District of Columbia
Department of Health
HIV/AIDS, Hepatitis, STD, and TB Administration (HAHSTA)

Annual Epidemiology & Surveillance Report

Supplemental: Clinical and Care Dynamics

Surveillance Data between **2008 and 2012**

Vincent C Gray, Mayor

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF HEALTH
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Acknowledgements

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Section 1. HIV Care Dynamics

With the advances and effectiveness of care and treatment, HIV has transitioned to a chronic condition that can be managed successfully for persons living with HIV to maintain healthy outcomes and live a standard life span. The Care Continuum is the new title for the approach of diagnosing persons with HIV, linking them into care and treatment, retaining them in continuous care and achieving viral load suppression, which is the marker of a person's and community's health. In addition to the goal of healthy outcomes for persons with HIV, viral suppression can help decrease the risk of HIV transmission by infected individuals. Assessing HIV care dynamics is an essential step in understanding the strengths of HIV programs in the District, as well as an opportunity to identify and resolve gaps in the care continuum.

Overall, the care continuum continues to improve for persons living with HIV in the District of Columbia. The Department of Health, in partnership with medical providers and community organizations, have prioritized early diagnosis and rapid connection to care ("Red Carpet" protocol ensures a HIV medical appointment within 72 hours) and introduced new innovations to support and retain persons in HIV care and treatment (community health workers and other treatment adherence approaches). In the care continuum, there are persons who drop out of care. The District has partnered with providers to outreach to those persons and re-engage them into care and treatment. These efforts have contributed to progress highlighted here:

- Increased linkage to care within 3 months from 57.3% in 2008 to 85.7% in 2012.
- Increased percentage of diagnosed population ever virally suppressed from 57.4% in 2008 to 61.0% in 2012.
- Increased persons in stages 1 and 2 (HIV only diagnosis) at time of diagnosis from 63% in 2008 to 79% in 2012.
- Decreased percentage persons diagnosed with both HIV and AIDS (stage 3) at time of diagnosis from 34% in 2008 to 19% in 2012.
- Increased average CD4 count at time of diagnosis from 330 in 2008 to 435 in 2012 (reaching persons earlier in their infection).
- Decreased percentage of AIDS cases classified as late testers from 56% in 2008 to 44% in 2012.

There persist some health disparities in the care continuum. Blacks (71.4%) and Hispanics (74.3%) have a lower linkage to care within 3 months of their HIV diagnosis percentage compared to whites (81.9%). Black men (30%) have a higher rate of stage 3 diagnosis (AIDS) at the time of diagnosis compared to white men (18%). Among late testers, Hispanics (64.5%) and persons more than 60 years old (71.6%) have higher rates than the District average.

The data contained in this section provide important insight into how the HIV care system is ensuring healthy outcomes for persons living with HIV. The Department of Health will continue its collaboration with providers and engage with the community in meaningful ways to address gaps and enhance the care system.

Table 1. Care Dynamics Measure Definitions
District of Columbia

Measure	Definition	Levels
Newly Reported HIV Diagnoses	Number of HIV cases among District residents reported to the DC Department of Health from 2008 to 2012	-
Time to Linkage to Care	Length of time from diagnosis date to first CD4 and/or viral load** lab	≤3 months >3 to 6 months >6 to 12 months >12 months No lab reported
Care Status	Stability of care in 2013	Retained: At least two viral load and/or CD4 labs reported more than 60 days apart in 2013 Sporadic: One viral load or CD4 lab reported in 2013 Out of care: No lab reported in 2013
Ever Virally Suppressed	Suppression any time after HIV disease diagnosis	Suppressed: reported viral load ≤200 copies/mL Not suppressed: reported viral load >200 copies/mL No viral load reported
Last Known Viral Status	Suppression status at last known viral load in 2013	Suppressed: reported viral load ≤200 copies/mL Not suppressed: reported viral load >200 copies/mL No viral load reported in 2013

Figure 1. Care Dynamics at Time of Diagnosis for Newly Diagnosed HIV Cases
District of Columbia, 2008-2012

