider Address	56	46	45	40	45	50	49	43	34	47	65	42	47	38	38	38	32	49	51	37
Gender	Female	10	4	1	5	8	8	5	3	3	7	2	2	5	4	3	2	4	4	1	2
	Male	41	32	40	31	33	37	36	37	29	41	55	39	38	29	31	30	28	41	39	32
Age	< 30	9	8	10	9	12	12	12	7	3	10	13	12	11	10	6	13	7	11	14	7
	30–39	14	11	7	12	16	10	15	12	12	16	22	8	12	11	7	6	13	14	5	6
	40–49	18	12	18	11	10	16	10	11	11	12	13	13	12	6	11	9	7	8	11	13
	≥ 50	10	5	6	4	3	7	4	10	6	10	9	8	8	6	10	4	5	12	10	8
Exposure	MSM	29	25	26	24	30	26	29	27	23	36	43	30	33	25	26	22	20	29	–	–
	IDU	8	6	3	3	6	7	5	3	3	2	8	0	3	4	1	3	3	2	–	–
	HET	12	4	5	8	5	11	7	10	6	10	6	9	7	4	6	6	6	7	–	–
	Other	2	1	2	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	–	–
	NIR/Unknown	0	0	5	1	0	0	0	0	0	0	0	0	0	0	1	1	3	7	–	–
Richmond	By Client Residence	3	1	1	1	2	3	3	2	2	0	1	3	0	1	3	0	2	1	0	1
	By Provider Address	1	1	3	0	0	2	2	1	1	1	0	2	0	1	2	1	0	0	0	2
Vancouver	By Client Residence	45	34	38	34	36	40	34	38	30	46	50	37	41	29	30	31	27	43	36	32
	By Provider Address	52	43	41	39	42	46	43	42	33	44	61	40	46	35	34	36	29	47	47	35
North Shore / Coast Garibaldi	By Client Residence	3	1	2	1	3	2	4	0	0	2	6	1	2	3	1	1	3	1	4	1
	By Provider Address	3	2	1	1	3	2	4	0	0	2	4	0	1	2	2	1	3	2	4	0

Indicator 4: Stage of HIV Infection at Baseline

	VCH				Female				Male				< 30 years				30–39 years				40–49 years			
	'10	'11	'12	'13	'10	'11	'12	'13	'10	'11	'12	'13	'10	'11	'12	'13	'10	'11	'12	'13	'10	'11	'12	'13
Stage 0	38	48	44	34	5	0	6	1	33	48	38	32	13	9	16	13	15	20	15	11	7	16	7	8
Stage 1	39	35	33	32	4	4	3	3	35	31	29	29	9	10	8	13	15	12	13	11	11	6	7	4
Stage 2a	22	33	19	32	3	5	1	3	19	28	18	29	4	9	4	7	9	10	3	8	8	10	8	7
Stage 2b	22	23	18	8	7	4	3	1	15	19	15	7	3	6	4	0	5	4	4	6	9	9	6	1
Stage 3	42	31	34	30	10	4	2	4	32	27	32	26	2	3	5	2	8	7	6	4	11	8	8	12
Unknown	22	17	10	29	0	0	1	3	22	16	9	26	8	4	5	4	10	7	2	9	3	2	0	7
Total	185	187	158	165	29	17	16	15	156	169	141	149	39	41	42	39	62	60	43	49	49	51	36	39

	≥ 50 years				MSM			IDU			Heterosexual			Other Exposure			NIR/Unknown		
	'10	'11	'12	'13	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Stage 0	3	3	6	2	30	44	35	3	2	4	5	2	5	0	0	0	0	0	0
Stage 1	4	7	5	4	24	27	26	6	2	1	9	6	6	0	0	0	0	0	0
Stage 2a	1	4	4	10	15	23	14	2	4	4	5	5	1	0	1	0	0	0	0
Stage 2b	5	4	4	1	12	16	13	4	2	2	5	5	3	1	0	0	0	0	0
Stage 3	21	13	15	12	17	15	22	7	1	1	17	13	9	0	2	0	1	0	2
Unknown	1	4	3	9	17	13	8	1	2	0	3	1	1	0	1	0	1	0	1
Total	35	35	37	38	115	138	118	23	13	12	44	32	25	1	4	0	2	0	3

Indicator 5: HIV Cascade of Care

		DIAGNOSED	LINKED	RETAINED	ON ART	ADHERENT	SUPPRESSED
Vancouver Coastal Health		4492	4298	3971	3739	3450	2891
Age Category	< 30	235	169	152	130	110	87
	30–39	632	607	548	503	450	363
	40–49	1484	1431	1303	1228	1122	937
	≥ 50	2140	2090	1968	1878	1768	1504
Age Category and MSM Status	MSM	< 30	51	48	40	34	28
		30–39	190	185	167	138	114
		40–49	565	557	515	461	405
		≥ 50	998	986	944	867	771
	Non-MSM	< 30	39	39	37	34	18
		30–39	174	169	155	141	87
		40–49	401	392	389	313	228
		≥ 50	556	547	547	479	370
	Unknown	< 30	145	83	76	51	41
		30–39	268	253	226	191	162
		40–49	518	482	399	348	304
		≥ 50	587	558	474	422	363
Gender	Male	3913	3780	3468	3275	3058	2591
	Female	579	518	503	464	392	300
Injection Drug Use	IDU	1227	1206	1204	1128	1005	764
	Non-IDU	2132	2096	1974	1880	1777	1547
	Unknown	1133	996	793	731	668	580
MSM Status	MSM	1805	1776	1666	1590	1497	1318
	Non-MSM	1170	1147	1131	1053	941	703
	Unknown	1518	1376	1174	1096	1012	870
Health Authority	Richmond	129	116	110	102	96	88
	Vancouver	4085	3922	3616	3403	3138	2617
	North Shore / Coast Garibaldi	276	259	245	234	216	186

