HIV EPIDEMIOLOGIC PROFILE
WEST VIRGINIA

2017

West Virginia HIV/AIDS Surveillance Program

WEST VIRGINIA Department of Health & Human Resources
BUREAU FOR PUBLIC HEALTH

Office of Epidemiology and Prevention Services
350 Capitol Street, Room 125
Charleston, West Virginia 25301

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HIV Epidemiologic Profile
West Virginia
2017

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Data in this document are presented for diagnoses of HIV and AIDS diagnosed through December 31, 2016, and reported to the West Virginia Department of Health and Human Resources through March 10, 2017. Data are provisional and may vary in time due to new cases that are received and/or lost to other states. All data excludes individuals who currently reside in federal prison unless otherwise noted.

AIDS became a reportable disease by legislative rule in West Virginia in April 1984. HIV became reportable by name in West Virginia in September 1989.

NOTICE TO HEALTH CARE PROVIDERS, LABORATORIES, AND OTHERS RESPONSIBLE FOR DISEASE REPORTING:

West Virginia Code §16-3C-8, §16-3-1 et seq., 64CSR64, and 64CSR7 require that all positive HIV test results and all cases of AIDS as defined by the CDC must be reported to the West Virginia Bureau for Public Health. For information on the CDC AIDS case definition, to obtain case report forms, or to report a case, contact:

West Virginia Division of STD and HIV
350 Capitol Street, Room 125
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Table of Contents

Executive summary **9**

Purpose and data sources 14

Technical notes 16

Sociodemographics **20**

People living with diagnosed HIV 25

New HIV diagnoses 28

Men who have sex with men 30

Blacks 33

Females 36

Hispanics/Latinos 39

Age 42

The intersection between HIV and other diseases

STDs and HIV coinfections 45

Viral hepatitis and HIV coinfections 47

Injection drug use and HIV 51

Tuberculosis and HIV coinfections 54

HIV and mortality 56

HIV continuum of care **59**

Appendix **62**

Figures and Tables

Figure 1. West Virginia population estimate, 2016 20
Figure 2. West Virginia's population distribution by age group and sex, 2016 20
Figure 3. Percentage of population of the United States and West Virginia by race, 2016 21
Figure 4. Percent uninsured by county in West Virginia, 2015 21
Figure 5. Median household income by county in West Virginia, 2015 21
Figure 6. Percentage living in poverty by county in West Virginia, 2015 22
Figure 7. Median income by highest education level and sex for West Virginia, 2015 22
Figure 8. Public Health Management Districts for West Virginia 23
Figure 9. Number of PLWH by current age in West Virginia, 2016 25
Figure 10. Number of PLWH by race/ethnicity in West Virginia, 2016 25
Figure 11. Percentage of PLWH by risk factor in West Virginia, 2016 26
Figure 12. PLWH by Public Health Management District in West Virginia, 2016 27
Figure 13. Number of new diagnoses of HIV by disease stage in West Virginia, 2012–2016 28
Figure 14. Number of new diagnoses of HIV infections by sex in West Virginia, 2012–2016 28
Figure 15. Number of new HIV diagnoses by age and sex in West Virginia, 2012-2016 29
Figure 16. Percentage of HIV diagnoses by race/ethnicity in West Virginia, 2012-2016 29
Figure 17. Number of new diagnoses of HIV by county in West Virginia, 2012-2016 30
Figure 18. Percentage MSM by age at HIV diagnoses in West Virginia, 2012–2016 31
Figure 19. Percentage of MSM with new diagnoses of HIV by race/ethnicity in West Virginia, 2012–2016 32
Figure 20. Number of new diagnoses of HIV among blacks by age and sex in West Virginia, 2012–2016 33
Figure 21. Number of new HIV diagnoses by risk factor and race/ethnicity in West Virginia, 2012–2016 34
Table 1. Number of new diagnoses of HIV by transmission risk, race/ethnicity, and sex in West Virginia, 2012–2016 35
Figure 22. Number of new diagnoses of HIV among women by age group in West Virginia, 2012–2016 36
Figure 23. Percentage of new diagnoses of HIV among women by race/ethnicity in West Virginia, 2012–2016 36
Figure 24. Percentage of new diagnoses of HIV among women by exposure category in West Virginia, 2012–2016 37
Figure 25. Number of new diagnoses of HIV among Hispanics/Latinos by age and sex in West Virginia, 2012-2016 39
Figure 26. Number of new diagnoses of HIV excluding stage 3 (AIDS) in West Virginia, 2012-2016 40
Figure 27. Estimated number of diagnosed HIV infections by age in the United States, 2014 42
Figure 28. Number of PLWH by age in West Virginia, 2016 43
Figure 29. Number of new diagnoses of HIV by age in West Virginia, 2012-2016 44

Figure 30. Number of Early Syphilis Infections diagnosed in West Virginia, 2009–2016.....45
Figure 31. Number of gonorrhea and chlamydia Infections by sex diagnosed in West Virginia, 2012–2016.....46
Figure 32. Percentage HIV/hepatitis coinfection by age group in West Virginia, 2012–2015.....47
Figure 33. Percentage HIV/Hepatitis coinfection by sex in West Virginia, 2012–2015 47
Figure 34. Percentage HIV/Hepatitis coinfection by race/ethnicity in West Virginia, 2012–2015.....48
Figure 35. Percentage HIV/Hepatitis coinfection by risk factor in West Virginia, 2012–2015 48
Figure 36. Number of HIV/HCV coinfections by county in West Virginia, 2012–2016 49
Figure 37. Number of diagnoses of HIV infection with IDU risk factor by county in West Virginia, 2012–2016.....51
Figure 38. Number of diagnoses of HIV infection by age among PWID in West Virginia, 2012-2016.....51
Figure 39. County-level vulnerability to rapid spread of HIV infection among persons who inject drugs 52
Figure 40. Number of active TB infections reported by year in West Virginia, 2009-2016.....54
Figure 41. Number of active TB infections reported by county in West Virginia, 2009-2016 54
Figure 42. Number of active TB infections reported by age in West Virginia, 2016.....55
Figure 43. Number HIV deaths and median age at death by year in West Virginia from 1984–2016 56
Table 2. Underlying cause of death among HIV infected people originally diagnosed in West Virginia, 2012–2016.....57
Figure 44. Number of diagnosis of HIV infection and deaths by year in West Virginia, 1983–2016 58
Figure 45. Number of HIV screening tests in West Virginia by year, 2012-2016.....59
Figure 46. West Virginia continuum of care.....60
Table 3. Rates of persons living with diagnosed HIV in West Virginia by county, December 31, 2016 ..62
Figure 47. Crude rates of persons living with diagnosed HIV in West Virginia by county, 2016 63
Figure 48. Crude rates of persons living with diagnosed HIV in West Virginia by county, 2016 63
Figure 49. Diagnoses of HIV, all races/ethnicities, both sexes, ages 13 and above, for the United States and Territories of the United States, 2015 (West Virginia with 4.7 new diagnoses per 100,000) ..63

Executive summary

The human immunodeficiency virus (HIV) epidemic is an ongoing public health concern in West Virginia. The number of people living with diagnosed HIV (PLWH) continues to grow, presenting challenges for prevention and clinical services.

West Virginia is considered to be a low incidence HIV state. In recent years, the average annual number of new diagnosed HIV infections is 81. Persons at greatest risk for acquiring HIV in West Virginia are gay, bisexual, and other men who have sex with men (MSM) and high-risk heterosexuals.

Overall risk of HIV infection

People living in West Virginia were less likely to be diagnosed with an HIV infection over the course of their life than people living in other parts of the country. [1] West Virginia was ranked 39th in the United States for lifetime risk of HIV diagnosis at 1 in 302 people. Among U.S. States, Maryland had the highest lifetime risk (1 in 49 people) and North Dakota (1 in 670 people) had the lowest. However, West Virginia remains vulnerable to an HIV outbreak among persons who inject drugs (PWID) because PWID are likely to share injection equipment, which is the most efficient way to transmit HIV. In fact, in an assessment of U.S. counties vulnerable to HIV and hepatitis C (HCV) infections, 28 counties in West Virginia were among the 220 most vulnerable counties (the top 5.0%) in the U.S. [2, 3]

Geographic distribution

West Virginia is the only state that is entirely within the Appalachian region, which has a large rural population well-known for high poverty, low education levels, and high unemployment. West Virginia continues to have several economic and public health challenges. In 2015, West Virginia ranked last in the nation with an employment-to-population ratio of 49.4%, compared to the national average of 59.3%.[4] United Health Foundation's *America's Health Rankings* for 2015 found that Americans are making considerable progress in key health measures. West Virginia, however, ranked either last or second-to-last in 17 categories, such as health behaviors, child immunization, clinical care, diabetes, drug deaths, obesity, premature death, preventable hospitalizations, and smoking.

The top five counties in West Virginia that reported new diagnoses of HIV infection including stage 3 (AIDS) during 2012–2016 were Kanawha (n=44), Raleigh (n=25), Cabell (n=23), Berkeley (n=20), and Monongalia (n=17). Prevalence of HIV is greatest in the major urban areas of the State, such as Martinsburg (Berkeley County, 213 HIV cases per 100,000 population), Charleston (Kanawha County, 171 per 100,000) the most populous city in West Virginia, Huntington (Cabell County, 166 per 100,000), Beckley (Raleigh County, 158 per 100,000), and Morgantown (Monongalia County, 127 per 100,000).

While there is local transmission of HIV within these areas, high risk behavior extends beyond West Virginia's borders. Morgantown, as well as other counties in the northern panhandle fall within the sphere of Pittsburgh, Pennsylvania. Jefferson (Charles Town) and Berkeley (Martinsburg) counties fall within the District of Columbia's catchment area. These areas report

much higher infection rates compared to West Virginia.

New HIV infections diagnosed in West Virginia 2012–2016

In 2016, West Virginia's estimated population was 1.8 million with a non-Hispanic white majority (93.6%).[5] Most new diagnoses of HIV infections, including stage 3 (AIDS), occurred among non-Hispanic white males (58.9%), during 2012–2016. Non-Hispanic blacks are the largest minority in the state and are disproportionately affected by HIV disease as compared with non-Hispanic whites. Blacks represent 3.6% of West Virginia's population, but account for 17.7% of HIV infections (down from 33.0% during 1989–2011) and 17.0% of those with AIDS.

Among people diagnosed with a new HIV infection (n=406) from 2012–2016, male-to-male sexual contact is the most reported transmission category, accounting for 67.2% (n=217) of new diagnoses among men (n=323) and 53.4% of new infections overall. The largest percentage of new diagnoses of HIV infections in West Virginia occurred among people aged 25-34 years (27.3%), followed by 35-44 years (23.6%), and youth aged 13-24 years (19.0%). Combined, HIV infections among those aged 13-34 years accounted for 46.3% (n = 188) of new HIV infections in West Virginia during this time period.

The proportion of West Virginians with a newly diagnosed HIV infection who reported past injection drug use (IDU) has declined from 16.0% (1989 – 2011) to 9.0% (2012–2016). Heterosexual contact was the most frequently cited transmission category reported among women during 2012–2016.

Delayed diagnosis

Many West Virginians continue to be diagnosed with an HIV infection late in the course of the disease (stage 3 or AIDS). Any HIV infection that has an associated AIDS defining event at the time of or within 12 months of diagnosis is considered to be a delayed diagnosis. Approximately 26.4% of people receiving new HIV diagnoses are simultaneously diagnosed with AIDS (i.e., diagnosed with AIDS ≤ 30 days from their first confirmed positive HIV test). Another 7.3% had an HIV infection, which progressed to AIDS within 12 months.

Criteria for an AIDS-defining event are CD4+ T-lymphocyte counts of <200 cells/µL or CD4+ T-lymphocyte percentage <14%, and certain HIV-related conditions and symptoms. The CD4+ T-lymphocyte percentage is used only when the corresponding CD4+ T-lymphocyte count is unknown. This avoids overestimating the proportion of cases in stage 3 (AIDS).[6]

Approximately 33.0% of the HIV-infections diagnosed during 2012–2016 were classified as having a delayed diagnosis. Late diagnosis was more common among males (87.5%) compared to females (12.5%) and evenly split between ages 25-34 (24.1%) and ages 35-44 (24.1%) as compared to lower percentages for younger and older patients.

While non-Hispanic whites (72.3%) were the most common among late testers, non-Hispanic blacks (<4% of the population) and Hispanics (<2% of the population) were disproportionally

high based on population size (16.1% and 4.5% respectively).

Among late testers, male-to-male sexual contact was the most common route of transmission (56.3%) followed by heterosexual contact (15.2%) and then IDU (6.3%) or 8.9% including MSM/IDU.

In 2015, West Virginia had the third highest percentage stage 3 (AIDS) classification at HIV diagnosis among 38 United States jurisdictions. A study conducted by the Centers for Disease Control and Prevention (CDC) found 37.5% stage 3 (AIDS) classification at diagnosis of HIV among persons aged ≥ 18 years residing in West Virginia. Stratified by race and ethnicity, non-Hispanic blacks (54.5%) were more likely to be simultaneously classified at stage 3 (AIDS) when diagnosed with HIV than non-Hispanic whites (32.7%).[7]

People living with diagnosed HIV (PLWH)

There were an estimated 1,746 people living with diagnosed HIV (PLWH) in West Virginia at the end of 2016. Most PLWH are over the age of 45 (64.6%), non-Hispanic white (72.6%), predominately male (77.9%), and had male-to male sexual contact (53.2%).

For HIV surveillance purposes, counties in West Virginia are grouped into eight Public Health Management Districts. By the end of 2016, the three districts with the highest number of PLWH are District 3 (n=399), District 7 (n=302), and District 8 (n=292). Within these districts PLWH mostly reside within the major population centers, of Charleston (Kanawha County) in District 3, Martinsburg (Berkeley County) in District 8, and Morgantown (Monongalia County) in District 7.

Indicators HIV infection risk among youth

Many young people engage in sexual risk behaviors that can result in unintended health outcomes. Sexual risk behaviors place adolescents at risk for HIV infection, other sexually transmitted diseases (STDs), and unintended pregnancy. In 2015, the proportion of high school students who ever had sexual intercourse[8] was 46.7% and among those who had sex, 48.5% did not use a condom during last sexual intercourse.[9]

Sexually transmitted diseases

Early syphilis (the most infectious stage) remains a health problem in West Virginia, primarily among men who have sex with men. In West Virginia, the rate of early syphilis was 0.22 per 100,000 in 2011 and increased sharply to 5.07 per 100,000 in 2015. West Virginia ranked 44th in rates of primary and secondary syphilis among 50 states, in 2014.[10]

In 2014, West Virginia had the lowest incidence, 50th among 50 states, in chlamydial infections (245 per 100,000 persons) and ranked 44th among 50 states in gonorrheal infections (45.4 per 100,000 persons). Reported rates of chlamydia among women (357.5 cases per 100,000) were 2.4 times greater than those among men (148.9 cases per 100,000).[11,12]

Hepatitis

Infection with hepatitis A (HAV), hepatitis B (HBV), and HCV are markers for risk of HIV

infection. Nationally, of people infected with HIV, about 25.0% are coinfected with HCV, and about 10.0% are coinfected with HBV. HIV coinfection more than triples the risk for liver disease, liver failure, and liver-related death from HCV.[13]

In West Virginia, between 2010 and 2014, reported rates of acute HAV decreased by 25%. Reported rates of acute HVB increased by 111% and were highest among 50 states. Reported rates of acute HCV increased by 195%.[14] Drug use, including IDU, and incarceration are frequent self-reported risk factors for people infected with HCV.

West Virginia at high risk because of IDU

The drug overdose epidemic in West Virginia is very concerning. In 2014, West Virginia had the highest rate of opioid deaths of any state, with an age-adjusted rate of 35.5 opioid deaths per 100,000 (n=627). People who inject drugs (PWID) are at substantial risk of death due to overdose and of infection with HBV, HCV, and HIV. Due to the increase in IDU, 28 counties in West Virginia have been identified as being vulnerable to an HIV/HCV outbreak.[15] While this has been a risk for some time, introduction of HIV among the growing number of persons who inject drugs in West Virginia could fuel the rapid spread of HIV.

West Virginia remains a low-morbidity state for HIV and STDs. The West Virginia HIV rate of new diagnoses per 100,000 was 6.1 in 2014.[16] However, West Virginia is bordered by states with much higher rates, such as Maryland (27.7), Virginia (14.1), Pennsylvania (12.2), Ohio (10.3), and Kentucky (9.9) for 2014. Jefferson and Berkeley counties fall within the District of Columbia's catchment area. The District of Columbia had the highest rate of 66.9 HIV infections per 100,000 in the United States for 2014.

A variety of factors might contribute to West Virginia's lower HIV infection rates, including a population that is more rural than many other states. Only three counties have more than 100,000 people. The population is fairly homogeneous, non-Hispanic white (93.6%) with a small non-Hispanic black population (3.6%), which is one of the racial/ethnic groups most affected by HIV in the United States.[17]

However, the current dynamics of HIV infection could change due to increased number of PWID, mobile "hookup" applications, increased co-infections, and multi-directional sexual transmission across state boundaries. Consequently, to adequately address these changing dynamics, cross jurisdictional and advanced coordinated surveillance techniques, IDU treatment, harm reduction/syringe services programs, health care, wrap around services, and effective prevention activities, such as providing pre-exposure prophylaxis (PrEP) are needed.

