



BRITISH COLUMBIA  
CENTRE *for* EXCELLENCE  
*in* HIV/AIDS

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

SECOND QUARTER 2015



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



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## 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 HA's. 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](mailto:iday@cfenet.ubc.ca).

For Indicator 5 (page 22), recent data have allowed for more comprehensive death information. As a result, 2015 Q2 data for the Diagnosed and Linked to Care steps may be slightly lower than previously reported.

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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. Ana Prado 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. Jason Wong 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 antiretroviral therapy (ART) 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

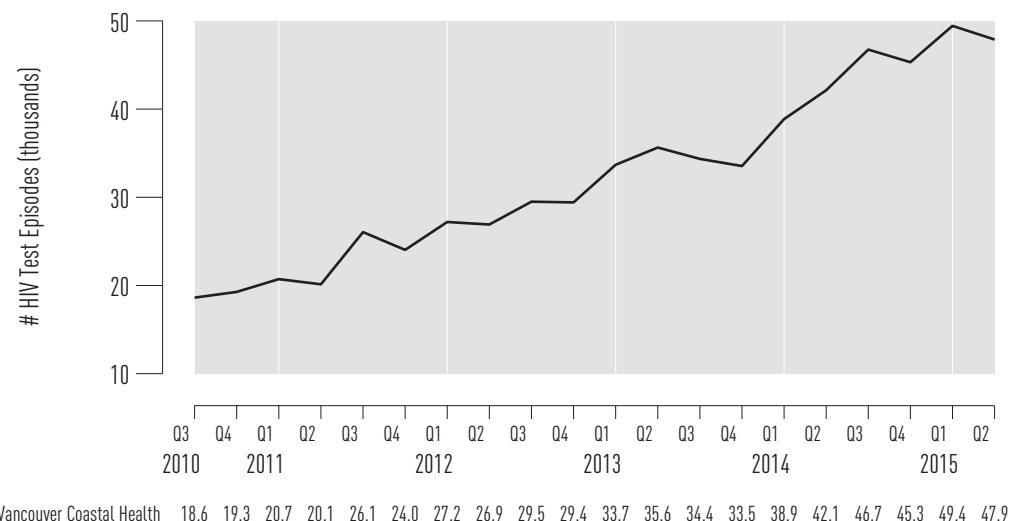


Figure 1.2 HIV Test Episodes by Gender and Prenatal Status for Vancouver Coastal Health <sup>1</sup>

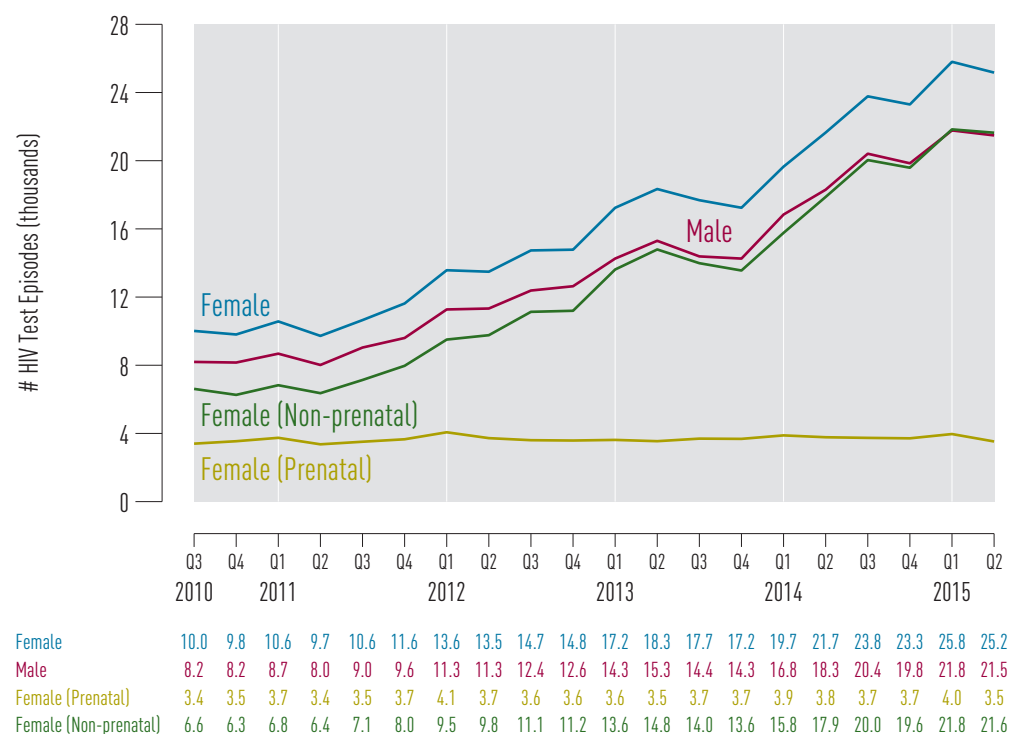


Figure 1.3 HIV Test Episodes by Age Category for Vancouver Coastal Health <sup>1,2</sup>

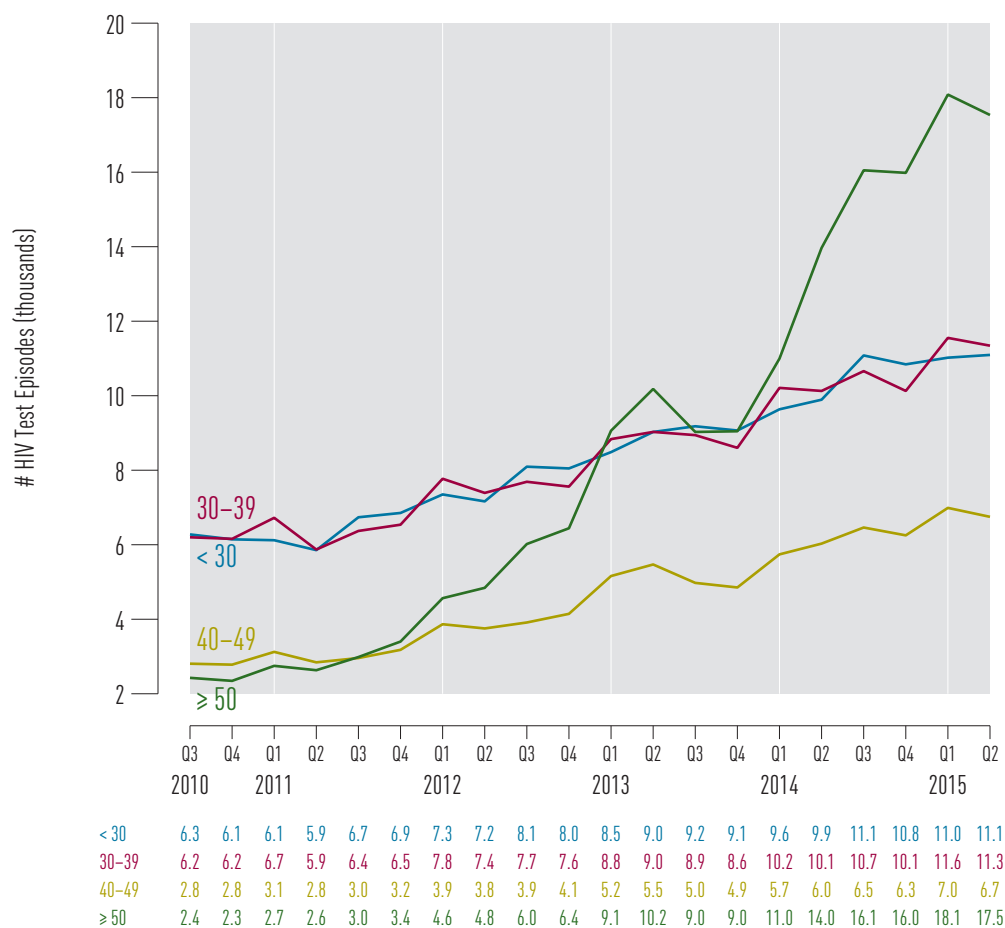
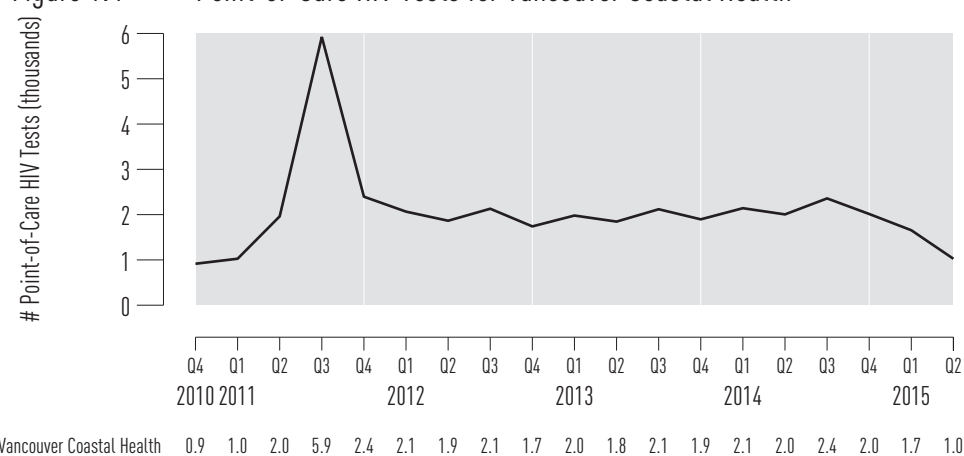


Figure 1.4 Point-of-Care HIV Tests for Vancouver Coastal Health



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

Limitations:

- i Repeat tests in individuals who test using various identifiers may not be identified and these individuals may be counted more than once.
- ii Poc testing data are available from the fourth quarter of 2010 forward.

2 Testing does not include point of care tests.

Figure 1.5 HIV Test Episodes for Vancouver Coastal Health by HSDA

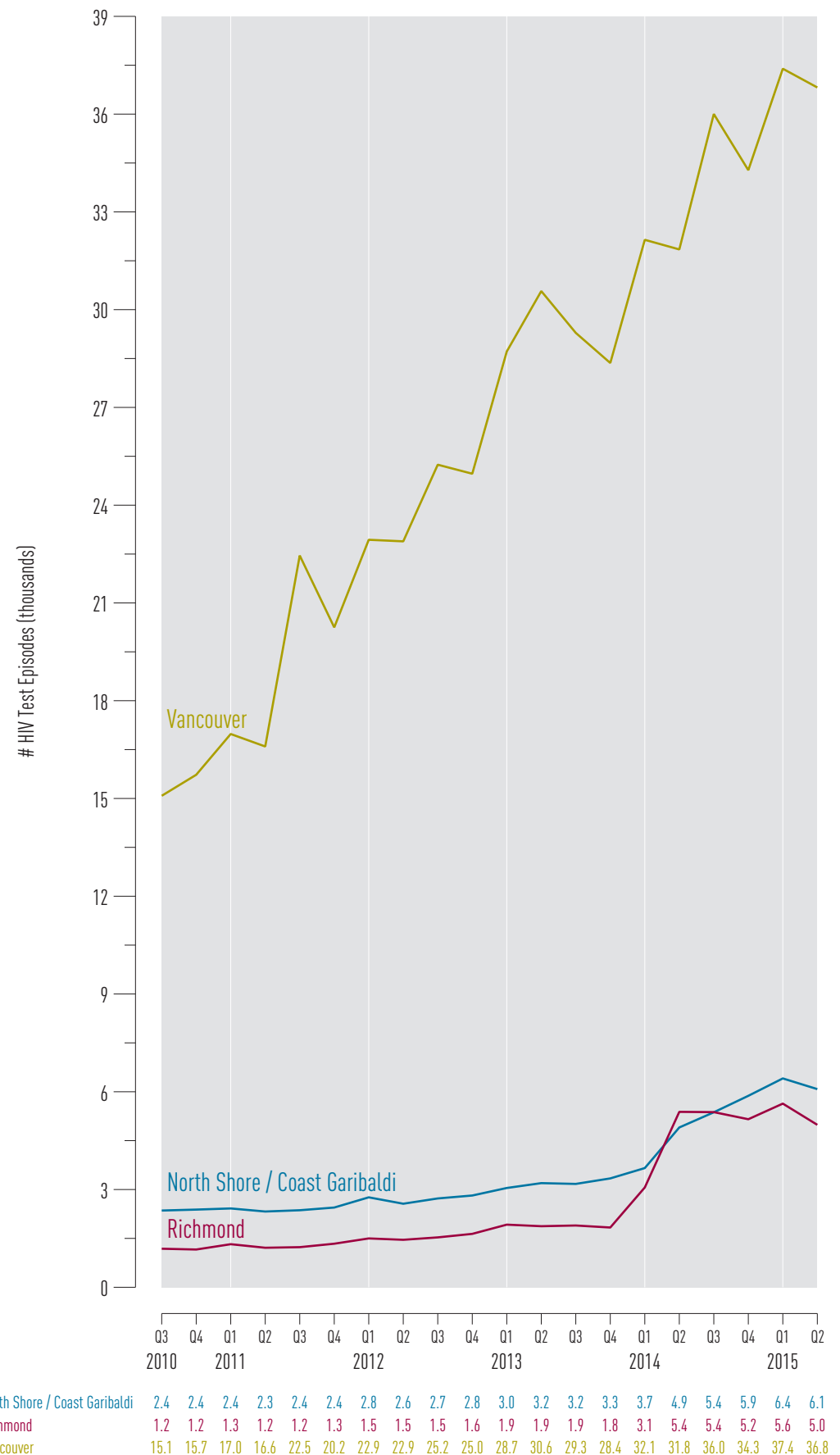


Figure 1.6 HIV Test Episodes for Non-prenatal Females in Vancouver Coastal Health by HSDA <sup>1</sup>

