Appendix A. Understanding Surveillance Data

In order to understand surveillance data, it is important to be familiar with some key terms. Newly diagnosed, or new diagnoses, are persons diagnosed with a disease in a given time period; a diagnosis could be a positive test result or could be determined by a clinician. A diagnosis does not always occur at exactly the same time as someone is infected or gets sick; sometimes it is months or years before someone is diagnosed. Incidence is the number of *new infections* of a disease in a defined population during a specific period of time. It is important to understand the difference between incidence and "newly diagnosed". Incident cases, or new infections, are not always diagnosed right away. Thus, the number of new diagnoses does not necessarily reflect trends in incidence (that is, new infections). At the time of diagnosis, some individuals will have been infected recently, while others will have been infected sometime in the past.

Prevalence is the total number of people in a population with a particular disease or condition at a given time point. Prevalence can be thought of as a snapshot of all existing cases of a disease or condition at a specified time; for instance, the percentage of persons living with HIV among all persons living in the District as of Dec. 31, 2012.

Understanding HIV Surveillance

The District of Columbia Municipal Code (22 DCMR 206) mandates reporting of all HIV and AIDS diagnoses to the DC DOH. An HIV diagnosis or case refers to a person who has tested positive for HIV infection. An AIDS case refers to a person who had a diagnosis of HIV infection and later had a diagnosis of AIDS, or a person diagnosed with HIV and AIDS at the same time. AIDS is defined by a CD4+ T-cell count less than 200 cells/μL or an AIDS-defining opportunistic infection; both of these are signs of immune system failure. Only confirmed reports of HIV and AIDS cases are accepted; anonymous test results are not reported. Reports are received from a variety of sources, including hospitals, private physicians' offices, community-based organizations, clinics, and laboratories. Data on HIV and AIDS cases are entered into the federally issued enhanced HIV/AIDS Reporting System (eHARS) and de-identified case information is shared with CDC monthly. CDC uses these data to prepare national surveillance reports.

Please note that the term "HIV" encompasses all persons living with HIV infection regardless of their stage of disease (including persons diagnosed with HIV infection who have not progressed to AIDS, persons who were diagnosed with HIV infection and AIDS at the same time, and persons who were diagnosed with HIV infection and later received an AIDS diagnosis. This is consistent with the Centers for Disease Control and Prevention HIV surveillance categorization and reports.

Understanding the District of Columbia HIV Prevalence Estimate

There were 680 newly diagnosed HIV cases reported in 2012. However, the total number of persons living with HIV in the District increased by 1,016 cases compared with last year's report. In addition, the prevalence of HIV increased from 2.4% in the 2011 Annual Report to 2.5% in this year's report. Reasons for the changes in these data include the following:

1. Completeness of vital status data continues to improve. HAHSTA matched HIV cases with Social Security Death files, as well as the National Death Index, to determine the vital status of persons diagnosed with HIV in the District. While HAHSTA routinely receives information regarding District of Columbia residents who have died, national death matches provide information about persons diagnosed in the District who moved outside the District. Executing matches reduces case counts, resulting in a more accurate prevalence estimate of persons living with HIV in the District.

Year of HIV Diagnosis	Potential Duplicate Cases Identified	Cases Assigned to Another State/Jurisdiction	
		(N)	(%)
2008	1,056	241	22.8
2009	844	180	21.3
2010	673	158	23.5
2011	570	162	28.4
2012	394	91	23.1

2. CDC routinely notifies HAHSTA if an HIV case reported in DC appears to be the same person reported in another state or jurisdiction. CDC makes this determination based on the soundex (a phonetic algorithm for indexing names) of a person's name, date of birth, and sex at birth; CDC does not have access to names, so matches must be determined through this process. Each case is investigated to determine if both states/ jurisdictions are reporting on the same individual. If such a determination is made, the state with the earliest report date counts the case as diagnosed with HIV in its jurisdiction. The summary table on the previous page shows the number of times newly diagnosed cases were identified as a possible duplicate report and the number and proportion of possible duplicates that were assigned to another state or jurisdiction.

3. In the 2011 Annual Report, and in all previous reports, the prevalence of HIV in the District was calculated by dividing the number of adults and adolescents diagnosed and living with HIV (that is, persons 13 years of age and older at the time of HIV diagnosis) by the population of the District that was 13 years of age and older in the calendar year. Pediatric cases, or persons less than 13 years of age at HIV diagnosis, were not included in the prevalence calculation.

   HAHSTA included pediatric cases in the prevalence calculation in this year's report to fully reflect the HIV epidemic in Washington, DC.

$$\text{Prevalence Calculation: } \frac{\text{16,072 persons living with HIV as of December 2012}}{\text{632,323 persons living in the District, 2011}} = 2.5\%$$

   Persons diagnosed at 13 years of age or younger are living longer lives due to advances in HIV care and treatment; the median age among pediatric cases living as of Dec. 31, 2012 was 19 years. Addition of this age group decreases the calculated prevalence of HIV because the denominator, or total population of the District, increased by including those between 0 and 12 years of age, and the prevalence of disease in this age group is low.

4. The District of Columbia's population is changing as evidenced by the 2010 US Census and 2012 US Census Bureau population estimates. The table below depicts the percent change between the 2010 Census and 2012 population estimates. There was an estimated 4.5% increase in the total number of persons living in the District.