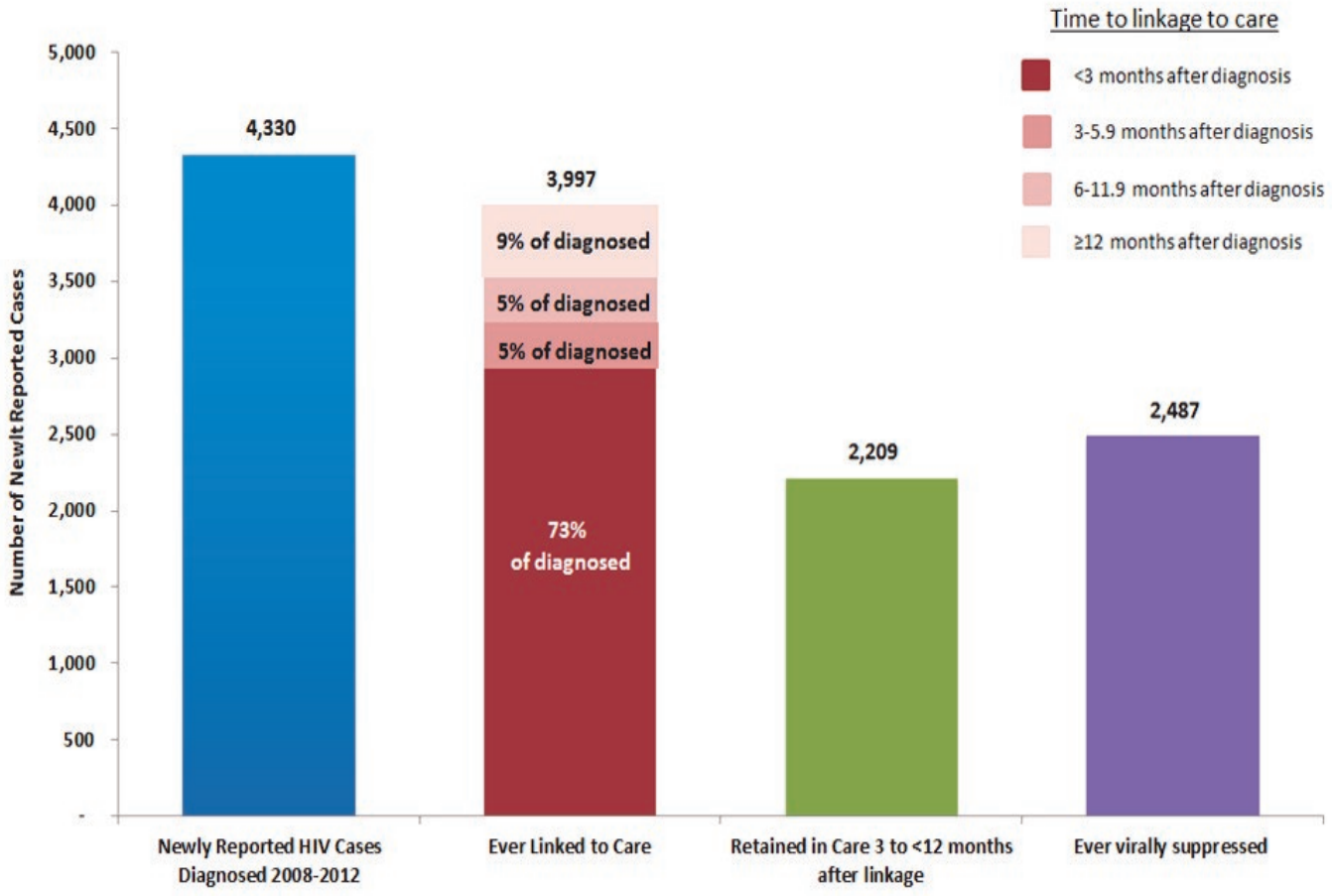


Figure 1 represents the care continuum around the time of diagnosis for newly reported HIV cases in the five year period from 2008 to 2012. Each bar contains the entire newly diagnosed population from 2008 to 2012, and presents a graduated view of care performance for each metric (defined in Table 1). This figure is intended to give a snapshot of the care environment around the time of diagnosis in Washington, DC using population-based data. Of the 4,330 cases newly diagnosed between 2008 and 2012, 73% were linked to HIV primary care with 3 months of diagnosis, 51% were retained in care with 3 to 12 months of linkage to care and 57% were ever virally suppressed.

Table 2. Care Dynamics for Newly Diagnosed HIV Cases by Selected Characteristics
District of Columbia, 2008-2012

	Newly Reported HIV Cases Diagnosed 2008-2012	Ever Linked to Care		Linked to Care <3 Months of Diagno-sis		Retained in Care 3 to <12 Months of Linkage		Ever Virally Suppressed†	
	N	N	%	N	%	N	%	N	%
Sex									
Male	3,117	2,869	92.0	2,274	73.0	1,570	50.4	1,780	57.1
Female	1,213	1,128	93.0	895	73.8	639	52.7	707	58.3
Race/Ethnicity									
White	576	549	95.3	472	81.9	315	54.7	400	69.4
Black	3,313	3,044	91.9	2,366	71.4	1,677	50.6	1,836	55.4
Hispanic	304	278	91.4	226	74.3	160	52.6	179	58.9
Other*	137	126	92.0	105	76.6	57	41.6	72	52.6
Mode of Transmission									
MSM	1,679	1,571	93.6	1,240	73.9	899	53.5	1,032	61.5
IDU	270	238	88.1	185	68.5	122	45.2	129	47.8
MSM/IDU	97	84	86.6	52	53.6	44	45.4	44	45.4
Heterosexual contact	1,368	1,266	92.5	1,013	74.0	709	51.8	805	58.8
RNI/Other**	916	838	91.5	679	74.1	435	47.5	477	52.1
Age at Diagnosis									
0-19	177	166	93.8	135	76.3	112	63.3	86	48.6
20-29	1,124	1,014	90.2	760	67.6	527	46.9	575	51.2
30-39	1,017	940	92.4	751	73.8	509	50.0	589	57.9
40-49	1,090	1,006	92.3	805	73.9	581	53.3	665	61.0
50-59	679	640	94.2	521	76.7	361	53.2	437	64.4
60 and older	243	231	95.1	197	81.1	119	49.0	135	55.6
Year of Diagnosis									
2008	1,180	1,072	90.8	676	57.3	427	36.2	677	57.4
2009	881	815	92.5	635	72.1	452	51.3	508	57.7
2010	867	809	93.3	684	78.9	456	52.6	500	57.7
2011	722	667	92.4	591	81.9	404	56.0	387	53.6
2012	680	634	93.2	583	85.7	470	69.1	415	61.0
Total	4,330	3,997	92.3	3,169	73.2	2,209	51.0	2,487	57.4

†Ever linked and ever virally suppressed by Year of Diagnosis will have a longer follow-up time for persons diagnosed in the earlier of the 5 year time frame
*Other: mixed race individuals, Asians, Alaska natives, Native Hawaiians, Pacific Islanders and unknown
**MSM: Men who have sex with men; IDU: Injecting drug users; RNI: Reason not indicated; Other: perinatal transmission, hemophilia, blood transfusion and occupational exposure

Disparities between men and women were not observed. Whites had higher rates of linkage, retention, and suppression compared to all other racial groups. Persons with MSM/IDU as reported mode of transmission had lower rates of linkage and suppression compared to the MSM, heterosexual and RNI/other modes of transmission. Linkage tends to increase as age at diagnosis increases.