Deaths among persons with HIV

From 1982 through the end of 2016, 3,054 West Virginia residents were diagnosed with an HIV infection. By the end of 2016, over 41.0% had died (n=1,263). Due to antiretroviral therapy (ART), the number of deaths due to HIV as an underlying factor have been decreasing.

[1] 2016 Conference on Retroviruses and Opportunistic Infections http://www.cdc.gov/nchhstp/newsroom/2016/croi-2016.html#Graphics2

[2] MM Van Handel, CE Rose, EJ Hallisey, JL Kolling, JE Zibbell, Brooks County County-level Vulnerability for Rapid Dissemination of HIV or HCV Infections among Persons who Inject Drugs, United States, JAIDS Journal of Acquired Immune Deficiency Syndromes Publish Ahead of Print DOI: 10.1097/QAI.0000000000001098

[3] Vulnerability Assessment: Talking Points for Key State Health Departments; CDC

[4] Regional and State Unemployment – 2015 Annual Averages, Bureau of Labor Statistics U.S. Department of Labor http://www.bls.gov/news.release/pdf/srgune.pdf

[5] United States Census QuickFacts http://www.census.gov/quickfacts/table/RHI105210/54

[6] MMWR Recommendations and Reports / Vol. 63 / No. 3 April 11, 2014 Revised Surveillance Case Definiation for HIV Infection – United States, 2014 https://www.cdc.gov/mmwr/pdf/rr/rr6303.pdf

[7] HIV Surveillance Report Supplemental Report, Volume 22, Number 4 https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-supplemental-report-vol-22-4.pdf

[8] Sexual Risk Behaviors: HIV, STD, & Teen Pregnancy Prevention https://www.cdc.gov/healthyyouth/sexualbehaviors/

[9] Youth Risk Behavior Surveillance — United States, 2015, MMWR Surveillance Summaries / Vol. 65 / No. 6 June 10, 2016 http://www.cdc.gov/mmwr/volumes/65/ss/pdfs/ss6506.pdf

[10] Table 26. Primary and Secondary Syphilis - Reported Cases and Rates of Reported Cases by State, Ranked by Rates, United States, 2014 http://www.cdc.gov/std/stats14/tables/26.htm

[11] Sexually Transmitted Disease Surveillance 2014 https://www.cdc.gov/std/stats14/surv-2014-print.pdf

[12] West Virginia – State Health Profile 2015 http://www.cdc.gov/nchhstp/stateprofiles/pdf/West_Virginia_profile.pdf

[13] HIV and Viral Hepatitis https://www.cdc.gov/hiv/pdf/library_factsheets_hiv_and_viral_hepatitis.pdf

[14] Viral Hepatitis Surveillance United States, 2014 http://www.cdc.gov/hepatitis/statistics/2014surveillance/pdfs/2014hepsurveillancerpt.pdf

[15] Brooks, JT County County-level Vulnerability to Rapid Dissemination of HIV/HCV Infection Among Persons who Inject Drugs March 10, 2016 National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Division of HIV/AIDS Prevention, West Virginia State Profile

[16] NCHHSTP AtlasPlus http://gis.cdc.gov/grasp/nchhstpatlas/main.html?value=atlas

[17] HIV Among African Americans http://www.cdc.gov/hiv/group/racialethnic/africanamericans/

WEST VIRGINIA Department of Health & Human Resources BUREAU FOR PUBLIC HEALTH

Epidemiologic resources:
West Virginia HIV/AIDS Surveillance Program
www.hiv.wv.gov
Centers for Disease Control and Prevention
www.cdc.gov/hiv

Purpose and data sources

Purpose

The *West Virginia HIV Epidemiologic Profile* was designed to inform policy makers, prevention and care planning groups, grantees, and applicants for funding. This profile has been designed to be user-friendly and does not require an in-depth knowledge of biostatistics or epidemiology. This document can be used to better understand the HIV epidemic in West Virginia and to:

- Set priorities among populations who need prevention and care services
- Provide a basis for determining or projecting future needs
- Develop requests for proposals to providers and subcontractors
- Increase general community awareness of HIV
- Disseminate data to providers
- Frame research and evaluation questions
- Apply for and receive funding
- Respond to public needs (e.g., educators, funding agencies, media, policymakers)

The *West Virginia HIV Epidemiologic Profile* was designed to accomplish four goals:

- Provide a thorough description of HIV among the various populations (overall and subpopulations) in West Virginia in terms of sociodemographic, geographic, behavioral, and clinical characteristics.
- Describe the current status of persons with HIV infection in the service area and provide some understanding of how the HIV distribution may look in the future.
- Identify characteristics of the general population and of populations who are living with, or at high-risk for HIV in defined geographic areas and who need primary and secondary prevention or care services.
- Provide information required to conduct needs assessments and gap analyses.

Data sources

HIV infections: The West Virginia HIV/AIDS Surveillance Program has the overall responsibility for the collection, analysis, and reporting of HIV data for the State. AIDS became a reportable disease by legislative rule in West Virginia in April 1984. HIV became reportable by name in West Virginia in September 1989. Data are collected on standardized reporting forms and include demographic characteristics, laboratory and clinical information, mode of exposure, opportunistic infections and treatment and referral services. Data are obtained from mandatory laboratory reporting and medical record abstractions. All data are stored in the Enhanced HIV/AIDS Reporting System (eHARS). eHARS data are only representative of reported infections. Consequently, persons tested and not reported, persons testing anonymously, and persons undiagnosed/untested are not included in surveillance data. No adjustments have been made to the data to account for reporting delay or missing mode of transmission unless indicated. CDC calculations of undiagnosed infections were used to estimate the number of persons living with HIV disease in West Virginia and by transmission category.

Sexually transmitted disease (STD) data: STD data are collected by the STD program. The primary goal of the West Virginia STD Program is to prevent the spread and resultant sequelae of STDs, including HIV infections. There is a strong association between HIV and sexually

transmitted diseases, as they have similar modes of transmission. Therefore, STD rates are a useful indicator of risky sexual behaviors at the population level. By examining rates of STD infections in the state, additional insight on behavioral groups to target for HIV prevention may be discovered.

Vital statistics data: The West Virginia Health Statistics Center maintains a database of vital records, including birth and death data (including deaths due to drug overdose). Mortality data can be used to monitor and evaluate health status in terms of current mortality levels and long-term mortality trends, as well as to identify segments of the population at greatest risk of death from specific diseases and injuries. Mortality data are useful for HIV surveillance in ascertaining deaths of persons diagnosed with HIV infection, including leading and underlying causes of death. These data are linked with HIV data at least annually. HIV data are also linked with Social Security Death Master Files annually.

Youth Risk Behavioral Survey (YRBS): West Virginia participates in CDC YRBS, administered every two years to a randomly selected sample of middle and high schools across the state. Students participation is confidential, and questions regarding their participation in risky behavior are administered. Areas of interest include sexual risk behavior, alcohol and drug use, injury and violence, tobacco use, nutrition and physical activity. West Virginia data are compared to other states' data. Data are used to note areas of need, affect policies and improve and structure programs on both the national and state level.

Tuberculosis (TB) surveillance data: The West Virginia Division of Tuberculosis Elimination (DTBE) is authorized by state law to coordinate TB control activities in order to eliminate indigenous transmission of tuberculosis infection in West Virginia. Newly diagnosed TB cases co-infected with HIV are reported to the HIV/AIDS Surveillance Program as needed.

Hepatitis data: Division of Infectious Disease Epidemiology (DIDE) has overall responsibility to conduct surveillance for hepatitis infections. The West Virginia Electronic Disease Surveillance System (WVEDSS) is used to record all new HBV or HCV positive laboratory results indicating a current HBV or HCV infection, through electronic laboratory reporting (ELR).

Care data: Information on persons living with HIV infection who are receiving regular HIV-related care were obtained from HIV surveillance data, Ryan White Part B and C Program data, and AIDS Drug Assistance Program (ADAP) data. Persons are considered to be living with unmet need if no evidence of HIV–related care can be accessed through any one of these systems.

Technical notes

Definitions

Age at diagnosis: Age at diagnosis is the age of the individual at the time he/she was diagnosed with HIV and/or AIDS.

AIDS: Diagnosis with any one of 26 different opportunistic illnesses which are indicative of a severe immune deficiency or a laboratory test demonstrating severe immune deficiency (i.e., CD4 count <200 or CD4 percent <14%).

AIDS diagnoses: The total number of persons diagnosed with AIDS who were residing in West Virginia when they were diagnosed with AIDS. This category includes persons diagnosed with AIDS both living and deceased.

Blood recipient: HIV transmission via transfusing blood or blood products or transplanting tissue or organs.

Case: A reported instance of HIV infection or AIDS in which the individual who received a confidential HIV or AIDS diagnosis resided in West Virginia at the time of diagnosis. HIV cases do not include persons with a current HIV diagnosis who were originally reported with HIV in another state or United States territory. AIDS cases include all persons who resided in West Virginia at time of AIDS diagnosis, regardless of where an earlier HIV diagnosis might have occurred.

Deaths: Cumulative deaths are the total number of deaths counted from when West Virginia first reported AIDS (1984) and HIV (1989) through the end of the report year.

Deaths among persons diagnosed with HIV are included regardless of whether the death was attributed to HIV or AIDS. Deaths are counted for those persons originally diagnosed in West Virginia. Persons who died out of state may not be reflected in this data.

Disease rate: A standardized proportion often used to represent risk for disease within a given population. A rate is usually calculated by dividing the number of cases (disease frequency) by the number of persons at risk for the disease (population estimate). Usually the size of the general population, rather than of the population potentially exposed to HIV infection by various high risk behaviors, is used as the denominator since the latter is unknown. In this report, all rates are reported as cases per 100,000 West Virginia residents.

Epidemiology: The study of the distribution, determinants and frequency of disease in humans.

Enhanced HIV/AIDS Reporting System (eHARS): The eHARS database contains names of HIV-positive persons reported in West Virginia. The purpose of this surveillance system is to help West Virginia monitor and respond to changes in the epidemic. eHARS contains names, demographic information, risk behaviors, opportunistic infections and laboratory data related to HIV disease status.

Ethnicity: There are two ethnicity categories: Hispanic/Latino and not Hispanic/Latino. All persons who identified as Hispanic/Latino are classified as Hispanic/Latino regardless of their racial identification.

Heterosexual contact: Includes persons who had heterosexual contact with an HIV-infected person, an injection drug user, or a person who has received blood products. For females only, history of heterosexual sex with a bisexual male

constitutes a transmission category of heterosexual contact.

HIV/AIDS transmission categories: A hierarchy of transmission categories developed by the Centers for Disease Control and Prevention (CDC) is used for surveillance purposes. Persons with more than one reported transmission risk are classified in the category listed first in the hierarchy, except for men who have sex with men (MSM) who have a history of injection drug use (IDU) which is considered a separate category. In addition, "undetermined" risk is where a person has an incomplete transmission history. Over time, a case with an undetermined risk category may be reassigned to another category if additional information is received.

HIV diagnoses: The number of cases of a disease reported or diagnosed in a specific time, regardless of current vital status. Cumulative cases include those who have already died. AIDS and HIV disease totals are cumulative since 1984 and July 1989, respectively.

The term *diagnosis of HIV infection* refers to a diagnosis of HIV infection regardless of the person's stage of disease (stage 0, 1, 2, 3 [AIDS], or unknown) at the time of diagnosis. The diagnosis date reflects the time of testing, not the time when the person became infected. HIV surveillance data may not be representative of all persons infected with HIV because not all infected persons have been (1) tested or (2) tested at a time when their infection could not be detected and diagnosed.

HIV diagnosis date: The earliest date associated with a verifiable report of HIV infection. Verifiable reports include positive antibody tests, detectable viral loads, positive antigens or cultures, or physician diagnosis, but not self-reported diagnosis dates, positive lab results from anonymous testing, or diagnosis dates from other states that remain unverified.

HIV-Not AIDS: HIV-Not AIDS includes persons diagnosed with HIV infection in West Virginia (both living and deceased). The category HIV-Not AIDS is based on diagnoses of HIV infection and does not include every person who was infected with HIV. Furthermore, a recent diagnosis may not reflect a new infection; an individual may be diagnosed with HIV many years after he/she was first infected. HIV-Not AIDS includes some people who may have been diagnosed with AIDS in another state. Many people do not get tested for HIV and cannot be included in surveillance statistics.

Injection drug use (IDU): Includes persons who took non-prescribed drugs by injection, intravenously, intramuscularly or subcutaneously. Persons who currently inject drugs or have a history of injecting drugs.

Incidence: The number of new cases of a disease that occur in a population during a certain time period, usually a year.

Late HIV diagnosis: Refers to anyone who is diagnosed with AIDS within 12 months of their initial HIV diagnosis.

Male-to-male sexual contact (MSM): Includes males with reported sexual contact with another male.

Male-to-male sexual contact and injection drug use (MSM/IDU): Includes males who reported both male-to-male sexual contact and injection drug use or MSM who have a history of injecting drugs.

MSM (Men who have sex with men): Males who have a history of sexual contact with other men or with both men and women.

New diagnoses: Number of cases newly diagnosed over a given period of time, usually a year. In HIV surveillance, new diagnoses do not necessarily represent new infections because persons with new diagnoses may have been infected for many years. Thus, only some newly diagnosed cases are also incident cases.

New HIV disease diagnoses: Refers to anyone who is diagnosed with HIV in a given time period, regardless of disease status (whether HIV only or HIV and AIDS concurrently).

Pediatric cases: Children <13 years at the time of diagnosis.

Perinatal (pediatric) transmission: HIV transmission from mother to child during birth or through breastfeeding.

Persons living with diagnosed HIV (PLWH): This category includes the total number of persons currently living with diagnosed HIV and any stage of the disease including stage 3 (AIDS) in West Virginia, based on the most current address in eHARS. These persons may or may not have been diagnosed with HIV or AIDS in West Virginia.

Prevalence: The total number of persons living with a specific disease or condition at a given time. HIV prevalence data are generally presented as "people living with diagnosed HIV" or "PLWH."

Public health surveillance: The ongoing systematic collection, analysis, interpretation, dissemination and evaluation of population-based information about persons with a condition or risk factor of public health concern.

Race/Ethnicity: The collection of race/ethnicity data in HIV/AIDS surveillance follows CDC guidelines.

Race: There are four race categories: White, Black/African American, Asian/Native Hawaiian/Pacific Islander (API), and American Indian/Alaskan Native (AI/AN). The categories Asian, Native Hawaiian, and Pacific Islander were combined into the single category API due to their small population size in West Virginia.

Reporting delay: The time interval between the date a case is diagnosed and the date the case is reported to the health department. Reporting delays can result in data regarding recent diagnoses being incomplete.

Risk: Risk behaviors are those behaviors associated with HIV transmission. A single person may have multiple exposures, so a hierarchy is used to select the risk factor that was most likely to cause HIV transmission. However, males who report male-to-male sexual contact and injection drug use are classified into a combined category. The primary transmission categories that have been identified are: heterosexual contact, injection drug use (IDU), male-to-male sexual contact (MSM), male-to-male sexual contact and injection drug use (MSM/IDU), perinatal transmission, and transfusion/hemophilia.

Simultaneous diagnosis: Refers to anyone who was diagnosed with AIDS within 30 days of their initial HIV diagnosis.

STD: Sexually transmitted diseases (STDs) are infections that have resulted in a disease. Local

health departments offer patients tests for three STDs, gonorrhea, Chlamydia and syphilis, and provide treatment for patients diagnosed with, exposed to, or suspected of having these diseases. Sexually transmitted infections (STIs) are sexually transmitted viral or bacterial infections that might or might not have resulted in disease.

Transfusion/Hemophilia: Includes hemophilia and receipt of transfusions or transplants.

Undetermined: Persons with no identified risk (NIR) or no reported risk factor (NRR).

Women: Adult and adolescent females (determined by birth sex) aged 13 and older.

Year of report versus year of diagnosis: HIV disease is unlike most communicable diseases in that it is chronic in nature. Failure of providers to initially report cases and changes in city/county of residence after initial diagnosis can complicate case counting. Therefore, enhanced surveillance activities may artificially fluctuate the number of case reports counted by date entered into the HIV surveillance (eHARS) database (referred to as date of report). Counting cases by the date of initial diagnosis improves the analysis of the epidemic. Tabulating case totals by date of diagnosis inherently delays the reporting of disease information. Tables by date of diagnosis typically lag by one year.

Abbreviations

AIDS Acquired Immunodeficiency Syndrome

CDC Centers for Disease Control and Prevention

eHARS Enhanced HIV/AIDS Reporting System

HIV Human Immunodeficiency Virus

IDU Injection Drug Use or Injection Drug User

MSM Male-to-Male Sexual Contact or Men who have Sex with Men

MSM/IDU Men who have Sex with Men and Injection Drug Use

NIR No Identified Risk

NRR No Risk Reported

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www.hiv.wv.gov
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Sociodemographics

The population of West Virginia is less than 1% of the United States population. The State has a population of 1.83 million and is mostly rural with eleven of 55 counties with a population over 50,000 people. More than 66.0% of West Virginia residents live within rural areas.