	DC Population† 2010	Estimated DC Population††, 2012	Percent Change
	N	N	%
Sex			
Male	285,786	299,041	4.6
Female	319,126	333,282	4.4
Total	604,912	632,323	4.5
Race/Ethnicity			
White	211,121	224,327	6.3
Black	303,731	307,150	1.1
Hispanic	55,266	62,726	13.5
Other*	34,794	38,120	9.6
Total	604,912	632,323	4.5
Current Age			
<13	73,919	83,159	12.5
13-19	50,090	49,050	-2.1
20-29	134,520	135,760	0.9
30-39	98,546	109,006	10.6
40-49	76,478	78,409	2.5
50-59	72,098	73,456	1.9
≥60	99,261	103,483	4.3
Total	604,912	632,323	4.5

†Source: 2010 US Census
††Source: 2012 US Census Bureau population estimates
*Other race includes mixed-race individuals, Asians, Alaska Natives, American Indians, Native Hawaiian, Pacific Islanders, and unknowns

The composition of District residents also changed by race/ethnicity and age. The number of Hispanics living in the District increased by 13.5% and the number of those classified as other race increased by 9.6%. The percent change among blacks was negligible at 1.1%. In addition, the population between 0 and 12 years of age increased by 12.5%, while the population between 13 and 19 years of age decreased by 2.1%. It is also important to note that the population between 30 and 39 years of age increased by 10.6%.

Understanding Sexually Transmitted Disease (STD) Surveillance

Currently, chlamydia, gonorrhea, and syphilis are the only STDs for which surveillance data are routinely collected and analyzed in the District. Local reporting laws require all clinicians and laboratories to report findings relevant to STDs – including positive test results, patients receiving STD treatment, and suspicious STD related symptoms – to the Department of Health.

STD morbidity reports should include the patient's name, address, and requested demographic information (sex, age, race, ethnicity, etc.); however, demographic information is often missing from these reports. The percentage of cases missing pertinent data varies depending on the disease and the variable of interest. For example, in 2011, only 38 (0.5%) cases of reported chlamydia had "unknown" sex, but 847 (32.5%) cases of reported gonorrhea had "unknown" race.

Data on race and ethnicity are reported separately and are not mutually exclusive variables. Therefore, an individual of Hispanic and black origins could be counted as black non-Hispanic, black Hispanic, black of unknown ethnicity, Hispanic of unknown race, or possibly non-Hispanic of unknown race, depending on the completeness of information reported. For these reasons, reported totals by demographic factors such as race and ethnicity represent estimates and should be interpreted with caution.

In addition, unlike HIV surveillance, STD surveillance is based on incident (new) infections. Some individuals may be diagnosed multiple times with the same STD, or with different types of STDs at the same time. Additionally, primary and secondary syphilis cases are used as a measure of disease incidence, while early latent and late latent syphilis cases are a better indicator of disease prevalence.

Understanding Viral Hepatitis Surveillance for the District of Columbia

Viral hepatitis is a nationally and locally reportable disease. The District of Columbia Municipal Code (22 DCMR Chapter 2 201.5) mandates reporting of "hepatitis, infections and serum" by health care providers, and medical institutions such as hospitals and laboratories. Hepatitis cases are primarily reported to the DOH by laboratory reports; however, they are also identified through reports from health care providers, hospitals, clinics and through reports from other health departments. In some instances, the DOH requires additional information to classify a case, therefore hepatitis program investigators contact providers and patients to obtain more complete information. It should be noted that federal funding is not currently available to support or strengthen case surveillance for viral hepatitis.

The District's hepatitis surveillance program uses a confidential name-based Viral Hepatitis Registry (VHR) which includes basic demographic data, diagnosis, and event/illness onset dates, when available. Supplemental information collected through the case investigation process is documented and often includes clinical features, serologic test results, and risk factors for infection. This information is compiled and used to classify cases according to the CDC/Council of State and Territorial Epidemiologists (CSTE) and DC-specific case definitions. Locally, confirmed chronic hepatitis B or C cases include a complete series of labs. A probable case of chronic hepatitis B or C is a combination of reported lab results that are an incomplete series and don't include all results necessary to confirm a diagnosis. A suspect case of chronic hepatitis C includes a single positive lab result indicative of possible chronic hepatitis C.

Understanding Tuberculosis Surveillance

In the District of Columbia, active tuberculosis (TB) is a reportable condition by both medical providers and laboratories. Medical providers must report anyone who is diagnosed with, or has symptoms suspicious of, TB. Laboratories are required to report preliminary tests indicative of active TB, as well as confirmed tests. In any given year 25% to 30% of initial reports of persons with suspicious clinical or laboratory findings will be verified as TB by laboratory confirmation or clinical case definition. Receiving initial reports allows HAHSTA to begin immediate medical and epidemiological follow-up on suspect cases; this is done to interrupt potential disease transmission while the person waits for final results, which could take as long as eight weeks.

Understanding Geographic Mapping

Availability of ward-level data varies by disease. Where these data were not available, cases were excluded in the maps. For persons who were incarcerated, in temporary housing, or lacking housing at the time of diagnosis, ward is reported separately from the maps as "jail" and "homeless" cases. When calculating rates by ward, the base population used is the District population from the 2010 US Census. Ward of residence is not indicative of where a person was infected, but represents where the person resided at the time of diagnosis.