The 20 to 29 year old age group has the lowest rates of overall linkage, linkage with 3 month of HIV diagnosis and retention, as compared to all other age groups. Cases aged 60 and older had high rates of linkage, but varied by retention and suppression compared to other age groups. Linkage, retention, and suppression increased over the 5-year period.

Figure 2. 2013 Care Dynamics for Newly Diagnosed Living HIV Cases
District of Columbia, 2008-2012

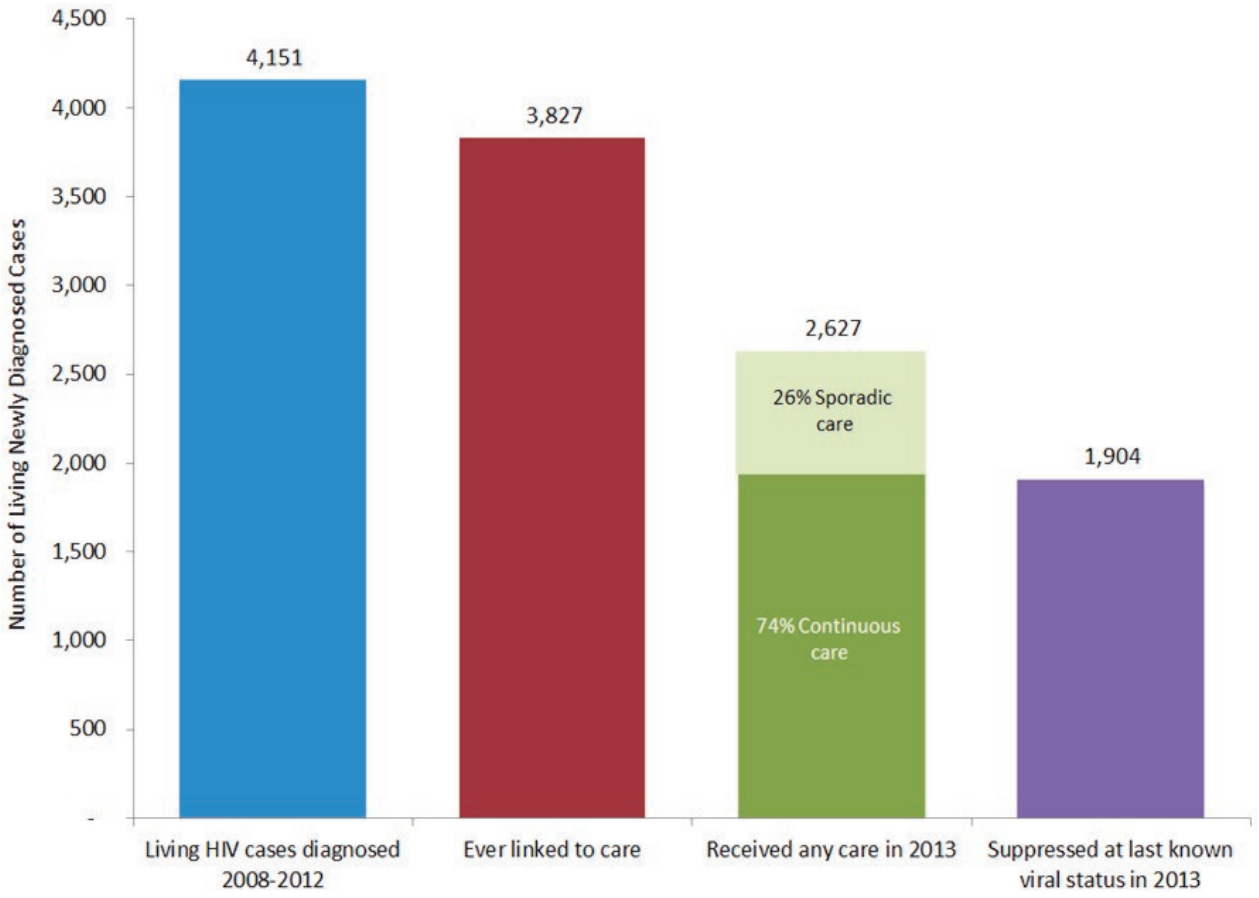


Figure 2 represents the 2013 care continuum for newly diagnosed HIV cases in the five year period who were living as of December 31, 2012. This differs from what is presented in figure 1 as it depicts the care and viral load status of living cases during the 2013 calendar year. Among the 4,151 newly diagnosed living HIV cases diagnosed between 2008 and 2012, 92% were ever linked to care, 63% received any care in 2013, of which 74% received continuous care and 26% sporadic care. Of all living cases newly diagnosed, 46% achieved viral suppression at last lab in 2013. Table 3 illustrates a more detailed presentation of these dynamics.

Table 3. 2013 Care Dynamics for Newly Diagnosed Living HIV Cases by Selected Characteristics
District of Columbia, 2008-2012