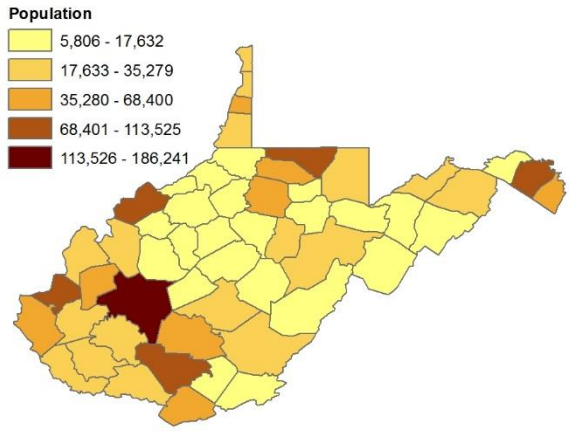
Compared to the United States as a whole, West Virginia residents have lower incomes, higher unemployment rates, and are less highly educated.[18]

Population trends

West Virginia has been in population decline (-1.2%) in recent years with approximately 10,000 fewer people in 2016 compared to the 2015 population estimate (Figure 1).[19] Charleston (49,138, 2016 estimate) and Huntington (48,113), both of which used to have greater than 50,000, people have since declined in population.

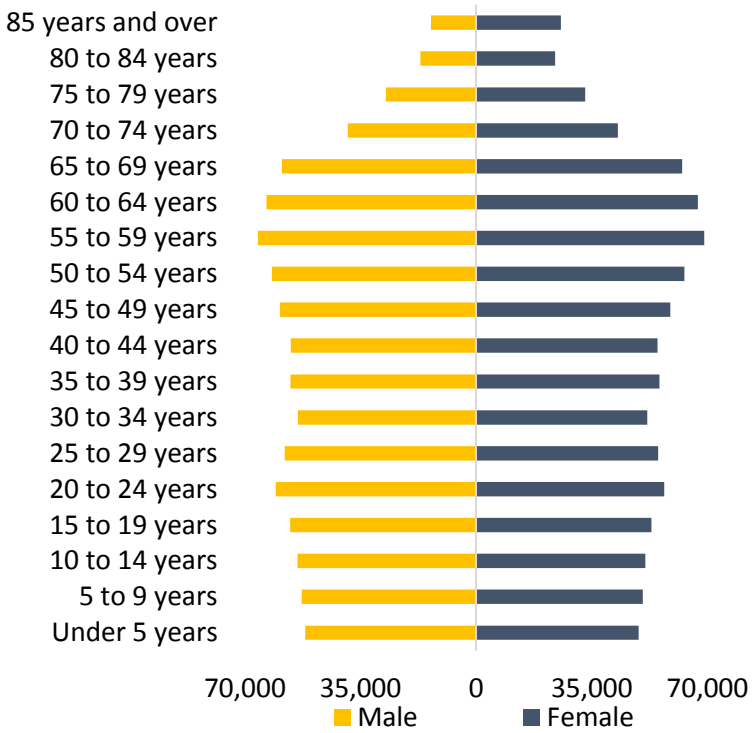
Eleven out of 55 counties, based on 2016 estimates, either had a 0.0% population change or below 1.0% positive growth. Berkeley County was the only county with a population growth above 1.0% at 1.7%. All other counties had an estimated negative population growth.[20]

Figure 1. West Virginia population estimate, 2016



Source: U.S. Census Bureau American FactFinder

Figure 2. West Virginia's population distribution by age group and sex, 2016



Source: U.S. Census Bureau American FactFinder

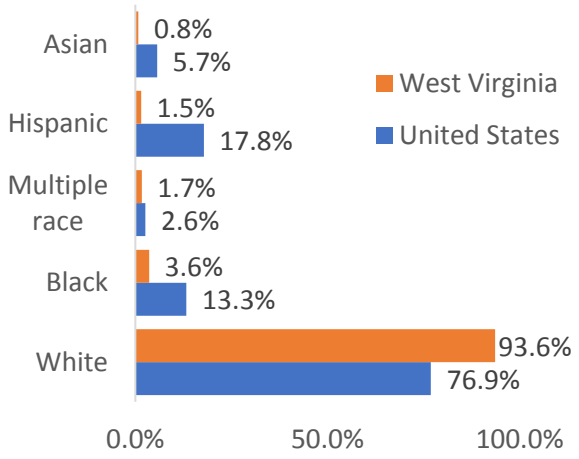
Age

West Virginia's population is older than the national age distribution. According to the United States Census Bureau, in 2015 the median age (the age at which half the population is older than and half is younger) was 41.8 years (compared with 37.6 years in the United States overall). This represents a nearly half-year increase from the median age of 41.3 years in West Virginia in 2010. During 2016, 20.5% (US 22.8%) of the population was under the age of 18, and 18.8% (US 15.2%) was 65 years and older.[21]

Sex

About 50.5% of West Virginians are female and 49.5% are male (Figure 2).[22] The younger age groups have relatively similar male to female ratios; however, the proportion of males decrease with increasing age. The ratio of male to females declines for males starting with age-group 55-59 years. In 2016, males represented 51.2% of all West Virginians under 19 years old, while in the oldest age group (85 and over) they made up 34.7% of the population. A majority (55.0%) of West Virginia's seniors are women.

Figure 3. Percentage of population of the United States and West Virginia by race, 2016



Race and ethnicity

According to the 2016 United States Census estimates, 93.6% (U.S. 76.9%) of West Virginia residents are white, 3.6% (U.S. 13.3%) are black, and 2.8% are other races (Figure 3). An estimate of two or more races increased from 1.5% in the 2010 census to 1.7% in 2016. Likewise, Hispanic or Latino increased from 1.2% in 2010 to an estimated 1.5% in 2016.[23]

Health insurance

Based on United States Census Bureau data, the estimate for uninsured people in West Virginia was around 6.5% (compared with US 10.1%) in 2016, representing a substantial decrease from 16.8% in 2013 (Figure 4).[24, 25] Improved access to insurance, both nationally and in West Virginia, is largely due to the implementation of the Patient Protection and Affordable Care Act's (ACA) mandate for personal health insurance in 2014.[26] Overall, there was an estimated 10.3% decrease in West Virginia's population without health insurance coverage. West Virginia is a Medicaid expansion state, which contributed to the overall decline in uninsured people.

Figure 4. Percent uninsured by county in West Virginia, 2015

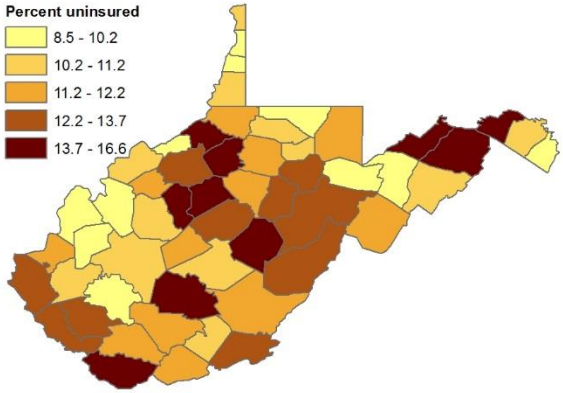
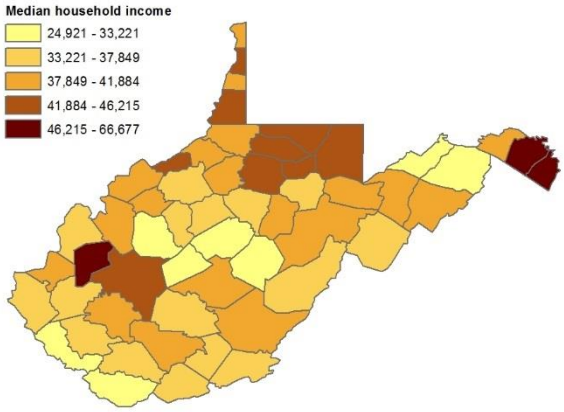


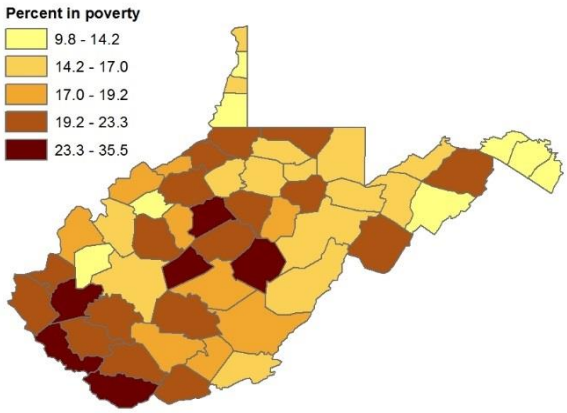
Figure 5. Median household income by county in West Virginia, 2015



Income and poverty

In 2015, the median household income in the United States was $53,889, a 3.8% increase from 2010. In West Virginia, the median household income was $41,751 (Figure 5).[27] West Virginia has one of the lowest median incomes in the United States (ranked 48th in median household income including the District of Columbia), with 17.9% of person living poverty compared to 13.5% nationally (Figure 6). [28] Three counties in West Virginia are among 100 counties in the United States with the lowest median household incomes. In 2016, McDowell County ranked the 5th lowest median household income ($24,460, 35.5% poverty), Webster County ranked 70th ($30,578, 26.1% poverty), and Mingo County ranked 75th ($30,638, 25.8% poverty).[29]

Figure 6. Percentage living in poverty by county in West Virginia, 2015

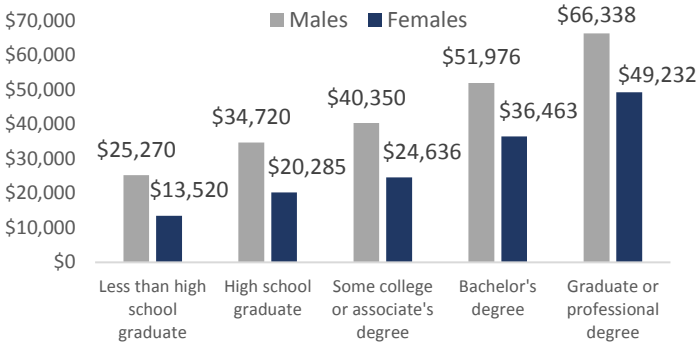


Educational status

In 2016, 85.0% of West Virginians ages 25 and older had at least a high school education, slightly less than the national estimate of 86.7%. The percentage of West Virginia residents (19.2%) who had a bachelor's degree was less than the nationwide (29.8% in 2016).[30]

The highest level of education completed is tied closely with a person's income (Figure 7).[31] Data from the United States Census Bureau shows a wide gap in median income between groups of different education levels and sex in West Virginia, with the lowest among females with less than a 9th grade education, at almost $13,520 and the highest among males with a graduate or professional degree at $66,338.[32]

Figure 7. Median income by highest education level and sex for West Virginia, 2015



Health planning geography

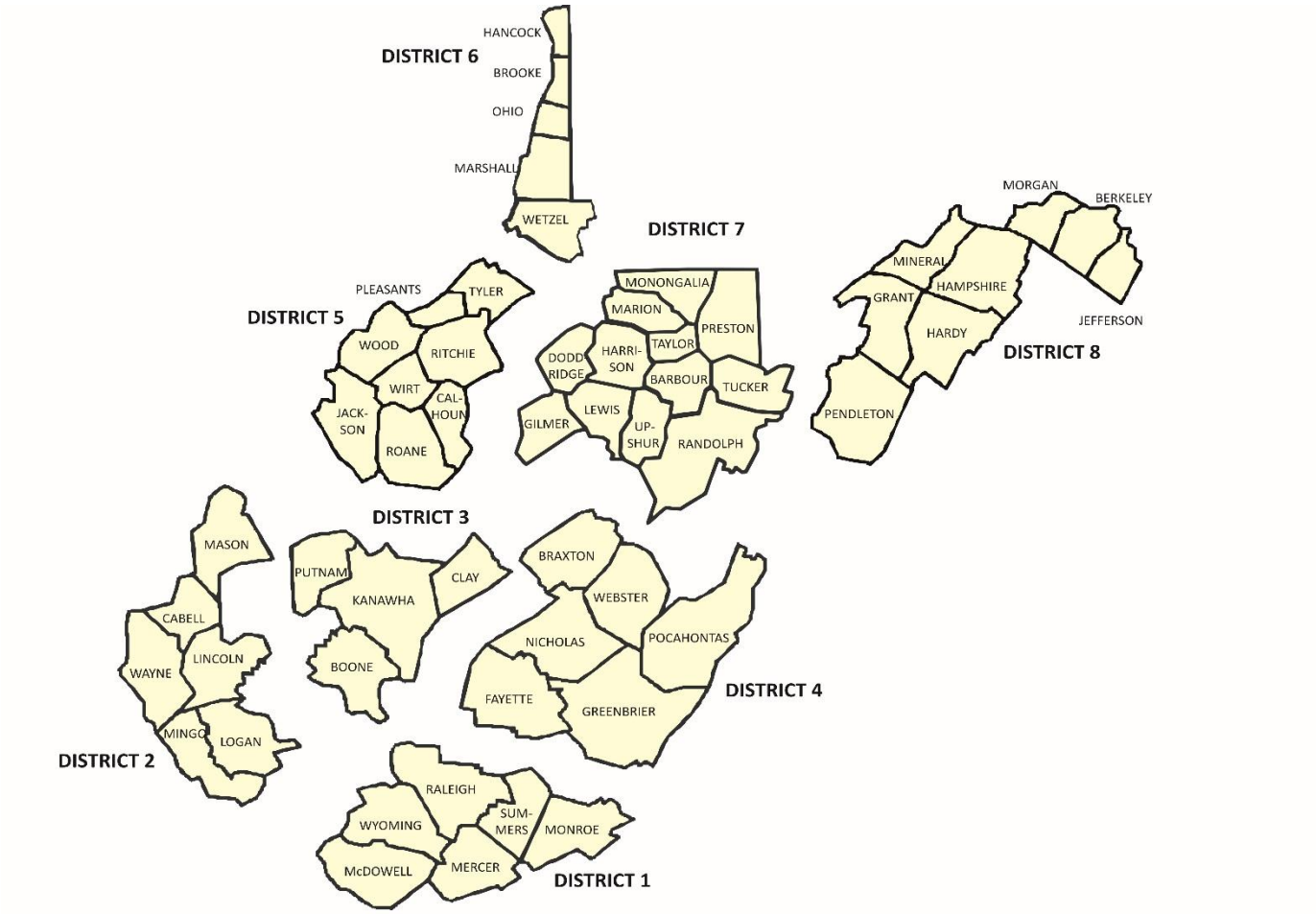
The West Virginia Bureau for Public Health (BPH) uses several common geographic boundaries when analyzing HIV or STD data. For health planning and reporting purposes, West Virginia's 55 counties are organized into 8 public health districts (Figure 8).

West Virginia is part of the southern United States (Appendix Figure 49). The State is bordered by five states, which include: Virginia, Pennsylvania, Ohio, Maryland, and Kentucky. The northern panhandle extends adjacent to Pennsylvania and Ohio, with the West Virginia cities of Wheeling and Weirton just across the border from the Pittsburgh metropolitan area (District 6), while Bluefield in the southern part of the State is less than 70 miles from North Carolina (District 1). Huntington in the southwest is close to Ohio and Kentucky (District 2), while Martinsburg and Harpers Ferry in the Eastern Panhandle region (District 8) border Maryland and Virginia and are considered part of the Washington D.C. metropolitan area. The State Capitol,

Charleston, is the most populous city, located in Kanawha County (District 3).

The unique location of West Virginia means that it is often included in several geographical regions, including the Mid-Atlantic, the Upland South, and the Southeastern United States. It is the only state that is entirely within Appalachia.

Figure 8. Public Health Management Districts for West Virginia



Source: West Virginia Department of Health and Human Resources, Bureau for Public Health, Office of Epidemiology and Prevention Services, West Virginia HIV/AIDS Surveillance Program

[18] United States Census Bureau QuickFacts https://www.census.gov/quickfacts/fact/table/WV/PST045216#viewtop
[19] United States Census Bureau American FactFinder West Virginia https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF
[20] United States Census Bureau American FactFinder West Virginia https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF
[21] United States Census Bureau American FactFinder West Virginia https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF
[22] United States Census Bureau QuickFacts https://www.census.gov/quickfacts/fact/table/WV/PST045216#viewtop
[23] United States Census Bureau QuickFacts https://www.census.gov/quickfacts/fact/table/WV,US/SEX255216
[24] United States Census Bureau, QuickFacts https://www.census.gov/quickfacts/fact/table/US,WV/PST045216
[25] Health Insurance Coverage in the United States: 2015 Current Population Reports https://www.census.gov/content/dam/Census/library/publications/2016/demo/p60-257.pdf
[26] Health Insurance Coverage in the United States: 2015 Current Population Reports https://www.census.gov/content/dam/Census/library/publications/2016/demo/p60-257.pdf
[27] United States Census Bureau QuickFacts https://www.census.gov/quickfacts/fact/table/US/PST045216
[28] U.S. Census Bureau, 2016 Current Population Survey, Annual Social and Economic Supplements Data Tables. Household Income.
[29] Small Area Income and Poverty Estimates (SAIPE) Program https://www.census.gov/data-tools/demo/saipe/saipe.html?s_appName=saipe&map_yearSelector=2016&map_geoSelector=aa_c
[30] United States Census Bureau QuickFacts https://www.census.gov/quickfacts/fact/table/WV/PST045216#viewtop
[31] Statistical Abstract of the United States: 2010 (Table 227) https://www2.census.gov/library/publications/2010/compendia/statab/129ed/tables/educ.pdf
[32] United States Census Bureau American FactFinder West Virginia https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

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www.hiv.wv.gov
Centers for Disease Control and Prevention
www.cdc.gov/hiv

People living with diagnosed HIV

As of December 31, 2016, there were 1,746 people (excluding federal prisoners), or about one in every 1,049 West Virginia residents, who were living with HIV disease. A greater number of people are now living longer with HIV due to advances in medical treatment and care. From 2006 to 2016, the number of people living with diagnosed HIV (PLWH) in West Virginia increased by 25.9%. As of December 31, 2016, approximately 56.1% of the diagnosed HIV-positive population had an AIDS-defining condition.