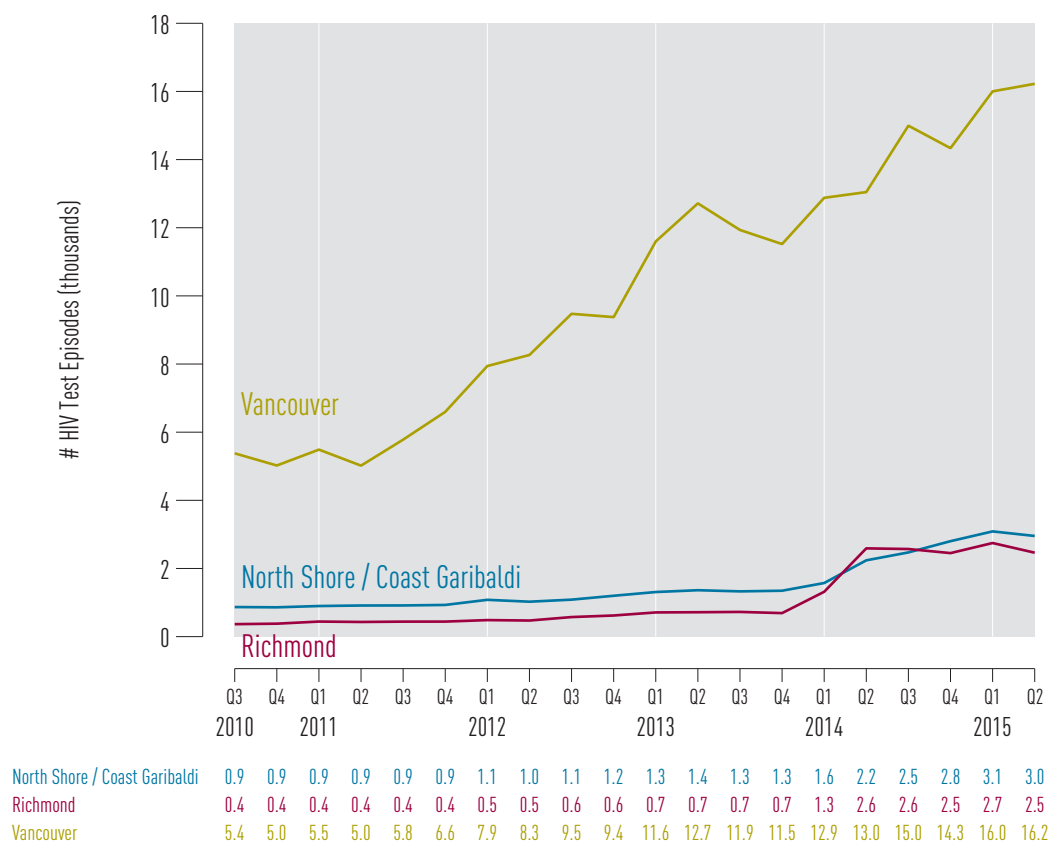
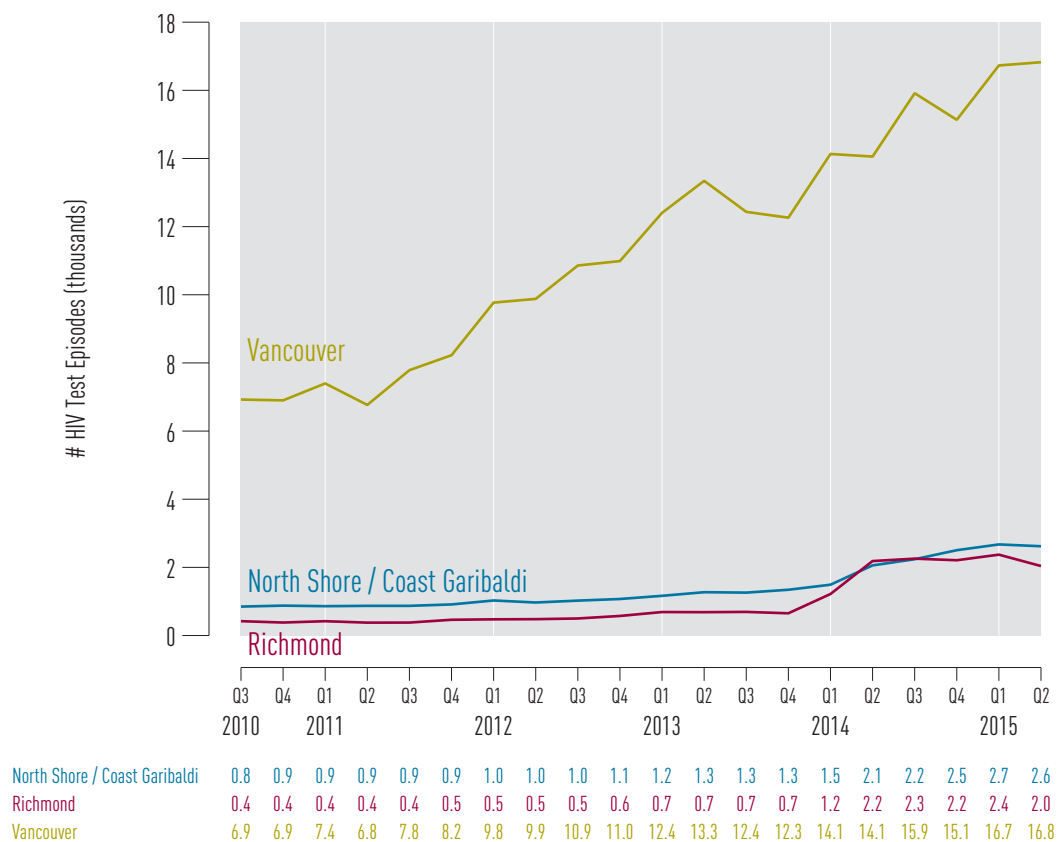


Figure 1.7 HIV Test Episodes for Males in Vancouver Coastal Health by HSDA <sup>1</sup>



## Indicator 2. HIV Testing Rates

Figure 2.1 Rate of HIV Testing for Vancouver Coastal Health and HSDAs <sup>2</sup>

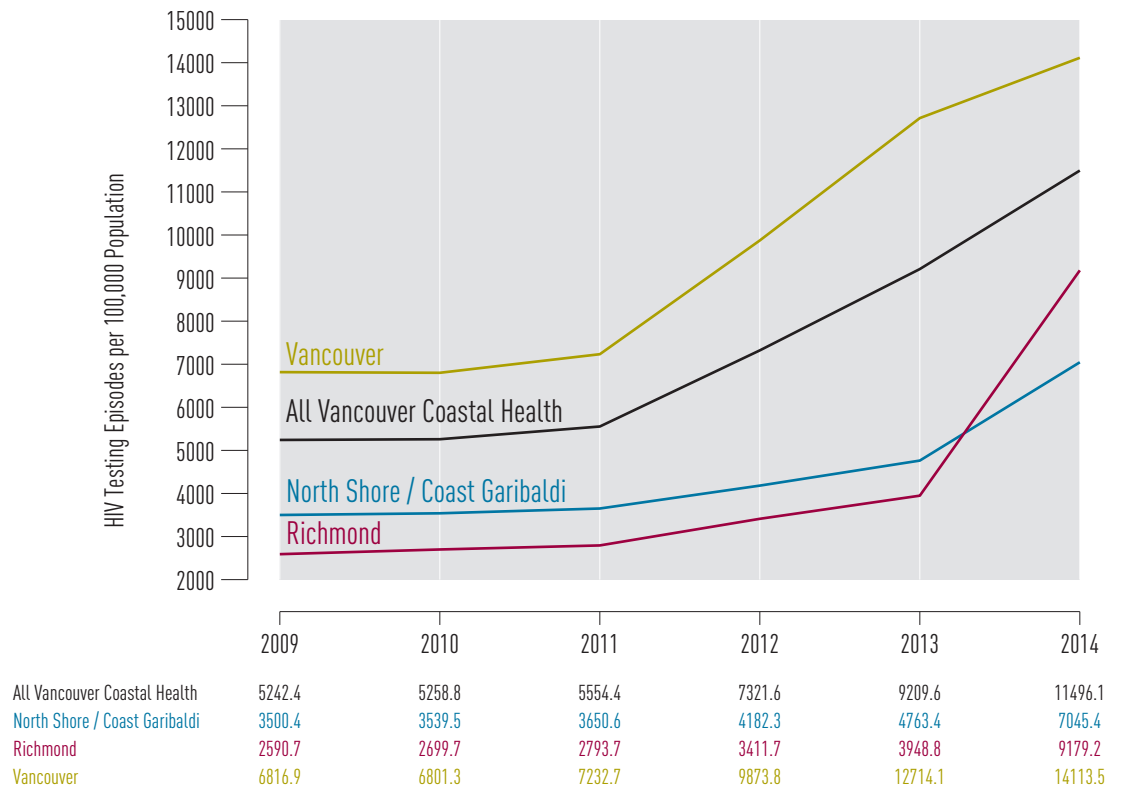


Figure 2.2 Rate of HIV Testing by Gender for Vancouver Coastal Health <sup>2</sup>

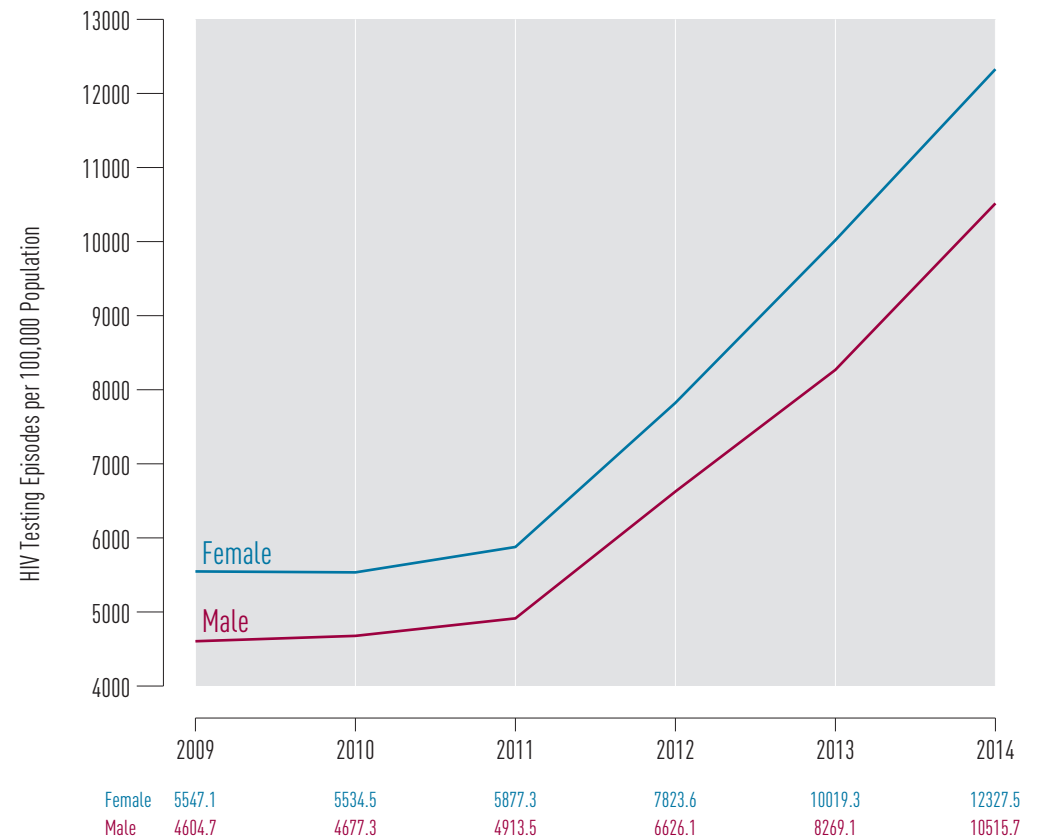
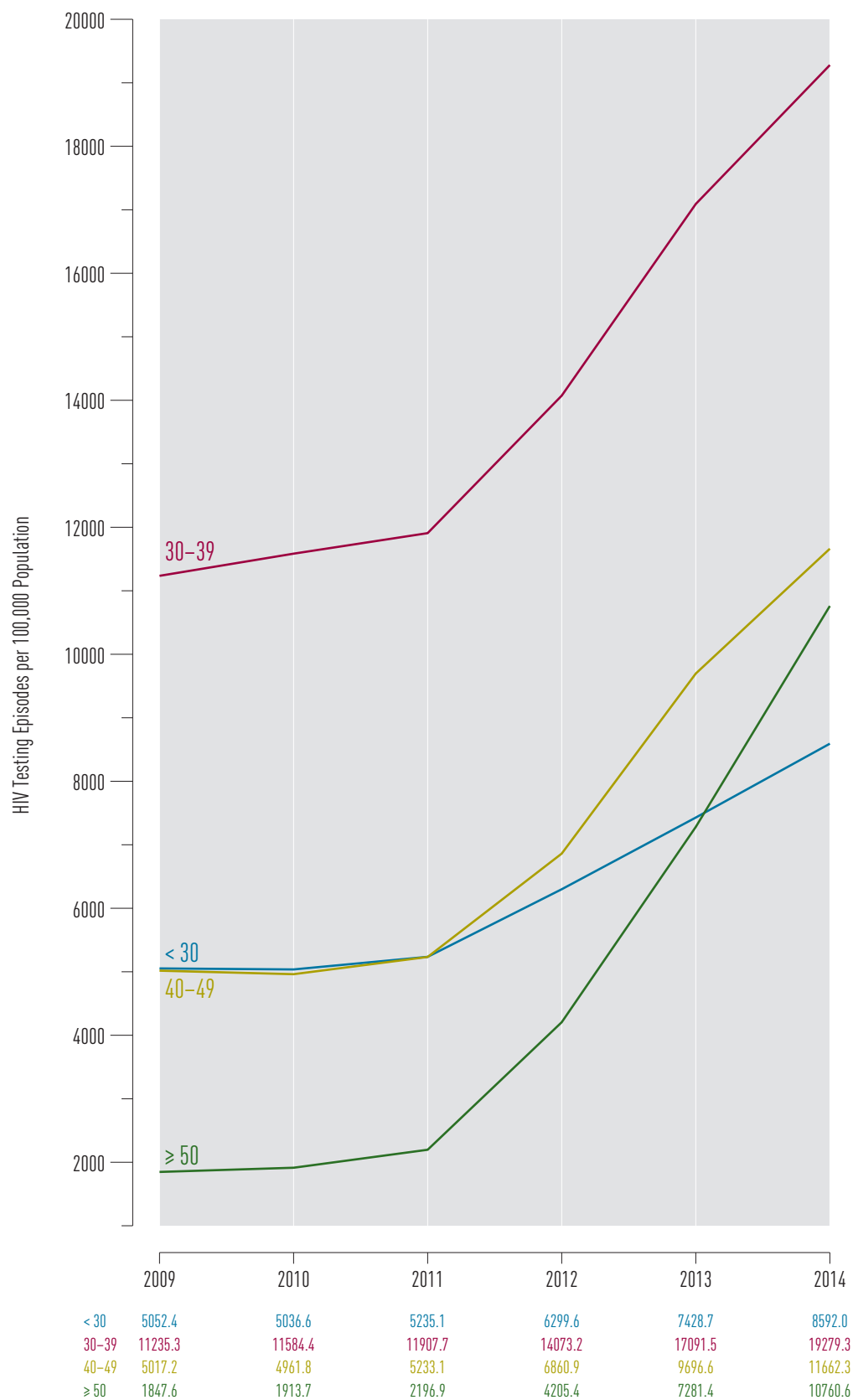


Figure 2.3 Rate of HIV Testing by Age Category for Vancouver Coastal Health <sup>2</sup>



<sup>2</sup> Testing does not include point of care tests.