	Living HIV Cases Diagnosed 2008-2012	Ever Linked to Care		Retained in Care		Retained in Continuous Care in 2013†		Suppressed at Last Known Viral Status in 2013†	
	N	N	%	N	%	N	%	N	%
Sex									
Male	2,995	2,755	92.0	1,862	62.2	1,354	45.2	1,361	45.4
Female	1,156	1,072	92.7	765	66.2	592	51.2	543	47.0
Race/Ethnicity									
White	567	541	95.4	351	61.9	255	45.0	289	51.0
Black	3,170	2,908	91.7	2,028	64.0	1,494	47.1	1,419	44.8
Hispanic	293	268	91.5	185	63.1	151	48.1	153	52.2
Other*	121	110	90.9	63	52.1	46	38.0	43	35.5
Mode of Transmission									
MSM	1,651	1,543	93.5	1,065	64.5	807	48.9	812	49.2
IDU	251	220	87.6	151	60.2	105	41.8	100	39.8
MSM/IDU	95	82	86.3	61	64.2	38	40.0	39	41.1
Heterosexual contact	1,331	1,230	92.4	844	63.4	646	48.5	615	46.2
RNI/Other**	823	752	91.2	506	61.3	350	42.4	338	41.0
Age at Diagnosis									
0-19	177	166	93.8	129	72.9	96	54.2	69	39.0
20-29	1,117	1,007	90.2	657	58.8	463	41.5	467	41.8
30-39	991	915	92.3	608	61.4	470	47.4	438	44.2
40-49	1,043	961	92.1	680	65.2	506	48.5	513	49.2
50-59	622	585	94.1	420	67.5	313	50.3	322	51.8
60 and older	201	193	96.0	133	66.2	98	48.8	95	47.3
Year of Diagnosis									
2008	1,095	991	90.5	634	57.9	466	42.6	475	43.4
2009	841	778	92.5	541	64.3	406	48.3	390	46.4
2010	839	782	93.2	517	61.6	381	45.4	368	43.9
2011	701	646	92.2	440	62.8	326	46.5	300	42.8
2012	675	630	93.3	495	73.3	367	54.4	371	55.0
Grand Total	4,151	3,827	92.2	2,627	63.3	1,946	46.9	1,904	45.9

†Ever linked, retention and last known viral load by Year of Diagnosis will have a longer follow-up time for persons diagnosed in the earlier of the 5 year time frame.
*Other: mixed race individuals, Asians, Alaska natives, Native Hawaiians, Pacific Islanders and unknown
**MSM: Men who have sex with men; IDU: Injecting drug users; RNI: Reason not indicated; Other: perinatal transmission, hemophilia, blood transfusion and occupational exposure

Though large disparities were not seen by sex, women were more likely than men to be retained in care and virally suppressed in 2013. In general, IDU related modes of transmission had poor outcomes, with the lowest percentages of retention and suppression at last viral load. The 20 to 29 year old age group had poorest retention and suppression outcomes. Persons 0 to 19 years old are the group with the highest percentage retained in care, but lowest proportions of suppression at last lab. Overall, linkage to care, retention in care and viral suppression at last lab in 2013 all increased by year of HIV diagnosis.

Section 2. Stage of HIV Disease

Stage of disease is based on immune system function as measured by CD4 T-cells. As CD4 cells are depleted, probability of adverse symptoms increases as the body loses its ability to fight off disease. Maintaining low viral loads and high CD4 counts is important to both reducing new infections and keeping individuals healthy. These stages have been defined by the CDC, and modified for use with surveillance data as shown in Table 4; the definition used here does not include diagnoses of AIDS-defining conditions and relies solely on CD4 count and percentage for classification.

These stages are an enhanced version of the classic HIV disease dichotomy as they allow for a more accurate depiction of an individuals' health status by allowing reclassification dependent on only the most recent clinical results.

Table 4. Stages of HIV Infection

Measure	Definition
Stage 1	CD4 T-cell count of more than 500 cells/μL CD4 T-cell percent of more than 29%
Stage 2	CD4 T-cell count of between 200 cells/μL and 500 cells/μL CD4 T-cell percent of between 14% and 29%
Stage 3 (AIDS)	CD4 T-cell count of less than 200 cells/μL CD4 T-cell percent of less than 14%
Stage Unknown	CD4 test result is unknown

Figure 3. Stage of Disease within 3 Months of Diagnosis among Newly Diagnosed Cases
District of Columbia, 2008-2012