Sex

By the end of 2016, there were 1,360 males and 386 females in West Virginia who were living with an HIV diagnosis, with males representing 77.9% of the total HIV-positive population. Males were living with HIV disease at a rate of 73 per 100,000, and females at a rate of 21 per 100,000. Males were 3.5 times more likely to be living with a diagnosis of HIV than females.

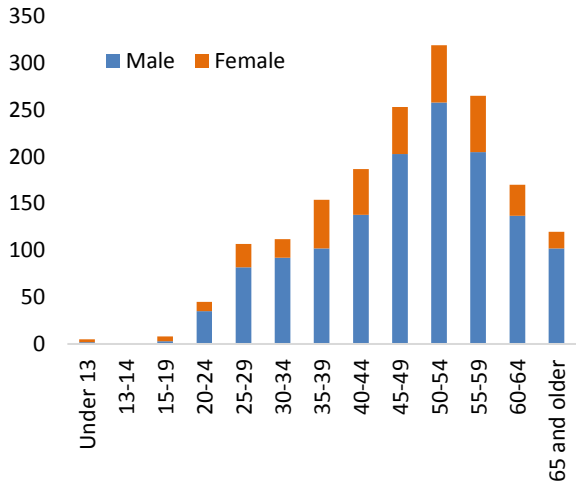
Current age

Persons are living longer with HIV (Figure 9). By December 31, 2016, 32.8% of PLWH were between the ages of 45 to 54. The number of infections were highest among the 50-54 year (n=319) age group at 17 per 100,000, followed by the 55-59 (n=265) age group at 15 per 100,000. The median age for PLWH in West Virginia was 50 years old, at the end of 2016.

Race/Ethnicity

In West Virginia, 60.1% of all people living with diagnosed HIV as of December 31, 2016 were non-Hispanic, whites, followed by non-Hispanic, blacks at 12.8% (Figure 10). Approximately 2.3% of living cases were Hispanic/Latino. Non-Hispanic, blacks (n=349, 529 per 100,000) were more than seven times likely to be living with HIV disease at the end of 2016 than non-Hispanic, whites (n=1,267, 74 per 100,000).

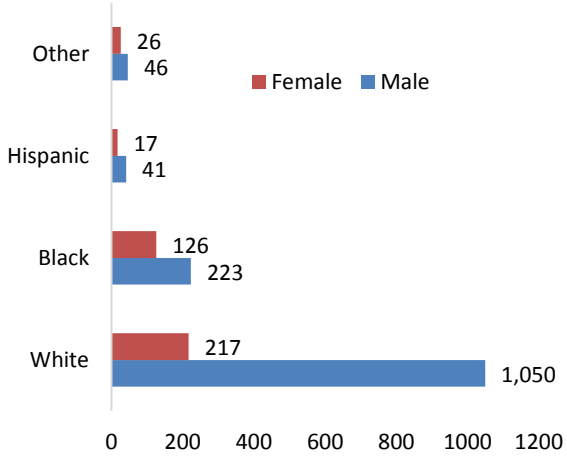
Figure 9. Number of PLWH by current age in West Virginia, 2016



Hispanic/Latino persons were almost three times more likely to be living with HIV disease as non-Hispanic whites.

Although non-Hispanic blacks make up <4% of the population, they account for 32.6% of all women and 16.4% of all males living with diagnosed HIV. Among people with diagnosed HIV, 56.2% of women and 77.2% of men were non-Hispanic, whites and 4.4% of women and 3.0% of men were Hispanic/Latino. Among males, non-Hispanic blacks had the highest prevalence (683 diagnosed HIV infections per 100,000 population). Black and Hispanic/Latino

Figure 10. Number of PLWH by race/ethnicity in West Virginia, 2016



males were over five and two times more likely to be living with HIV disease than white males, respectively. Black females were more than 15 times more likely to be living with diagnosed HIV than white females, and Hispanic/Latino females were almost five times more likely than white females to be living with diagnosed HIV.

Transmission risk

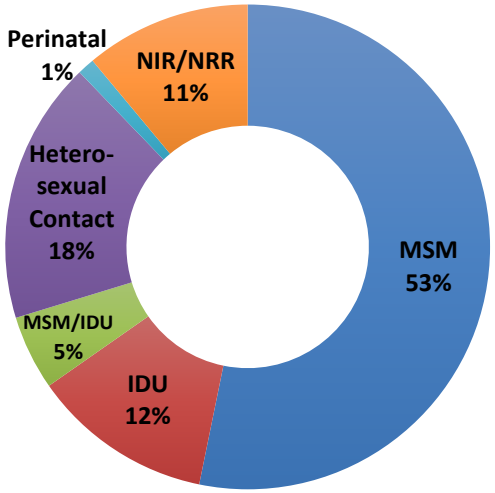
At the end of 2016, 53.0% of all living persons with an HIV diagnosis were attributed to male-to-male sexual contact (MSM) (Figure 11). Heterosexual contact represented 18.0% of living cases, and 12.0% of cases were attributed to injection drug use (IDU). Approximately 11.0% of PLWH had no reported risk (NRR) or no identified risk (NIR) for transmission. Perinatal cases accounted for 1.0% of cases. Among women, heterosexual contact was the most common transmission risk (59.3%). Of all PLWH at the end of 2016, non-Hispanic, white MSM were the largest transmission risk group living with HIV (45.2%), followed by non-Hispanic, white females (9.5%) and black females with infection attributed to heterosexual transmission (4.9%). Non-Hispanic, black MSM made up 5.2% of PLWH.

Patients often refuse to answer questions on the CDC adult confidential case report form (ACRF)[33] for reasons not well understood. However, sometimes with repeated visits and questioning by disease intervention specialists (DIS) and clinical staff, who were able to fill some of these data gaps over time.

Region

Among the eight public health management districts in West Virginia (Figure 12), the district with the highest number of PLWH by the end of December 31, 2016, was District 3 (n=399) containing Kanawha County, the most populous in the State (188,332), with the city of Charleston hosting the State Capitol. The second highest was District 7 (n=302), including

Figure 11. Percentage of PLWH by risk factor in West Virginia, 2016



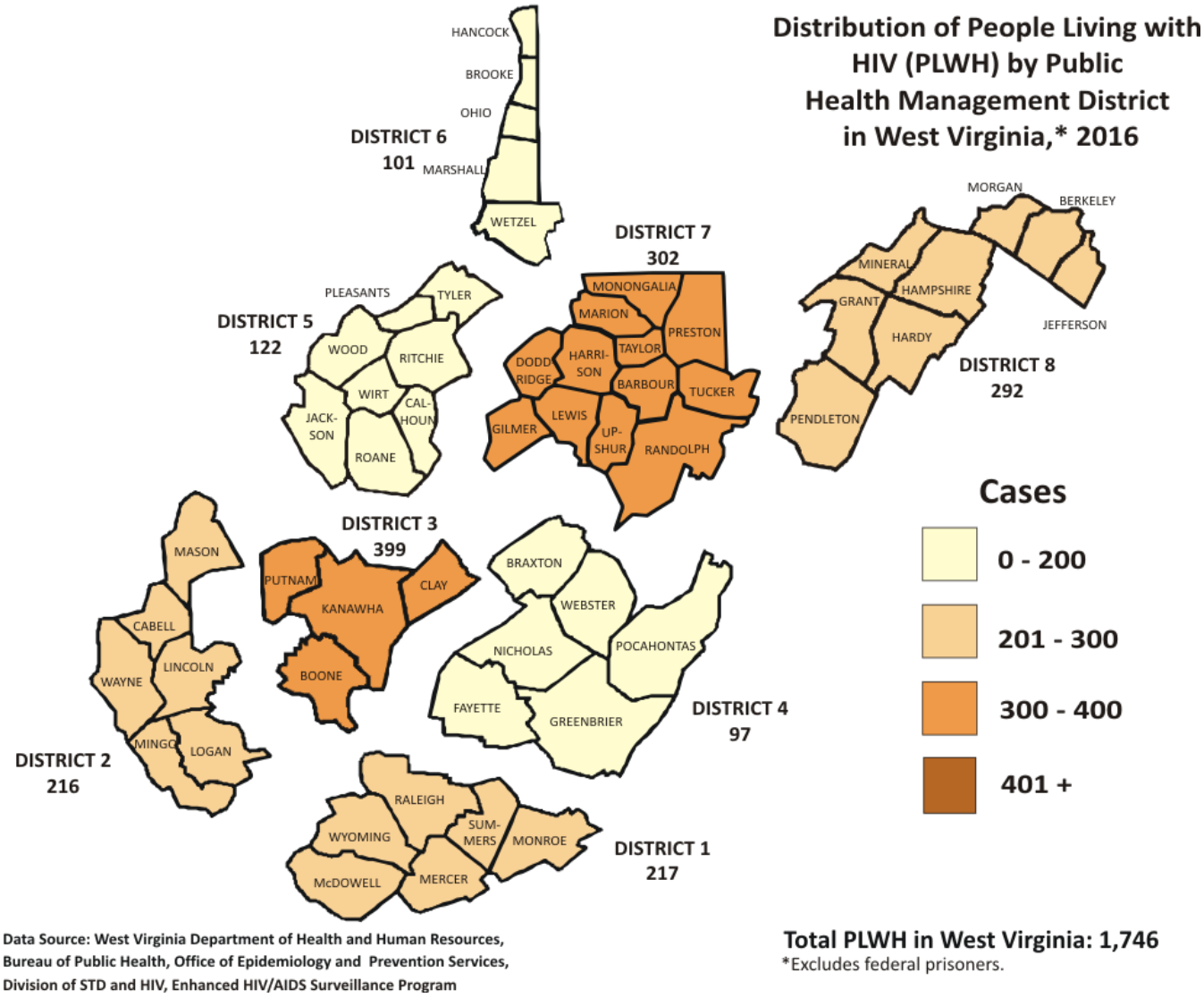
Monongalia County (104,236) with Morgantown as the largest city in North-Central West Virginia. Third was District 8 (n=292), including Berkeley County in the Eastern Panhandle region and the second-most populous of West Virginia's 55 counties. Martinsburg is the eighth most populous city in West Virginia (17,743) and the county seat of Berkeley County. Berkeley County is part of the Hagerstown-Martinsburg, MD-WV Metropolitan Statistical Area.

The counties with the highest prevalence rates per 100,000 population are Berkeley (213, n=179), Kanawha (171, n=358), Cabell (166, n=170), Raleigh (158, n=132), Jefferson (150, n=64), and Monongalia (128, n=117) (Appendix Table 1). These counties have the greatest burden of disease and require the most health care resources for PLWH. Overall, there were 95 for every 100,000-people living in West Virginia with a diagnoses of HIV infection by the end of December 31, 2016 (Appendix Figure 48).

Notwithstanding the high rates in some West Virginia counties, in comparison to adjoining states West Virginia had a much lower prevalence. The rates of persons living with diagnosed HIV in 2014 for West Virginia was 120 per 100,000 population (including federal

prisoners). Virginia (348), Kentucky (177), Ohio (205), Pennsylvania (309), and Maryland (639) rates were much higher.[34]

Figure 12. PLWH by Public Health Management District in West Virginia, 2016



[33] Adult confidential case report form http://dhhr.wv.gov/adultHIVcaseReport.pdf

[34] AIDSVu https://aidsvu.org/

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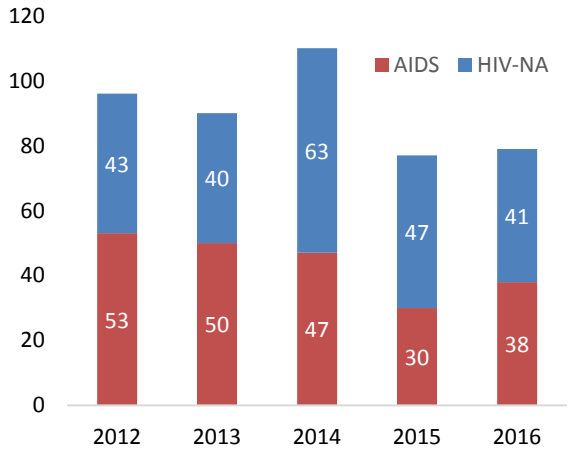
New HIV diagnoses

New diagnoses of HIV in the United States

In 2015, 39,513 people received an HIV diagnosis in the United States. The annual number of HIV diagnoses fell 9.0% nationally between 2010 and 2014. The declines may be due to targeted HIV prevention efforts. However, progress has been uneven, and annual infections and diagnoses have increased among a few groups, such as Hispanic/Latino gay and bisexual men.[35]

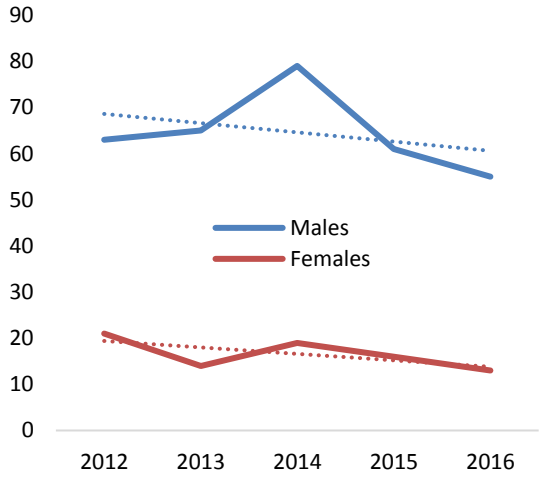
Nationally, men who have sex with men (MSM) are the population most affected with HIV, accounting for over 67% of all new diagnoses in 2015. By race/ethnicity, blacks and Hispanics/Latinos are disproportionately affected by HIV. In 2015, blacks represented 12% of the population, but accounted for 45% (n=17,670) of HIV diagnoses. Blacks have the highest rate of HIV diagnoses compared to other races and ethnicities. Hispanics/Latinos represented 18% of the US population, but accounted for 24% (9,290) of HIV diagnoses. Of people who received an HIV diagnosis in 2015, 4% (1,723) were aged 13-19, 37% (14,594) were aged 20-29, 24% (9,631) were aged 30-39, 17% (6,720) were aged 40-49, 12% (4,870) were aged 50-59, and 5% (1,855) were aged 60 and over.[36]

Figure 13. Number of new diagnoses of HIV by disease stage in West Virginia, 2012–2016



HIV diagnoses are not evenly distributed geographically. The population rates (per 100,000 people) of people who received an HIV diagnosis during 2015 were highest in the South (16.8), followed by the Northeast (11.6), the West (9.8), and the Midwest (7.6).[37]

Figure 14. Number of new diagnoses of HIV infections by sex in West Virginia, 2012–2016



New HIV diagnoses in West Virginia

West Virginia represented less than 1% of the total population in the United Sates and less than 0.06% of the total HIV positive population in 2015. In 2015, West Virginia ranked 41st in the number of annual reported new HIV disease diagnoses in the United States and 40th by rate of HIV disease diagnosis.[38] West Virginia ranked 41st in the estimated rate of stage 3 (AIDS) diagnoses and ranked 42nd in both the number of reported stage 3 (AIDS) diagnoses and cumulative diagnoses in the United States for 2015.[39]

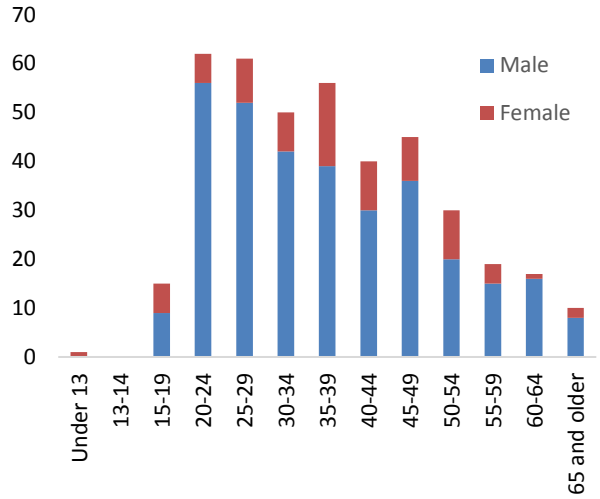
Over the past 10 years from 2006 to 2016, new HIV diagnoses in West Virginia decreased. On average, 96 new HIV infections were diagnosed each year in West Virginia from 1984-2011.