# 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 <sup>3</sup>

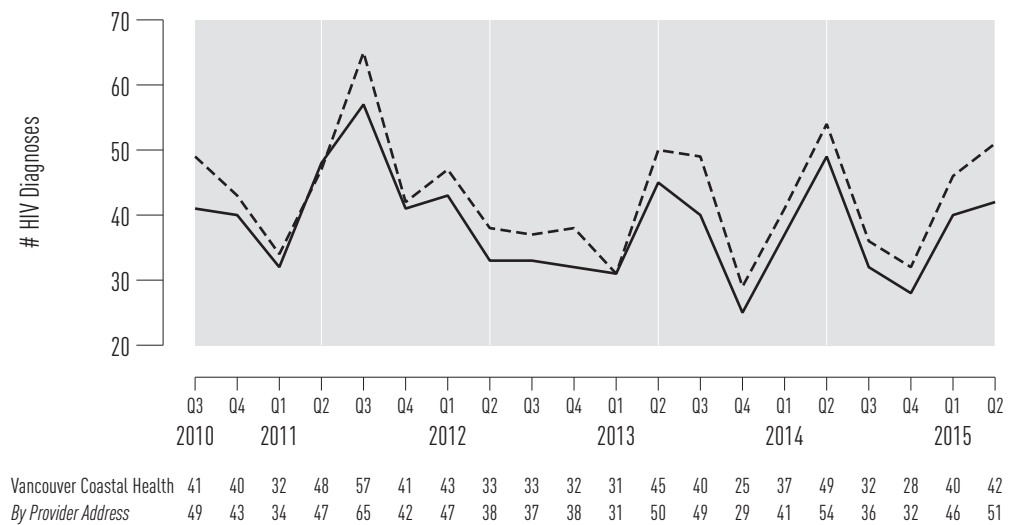
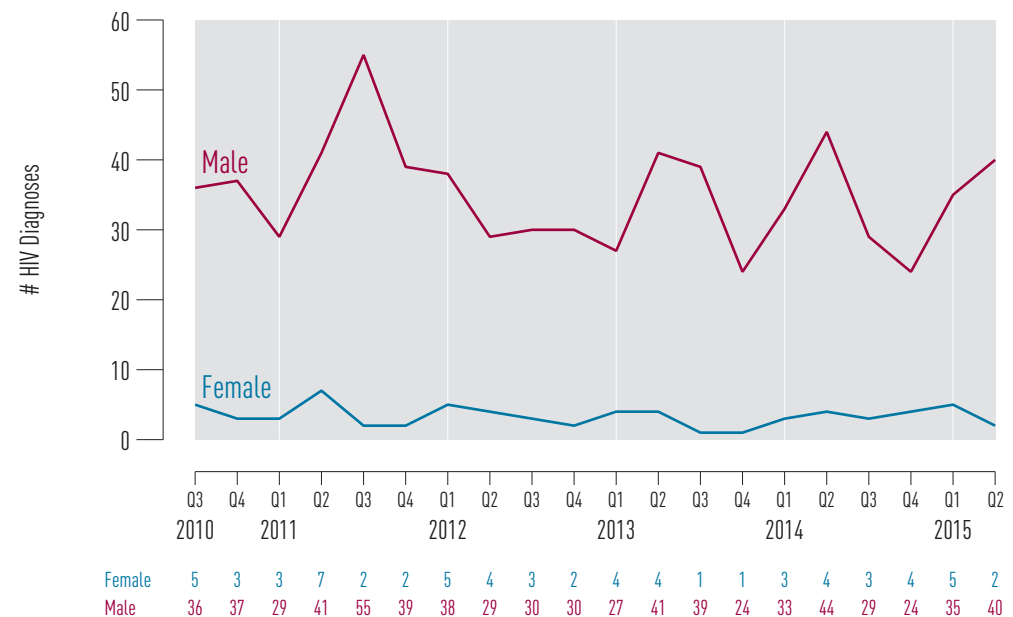


Figure 3.2 New HIV Diagnoses for Vancouver Coastal Health by Gender <sup>3</sup>



<sup>3</sup> Data Source: BCCDC. "By Provider Address" is graphed as dashed line in same colour.



Figure 3.3 New HIV Diagnoses for Vancouver Coastal Health by Age Category <sup>3</sup>

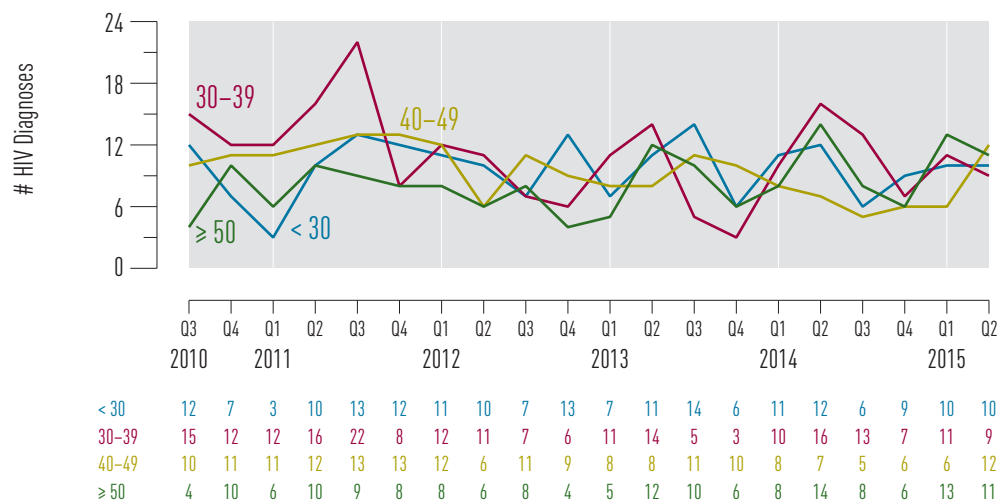
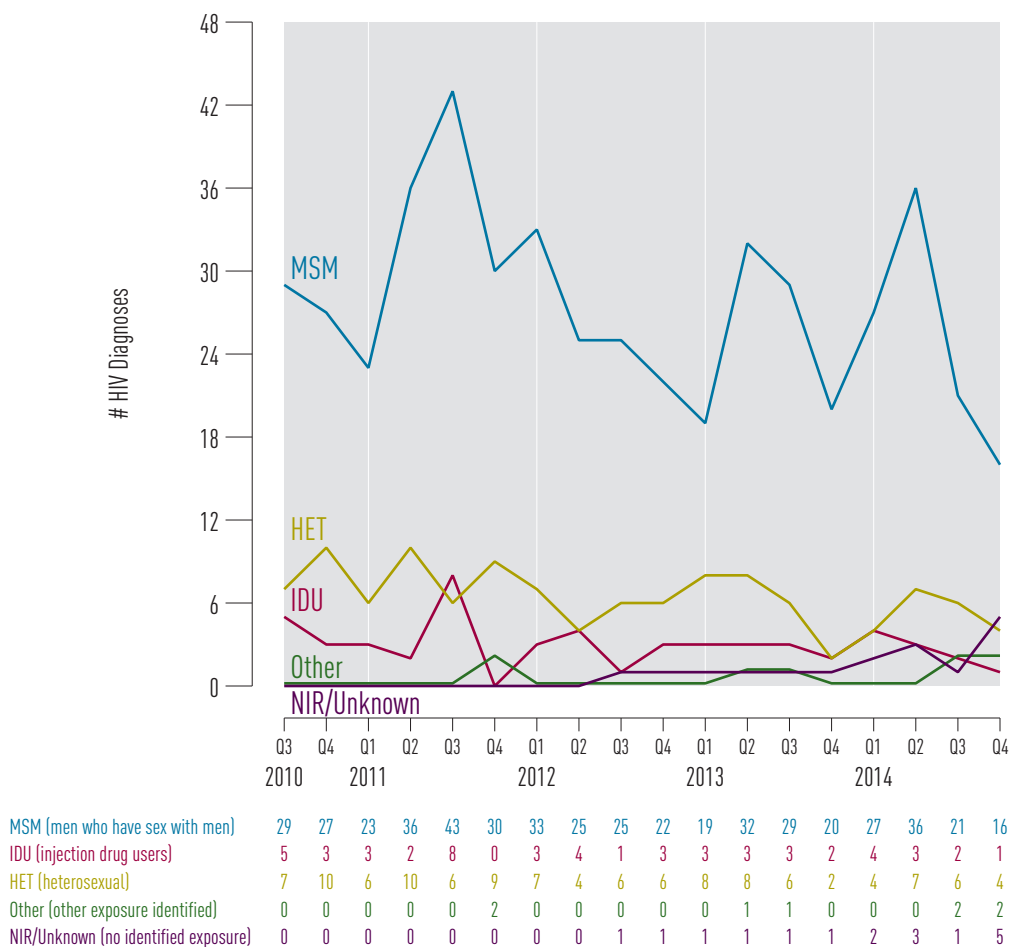


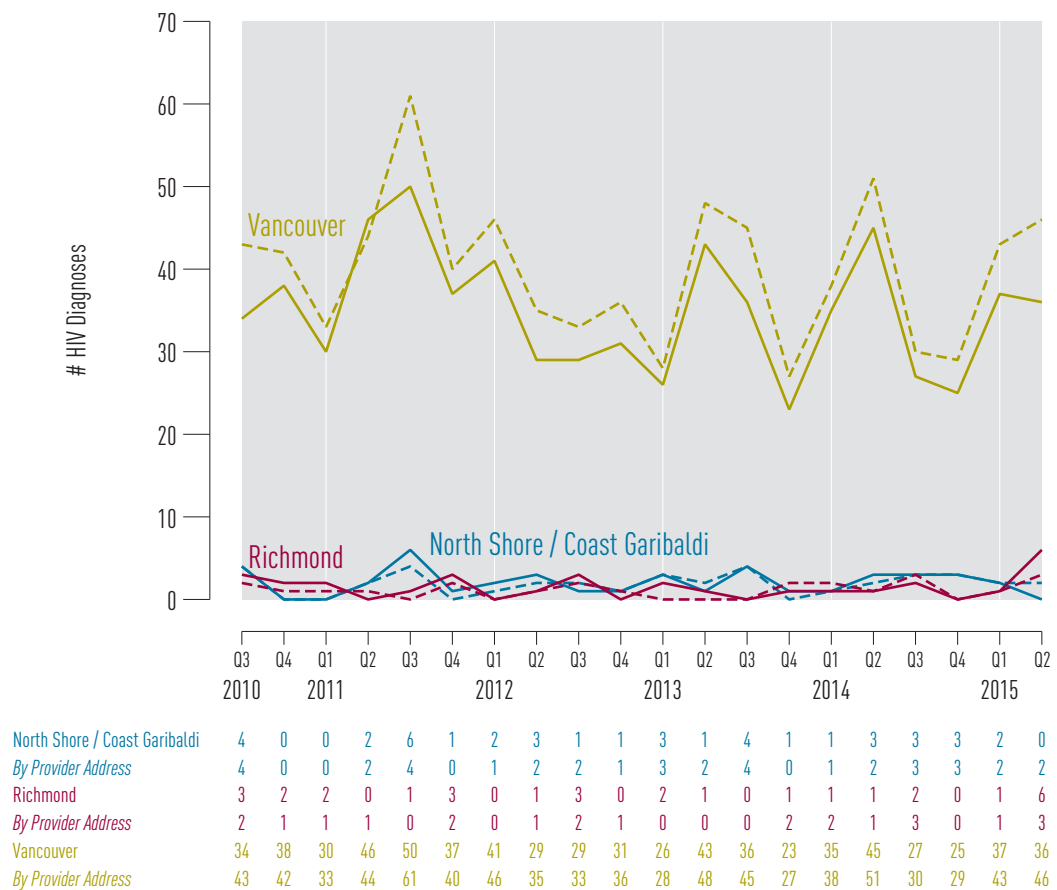
Figure 3.4 New HIV Diagnoses for Vancouver Coastal Health by Exposure Category <sup>3,4</sup>



<sup>3</sup> Data Source: BCCDC. "By Provider Address" is graphed as dashed line in same colour.