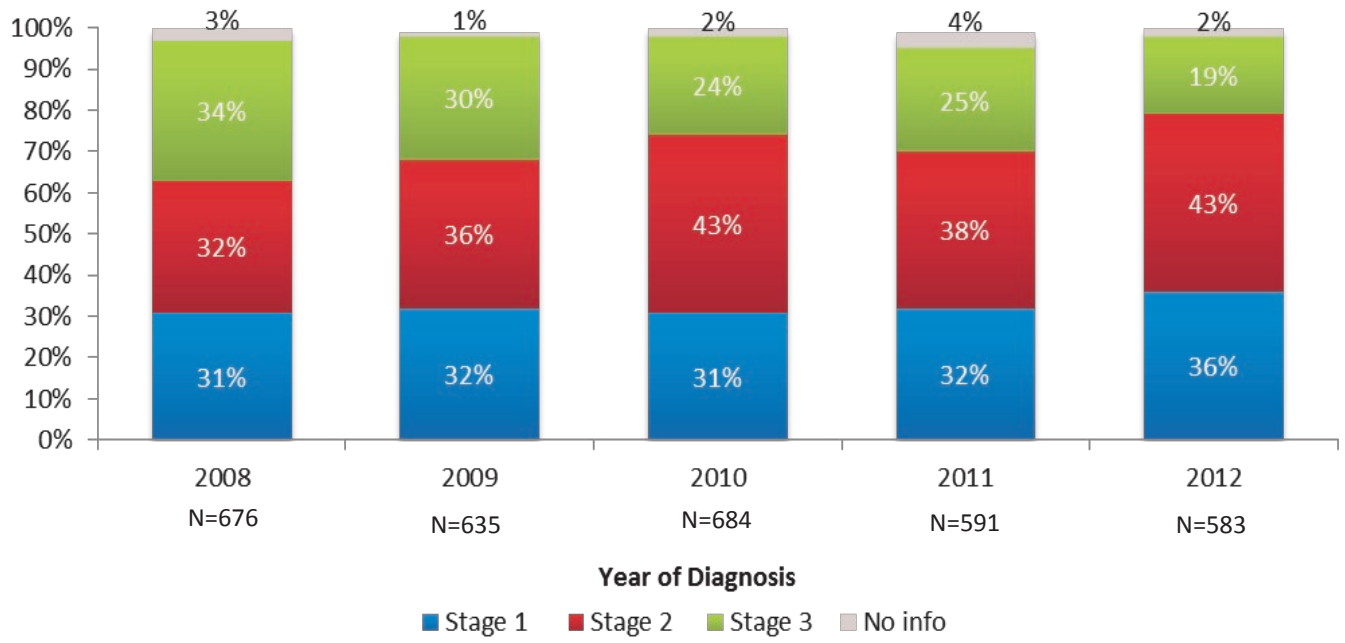
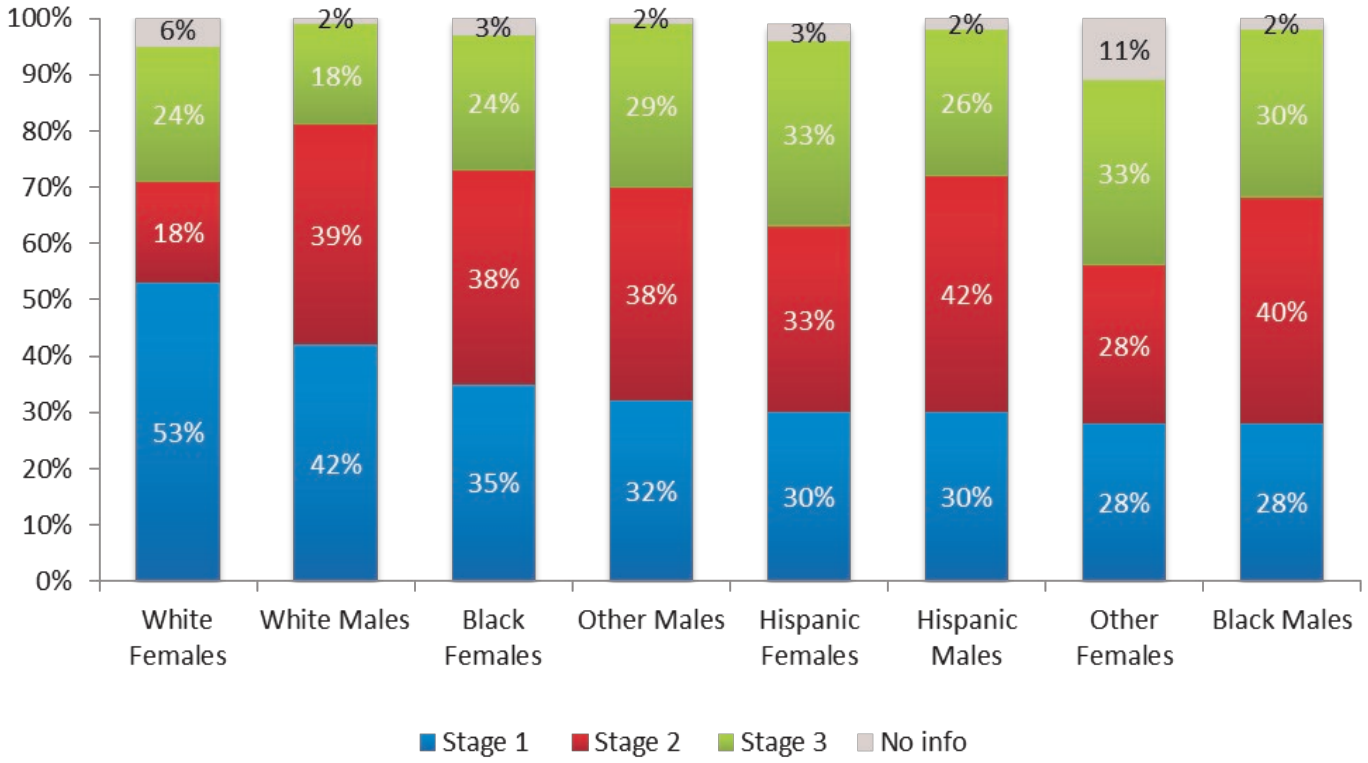


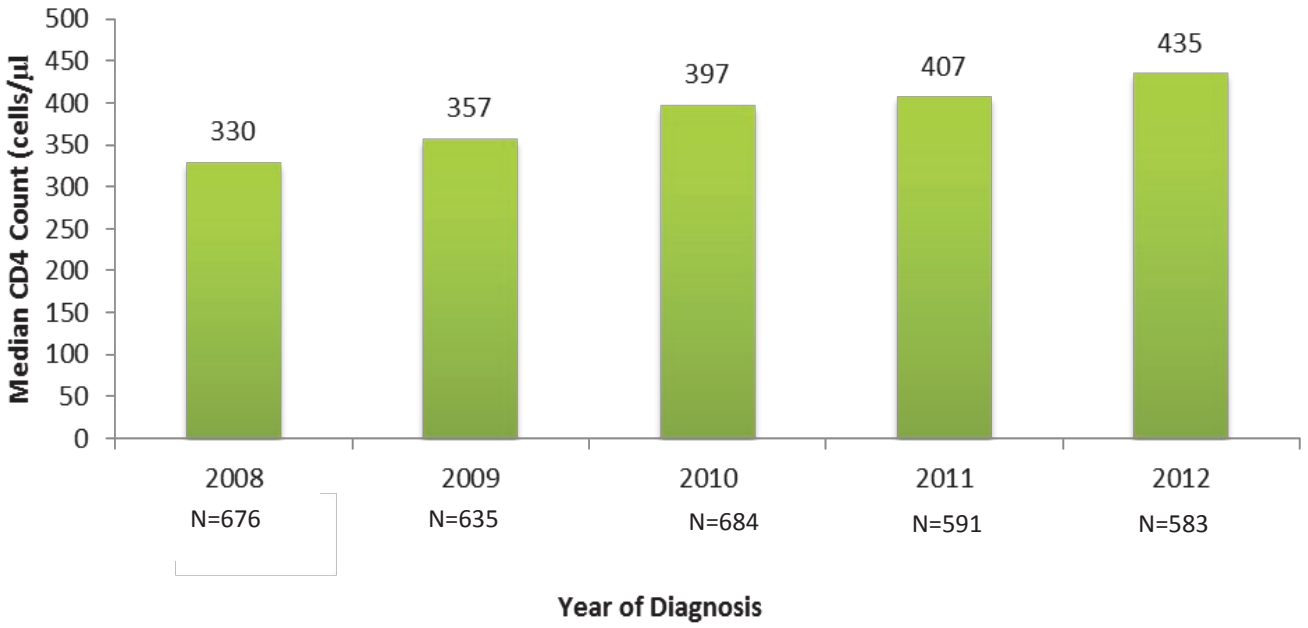
Figure 3 portrays the stage of HIV disease near the time of diagnosis. The denominator for each year is persons diagnosed within the calendar year (January 1 through December 31) with a CD4 count reported to HAHSTA within 3 months of date of diagnosis. Reductions in the proportion of individuals found in Stage 3 (AIDS) indicate improvements in earlier testing and identification of HIV cases before health deterioration. The data shows a decrease in stage 3 diagnoses **from 34% in 2008 to 19% in 2012.**