From 2012–2016, an average of 74 new HIV infections were diagnosed in West Virginia each year. The 22.4 % decrease in diagnosed mainly represents a decrease in the progression of HIV to stage 3 (AIDS), largely due to the effectiveness of antiretroviral therapy (ART). The lowest number of stage 3 (AIDS) diagnoses in West Virginia occurred in 2015, at 30 cases, but rose slightly to 38 in 2016 (Figure 13).

Sex

From 2012–2016, approximately 79.6% of the newly diagnosed HIV infections were among males (Figure 14). Rates of new diagnoses among males have stayed relatively stable from 2012 to 2016, at an average of 9 per 100,000 population. Rates of newly diagnosed cases among females have been stable as well, approximately 2 per 100,000 in 1984-2011 and 2012–2016. Males were four times more likely to be diagnosed with HIV than females during 2012–2016 (Figure 15).

Figure 15. Number of new HIV diagnoses by age and sex in West Virginia, 2012-2016



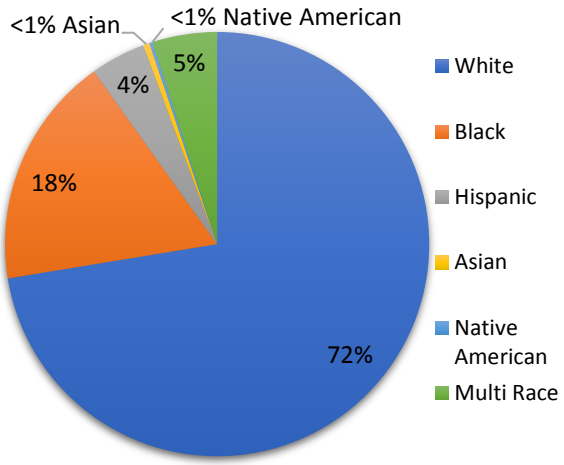
Age

Overall, the highest percentage of diagnoses of new infections occurred among the 25-34 age group during 2012–2016, at 22.2%. Second was the 35-44 age group at 19.2% and third was the 13-24 age group at 15.4%, followed by the 45-54 age group at 15.0%. Males aged 25-34 years were over five times more likely to be diagnosed with HIV disease than females of the same age.

Race/Ethnicity

From 2012–2016, 72.0% of the new HIV diagnoses were non-Hispanic whites followed by non-Hispanic blacks (18.0%), and Hispanic/Latino (4.0%) (Figure 16). On average from 1984 to 2011, 24.0% of all new HIV diagnoses were among blacks. During 2012-2016, blacks were more than six and a half times more likely to be diagnosed with HIV than whites. Hispanics/Latinos and mixed race were almost four times as likely to be diagnosed with HIV than whites. The lowest rates of diagnosis in 2015 were among the Asian population at 13 per 100,000 and whites at 16 per 100,000.

Figure 16. Percentage of HIV diagnoses by race/ethnicity in West Virginia, 2012-2016



Transmission category

During 2012–2016, nearly 19.0% of newly diagnosed persons did not report or identify a known risk for HIV transmission. The percentage of newly diagnosed infections attributed to male-to-male sexual contact (MSM) increased from 52.0% during 1984-2011,

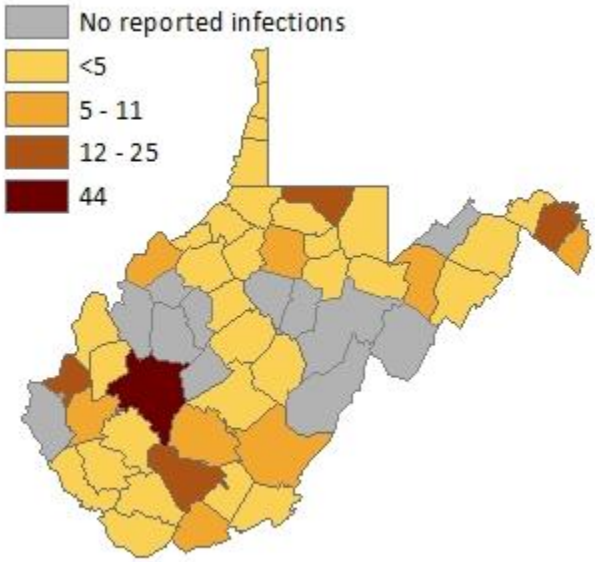
to 54.0% during 2012–2016. Heterosexual contact has remained relatively stable over the past 10 years, at an average of 15.0%. Injection drug use (IDU) has decreased, from 16.0% from 1984-2011 to 9.0% during 2012–2016.

Region

West Virginia is divided into eight public health management districts (Figure 12 page 27). During 2012–2016, District 3 had the highest number of new diagnoses of HIV. Forty-four new diagnoses of HIV were reported in Kanawha County the most populous in the State (188,332 population), with the city of Charleston (City 49,138, Urban 153,199, Metro 222,878) hosting the State Capitol (Figure 17). The second highest was District 1, with Raleigh County (n=25), its county seat is Beckley (77,510 population 2015). Third was Cabell County (n=23) with the city of Huntington (96,844 2015), West Virginia's fourth most populous county. Next were Berkeley (n=20) and Monongalia (n=17).

The counties with the highest prevalence rates per 100,000 population are Berkeley (213), Kanawha (171), Cabell (166), Raleigh (158), Jefferson (150), and Monongalia (128) (Appendix Table 1). These counties have the greatest burden of disease and require the most resources for health care for PLWH. Two other counties, (Appendix Figure 47). Overall, 95 of every 100,000 people were living with a diagnosed HIV infection during 2016 in West Virginia (Appendix Figure 48).

Figure 17. Number of new diagnoses of HIV by county in West Virginia, 2012-2016



[35] HIV in the United States: *At a Glance* (last updated: September 8, 2017 https://www.cdc.gov/hiv/statistics/overview/ataglance.html

[36] HIV in the United States: *At a Glance* (last updated: September 8, 2017 https://www.cdc.gov/hiv/statistics/overview/ataglance.html

[37] HIV in the United States: *At a Glance* (last updated: September 8, 2017 https://www.cdc.gov/hiv/statistics/overview/ataglance.html

[38] HIV Surveillance Report, Diagnoses of HIV Infection in the United States and Dependent Areas, 2015 https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2015-vol-27.pdf

[39] HIV Surveillance Report, Diagnoses of HIV Infection in the United States and Dependent Areas, 2015 https://www.cdc.gov/cdc-hiv-surveillance-report-2015-vol-27.pdf

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Men who have sex with men

HIV infection among MSM in the United States

Gay, bisexual men, and other men who have sex with men (MSM) represent approximately 2-4% of the United States population, yet are the most severely affected by HIV. A 2016 analysis estimated that there are nearly 4.5 million gay and bisexual men in the United States and that 15% are living with HIV infection (11% diagnosed).

Nationally, MSM account for 56.0% of all newly diagnosed HIV infections and more than two-thirds of all new HIV infections each year (70.0%, or an estimated 26,200 infections in 2014). The rate of new HIV infections among MSM is more than 44 times that of other men (rate ranges from 522 to 989 per 100,000 MSM compared to 12 per 100,000 other men).[40]

HIV diagnoses among MSM in West Virginia

MSM accounted for 54.0% (n=217) of all new diagnoses of HIV during 2012–2016 among all sexes and 67.2% of all new infections among men in West Virginia.

An additional 7.0% of male cases reported having sex with other men in addition to injection drug use (MSM/IDU). Heterosexual transmission among men is relatively rare in West Virginia. During 2012–2016, about 4.0% of men newly diagnosed with HIV reported sex with a female partner. Another 7.0% of men reported IDU as the mode of transmission.

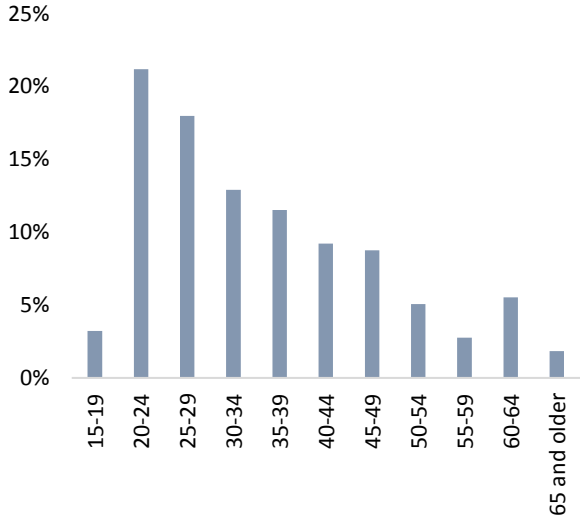
From 2012 to 2016, the median age at HIV diagnosis among MSM was 32 (range 17-71) years of age. Persons under 25 years of age at diagnosis accounted for 24.4% of total; 24.0% were older than 44 years of age (Figure 18). Twelve percent of men refused to report or claimed they were unable to identify a transmission risk. Transmission estimates are likely being underestimated, some men may have been reluctant to truthfully identify the mode of transmission, which could underestimate MSM and/or IDU HIV transmission risk overall.

HIV infection among MSM at a glance:

- MSM represent 53.2% of all West Virginia HIV cases living at the end of 2016.
- Among MSM infected with HIV in West Virginia, 56.3% were diagnosed with stage 3 (AIDS) either simultaneously or within 12 months of their original diagnosis from 2012–2016.
- Only 15.9% of all living MSM in West Virginia are under the age of 35, but 47.9% of MSM diagnosed with HIV during 2012–2016, were under the age of 35.

During 2012–2016, 78.3% of cases diagnosed were white (n=170), 12.9% black (n=28), and 5.5% Hispanic (n=12). Hispanic and Multi-race represent emerging groups with increased case numbers of HIV (Figure 19).

Figure 18. Percentage MSM by age at HIV diagnoses in West Virginia, 2012–2016



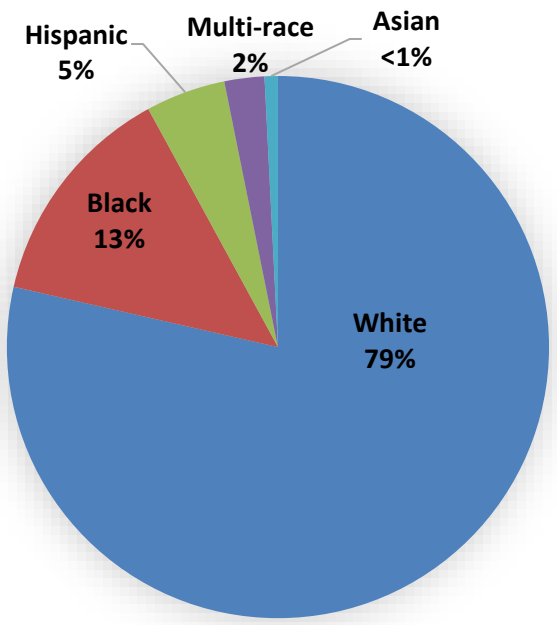
Overall, sexually transmitted diseases are common among MSM living with HIV. MSM with HIV represented 20.0% of all syphilis cases diagnosed during 2016.

Among MSM diagnosed with HIV in West Virginia from 2012–2016, 32.0% had AIDS upon or within 12 months of diagnosis. The total number of MSM diagnoses represented 58.2% among all PLWH, of which 5.0% were MSM who also reported using injection drugs (MSM/IDU) in 2016.

Among all living MSM, 18.0% were under 35 years of age and 65.0% were 45 years of age or older at the end of 2016. The median age of living MSM cases at the end of 2016 was 50 years (average 48).

By the end of 2016, 26.0% of all living MSM were residents in Public Health District 3, most living in Charleston, Kanawha County. Eighty-five percent of living MSM cases were white, 9.0% black, and 2.5% Latino/Hispanic.

Figure 19. Percentage of MSM with new diagnoses of HIV by race/ethnicity in West Virginia, 2012–2016



[40] HIV among Gay and Bisexual Men https://www.cdc.gov/nchhstp/newsroom/docs/factsheets/cdc-msm-508.pdf

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Blacks

HIV among blacks in the United States

Blacks account for a higher proportion of new HIV diagnoses, those living with HIV, and those ever diagnosed with AIDS compared to other races/ethnicities. In 2015, blacks accounted for 45.0% of new HIV diagnoses in the United States, though they comprise 12.0% of the US population. Gay and bisexual men account for most new HIV diagnoses among blacks.[41]

HIV among blacks in West Virginia

In West Virginia, blacks are disproportionately affected by the HIV epidemic at all stages of the disease (from new infections and stage 3-AIDS). Between 2012–2016, while comprising less than 4.0% of the State's population, blacks represented 18.0% (n=72) of all new diagnoses of HIV (n=406) including stage 3 (AIDS).

The rate of black males living with an HIV diagnosis is 6.8 time that of white males in West Virginia, 2014 (including federal prisoners).

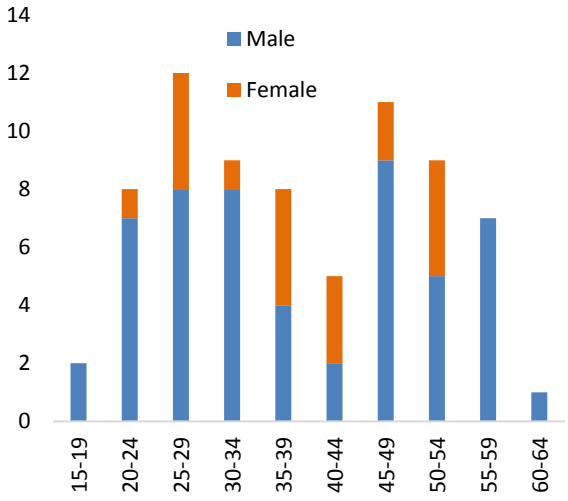
The rate of black females living with an HIV diagnosis is 24.7 times that of white females in West Virginia, 2014 (including federal prisoners).

Facts at a glance:

- Approximately 20.0% of people living with HIV in West Virginia are black, 2016.
- Blacks in West Virginia were three times more likely than whites to acquire HIV infection during 2015.
- Among blacks recently diagnosed with HIV in West Virginia, 66.7% were men, 2012-2016.
- During 2012–2016, black men were less likely than white men to report having had sex with other men (61.5% vs. 76.1%).

Of the 3,054 diagnoses of HIV infections (including AIDS) reported among West Virginia residents from 1984–2016, 23.0% (n=703) were among blacks. From 1984–2011, the percentage was higher at 24.0% (n=631). The percentage of blacks diagnosed with HIV declined to 18.0% (n=72) during 2012–2016. While the total number of diagnoses of HIV for blacks was less than whites in West Virginia (Figure 21), the number of diagnoses by population were much higher. In 2015, the rate of HIV diagnoses

Figure 20. Number of new diagnoses of HIV among blacks by age and sex in West Virginia, 2012–2016



among blacks per 100,00 population was 4.8 times the rate for whites (16.8 vs. 3.5) in West Virginia. Since 1984, 39.3% (n=276) of blacks (n=703) infected with HIV have died compared with 43.4% (n=955) among whites (n=2,202).

The rate of new diagnoses was highest among black females at 12.3 cases per 100,000, a rate 9.5 times higher than white females (1.3 per 100,000). Sixteen black women were diagnosed with HIV during 2012–2016, with presumed heterosexual exposure being the most common transmission category (Table 1). Black females self-reported injection drug use (IDU) at 10.5% compared to white women at 25.5%.

Five black women were assigned to the "presumed heterosexual" category based on self-reported sexual contact with a male. CDC definition for heterosexual contact is more rigid requiring heterosexual contact with a person known to have or to be at high risk for HIV before heterosexual contact is confirmed.

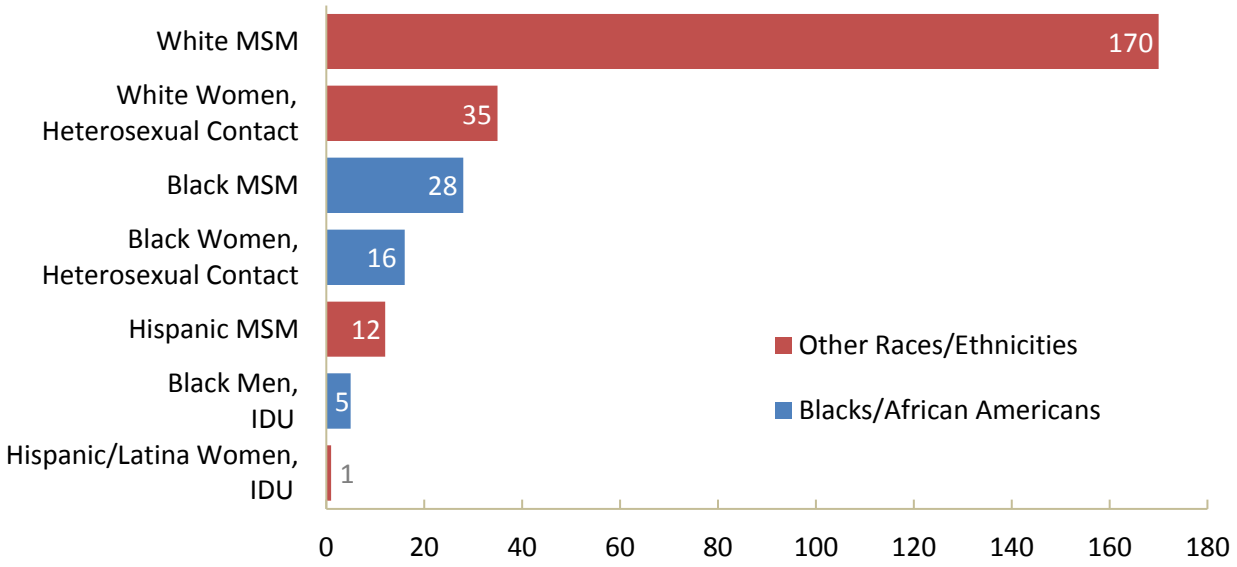
Among both sexes (Figure 20), blacks were most likely to be diagnosed with HIV between the ages of 25-29 (16.7%) and then later in life between the ages of 45-49 (15.3%).