<sup>4</sup> 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 <sup>3</sup>



<sup>3</sup> Data Source: BCCDC. "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	and No AIDS case report
2a		CD4 350–499	
2b		CD4 200–349	
3		( CD4 <200	or AIDS case report )
Unknown		No available CD4	and No AIDS case report

Figure 4.1 Stage of HIV Infection at Diagnosis for Vancouver Coastal Health, 2010–2014 <sup>5</sup>

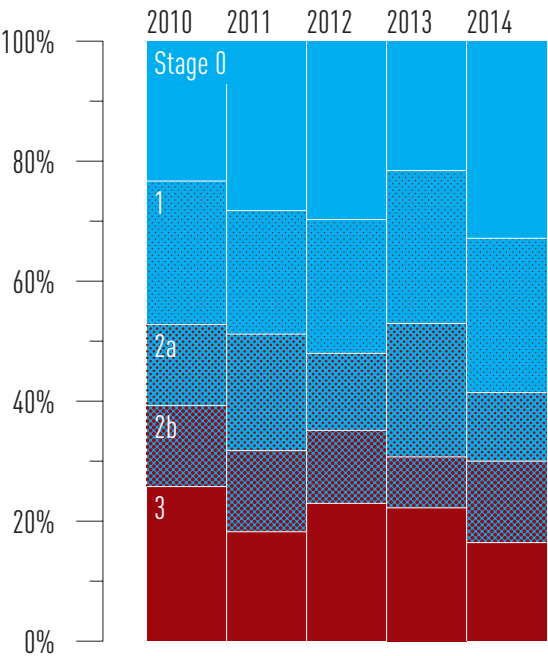
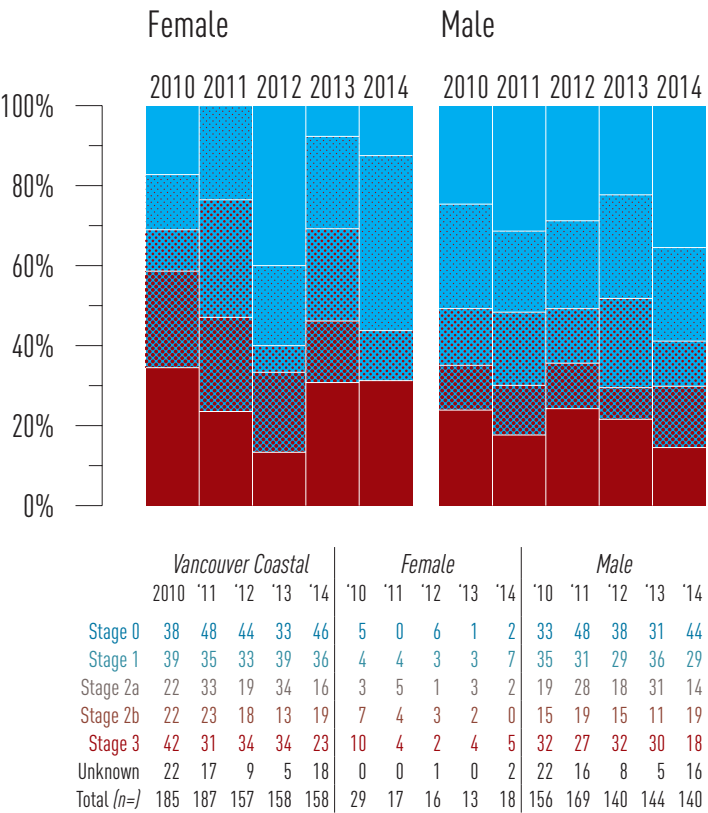


Figure 4.2 Stage of HIV Infection at Diagnosis by Gender for Vancouver Coastal Health, 2010–2014 <sup>5</sup>



5 Data Source: BCCDC

Figure 4.3 Stage of HIV Infection at Diagnosis by Age Category for Vancouver Coastal Health, 2010–2014 <sup>5</sup>

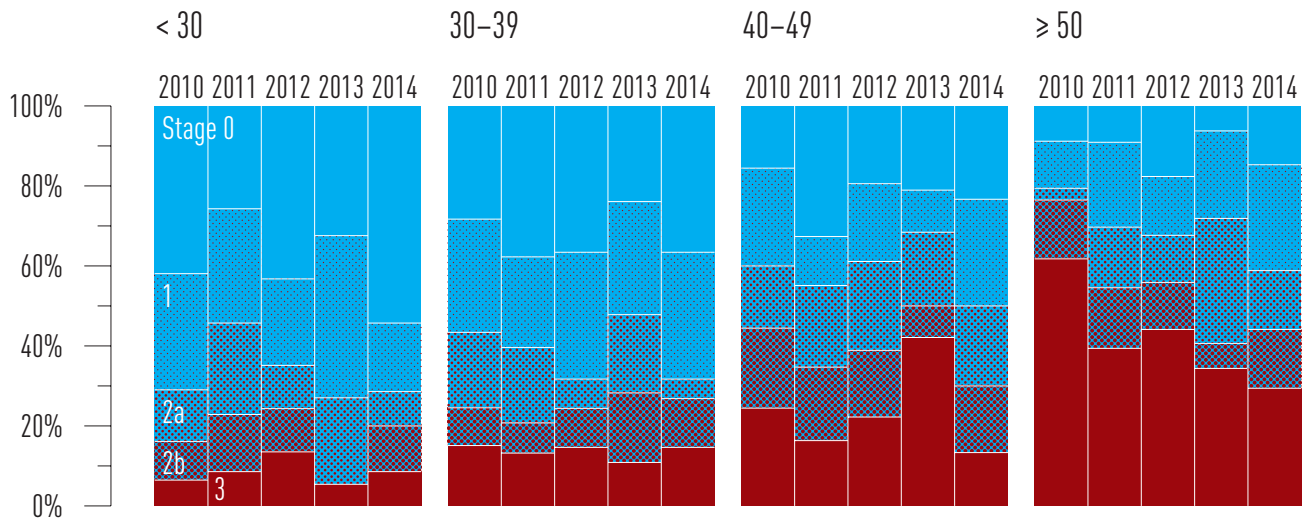
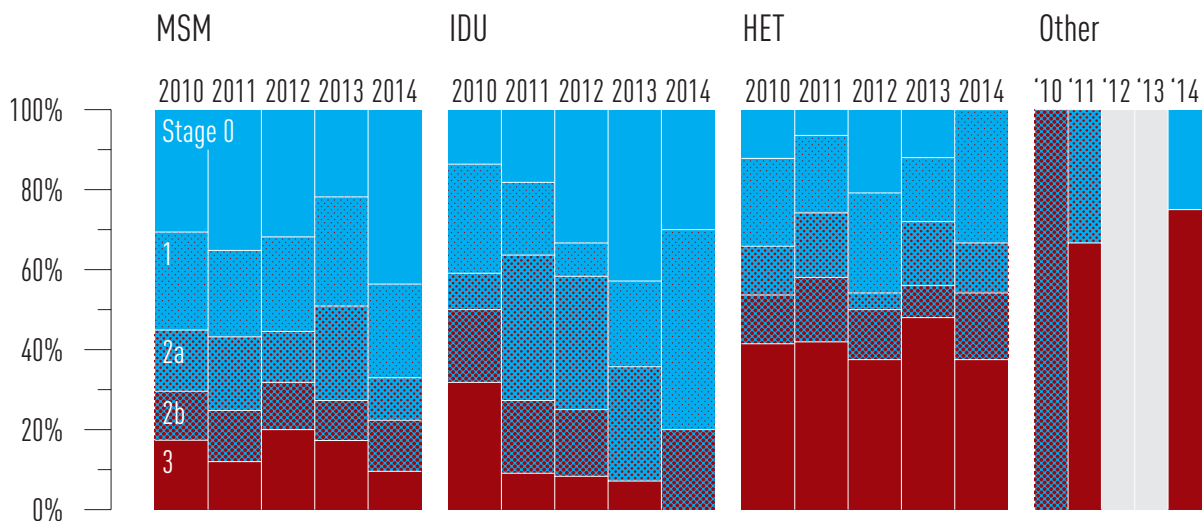


Figure 4.4 Stage of HIV Infection at Diagnosis by Exposure Category for Vancouver Coastal Health, 2010–2014 <sup>5,6</sup>



	< 30 years					30–39 years					40–49 years					≥ 50 years					MSM					IDU					Heterosexual					Other					NIR/Unknown				
	2010	11	12	13	14	10	11	12	13	14	10	11	12	13	14	10	11	12	13	14	10	11	12	13	14	10	11	12	13	14	10	11	12	13	14	10	11	12	13	14					
Stage 0	13	9	16	12	19	15	20	15	11	15	7	16	7	8	7	3	3	6	2	5	30	44	35	24	41	3	2	4	6	3	5	2	5	3	0	0	0	0	1	0	0	0	0	1	
Stage 1	9	10	8	15	6	15	12	13	13	13	11	6	7	4	8	4	7	5	7	9	24	27	26	30	22	6	2	1	3	5	9	6	6	4	8	0	0	0	0	0	0	0	0	2	1
Stage 2a	4	8	4	8	3	10	10	3	9	2	7	10	8	7	6	1	5	4	10	5	15	23	14	26	10	2	4	4	4	0	5	5	1	4	3	0	1	0	0	0	0	0	0	0	3
Stage 2b	3	5	4	0	4	5	4	4	8	5	9	9	6	3	5	5	5	4	2	5	12	16	13	11	12	4	2	2	0	2	5	5	3	2	4	1	0	0	0	0	0	0	0	0	1
Stage 3	2	3	5	2	3	8	7	6	5	6	11	8	8	16	4	21	13	15	11	10	17	15	22	19	9	7	1	1	1	0	17	13	9	12	9	0	2	0	0	3	1	0	2	2	2
Unknown	8	4	5	1	3	10	7	2	1	7	3	2	0	0	3	1	4	2	3	5	17	13	7	3	13	1	2	0	0	0	3	1	1	0	1	0	1	0	2	0	1	0	1	0	4
Total (n=)	39	39	42	38	38	63	60	43	47	48	48	51	36	38	33	35	37	36	35	39	115	138	117	113	107	23	13	12	14	10	44	32	25	25	25	1	4	0	2	4	2	0	3	4	12

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. Linked to HIV care, 3. Retained in HIV care, 4. On ART, 5. Adherent to ART and 6. 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 (i.e. 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 period 2014 Q3–2015 Q2 in BC overall and stratified by sex and age for each Health Authority.

Recent data have allowed for more comprehensive death information. As a result, data for the Diagnosed and Linked to Care steps may be slightly lower than previously reported.

Figure 5.1      Estimated Cascade of Care for Vancouver Coastal Health, Year Ending 2015 Q2 <sup>7</sup>  
n=4619

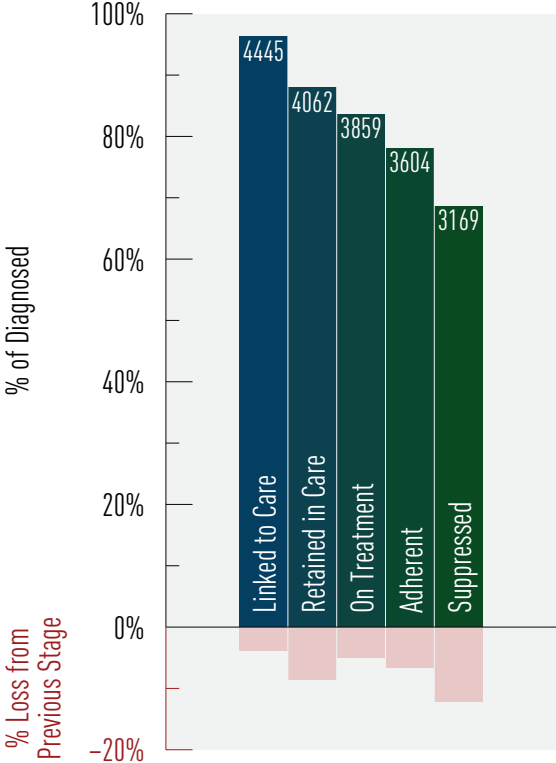
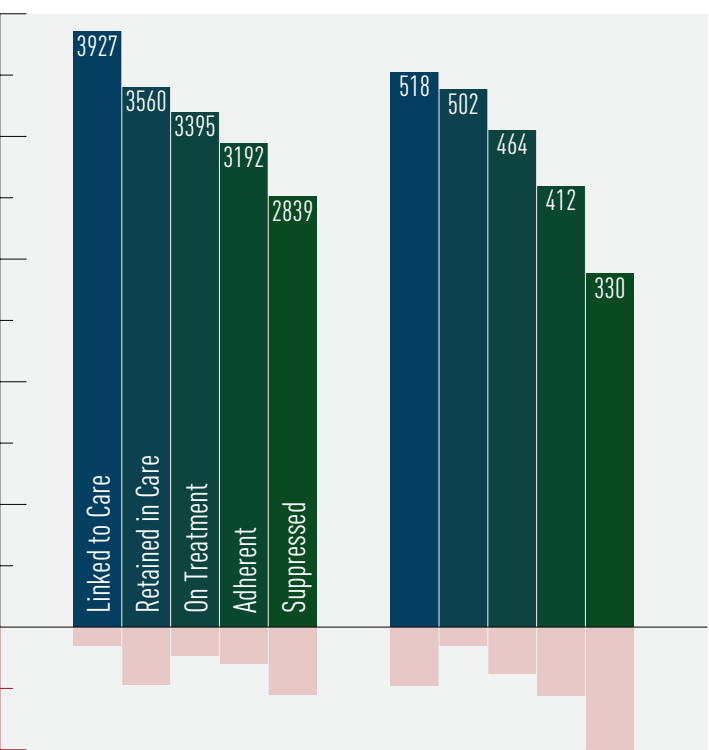
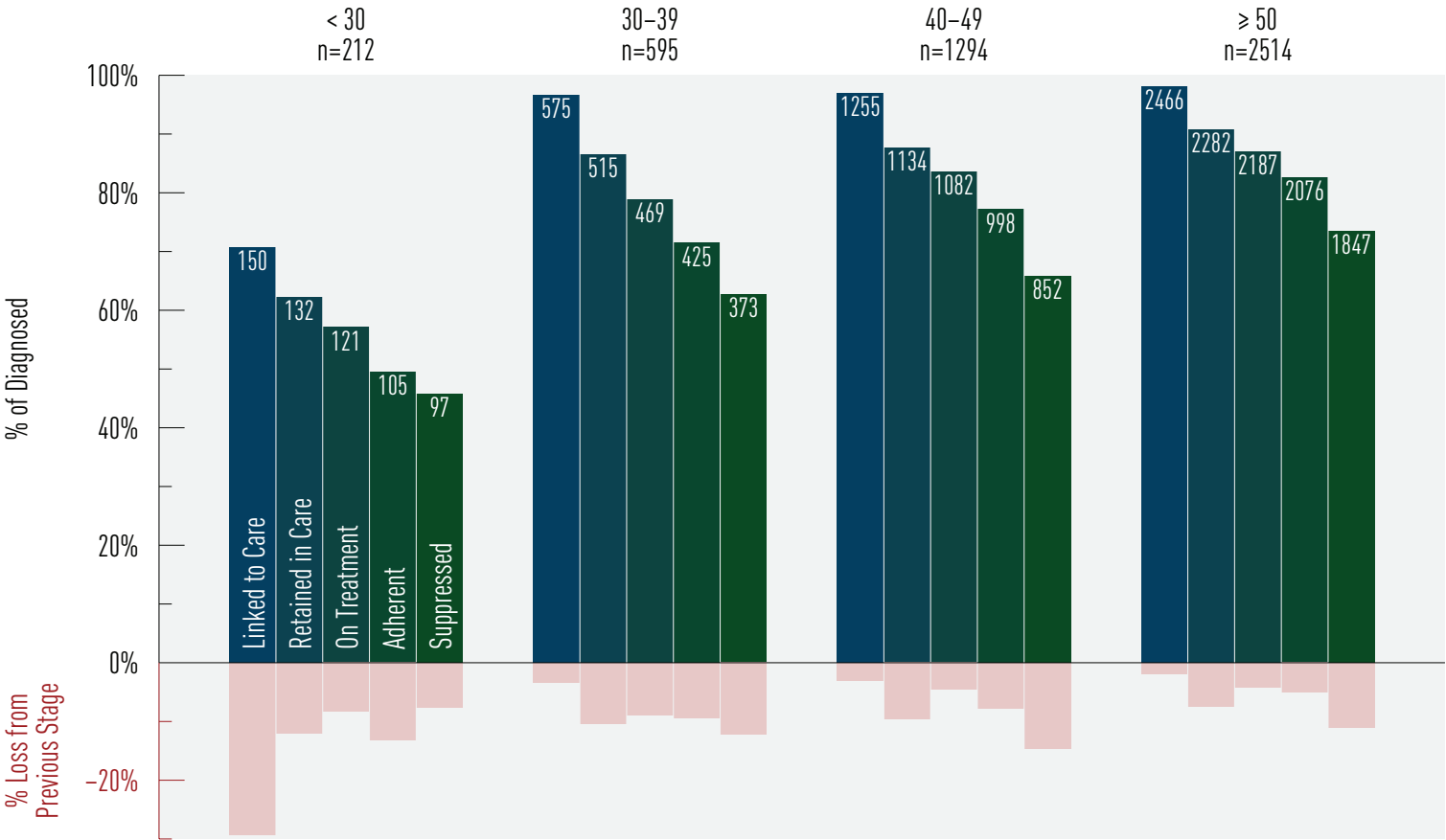