Figure 4. Stage of Disease within 3 Months of Diagnosis among Newly Diagnosed Cases by Sex and Race/Ethnicity
District of Columbia, 2008-2012



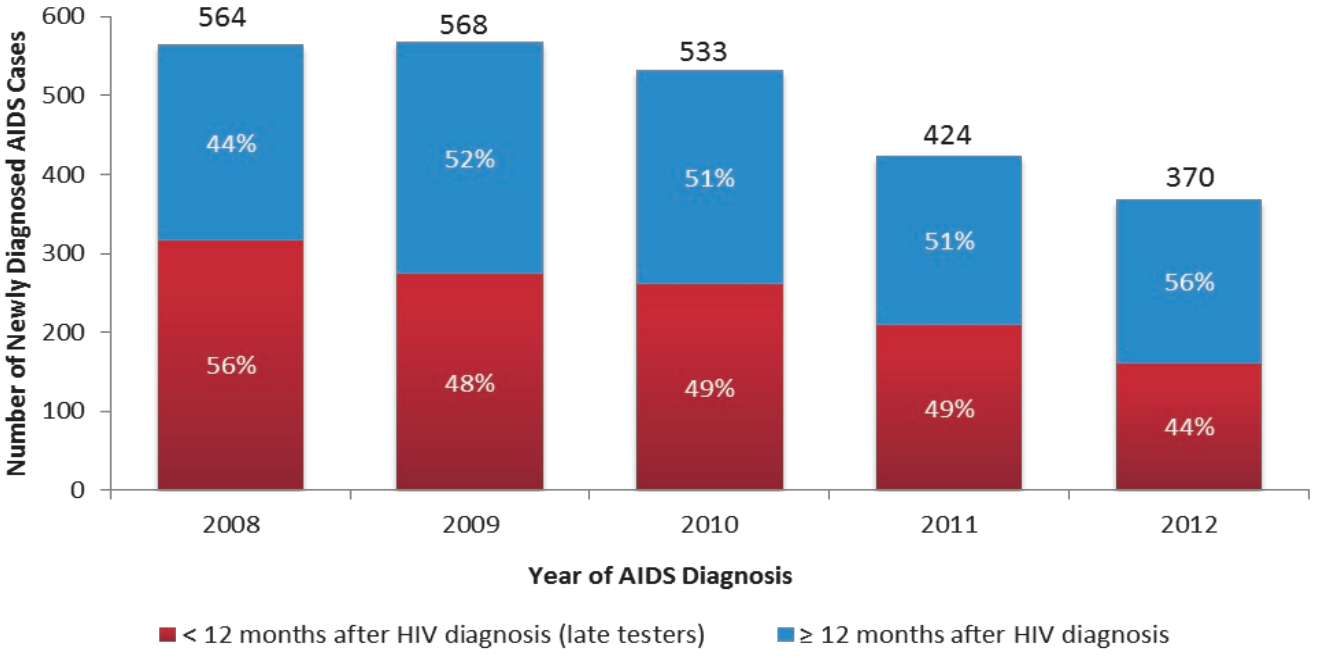
Stage of HIV disease, by sex and race/ethnicity, among newly diagnosed HIV cases between 2008 and 2012 is illustrated in Figure 4. Newly diagnosed Hispanic women and women classified with a race/ethnicity as "other" had the highest proportion of stage 3 disease (AIDS) at 33%, followed by Black males (30%).

Figure 5. Median CD4 Count within 3 Months of HIV Diagnosis among Newly Diagnosed HIV Cases by Year of HIV Diagnosis
District of Columbia, 2008-2012



There was a 32% increase in the median CD4 count at diagnosis between 2008 and 2012. This trend may be explained by the increased emphasis on routine city-wide HIV testing, earlier diagnosis and earlier linkage into HIV care.

Figure 6. Persons Newly Diagnosed with AIDS and Proportion of Late Testers by Year of AIDS Diagnosis
District of Columbia, 2008-2012



HAHSTA assessed the proportion of newly diagnosed AIDS cases between 2008 and 2012 with AIDS diagnoses that occurred within 12 months of the initial HIV diagnosis.

These cases were referred to as "late testers". There was a substantial reduction in the proportion of AIDS cases that were classified as late testers, with an overall decline of 49% in the 5-year period.