Region

During 2012–2016, the geographic distribution among blacks was highest in Berkeley County with a crude rate of 394 new diagnoses of HIV per 100,000 (n=14). Other areas with high rates included Kanawha County (129, n=18), Raleigh County (104, n=7), and Cabell County (169, n=7).

The total population of blacks in West Virginia was estimated at 57,232, in 2015. The counties with the greatest population of blacks are Kanawha County (13,955), Raleigh County (6,753), Cabell County (4,150), Mercer County (3,668), and Berkeley County (n=3,558).

Figure 21. Number of new HIV diagnoses by risk factor and race/ethnicity in West Virginia, 2012–2016



Source: West Virginia Department of Health and Human Resources (DHHR), Bureau for Public Health (BPH), Enhanced HIV/AIDS Reporting System (eHARS).

Table 1. Number of new diagnoses of HIV by transmission risk, race/ethnicity, and sex in West Virginia, 2012–2016

Transmission category	White		Black		Hispanic		Other Race*		Total	%
Males	No.	%	No.	%	No.	%	No.	%	No.	%
MSM	170	71.1	28	52.8	12	75.0	7	46.7	**217**	**67.2**
IDU	14	5.9	5	9.4	0	0.0	1	6.7	**20**	**6.2**
MSM/IDU	16	6.7	0	0.0	1	6.3	1	6.7	**18**	**5.6**
Presumed Heterosexual	7	2.9	7	13.2	0	0.0	2	13.3	**16**	**5.0**
Mother had HIV	0	0.0	0	0.0	0	0.0	0	0.0	**0**	**0.0**
Other/Unknown	32	13.4	13	24.5	3	18.8	4	26.7	**52**	**16.1**
Total	**239**	**100.0**	**53**	**100.0**	**16**	**100.0**	**15**	**100.0**	**323**	**100.0**
Females	No.	%	No.	%	No.	%	No.	%	No.	%
IDU	14	25.5	2	10.5	1	100.0	0	0.0	**17**	**20.5**
Presumed Heterosexual	35	63.6	16	84.2	0	0.0	8	100.0	**59**	**71.1**
Mother had HIV	1	1.8	0	0.0	0	0.0	0	0.0	**1**	**1.2**
Other/Unknown	5	9.1	1	5.3	0	0.0	0	0.0	**6**	**7.2**
Total	**55**	**100.0**	**19**	**100.0**	**1**	**100.0**	**8**	**100.0**	**83**	**100.0**

**Other Race* includes Asian, Native Hawaiian, Pacific Islander, American Indian, Alaskan Native, and Multiple Race.

[41] HIV Among African Americans https://www.cdc.gov/hiv/group/racialethnic/africanamericans/index.html

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Centers for Disease Control and Prevention
www.cdc.gov/hiv

Females

Nationally, approximately a quarter of people living with HIV (PLWH) in the United States are women, and most HIV diagnoses in women are attributed to heterosexual sex. Though HIV diagnoses among women have declined in recent years nationally, more than 7,000 women received an HIV diagnosis in 2015. Black women are disproportionately affected by HIV, compared with women of other races/ethnicities. Of the total number of women living with HIV at the end of 2014, 60.0% (n=139,058) were black, 17.0% (n=39,343) white, and 17.0% (n=40,252) Hispanic.

HIV among females in West Virginia

Women newly diagnosed with HIV (n=83) infection in West Virginia represented 20.4% of all new HIV infections (n=406) diagnosed during 2012–2016. Approximately 22.0% (n=386) of PLWH (n=1,746) at the end of 2016 were women.

Age

The median age at diagnosis for women was 38 (average 37.7) years of age (Figure 22). Of the 83 women diagnosed with HIV from 2012–2016, 32.5% were between the ages of 35 to 44, followed by women aged 45-54 (22.9%), 25-34 (20.5%), and 13-24 (14.5%).

Race/Ethnicity

Among all recently diagnosed women with HIV in West Virginia, 2012–2016, an average of 17 females (1.9 cases per 100,000 female population) were diagnosed with HIV each year. During the same period, the rate of new diagnoses was highest among black females at 12.3 cases per 100,000 (Figure 23), a rate 9.5 times higher than white females (1.3 per 100,000). The rate of new HIV infections among Hispanic females during 2012–2016 was 1.4 cases per 100,000. Non-Hispanic whites accounted for 67.0% of new diagnoses of HIV among all women, followed by non-Hispanic blacks (23.0%), and women who reported multiple race (7.0%).

Figure 22. Number of new diagnoses of HIV among women by age group in West Virginia, 2012–2016

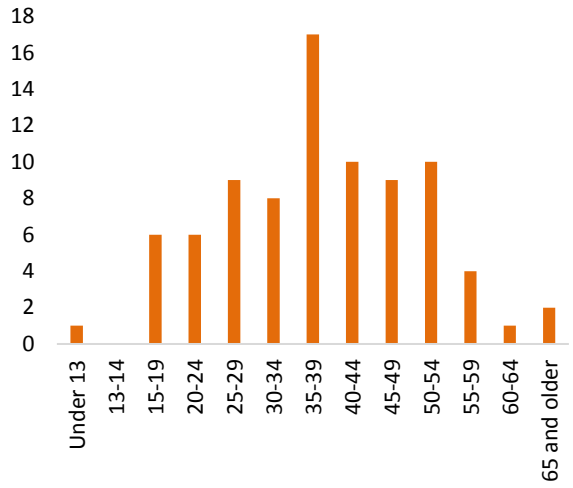
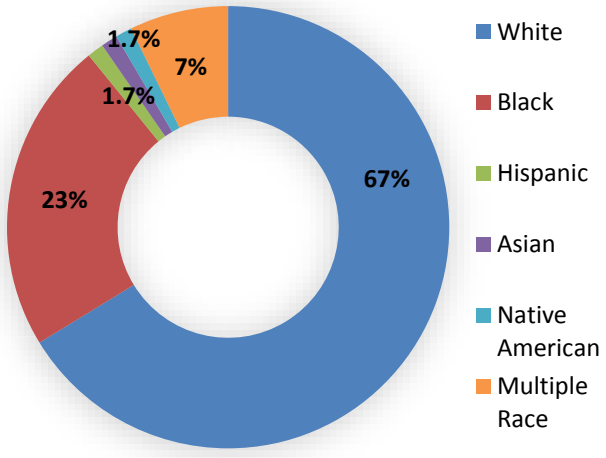


Figure 23. Percentage of new diagnoses of HIV among women by race/ethnicity in West Virginia, 2012–2016



Transmission category

Heterosexual contact (71.1%) was the most frequent transmission risk (Figure 24) reported by women newly infected by HIV. IDU was second most reported transmission category at 20.5% among females diagnosed during 2012–2016.

The rate of black females living with an HIV diagnosis was 24.7 times that of white females in West Virginia, 2014 (including federal prisoners).

The rate of Hispanic/Latina females living with an HIV diagnosis was 10.1 times that of white females in West Virginia, 2014 (including federal prisoners).

Late diagnosis

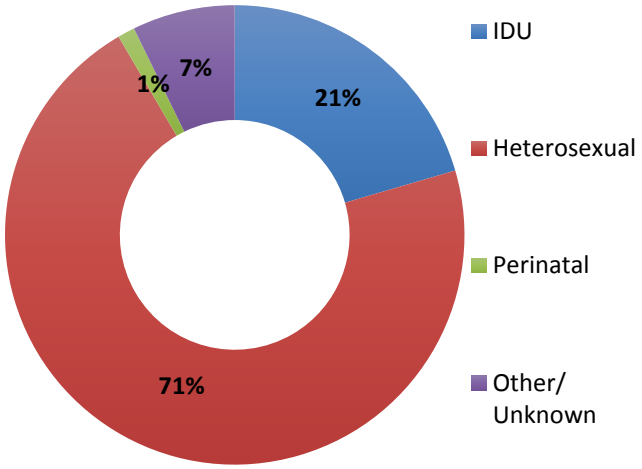
Early knowledge of HIV infection can improve an individual's health outcome[42] and help prevent further transmission. Late diagnosis refers to cases that have an initial stage 3 (AIDS) diagnosis or receive an AIDS diagnosis within 12 months of their HIV diagnosis. Approximately, 28.9% of women in West Virginia were diagnosed late.

Reproductive health in West Virginia

Perinatal HIV transmission accounts for nearly all pediatric HIV infections. HIV infection can be prevented when appropriate antiretroviral medications are given during pregnancy and after birth. The risk of transmission can be reduced.[43] From 2012–2016, 25 HIV positive women became pregnant in West Virginia. Twenty-one of those had been diagnosed with HIV prior to pregnancy, three were diagnosed during pregnancy and one was diagnosed seven days after the delivery. Four of the pregnancies ended due to miscarriages or were voluntarily terminated. During this time, 21 children under the age of 13 were tested due to suspected perinatal risk, of whom 20 tested negative for HIV.

In West Virginia, routine testing of women[44] during pregnancy[45] along with treatment with antiretroviral medication[46] may have decreased the risk of transmission among pregnant women and their children. From 2006-2011, there were four children diagnosed with HIV, since then one child born in 2015 was diagnosed with HIV.

Figure 24. Percentage of new diagnoses of HIV among women by exposure category in West Virginia, 2012–2016



[42] The Antiretroviral Therapy Cohort Collaboration; Survival of HIV-positive patients starting antiretroviral therapy between 1996 and 2013: a collaborative analysis of cohort studies; Lancet HIV 2017; 4: e349–356

[43] Connor EM, et al. Reduction of maternal-infant transmission of human immunodeficiency virus type 1 with zidovudine treatment. Pediatric AIDS Clinical Trials Group Protocol 076 Study Group. N Engl J Med 1994;331(18):1173-80.

[44] Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5514a1.htm

[45] West Virginia Code, Chapter 16. Public Health, §16-3C-2. HIV-related testing; methods for obtaining consent; billing patient health care providers. http://www.legis.state.wv.us/wvcode/Code.cfm?chap=16&art=3C#03C

[46] HIV Screening for Pregnant Women https://www.hrsa.gov/quality/toolbox/measures/hivpregnantwomen/

Epidemiologic resources:
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Centers for Disease Control and Prevention
www.cdc.gov/hiv

Hispanics/Latinos

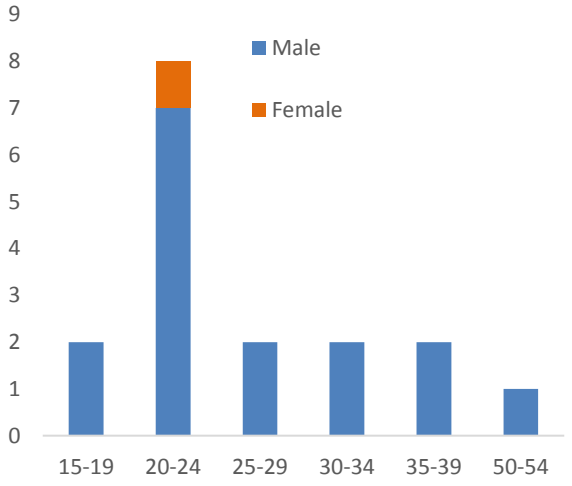
Background

In 2015, approximately 9,290 Latinos received a diagnosis of HIV infection in the United States. Latinos represent approximately 17.0% of the United States population, but account for an estimated 21.0% of people living with HIV (263,900 persons in 2013) and an estimated 24.0% of all persons with newly diagnosed infection.[47] The HIV diagnosis rate among Latino men and women is more than three times that among white men and women (2015).

HIV infection among Hispanics in West Virginia

Once the fastest-growing population group in the United States, Latino's growth slowed from 4.4% (2000-2007) to 2.8% (2007-2014). However, Latinos still accounted for 54.0% of the total population growth of the United States.[48] West Virginia is one of the few states where the population decreased overall (-1.2%). Yet, the Latino population has increased from 1.1% (2010 Census) to 1.5% (2016 Census estimate). There are approximately 27,467[49] Latinos living in West Virginia.

Figure 25. Number of new diagnoses of HIV among Hispanics/Latinos by age and sex in West Virginia, 2012-2016



Facts at a glance:

- Among all HIV cases diagnosed since 1981 and living in West Virginia at the end of 2016, 2.3% are Hispanic (71/3,025).
- During 2012–2016, 4.0% of reported HIV cases were Hispanic.
- No transmission category was identified for 13.0% (9/71) of Hispanic men diagnosed during 2012–2016.

While the number of Hispanic/Latinos diagnosed with HIV in West Virginia is small, there is a disproportion as compared to whites. Out of the 3,025 people with reported cases of HIV (including AIDS) in West Virginia from 1981 to 2016, 71 (2.3%) were Hispanic. Sixteen of the 71 cases are deceased. Among the 17 Hispanics diagnosed with HIV during 2012–2016, the average rate of HIV infection was nearly twice as high among Hispanics (12.4) compared to whites (3.4) per 100,000 residents. During the same period, Hispanics diagnosed with HIV were mostly men (90.0%).

Out of all the reported infections among Hispanics/Latinos, 43.7% were men who reported sexual contact with other men (MSM), (31/71) (Figure 25). Out of the total, 12 (16.9%) reported injection drug use (IDU) and 2 (2.8%) others reported MSM/IDU (Figure 26). No transmission category was reported for 12.7% (9/71) and 2 (22.0% or 2/9) of recently diagnosed Hispanic men (Table 1 page 35) during 2012–2016. About 23 percent (16/71) of Hispanic women reported heterosexual contact diagnosed. During 2012–2016, one female reported injection drug use (IDU).

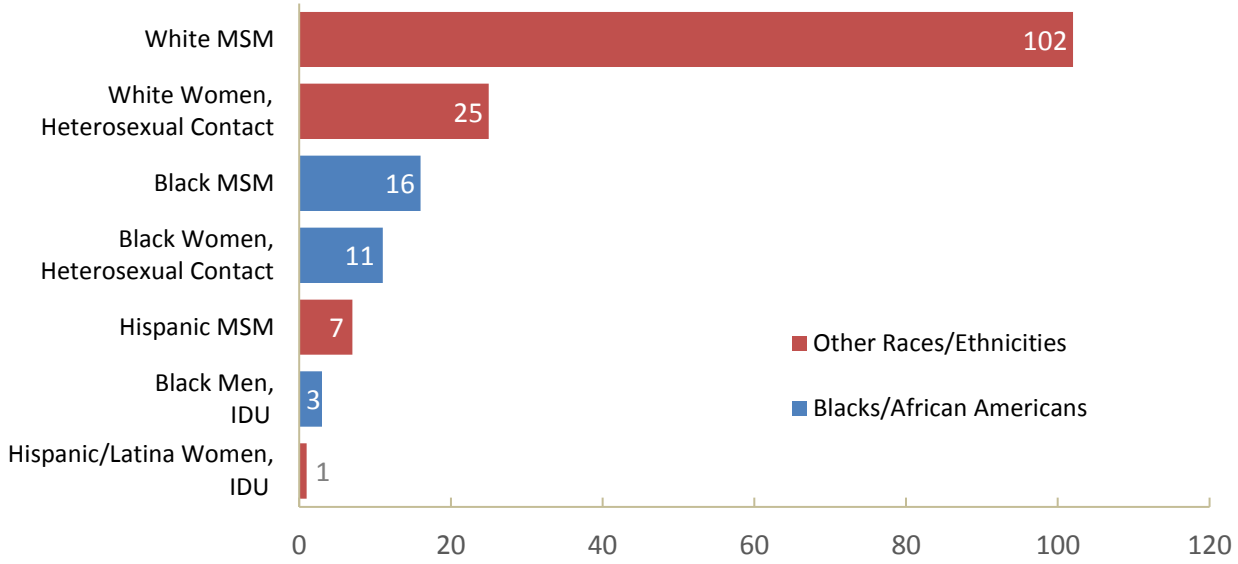
The rate of Hispanic/Latino males (including federal prisoners) living with an HIV diagnosis in West Virginia is 4.2 times that of white males.

The rate of Hispanic/Latina females (including federal prisoners) living with an HIV diagnosis in West Virginia is 10.1 times that of white females.