Figure 5.2      Estimated Cascade of Care for Vancouver Coastal Health by Gender, Year Ending 2015 Q2 <sup>7</sup>  
Men n=4046      Women n=573



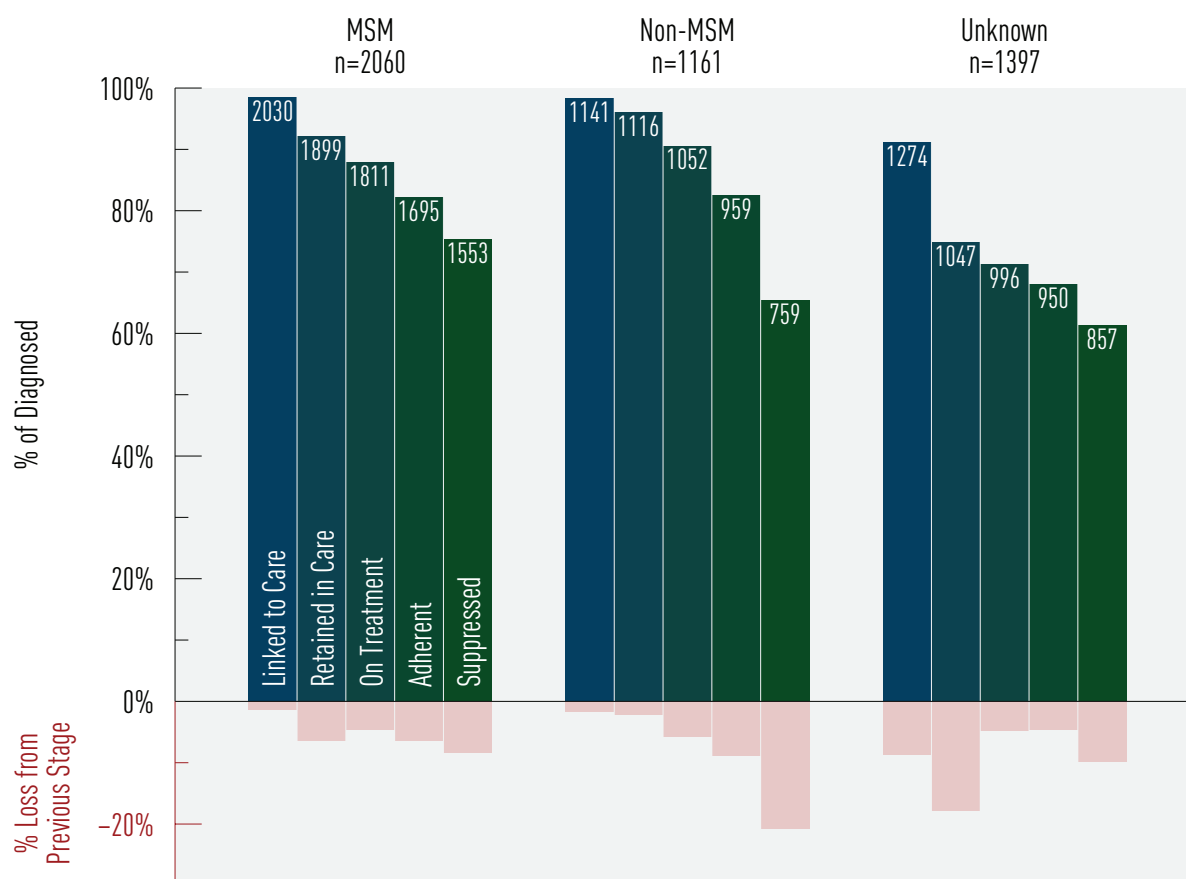
<sup>7</sup> Data is for the period 2014 Q3–2015 Q2.  
 Data Sources:  
 i British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).  
 ii Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).  
 Limitations: 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, Year Ending 2015 Q2 <sup>8</sup>



<sup>8</sup> Data is for the period 2014 Q3–2015 Q2.  
Data Sources:  
i British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).  
ii 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, Year Ending 2015 Q2 <sup>9</sup>



<sup>9</sup> Data is for the period 2014 Q3–2015 Q2.

Data Sources:

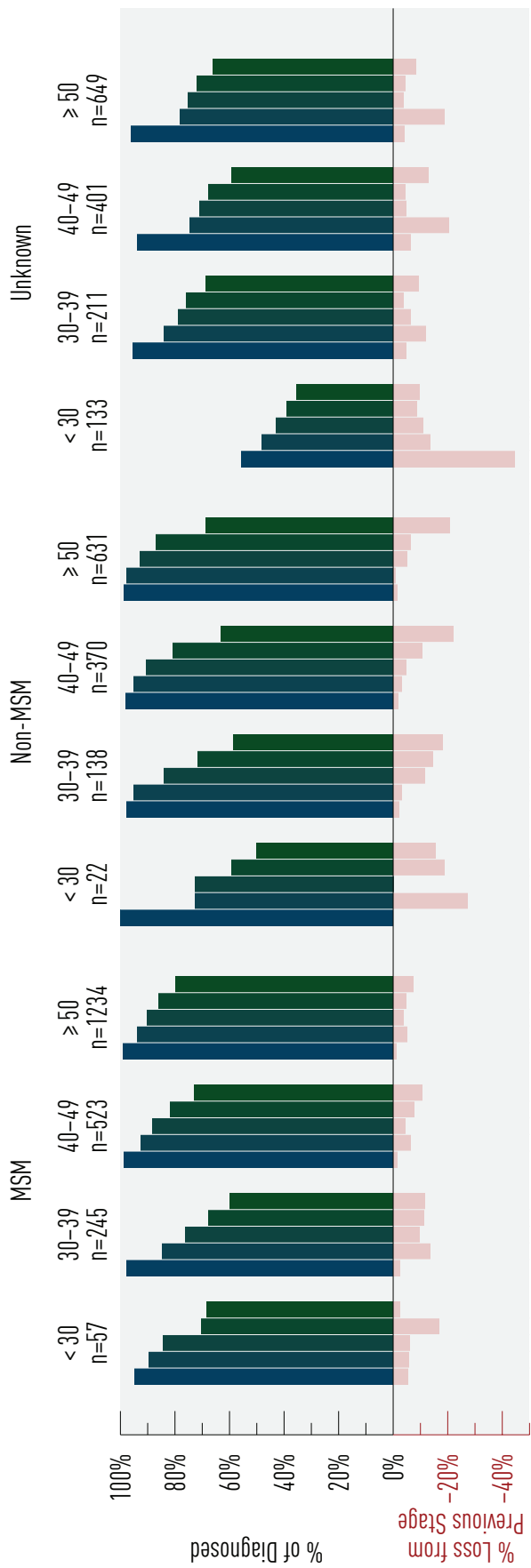
- i British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
- ii Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).

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.

Recent updates to the DTP database have allowed for more comprehensive information on HIV risk group category. As a result, 2014 Q4 data may differ significantly from preceding reports in terms of total numbers ascribed to each risk group.



Figure 5.5 Estimated Cascade of Care for Vancouver Coastal Health by Age Category and MSM Status, Year Ending 2015 Q2 <sup>9</sup>



<sup>9</sup> Data is for the period 2014 Q3–2015 Q2.

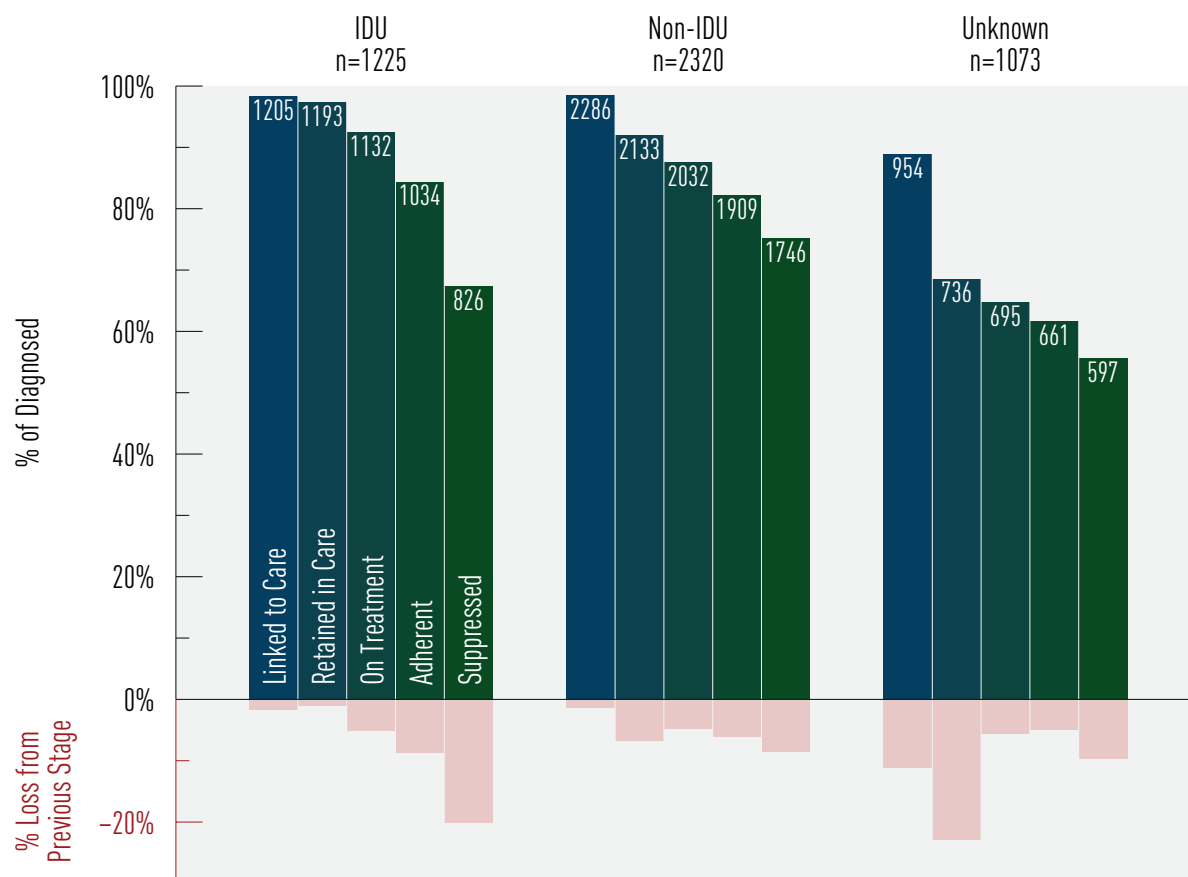
Data Sources:

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

Recent updates to the DTP database have allowed for more comprehensive information on HIV risk group category. As a result, 2014 Q4 data may differ significantly from preceding reports in terms of total numbers ascribed to each risk group.

Figure 5.6 Estimated Cascade of Care for Vancouver Coastal Health by History of IDU, Year Ending 2015 Q2 <sup>9</sup>



<sup>9</sup> Data is for the period 2014 Q3–2015 Q2.