Table 5. Characteristics of Late Testers among Newly Diagnosed AIDS Cases
District of Columbia, 2008-2012

	≥ 12 months after HIV diagnosis		< 12 months after HIV diagnosis (late testers)		Total
	N	%	N	%	
Sex					
Male	823	48.2	883	51.8	1,706
Female	413	54.8	340	45.2	753
Race/Ethnicity					
White	120	49.4	123	50.6	243
Black	1,028	51.5	969	48.5	1,997
Hispanic	50	35.5	91	64.5	141
Other	38	48.7	40	51.3	78
Mode of transmission					
MSM	406	51.1	389	48.9	795
IDU	155	66.2	79	33.8	234
MSM/IDU	49	72.1	19	27.9	68
Heterosexual contact	417	51.4	395	48.6	812
RNI/Other	209	38.0	341	62.0	550
Age at diagnosis					
0-19	73	64.6	40	35.4	113
20-29	327	59.7	221	40.3	548
30-39	354	54.5	296	45.5	650
40-49	301	47.4	334	52.6	635
50-59	143	37.7	236	62.3	379
≥60	38	28.4	96	71.6	134
Country of birth					
USA	1,129	53.6	976	46.4	2,105
Outside the US	70	26.6	193	73.4	263
Unknown	37	40.7	54	59.3	91
Initial AIDS Diagnosis					
CD4 Count <200	1,153	54.4	968	45.6	2,121
Opportunistic Infection	22	44.0	28	56.0	50
Low CD4 and OI	61	21.2	227	78.8	288
Total	1,236	50.3	1,223	49.7	2,459

Of the 2,459 AIDS cases diagnosed between 2008 and 2012, 49.7% were considered late testers. Men (51.8%) and Hispanics (64.5%) and persons ages 50 and older at the time of diagnosis (50-59: 62.3%; ≥60: 71.6%) had the highest proportion of late testing. Newly diagnosed AIDS cases who were born outside of the US (73.4%) or who had low CD4 counts and an opportunistic infection (78.8%) also had high proportions of late testers.

Section 3. Ryan White Care Dynamics

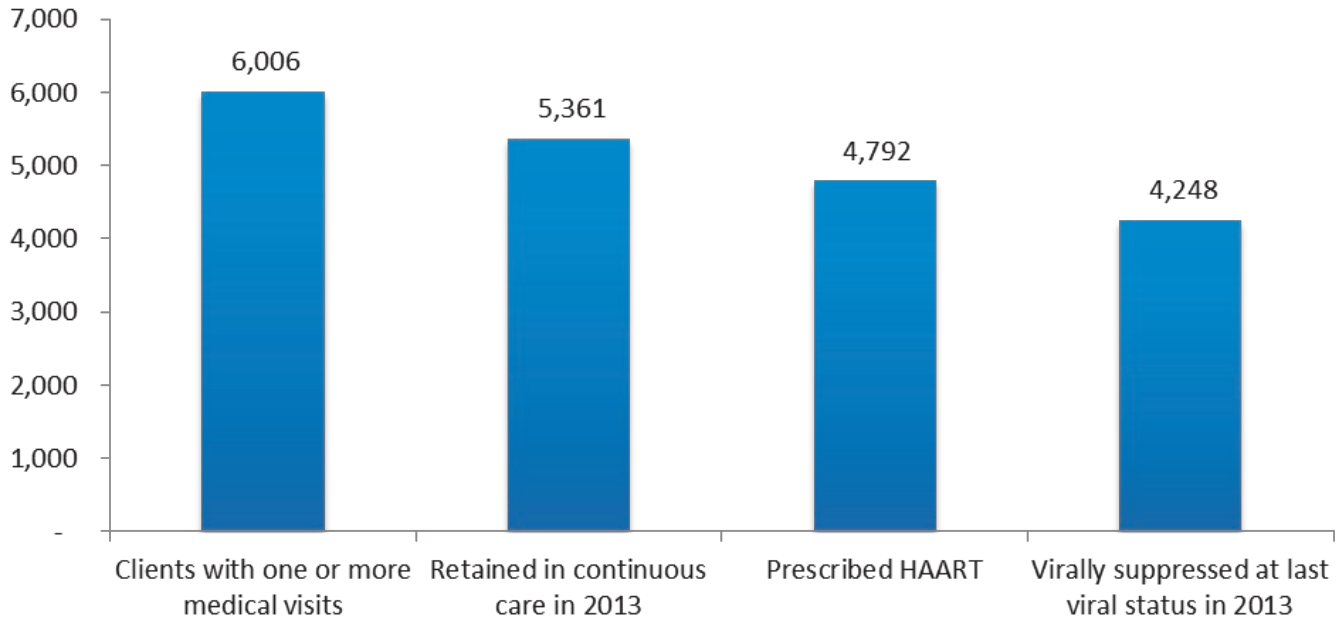
The Ryan White Comprehensive AIDS Resource Emergency (CARE) Act is a program funded by the Health Resource and Service Administration (HRSA) to provide HIV-related services to people diagnosed with HIV disease. More specifically, it is a program for those who do not have sufficient health care coverage or financial resources for coping with HIV disease. Ryan White fills gaps in care not covered by other sources. The Ryan White Care program primarily funds core medical and support services. Core medical services include outpatient and ambulatory health services, AIDS Drug Assistance Program (ADAP), AIDS pharmaceutical assistance, oral health care, early intervention services, health insurance premium and cost-sharing assistance, home health care, medical nutrition therapy, hospice care, home and community-based health services, mental health, outpatient substance abuse care, medical case management, and treatment adherence services.

HIV Care dynamics among Ryan White clients was examined to evaluate clients on the care continuum and asses their health outcomes. This continuum of care differs from what has been previously presented in several ways. First, the population used is a subset of the total number of HIV cases living in the District. These cases are not newly diagnosed in a given year, but are HIV cases who received Ryan White Care Act primary medical services in 2013. Second, the number of medical visits, rather than linkage to care, was measured. Third, information is included on the number of clients who had been prescribed HIV medication. Finally, data collection for RW clients differs from that of surveillance data; information is received at the health department directly from healthcare providers, rather than through lab data, resulting in some information not being able to be de-duplicated, therefore information on subpopulations may not be complete and were not presented in this report.