From 1984–2016, Hispanics (31.3%) were slightly less likely when compared to whites (33.3%) to progress to AIDS within 12 months of testing positive, an indication of a prolonged period of infection prior to diagnosis. Among 58 Hispanic HIV cases believed to be living at the end of 2016, who may or may not have been diagnosed in West Virginia, all were reported to be born in the United States.

HIV treatment helps people with HIV live healthy lives and prevents transmission of the virus to partners. However, many Latinos living with HIV do not receive the care and treatment they need. CDC estimates that among the roughly 263,900 Latinos living with HIV in 2013, 85% were aware of their status. A recent CDC study suggests that among Latinos with diagnosed HIV, 54% were virally suppressed (i.e., the virus is under control at a level that helps them stay healthy and reduces the risk of transmission).[50] Latinos in West Virginia make up a small number of infections, but infections may continue to increase with population growth and relocation into the State. Outreach to inform the Latino population of HIV screening and treatment resources is very important.

Figure 26. Number of new diagnoses of HIV excluding stage 3 (AIDS) in West Virginia, 2012-2016



Source: West Virginia Department of Health and Human Resources (DHHR), Bureau for Public Health (BPH), Enhanced HIV/AIDS Reporting System (eHARS).

[47] CDC Fact Sheet HIV among Latinos https://www.cdc.gov/nchhstp/newsroom/docs/factsheets/cdc-hiv-latinos-508.pdf
[48] Key facts about how the U.S. Hispanic population is changing http://www.pewresearch.org/fact-tank/2016/09/08/key-facts-about-how-the-u-s-hispanic-population-is-changing/
[49] United States Census Bureau QuickFacts https://www.census.gov/quickfacts/WV
[50] CDC Fact Sheet HIV among Latinos https://www.cdc.gov/nchhstp/newsroom/docs/factsheets/cdc-hiv-latinos-508.pdf

Age

About 1.2 million people live with HIV in the United States and 42.0% of adults with HIV are over 50. One in every six (17.0%) new HIV infections occurs in people over 50 years old (Figure 27). Older adults are less likely to be tested for HIV than younger adults. Many older adults may not believe they are at risk for HIV or other sexually transmitted diseases (STDs). Many older adults are diagnosed with HIV only when receiving treatment for other medical conditions. Centers for Disease Control and Prevention (CDC) estimates half of all people living with HIV in the United States will be age 50 and older.[51]

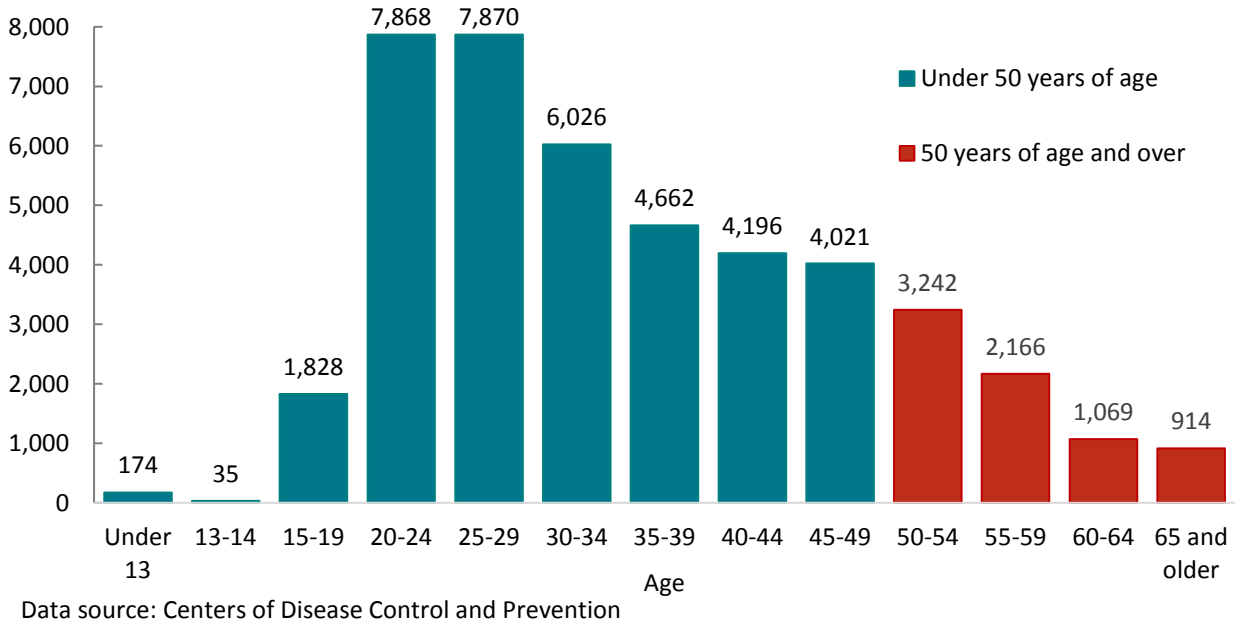
The likelihood of receiving an HIV and AIDS diagnosis simultaneously increases with age. Older adults are often not seen as being at risk for HIV/STDs by their health care providers. Because of this, providers commonly underestimate the sexual activity of older adults, missing an opportunity to address risk for HIV and other STDs. Assessing sexuality and sexual health includes assessing sexual risk.

Older women may be at higher risk of becoming infected with HIV due to physical changes of aging, such as the thinning of the vaginal wall due to hormonal loss of estrogen.[52] They may also be less likely to insist on using condoms because they are not worried about getting pregnant, placing themselves at risk for an HIV infection and other STDs.

Older adults and HIV in West Virginia

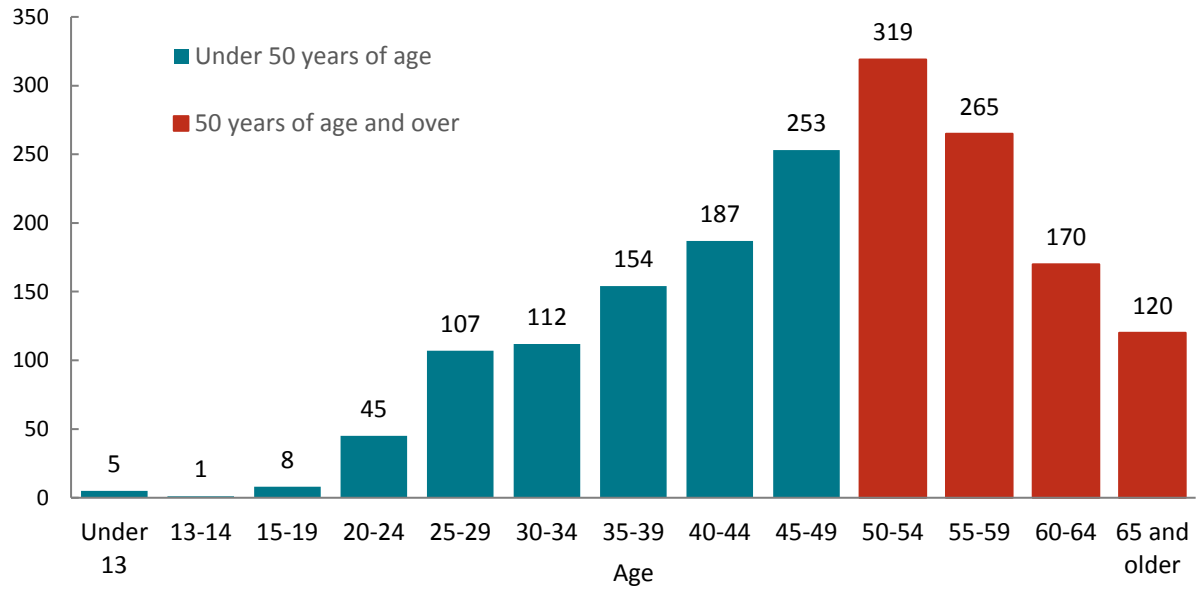
People living with HIV (PLWH) in West Virginia are living longer. The percentage of people living with HIV (PLWH) who are 50 years of age and older is 50.0% (Figure 28). In the mid-1990s, the introduction of highly effective antiretroviral therapy (ART) increased survival of people living with HIV and caused a precipitous drop in AIDS deaths in West Virginia. PLWH who consistently adhere to ART are expected to live a life expectancy

Figure 27. Estimated number of diagnosed HIV infections by age in the United States, 2014



Data source: Centers of Disease Control and Prevention

Figure 28. Number of PLWH by age in West Virginia, 2016



approaching that of the general population.[53] Therefore, the percentage of people over the age of 50 will continue to increase.

HIV among youth and younger adults in West Virginia

In 2015, youth aged 13-24 accounted for 22% of all new HIV diagnoses in the United States.[54] Most of the new infections are among gay and bisexual youth. In West Virginia, youth accounted for 19% of new infections diagnosed during 2012–2016 (Figure 29). Among all gay, bisexual, and other men who have sex with men (MSM), gay and bisexual youth aged 15-24 contributed to 33% of all new infections. Overall, the percentage of youth being diagnosed with HIV has increased slightly compared to previous years (23% for 1984-2011 to 25% for 2012–2016). This may be a positive development due to the decreasing time between infection and diagnosis.

Risk behavior data from the Youth Risk Behavior Surveillance System (YRBS), 2015,[55] describes sexual and other health risk behaviors that may contribute to HIV infection among youth in West Virginia:

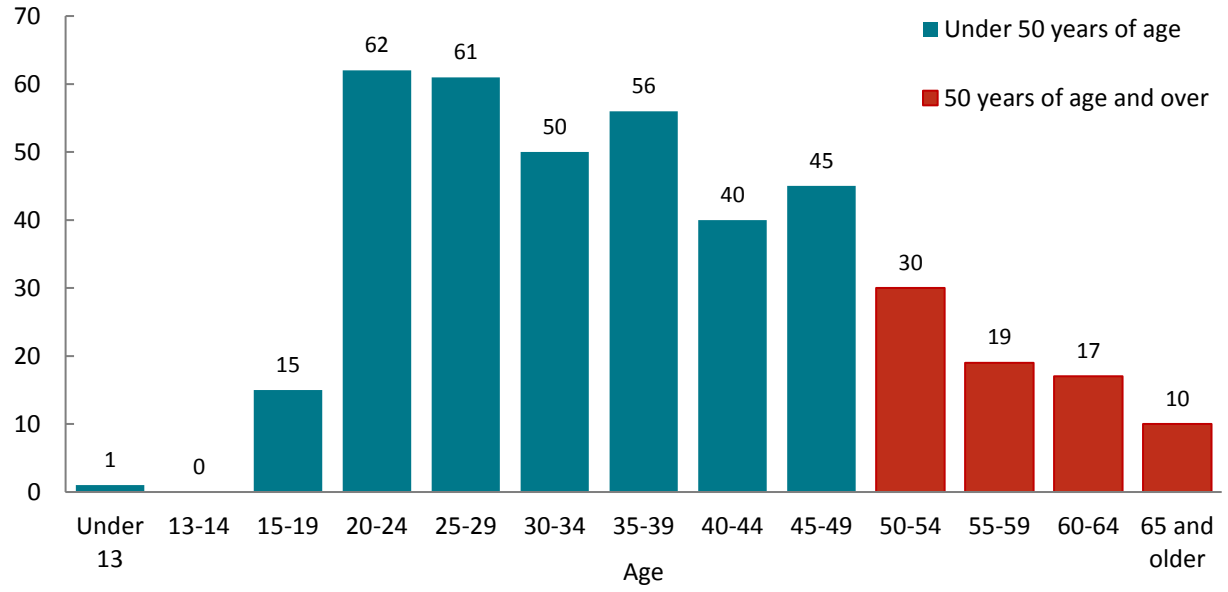
• Low rates of testing. Among high school students in West Virginia, 13.1% have been tested for HIV. Among male students who had sexual contact with other males, only 26.5% have ever been tested for HIV.

• Sexual activity. Out of all students who are currently sexually active, 35.5% had sexual intercourse during the previous 3 months.

• Low rates of condom use. Over half (51.5%) of all sexually active high school students did not use a condom the last time they had sexual intercourse.

• Number of partners. Over one-quarter (27.7%) of male students who had sexual contact with other males reported sexual intercourse with 4 or more persons during their life, compared to 13.4% of all students who had ever had sexual contact.

Figure 29. Number of new diagnoses of HIV by age in West Virginia, 2012-2016



[51] HIV Among People Age 50 and Over https://www.cdc.gov/hiv/group/age/olderamericans/index.html

[52] HIV Among People Aged 50 and Over https://www.cdc.gov/hiv/group/age/olderamericans/index.html

[53] Katz, Ingrid T et al. Improved life expectancy of people living with HIV: who is left behind? The Lancet HIV, Volume 4 , Issue 8 , e324 - e326

[54] HIV Among Youth https://www.cdc.gov/hiv/group/age/youth/index.html

[55] High School YRBS United States 2015 Results https://nccd.cdc.gov/youthonline/app/Results.aspx?LID=XX West Virginia 2015

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STDs and HIV coinfections

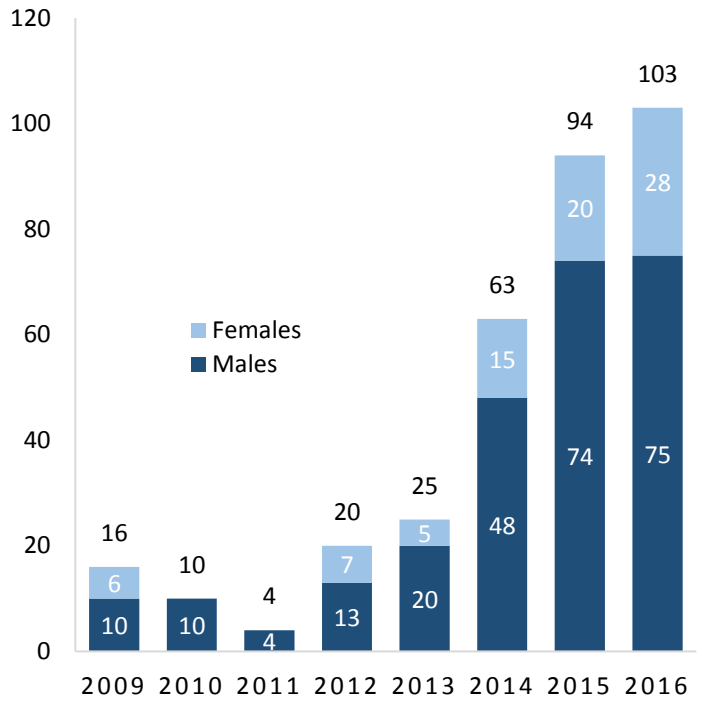
Sexually transmitted diseases in West Virginia

Sexually transmitted diseases (STDs) are indicators of ongoing high-risk sexual behavior, such as multiple concurrent partners and inconsistent condom use. Having a concurrent STD can increase the likelihood that someone with HIV might transmit HIV to uninfected partners because having a sore, break in the skin, or inflammation from an STD may allow an HIV infection that would have been stopped by intact skin.[56]

West Virginia is a low morbidity state for sexually transmitted diseases including HIV, gonorrhea, chlamydia, and syphilis, as compared to the rest of the United States. West Virginia ranked 49th for chlamydia, 45th for gonorrhea, and 39th for syphilis.[57]

Trend data show the number of syphilis infections increased 19.0% (2015) in the United States.[58] West Virginia has seen an exponential increase (415.0%, n=304) in early syphilis infections since 2012 to 2016 (Figure 30). During 2016, men accounted for most cases of syphilis, with the majority (58.7%) of all infections occurring among men who have sex with men (MSM).

Figure 30. Number of Early Syphilis* Infections diagnosed in West Virginia, 2009–2016



*Early syphilis 710 (primary), 720 (secondary), and 730 (early latent)

STDs and HIV coinfections in West Virginia

Chlamydia

From 2012–2016, there were 24,521 diagnoses of chlamydia infections in West Virginia. Women accounted for 70.2% of reported infections and men 29.8% (Figure 31). The percentage of gonorrhea infections (n=4,493) were almost equally split between females (50.2%) and males (49.8%). The 20-24 year-old age group was the most affected for both diseases, gonorrhea 34.5% and chlamydia 43.2%.

Less than 1% (n=52) of those cases were co-infected with HIV. The number of chlamydia and HIV co-infections did not increase during this time.

Gonorrhea

There were 4,493 cases of gonorrhea diagnosed in West Virginia between 2012 and 2016. Less than 1.0% (n=35) of those cases were co-infected with HIV. The number of gonorrhea and HIV co-infections decreased from a high of 10 in 2015 to a low of 5 during 2016.