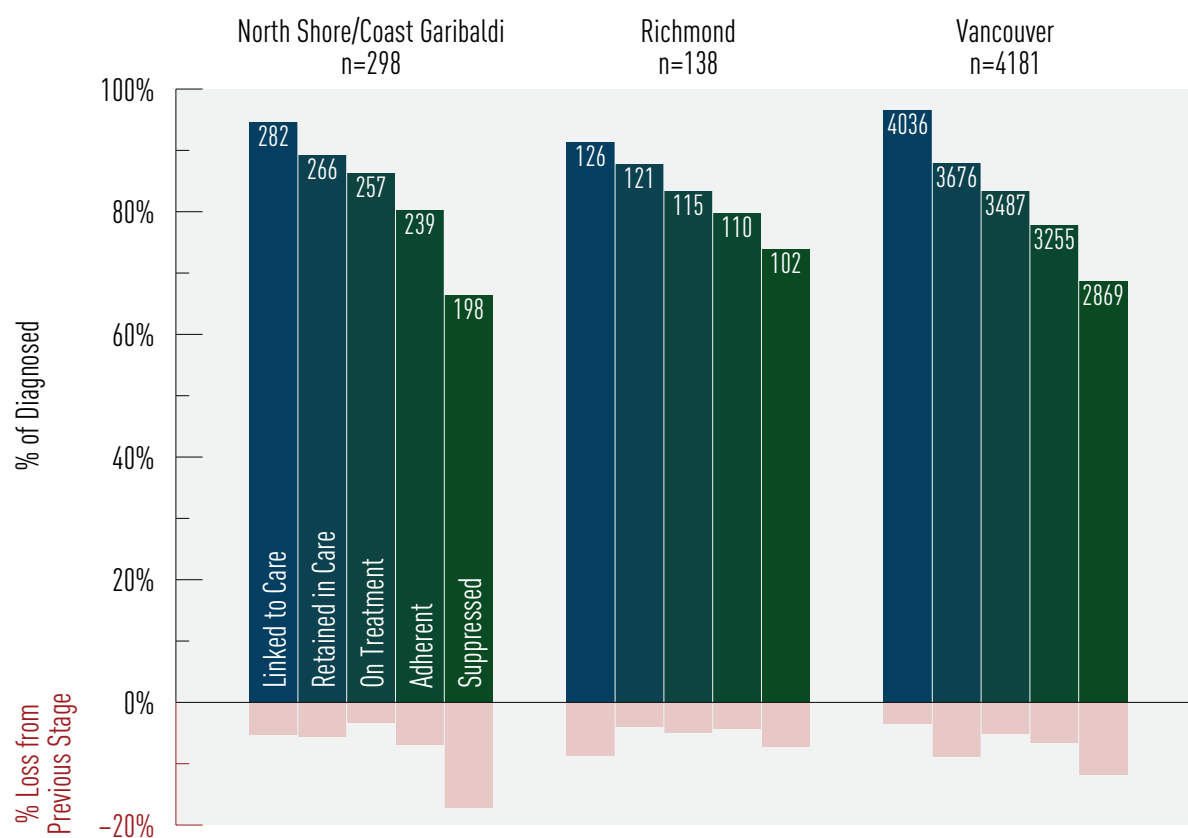
Data Sources:

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

Recent updates to the DTP database have allowed for more comprehensive information on HIV risk group category. As a result, 2014 Q4 data may differ significantly from preceding reports in terms of total numbers ascribed to each risk group.

Figure 5.7 Estimated Cascade of Care for Vancouver Coastal Health by HSDA, Year Ending 2015 Q2 <sup>9</sup>



<sup>9</sup> Data is for the period 2014 Q3–2015 Q2.

Data Sources:

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

Recent updates to the DTP database have allowed for more comprehensive information on HIV risk group category. As a result, 2014 Q4 data may differ significantly from preceding reports in terms of total numbers ascribed to each risk group.

## 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/ $\mu$ 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, 2013 Q3–2015 Q2 <sup>10</sup>

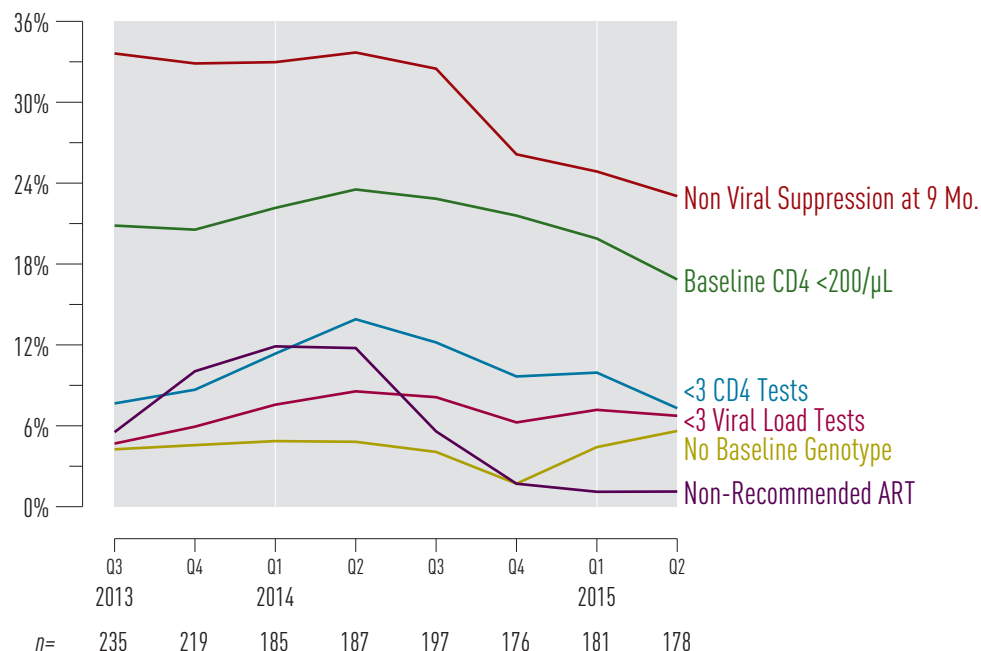
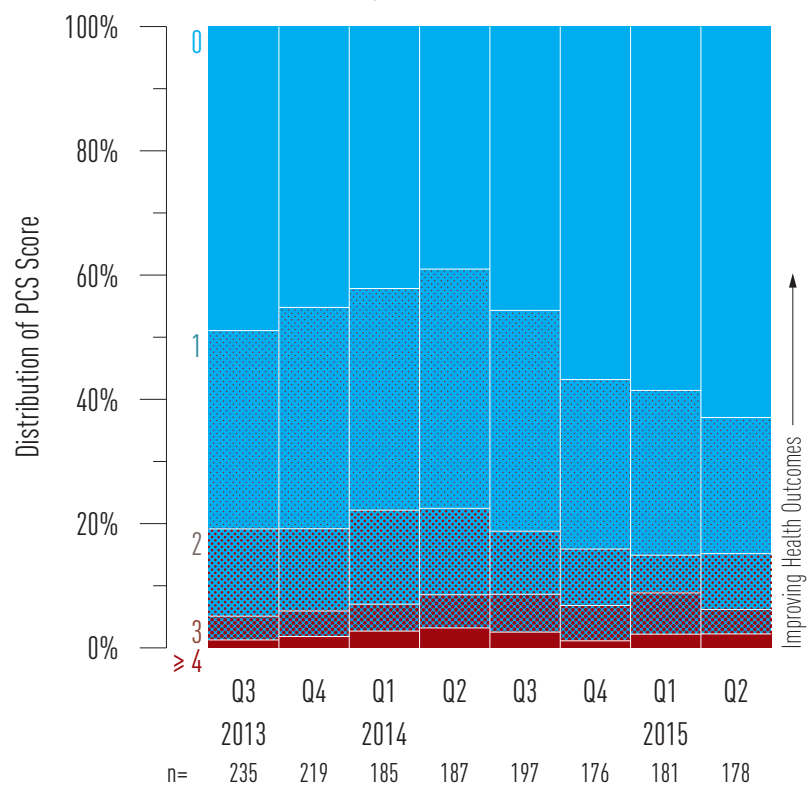


Figure 6.2 Historical Trends for PCS Score for Vancouver Coastal Health, 2013 Q3–2015 Q2 <sup>10,11</sup>



<sup>10</sup> Data Source: British Columbia Centre for Excellence Drug Treatment Program (DTP) Database. Limitations: CD4 cell count capture is approximately 80%.

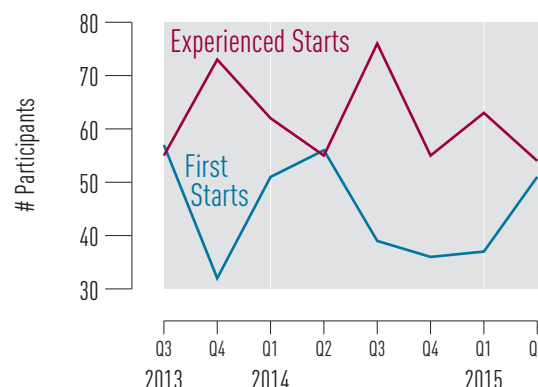
<sup>11</sup> Each quarter's data is calculated as the sum of the 4 quarters leading up to it. e.g. 2013 Q1 is calculated from 2012 Q2 – 2013 Q1. NB: A score of 0 is the best score and a score of 4 or more is the worst score.

# 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.

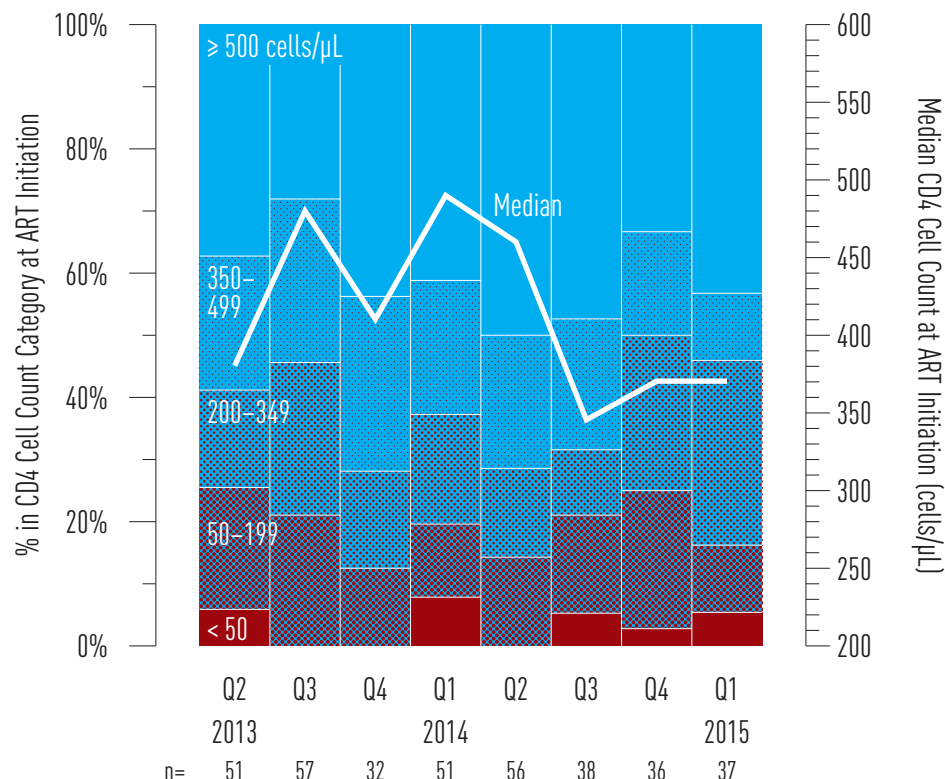
## Indicator 7. New Antiretroviral Therapy Starts in Vancouver Coastal Health

Figure 7 BC-CfE Drug Treatment Program Enrollment: New ART Participants in Vancouver Coastal Health, 2013 Q3–2015 Q2 <sup>12</sup>



## 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, 2013 Q3–2015 Q2 <sup>13</sup>



<sup>12</sup> Data Source: Drug Treatment Program Database  
Limitation: DTP participants are designated to an HA based on most current residence provided by the participant.

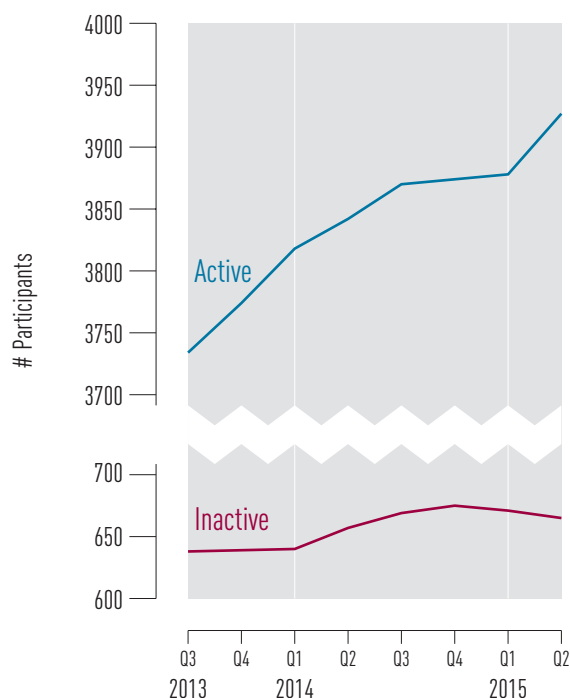
<sup>13</sup> Data Source: Drug Treatment Program Database  
Limitations: CD4 cell count data is approximately 80% complete.

## Indicator 9. Active and Inactive DTP Participants

Table 3. Distribution of People on ART for Vancouver Coastal Health, 2015 Q2 <sup>14</sup>

Age	< 30	143
	30–39	524
	40–49	1129
	≥ 50	2131
Gender	Male	3459
	Female	468
Exposure	MSM	1853
	IDU	1137
Total		3927

Figure 9 Active and Inactive DTP Participants for Vancouver Coastal Health, 2013 Q3–2015 Q2 <sup>15</sup>



<sup>14</sup> Data Source: Drug Treatment Program Database  
Limitation: DTP participants are designated to an HA based on most current residence provided by the participant.

Recent updates to the DTP database provides for improved classification allowing some individuals previously classified as 'unknown' to be reclassified into specific risk groups. This update is in effect from 2014Q4 and may result in noticeable changes of numbers in each risk group category compared to previous reports.