Table 6. Care Dynamics Measure Definitions
District of Columbia

Measure	Definition
Clients with one or more medical visits	Ryan White clients with at least one documented primary care visit in 2013
Retained in continuous care in 2013	Having 2 more medical visits in 2013 that were at least 90 days apart
Prescribed HAART	Ryan White clients with documentation of having been prescribed HIV medication
Virally suppressed at last viral status in 2013	Having a viral load result of <200 copies/mL at last viral load test in 2013

Figure 7. 2013 Care dynamics among Ryan White Clients



At the end of 2013, there were 6,006 unique had one or more primary medical care visits in 2013 and 89.3% (5,361/6,006) of were retained in care in 2013. More than three-quarters (79.6%; 4782/6,006) were prescribed HAART. Among Ryan White clients that had at least one primary care visit in 2013, 70.7% (4,248/6,006) were virally suppressed at their last viral load test in 2013.

Table 7. Characteristics of Care Dynamics among Ryan White Clients
District of Columbia, 2013

	Clients with one or more medical visits	Retained in Continuous Care in 2013		Prescribed HAART		Virally Suppressed at Last Viral Status in 2013	
	N	N	%	N	%	N	%
Gender							
Male	3,892	3,457	88.8%	3,137	80.6%	2,807	72.1%
Female	1,947	1,758	90.3%	1,499	77.0%	1,320	67.8%
Transgender	167	146	87.4%	146	87.4%	121	72.5%
Age at service							
0 - 19	74	41	55.4%	6	8.1%	4	5.4%
20-29	769	655	85.2%	502	65.3%	453	58.9%
30-39	1,124	1,005	89.4%	895	79.6%	818	72.8%
40 - 49	1,691	1,514	89.5%	1,395	82.5%	1,206	71.3%
50+	2,348	2,146	91.4%	1,984	84.5%	1,767	75.3%
Total	6,006	5,361	89.3%	4,782	79.6%	4,248	70.7%

Information for RW clients by subpopulations was limited. By gender, though disparities were not greatly seen, female clients had the lowest proportion of having been prescribed HAART(77.0%) and having been virally suppressed in 2013 (67.8%) compared to men and transgender persons. By age at service, the greatest disparity was among clients aged 0-19. Across the continuum, younger clients had very low proportions of primary care visits, retention in care HAART prescription and viral suppression, signifying that there is much work to be done among RW clients in this age group.

Appendix. Understanding HIV Care Surveillance

Primary care visits are not reportable to the DC DOH. However, HIV-related laboratory measures, such as CD4+ T-cell counts and HIV RNA viral loads, are required by DC Municipal code to be reported to HAHSTA by healthcare providers and clinical laboratories. Laboratory measures are used in surveillance to provide approximate measures of access to medical care and HIV-related clinical health status. With improved reporting of laboratory data through the comprehensive electronic laboratory reporting system instituted in 2007, HAHSTA is able to obtain a picture of HIV care among persons living with HIV in the District.

Limitations of Surveillance Data

The Health Resources and Services Administration (HRSA), Centers for Disease Control and Prevention (CDC) and the Department of Health and Human Services (DHHS) released measures to monitor the stages of HIV care, including diagnosis, linkage to care, retention in care and measurement of viral suppression. The measures reported in this supplement reflect local variations of federal standards revised to reflect the realities of available HIV surveillance data. Due to the nature of these data, there are a number of limitations to consider:

- **Year to year variation**
  Metrics are subject to variation by year since they are based on reported surveillance data; fluctuations in timing of data reported to the DC DOH may affect data availability.

- **Moving between stages**
  This report is a snapshot of care dynamics in the District and does not reflect movement between stages.

- **Changes in surveillance procedures**
  Although instituted in 2007, systematic collection of laboratory data began in 2009; thus, data collected prior to 2009 are not as complete or reliable as data collected since 2009.

- **Missing data**
  Care information can only be assessed among persons with reported data. There are some instances where diagnosed cases may not have laboratory data but are included in this report. For these cases, it is unclear whether persons are in care and HAHSTA is not receiving reports of laboratories, or whether a person is truly out of care.

- **Limited extra-jurisdiction data**
  While healthcare facilities in the District cater to residents of the greater metropolitan area, DOH surveillance data are currently limited to HIV patients who were established as residents of the District at the time of HIV or AIDS diagnosis.

- **Migration out of the city**
  This reports uses as a denominator the number of HIV positive people who were first diagnosed while residents of DC, between 2008 and 2012, and who are still alive. Whether any of these persons are receiving care in other jurisdictions (other than Virginia and Maryland) or whether they have moved out of DC is not known.

- **Number of lab tests**
  HIV positive persons in good health may be less likely to seek care, as compared to those who are in poorer health and require more care. Thus, there may be a trend towards persons with suppressed viral loads and higher CD4 counts to receive primary medical care but skip recommended lab tests. If this is the case, it would result in an underestimate of retention in care.

- **Newly diagnosed snapshot**
  Data used in the continuum of care are for cases diagnosed between 2008 and 2012. As such, it provides only a portion of the picture of linkage to care, retention, and viral suppression in the District. Persons diagnosed with HIV positive more than five years ago are not included and patterns and trends of their care cannot be assumed from these data.

- **No comparison to other data**
  These data should not be compared to other continuum of care presentations. Lack of uniformity of data systems and definitions of care metrics prevent accurate between-jurisdictional assessments. This continuum of care should not be compared to previous supplemental care data, as it evaluates different time periods. This supplement is designed to examine patterns and trends in the District only from HIV cases diagnosed between 2008 and 2012.