Indicator 6: Programmatic Compliance Score (PCS)

	2012				2013			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
< 3 CD4 Tests	4.8%	4.7%	4.4%	5.8%	4.1%	4.9%	5.9%	5.9%
< 3 Viral Load Tests	6.2%	5.6%	5.3%	5.4%	3.3%	3.1%	3.4%	3.2%
No Baseline Genotype	4.3%	5.2%	6.1%	5.0%	5.0%	4.9%	3.9%	4.3%
Baseline CD4 < 200 cells/μL	23.4%	23.9%	20.6%	19.0%	18.7%	19.5%	23.5%	23.0%
Non-Recommended ART	2.9%	2.3%	2.6%	2.1%	1.2%	1.8%	5.4%	9.6%
Non Viral suppression at 9 Mo.	19.1%	18.8%	21.9%	24.4%	22.8%	23.9%	23.0%	21.9%
PCS Score: 0	123	124	132	141	148	139	115	99
PCS Score: 1	57	60	65	64	60	50	51	57
PCS Score: 2	20	20	21	27	26	30	32	26
PCS Score: 3	6	7	8	9	7	7	6	3
PCS Score: 4 or more	3	2	2	1	0	0	0	2
Total (n=)	209	213	228	242	241	226	204	187

Indicator 7: New DTP ARV Participants

First Starts	79	55	53	54	46	51	57	33
Experienced Starts	39	50	41	59	46	45	57	74

Indicator 8: CD4 Cell Count at ART Initiation for ARV-Naïve DTP Participants

CD4 ≥ 500	22	23	14	21	7	19	16	14
CD4 350–499	28	11	17	12	14	11	15	9
CD4 200–349	17	11	10	9	13	8	14	6
CD4 50–199	8	6	10	6	9	10	12	4
CD4 < 50	4	4	2	4	3	3	0	0
<i>CD4 Median (cells/μL)</i>	<i>380</i>	<i>420</i>	<i>370</i>	<i>450</i>	<i>320</i>	<i>400</i>	<i>380</i>	<i>470</i>
Total (n=)	79	55	53	52	46	51	57	33

Indicator 9: Active and Inactive DTP Participants

Active DTP Participants	3637	3644	3666	3690	3704	3715	3737	3781
Inactive DTP Participants	606	603	611	617	629	630	645	642

Indicator 10: Antiretroviral Adherence

≥ 95%	70	57	55	48	59	50	35	40
80% to < 95%	14	12	15	12	10	8	12	6
40% to < 80%	3	6	3	7	5	1	4	5
< 40%	1	0	2	0	2	0	0	0
Total (n=)	88	75	75	67	76	59	51	51

Indicator 11: Resistance Testing and Results

Suppressed	2545	2512	2549	2464	2619	2600	2663	2576
Wild Type	584	543	532	528	514	493	443	442
Never Genotyped	57	49	42	47	42	39	35	22
1-Class	129	106	104	114	108	103	94	84
2-Class	15	23	27	28	26	31	19	14
3-Class	2	1	5	4	5	3	7	3
Total (n=)	3332	3234	3259	3185	3314	3269	3261	3141

Indicator 12: AIDS-Defining Illness

		2006	2007	2008	2009	2010	2011	2012	2013
CD4 < 200 at	Cases	119	128	95	82	69	52	47	42
ART initiation	<i>Rate per 100,000</i>	<i>11.2</i>	<i>11.8</i>	<i>8.7</i>	<i>7.4</i>	<i>6.1</i>	<i>4.5</i>	<i>4.0</i>	<i>3.5</i>
AIDS Cases	Cases	62	58	61	42	36	23	17	≤ 5
(DTP Reports)	<i>Rate per 100,000</i>	<i>5.8</i>	<i>5.4</i>	<i>5.6</i>	<i>3.8</i>	<i>3.2</i>	<i>2.0</i>	<i>1.4</i>	<i>0.3</i>
AIDS Cases	Cases	54	63	67	46	35	30	16	–
(BCCDC Reports)	<i>Rate per 100,000</i>	<i>5.1</i>	<i>5.8</i>	<i>6.1</i>	<i>4.1</i>	<i>3.1</i>	<i>2.6</i>	<i>1.4</i>	<i>–</i>

Indicator 13: HIV-Related Mortality

	2004	2005	2006	2007	2008	2009	2010	2011
Vancouver Coastal Health	55	88	73	49	36	34	18	20
Per 100 HIV+ Population	0.90	1.41	1.15	0.76	0.54	0.50	0.26	0.28
Per 100,000 Population	5.30	8.46	6.79	4.51	3.30	3.05	1.58	1.73