### 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

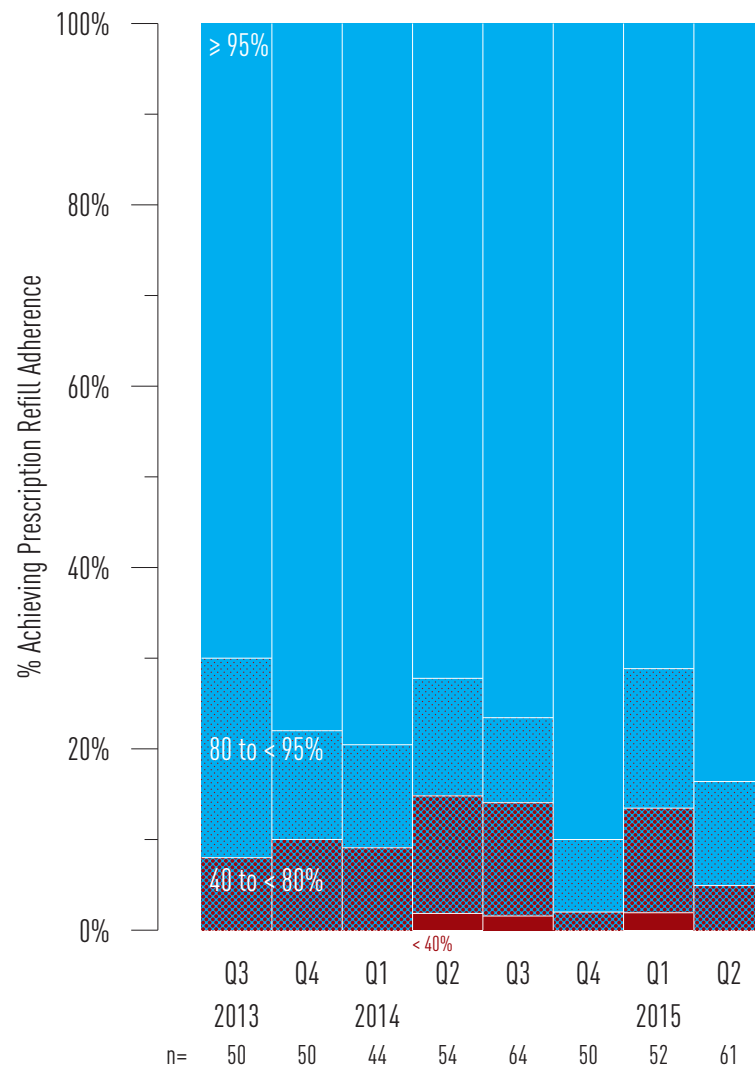
<sup>15</sup> Active DTP participants: An individual who has had medication prescribed at least once in the preceding quarter.  
Inactive DTP participants: Persons no longer prescribed drugs through the HIV/AIDS Drug Treatment Program in the last quarter.

# 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, 2013 Q3–2015 Q2 <sup>16</sup>



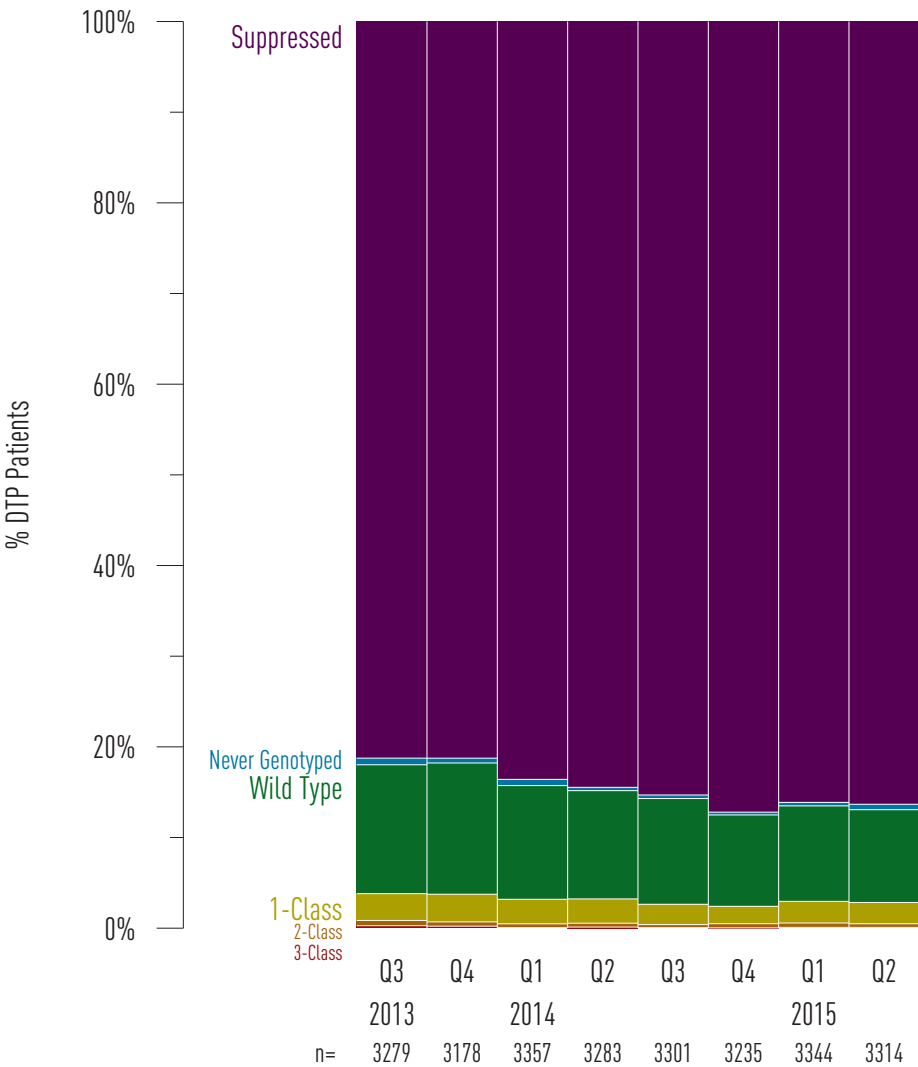
<sup>16</sup> Data Source: Drug Treatment Program Database  
Limitation: Prescription refill adherence is used as a proxy for patient adherence.



# 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.

Figure 11 Cumulative Resistance Testing Results by Resistance Category for Vancouver Coastal Health, 2013 Q3–2015 Q2 <sup>17</sup>



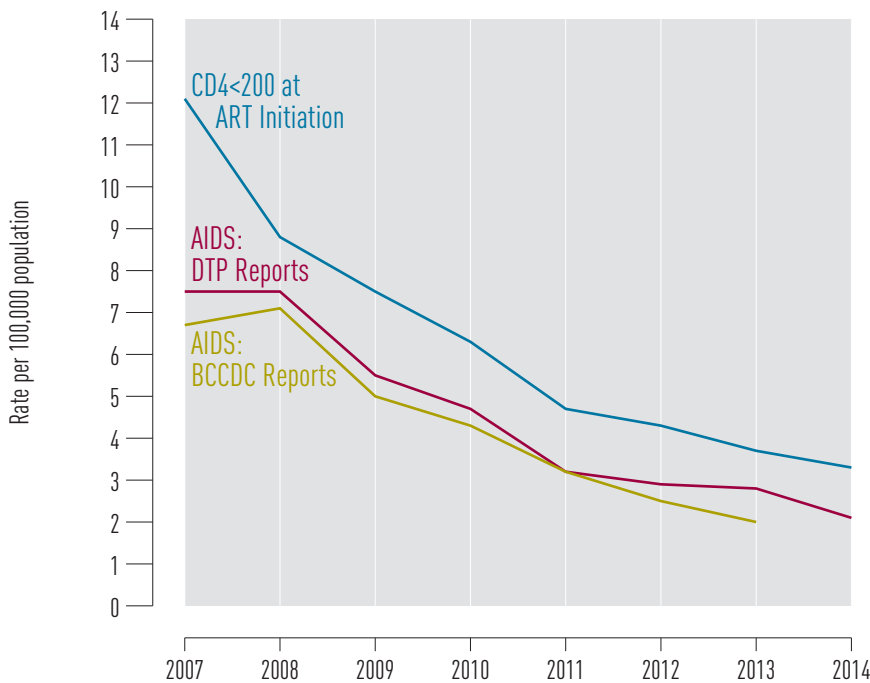
<sup>17</sup> Data Source: Drug Treatment Program Database

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 and physicians can voluntarily report AIDS cases to the BCCDC or DTP. As such, we have plotted both **BCCDC reports** and **DTP reported AIDS cases**. We also show the proportion of persons **initiating ART with a CD4<200 cells/μL**.

Figure 12 AIDS Case Rate and Reports for Vancouver Coastal Health <sup>18</sup>



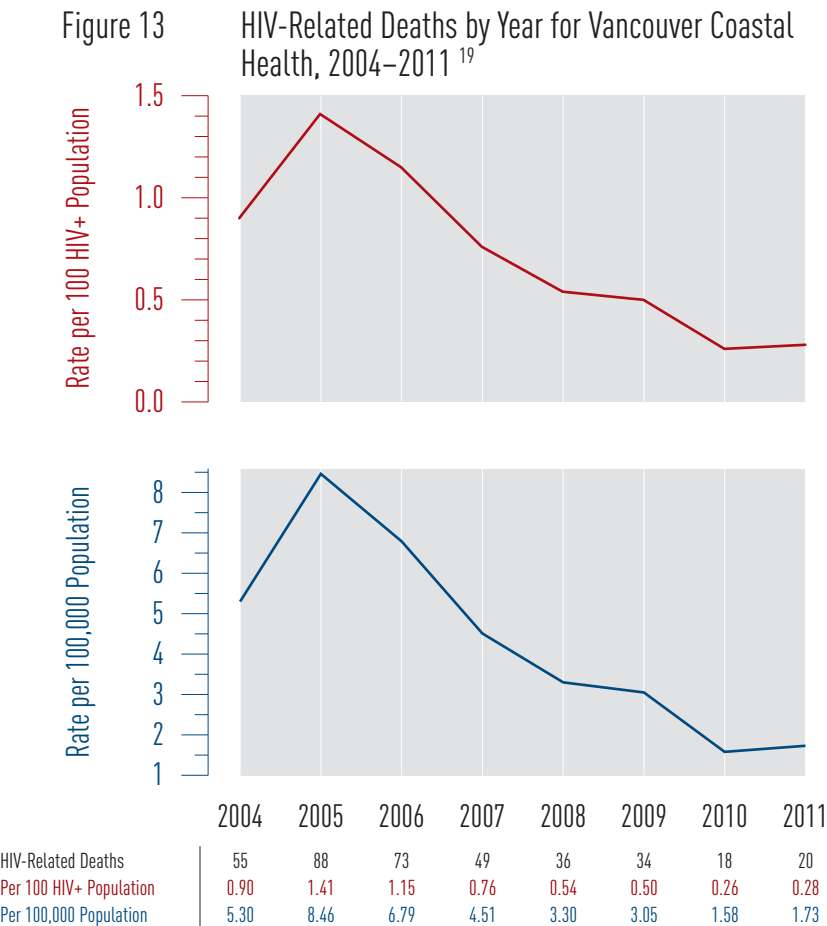
CD4<200 at ART initiation	CASES	130	95	82	69	52	48	42	38
	PER 100K	12.1	8.8	7.5	6.3	4.7	4.3	3.7	3.3
AIDS: DTP Reports	CASES	81	81	60	52	35	33	32	24
	PER 100K	7.5	7.5	5.5	4.7	3.2	2.9	2.8	2.1
AIDS: BCCDC Reports	CASES	72	76	54	47	36	28	23	-
	PER 100K	6.7	7.1	5.0	4.3	3.2	2.5	2.0	-

<sup>18</sup> Data Source: DTP AIDS cases are obtained from the Drug Treatment Program Database; BCCDC AIDS cases are obtained from the BC-CDC; CD4<200 at ART initiation data came from the DTP database.

Limitation: AIDS case reporting was investigated using 3 definitions: First, using AIDS cases reported in AIDS case report forms from the DTP; Second, using AIDS cases reported via the BCCDC and third, 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. The BCCDC uses DTP AIDS case reports as well as physician AIDS case reports made directly to the BCCDC. 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.



<sup>19</sup> 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)		2010		2011		2012				2013				2014				2015			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Vancouver Coastal Health		18.6	19.3	20.7	20.1	26.1	24.0	27.2	26.9	29.5	29.4	33.7	35.6	34.4	33.5	38.9	42.1	46.7	45.3	49.4	47.9
Gender	Female	10.0	9.8	10.6	9.7	10.6	11.6	13.6	13.5	14.7	14.8	17.2	18.3	17.7	17.2	19.7	21.7	23.8	23.3	25.8	25.2
	Male	8.2	8.2	8.7	8.0	9.0	9.6	11.3	11.3	12.4	12.6	14.3	15.3	14.4	14.3	16.8	18.3	20.4	19.8	21.8	21.5
	Other	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2
Female (Prenatal)		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	3.9	3.8	3.7	3.7	4.0	3.5
Female (Non-prenatal)		6.6	6.3	6.8	6.4	7.1	8.0	9.5	9.8	11.1	11.2	13.6	14.8	14.0	13.6	15.8	17.9	20.0	19.6	21.8	21.6
Age	< 30	6.3	6.1	6.1	5.9	6.7	6.9	7.3	7.2	8.1	8.0	8.5	9.0	9.2	9.1	9.6	9.9	11.1	10.8	11.0	11.1
	30–39	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	8.6	10.2	10.1	10.7	10.1	11.6	11.3
	40–49	2.8	2.8	3.1	2.8	3.0	3.2	3.9	3.8	3.9	4.1	5.2	5.5	5.0	4.9	5.7	6.0	6.5	6.3	7.0	6.7
	≥ 50	2.4	2.3	2.7	2.6	3.0	3.4	4.6	4.8	6.0	6.4	9.1	10.2	9.0	9.0	11.0	14.0	16.1	16.0	18.1	17.5
POC HIV Tests		0.0	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	2.1	2.0	2.4	2.0	1.7	1.0
North Shore / Coast Garibaldi		2.4	2.4	2.4	2.3	2.4	2.4	2.8	2.6	2.7	2.8	3.0	3.2	3.2	3.3	3.7	4.9	5.4	5.9	6.4	6.1
Female (Non-prenatal)		0.9	0.9	0.9	0.9	0.9	0.9	1.1	1.0	1.1	1.2	1.3	1.4	1.3	1.3	1.6	2.2	2.5	2.8	3.1	3.0
Male		0.8	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.2	1.3	1.3	1.3	1.5	2.1	2.2	2.5	2.7	2.6
Richmond		1.2	1.2	1.3	1.2	1.2	1.3	1.5	1.5	1.5	1.6	1.9	1.9	1.9	1.8	3.1	5.4	5.4	5.2	5.6	5.0
Female (Non-prenatal)		0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7	1.3	2.6	2.6	2.5	2.7	2.5
Male		0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.7	1.2	2.2	2.3	2.2	2.4	2.0
Vancouver		15.1	15.7	17.0	16.6	22.5	20.2	22.9	22.9	25.2	25.0	28.7	30.6	29.3	28.4	32.1	31.8	36.0	34.3	37.4	36.8
Female (Non-prenatal)		5.4	5.0	5.5	5.0	5.8	6.6	7.9	8.3	9.5	9.4	11.6	12.7	11.9	11.5	12.9	13.0	15.0	14.3	16.0	16.2
Male		6.9	6.9	7.4	6.8	7.8	8.2	9.8	9.9	10.9	11.0	12.4	13.3	12.4	12.3	14.1	14.1	15.9	15.1	16.7	16.8

Indicator 2: Rate of HIV Testing per 100,000

		2009	2010	2011	2012	2013	2014
Vancouver Coastal Health		5242.4	5258.8	5554.4	7321.6	9209.6	11496.1
North Shore / Coast Garibaldi		3500.4	3539.5	3650.6	4182.3	4763.4	7045.4
Richmond		2590.7	2699.7	2793.7	3411.7	3948.8	9179.2
Vancouver		6816.9	6801.3	7232.7	9873.8	12714.1	14113.5
Gender	Female	5547.1	5534.5	5877.3	7823.6	10019.3	12327.5
	Male	4604.7	4677.3	4913.5	6626.1	8269.1	10515.7
Age	< 30	5052.4	5036.6	5235.1	6299.6	7428.7	8592.0
	30–39	11235.3	11584.4	11907.7	14073.2	17091.5	19279.3
	40–49	5017.2	4961.8	5233.1	6860.9	9696.6	11662.3
	≥ 50	1847.6	1913.7	2196.9	4205.4	7281.4	10760.6

Indicator 3: New HIV Diagnoses		2010		2011		2012				2013				2014				2015			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Vancouver Coastal Health	By Client Residence	41	40	32	48	57	41	43	33	33	32	31	45	40	25	37	49	32	28	40	42
	By Provider Address	49	43	34	47	65	42	47	38	37	38	31	50	49	29	41	54	36	32	46	51
Gender	Female	5	3	3	7	2	2	5	4	3	2	4	4	1	1	3	4	3	4	5	2
	Male	36	37	29	41	55	39	38	29	30	30	27	41	39	24	33	44	29	24	35	40
Age	< 30	12	7	3	10	13	12	11	10	7	13	7	11	14	6	11	12	6	9	10	10
	30–39	15	12	12	16	22	8	12	11	7	6	11	14	5	3	10	16	13	7	11	9
	40–49	10	11	11	12	13	13	12	6	11	9	8	8	11	10	8	7	5	6	6	12
	≥ 50	4	10	6	10	9	8	8	6	8	4	5	12	10	6	8	14	8	6	13	11
Exposure	MSM	29	27	23	36	43	30	33	25	25	22	19	32	29	20	27	36	21	16	–	–
	IDU	5	3	3	2	8	0	3	4	1	3	3	3	3	2	4	3	2	1	–	–
	HET	7	10	6	10	6	9	7	4	6	6	8	8	6	2	4	7	6	4	–	–
	Other	0	0	0	0	0	2	0	0	0	0	0	1	1	0	0	0	2	2	–	–
	NIR/Unknown	0	0	0	0	0	0	0	0	1	1	1	1	1	1	2	3	1	5	–	–

		2010		2011		2012		2013		2014		2015	
Indicator 3: New HIV Diagnoses (cont'd)		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
North Shore / Coast Garibaldi	By Client Residence	4	0	0	2	6	1	2	3	1	1	3	1
	By Provider Address	4	0	0	2	4	0	1	2	2	1	3	2
Richmond	By Client Residence	3	2	2	0	1	3	0	1	3	0	2	1
	By Provider Address	2	1	1	1	0	2	0	1	2	1	0	0
Vancouver	By Client Residence	34	38	30	46	50	37	41	29	29	31	26	43
	By Provider Address	43	42	33	44	61	40	46	35	33	36	28	48

Indicator 4: Stage of HIV Infection at Baseline

	VCH					Female					Male					< 30 years					30–39 years					40–49 years				
	'10	'11	'12	'13	'14	'10	'11	'12	'13	'14	'10	'11	'12	'13	'14	'10	'11	'12	'13	'14	'10	'11	'12	'13	'14	'10	'11	'12	'13	'14
Stage 0	38	48	44	33	46	5	0	6	1	2	33	48	38	31	44	13	9	16	12	19	15	20	15	11	15	7	16	7	8	7
Stage 1	39	35	33	39	36	4	4	3	3	7	35	31	29	36	29	9	10	8	15	6	15	12	13	13	13	11	6	7	4	8
Stage 2a	22	33	19	34	16	3	5	1	3	2	19	28	18	31	14	4	8	4	8	3	10	10	3	9	2	7	10	8	7	6
Stage 2b	22	23	18	13	19	7	4	3	2	0	15	19	15	11	19	3	5	4	0	4	5	4	4	8	5	9	9	6	3	5
Stage 3	42	31	34	34	23	10	4	2	4	5	32	27	32	30	18	2	3	5	2	3	8	7	6	5	6	11	8	8	16	4
Unknown	22	17	9	5	18	0	0	1	0	2	22	16	8	5	16	8	4	5	1	3	10	7	2	1	7	3	2	0	0	3
Total	185	187	157	158	158	29	17	16	13	18	156	169	140	144	140	39	39	42	38	38	63	60	43	47	48	48	51	36	38	33

	≥ 50 years					MSM					IDU					Heterosexual					Other Exposure					NIR/Unknown				
	'10	'11	'12	'13	'14	'10	'11	'12	'13	'14	'10	'11	'12	'13	'14	'10	'11	'12	'13	'14	'10	'11	'12	'13	'14	'10	'11	'12	'13	'14
Stage 0	3	3	6	2	5	30	44	35	24	41	3	2	4	6	3	5	2	5	3	0	0	0	0	0	1	0	0	0	0	1
Stage 1	4	7	5	7	9	24	27	26	30	22	6	2	1	3	5	9	6	6	4	8	0	0	0	0	0	0	0	0	2	1
Stage 2a	1	5	4	10	5	15	23	14	26	10	2	4	4	4	0	5	5	1	4	3	0	1	0	0	0	0	0	0	0	3
Stage 2b	5	5	4	2	5	12	16	13	11	12	4	2	2	0	2	5	5	3	2	4	1	0	0	0	0	0	0	0	0	1
Stage 3	21	13	15	11	10	17	15	22	19	9	7	1	1	1	0	17	13	9	12	9	0	2	0	0	3	1	0	2	2	2
Unknown	1	4	2	3	5	17	13	7	3	13	1	2	0	0	0	3	1	1	0	1	0	1	0	2	0	1	0	1	0	4
Total	35	37	36	35	39	115	138	117	113	107	23	13	12	14	10	44	32	25	25	25	1	4	0	2	4	2	0	3	4	12

Indicator 5: HIV Cascade of Care		DIAGNOSED			LINKED			RETAINED			ON ART			ADHERENT			SUPPRESSED		
Vancouver Coastal Health		4619			4445			4062			3859			3604			3169		
Age Category	< 30	212			150			132			121			105			97		
	30–39	595			575			515			469			425			373		
	40–49	1294			1255			1134			1082			998			852		
	≥ 50	2514			2466			2282			2187			2076			1847		
Age Category and MSM Status	MSM	< 30			57			54			51			48			39		
		30–39			245			239			207			187			147		
		40–49			523			516			483			462			382		
		≥ 50			1234			1221			1158			1114			985		
	Non-MSM	< 30			22			22			16			16			11		
		30–39			138			135			131			116			81		
		40–49			370			363			352			335			233		
		≥ 50			631			622			617			585			434		
	Unknown	< 30			133			74			64			57			47		
		30–39			211			201			177			166			145		
		40–49			401			376			299			285			237		
		≥ 50			649			623			507			488			428		
Gender	Male	4046			3927			3560			3395			3192			2839		
	Female	573			518			502			464			412			330		

Indicator 5: <b>HIV Cascade of Care</b>		DIAGNOSED	LINKED	RETAINED	ON ART	ADHERENT	SUPPRESSED
Injection	IDU	1225	1205	1193	1132	1034	826
Drug Use	Non-IDU	2320	2286	2133	2032	1909	1746
	Unknown	1073	954	736	695	661	597
MSM Status	MSM	2060	2030	1899	1811	1695	1553
	Non-MSM	1161	1141	1116	1052	959	759
	Unknown	1397	1274	1047	996	950	857
Health Authority	North Shore / Coast Garibaldi	298	282	266	257	239	198
	Richmond	138	126	121	115	110	102
	Vancouver	4181	4036	3676	3487	3255	2869

Indicator 6: **Programmatic Compliance Score (PCS)**

	2013 Q3	Q4	2014 Q1	Q2	Q3	Q4	2015 Q1	Q2
< 3 CD4 Tests	7.7%	8.7%	11.4%	13.9%	12.2%	9.7%	9.9%	7.3%
< 3 Viral Load Tests	4.7%	5.9%	7.6%	8.6%	8.1%	6.2%	7.2%	6.7%
No Baseline Genotype	4.3%	4.6%	4.9%	4.8%	4.1%	1.7%	4.4%	5.6%
Baseline CD4 < 200 cells/μL	20.9%	20.5%	22.2%	23.5%	22.8%	21.6%	19.9%	16.9%
Non-Recommended ART	5.5%	10.0%	11.9%	11.8%	5.6%	1.7%	1.1%	1.1%
Non Viral suppression at 9 Mo.	33.6%	32.9%	33.0%	33.7%	32.5%	26.1%	24.9%	23.0%
PCS Score: 0	115	99	78	73	90	100	106	112
PCS Score: 1	75	78	66	72	70	48	48	39
PCS Score: 2	33	29	28	26	20	16	11	16
PCS Score: 3	9	9	8	10	12	10	12	7
PCS Score: 4 or more	3	4	5	6	5	2	4	4
<b>Total (n=)</b>	<b>235</b>	<b>219</b>	<b>185</b>	<b>187</b>	<b>197</b>	<b>176</b>	<b>181</b>	<b>178</b>

Indicator 7: **New DTP ARV Participants**

First Starts	57	32	51	56	39	36	37	51
Experienced Starts	55	73	62	55	76	55	63	54

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

CD4 ≥ 500	16	14	21	28	18	12	16	18
CD4 350–499	15	9	11	12	9	6	3	10
CD4 200–349	14	5	9	8	4	9	12	10
CD4 50–199	12	4	6	8	6	8	4	8
CD4 < 50	0	0	4	0	2	1	2	4
<i>CD4 Median (cells/μL)</i>	<i>380</i>	<i>480</i>	<i>410</i>	<i>490</i>	<i>460</i>	<i>345</i>	<i>370</i>	<i>370</i>
<b>Total (n=)</b>	<b>57</b>	<b>32</b>	<b>51</b>	<b>56</b>	<b>39</b>	<b>36</b>	<b>37</b>	<b>50</b>

Indicator 9: **Active and Inactive DTP Participants**

Active DTP Participants	3734	3774	3818	3842	3870	3874	3878	3927
Inactive DTP Participants	638	639	640	657	669	675	671	665

Indicator 10: **Antiretroviral Adherence**

≥ 95%	35	39	35	39	49	45	37	51
80% to < 95%	11	6	5	7	6	4	8	7
40% to < 80%	4	5	4	7	8	1	6	3
< 40%	0	0	0	1	1	0	1	0
<b>Total (n=)</b>	<b>50</b>	<b>50</b>	<b>44</b>	<b>54</b>	<b>64</b>	<b>50</b>	<b>52</b>	<b>61</b>

**Indicator 11: Resistance Testing and Results**

	2013 Q3	Q4	2014 Q1	Q2	Q3	Q4	2015 Q1	Q2
Suppressed	2664	2582	2806	2773	2816	2821	2880	2861
Wild Type	466	460	421	392	385	326	352	339
Never Genotyped	24	17	23	12	13	10	13	20
1-Class	97	97	91	88	74	62	80	78
2-Class	19	15	14	14	11	15	16	13
3-Class	9	7	2	4	2	1	3	3
<b>Total (n=)</b>	<b>3279</b>	<b>3178</b>	<b>3357</b>	<b>3283</b>	<b>3301</b>	<b>3235</b>	<b>3344</b>	<b>3314</b>

**Indicator 12: AIDS-Defining Illness**

	2007	2008	2009	2010	2011	2012	2013	2014
CD4 < 200 at ART initiation	Cases	130	95	82	69	52	48	38
	<i>Rate per 100,000</i>	<i>12.1</i>	<i>8.8</i>	<i>7.5</i>	<i>6.3</i>	<i>4.7</i>	<i>4.3</i>	<i>3.3</i>
AIDS Cases (DTP Reports)	Cases	81	81	60	52	35	33	24
	<i>Rate per 100,000</i>	<i>7.5</i>	<i>7.5</i>	<i>5.5</i>	<i>4.7</i>	<i>3.2</i>	<i>2.9</i>	<i>2.1</i>
AIDS Cases (BCCDC Reports)	Cases	72	76	54	47	36	28	–
	<i>Rate per 100,000</i>	<i>6.7</i>	<i>7.1</i>	<i>5.0</i>	<i>4.3</i>	<i>3.2</i>	<i>2.5</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