Syphilis

During 2016, 90% of all HIV coinfected (n=20) syphilis cases were men (n=18) and 10% women (n=2). HIV coinfections accounted for 19.4% of all 103 cases reported in 2016. At the time of

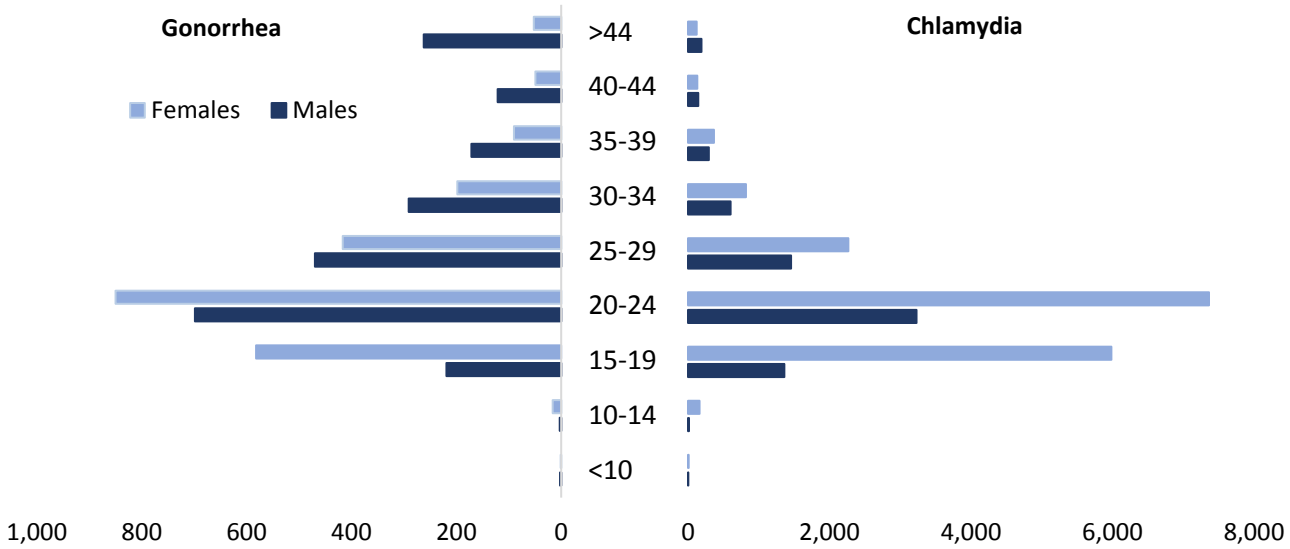
diagnosis with syphilis (n=103), ten people (9.7%) were coinfected with chlamydia (n=5), gonorrhea (n=7), herpes simplex virus-2 (n=1), and hepatitis C virus (n=1), some had multiple coinfections. Out of the 192 early syphilis infections diagnosed from 2015-2016, 33 (17.2%) were coinfected with HIV.

From 2012–2016, there were 304 diagnoses of syphilis infections in West Virginia.[59] Men accounted for 75.4% of early syphilis infections (24.6% women). Out of the 304 cases, 49 (16.1%) were co-infected with HIV. All the syphilis and HIV coinfections were found in men. Most of the coinfected men (n=40) reported male-to-male sexual contact (MSM) as the exposure category. One individual reported heterosexual contact and injection drug use (IDU), seven others reported MSM and IDU, while the remaining person did not report a risk factor.

Testing and treatment

Testing and treatment of STDs is an effective tool in preventing the spread of HIV. Untreated STDs are a common cause of pelvic inflammatory disease, infertility and chronic pelvic pain. In addition, they can increase the spread of HIV and cause cancer. Pregnant women and newborns are particularly vulnerable. STD treatment reduces an individual's ability to transmit HIV.[60]

Figure 31. Number of gonorrhea and chlamydia Infections by sex diagnosed in West Virginia, 2012–2016



Note: Gonorrhea is displayed at a different scale (hundreds) than chlamydia (thousands).
Source: West Virginia DHHR, BPH, OEPS, Division of STD and HIV

[56] STDs and HIV https://www.cdc.gov/std/hiv/stdfact-std-hiv-detailed.htm
[57] Sexually Transmitted Disease Surveillance STDs 2015 https://www.cdc.gov/std/stats15/STD-Surveillance-2015-print.pdf
[58] 2015 STD Surveillance Report https://www.cdc.gov/nchhstp/newsroom/2016/2015-std-surveillance-report.html
[59] West Virginia Sexually Transmitted Diseases http://www.dhhr.wv.gov/oeps/std-hiv-hep/stds_stis/Pages/STDSurveillance.aspx
[60] The role of STD Prevention and Treatment in HIV Prevention https://www.cdc.gov/std/hiv/stds-and-hiv-fact-sheet-press.pdf

Viral hepatitis and HIV coinfection

Viral hepatitis and HIV coinfection in the United States

Viral hepatitis means inflammation of the liver caused by a virus. In the United States, the most common causes of viral hepatitis are hepatitis A virus (HAV), hepatitis B virus (HBV), and hepatitis C virus (HCV). Each is distinct from the other and spread in slightly different ways. HBV and HCV infections are common among people who are at risk for, or living with, HIV.[61]

HCV is most often spread through blood, but can sometimes be spread through sexual contact. Approximately one quarter of HIV-infected persons in the United States are also infected with hepatitis C virus (HCV).[62]

HBV and HIV are bloodborne viruses transmitted primarily through sexual contact and injection drug use. Because of these shared modes of transmission, a high proportion of adults at risk for HIV infection are also at risk for HBV infection. About 20% of all new HBV infections in the United States are among gay and bisexual men.[63]

Figure 32. Percentage HIV/hepatitis coinfection by age group in West Virginia, 2012–2015

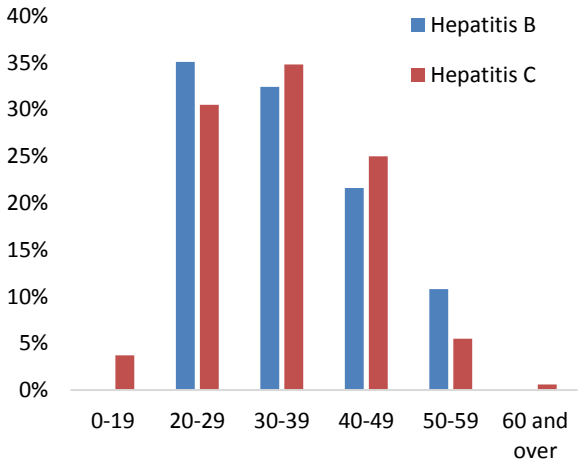
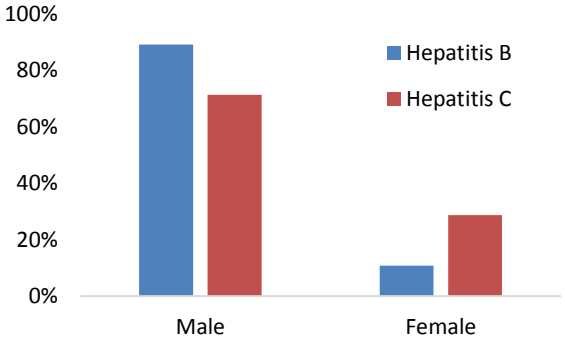


Figure 33. Percentage HIV/Hepatitis coinfection by sex in West Virginia, 2012–2015



Hepatitis and HIV coinfection in West Virginia

While West Virginia rates of acute HBV (No. 1) and HCV (No. 2) were highest nationally during 2015,[64] West Virginia is a low morbidity state for HIV. West Virginia's reported HIV/HCV coinfection prevalence was lower than national estimates.

Acute versus chronic

Acute HBV/HCV infection is a short-term illness that occurs within the first 6 months after someone is exposed to the virus. For most people, acute infection leads to chronic infection.

Chronic HBV or HCV infection is a long-term illness that occurs when the virus remains in a person's body. HBV or HCV infection can last a lifetime and lead to serious liver problems, including cirrhosis (scarring of the liver) or liver cancer.

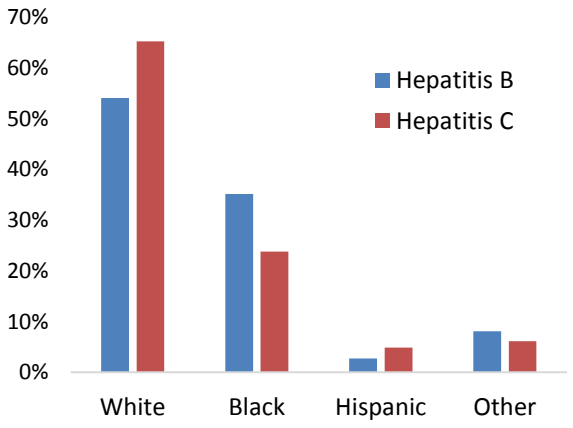
Nationally, coinfection with HIV and HCV is common (50%–90%) among HIV-infected injection drug users. About 15,000 people die of HCV every year in the United States and has

surpassed the number of people dying from HIV (including stage 3 - AIDS).[65]

More PLWH are infected with HCV than with HBV. A cross sectional study showed 7.9% (n = 164) among PLWH (n=2,089) in West Virginia were coinfected with HCV (n=22,425) and 1.8% (n = 37) tested positive with HBV (n=2,851) from 2012–2015. Coinfection with HBV or HCV was defined as any HIV or AIDS patient with present (acute) or past (chronic) infection. A previous study showed a 9.4% HIV/HCV coinfection from 2001 through 2013.

Among HIV/HBV coinfected persons, most (35.1%) were between the ages of 20 and 29; among those coinfected with HIV/HCV, most (34.8%) were between the ages of 30 and 39. HIV/HCV coinfection affected persons across a wider age range, compared to HIV/HBV coinfection (Figure 32). Of HIV/HCV coinfected persons, 42.7% belong to the baby boomer generation (born between 1946 and 1964). HIV/HCV coinfection was present in a higher proportion of females (28.7%) compared to HIV/HBV coinfection (10.8%) (Figure 33).

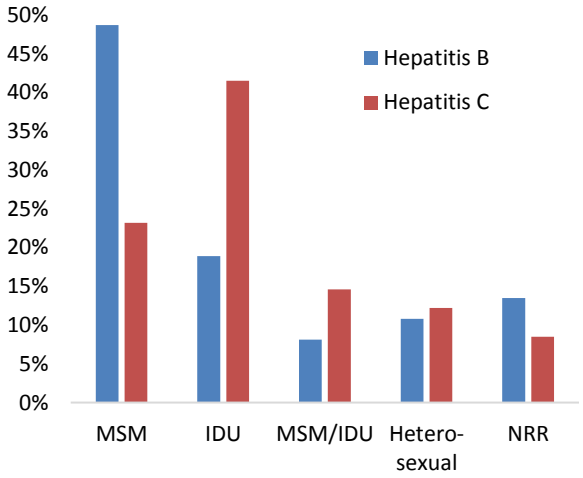
Figure 34. Percentage HIV/Hepatitis coinfection by race/ethnicity in West Virginia, 2012–2015



Coinfection with HIV and HBV in whites was 54.1% versus 35.1% among blacks. The racial disparity, while present, is slightly less pronounced among those with HIV/HCV coinfection: 65.2% of coinfected persons were white, and 23.8% were black (Figure 34).

Male-to-male sexual contact was the most commonly reported transmission route for HIV/HBV coinfection (48.7%), followed by 18.9% for injection drug use (IDU). For HIV/HCV coinfection, IDU was the most common transmission route for HIV/HCV coinfection (41.5%), followed by MSM (23.0%) (Figure 35).

Figure 35. Percentage HIV/Hepatitis coinfection by risk factor in West Virginia, 2012–2015



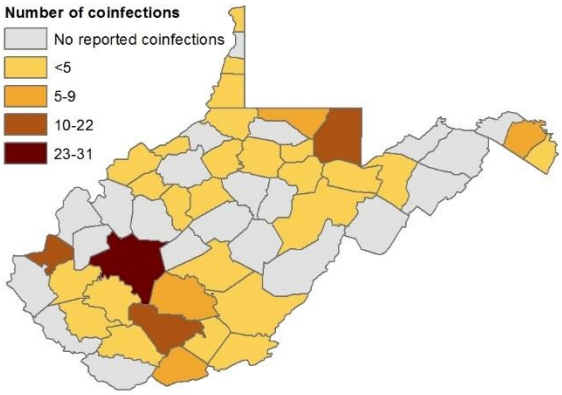
The percentage of people with a new HIV infection who report IDU (9.0%, 2012–2016) as a possible exposure has been declining (-47.1%) since 1989 (17.0%, 1989-2011). Rather, male-to-male sexual contact is the predominate risk factor (55.0%) for becoming infected with HIV. West Virginia is unique in other ways due to the racial/ethnic distribution in the state and its large rural population. In all regions of the United States including West Virginia, the majority of people who receive an HIV diagnoses live in urban areas.[66] In contrast, the

incidence of HCV is greater among nonurban populations, with IDU as the principal risk factor.[67]

HCV is approximately 10 times more infectious than HIV through skin (percutaneous) blood exposures and has been shown to survive for weeks in syringes. Transmission via injection drug use remains the most common mode of infection in the United States. Therefore, HCV is often acquired before HIV among people who inject drugs (PWID), and it is more prevalent among HIV-infected PWID than among people who are thought to have acquired HIV infection through sexual transmission.[68] This fact provides an incentive to test HCV individuals for HIV in order to detect possible outbreaks of HIV in West Virginia.

Nationally, hepatitis B vaccine has been successful in contributing to a 96.0% decline in the incidence of acute hepatitis B in children and adolescents. Approximately 95% of new HBV infections occur among adults. An effective vaccine for HCV has been elusive. Without a vaccine or cost-effective drugs to treat HCV, infections will continue to rise in West Virginia. The geographic distribution of HIV/HCV coinfection (Figure 36) shows the counties with the largest case numbers. Kanawha County was the highest with 31 reported coinfections, followed by Cabell County (n=22) and Raleigh County (n=16). Both HIV and HCV can be spread through IDU. Therefore, any increase in number or distribution of coinfected cases associated with IDU may increase the risk of rapid dissemination of HIV in West Virginia.

Figure 36. Number of HIV/HCV coinfections by county in West Virginia, 2012–2016*



*federal prisoners included

Overall risk to health

People with HIV who are coinfected with either HBV or HCV are at increased risk for serious, life-threatening complications. Viral hepatitis progresses faster and causes more liver-related health problems among people with HIV than among those who do not have HIV. Although treatment with antiretroviral therapy has improved the health and extended the life expectancy of people with HIV, liver disease — much of which is related to HBV and HCV — causes non-AIDS-related deaths in this population.[69]

Chronic HCV is a serious disease that can result in long-term health problems, even death. Most infected persons might not be aware of their infection because they are not clinically ill.

Viral hepatitis and HIV coinfection risk factors

Both HBV and HCV are sexually transmitted. Among adults in the United States, HBV is most commonly spread through sexual contact and accounts for nearly two-thirds of acute HBV infections. HBV is about 50–100 times more

infectious than HIV and can be passed through the exchange of body fluids, such as semen, vaginal fluids, and blood.[70] While, the risk of transmission of HCV from sexual contact is low, the risk increases for those who have multiple sex partners, have a sexually transmitted disease, engage in rough sex, or are infected with HIV.[71]

Prevention

Anyone living with HIV should be tested for HBV and HCV. Coinfection with hepatitis may complicate the management of HIV infection. To prevent coinfection for those who are not already infected with HBV, the Advisory Committee on Immunization Practices (ACIP) recommends HAV and HBV vaccination of high-risk patients. High-risk patients can include gay, bisexual, and other men who have sex with men (MSM) and PWID with an HIV infection.

The best way to prevent HCV is by avoiding behaviors that can spread the disease, especially injecting drugs.[72] While there are expensive treatments, there is no vaccine for HCV. Mother-to-child transmission of viral hepatitis is a risk to infants born to mothers who are infected with HCV. [73]

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[61] HIV and Viral Hepatitis https://www.cdc.gov/hiv/pdf/library/factsheets/hiv-viral-hepatitis.pdf
[62] HIV/AIDS and Viral Hepatitis https://www.cdc.gov/hepatitis/populations/hiv.htm
[63] HIV and Viral Hepatitis https://www.cdc.gov/hiv/pdf/library/factsheets/hiv-viral-hepatitis.pdf
[64] Surveillance for Viral Hepatitis – United States, 2015 https://www.cdc.gov/hepatitis/statistics/2015surveillance/index.htm
[65] The HIV and Viral Hepatitis Epidemic https://www.youtube.com/watch?v=mV9fOXt6f9I
[66] HIV in the United States by Geographic Distribution https://www.cdc.gov/hiv/statistics/overview/geographicdistribution.html
[67] Increases in Hepatitis C Virus Infection Related to Injection Drug Use Among Persons Aged ≤30 Years—Kentucky, Tennessee, Virginia, and West Virginia, 2006–2012, MMWR, Vol. 64/No. 17 https://www.cdc.gov/mmwr/pdf/wk/mm6417.pdf
[68] Lynn E. Taylor, Tracy Swan, and Kenneth H. Mayer; HIV Coinfection With Hepatitis C Virus: Evolving Epidemiology and Treatment Paradigms; Clin Infect Dis. 2012 Jul 15; 55(Suppl 1): S33–S42. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3491862/
[69] HIV and Viral Hepatitis 2017 https://www.cdc.gov/hiv/pdf/library/factsheets/hiv-viral-hepatitis.pdf
[70] Hepatitis B FAQs for the Public https://www.cdc.gov/hepatitis/hbv/bfaq.htm
[71] https://www.cdc.gov/hepatitis/hcv/cfaq.htm
[72] Viral Hepatitis https://www.cdc.gov/hepatitis/hcv/index.htm
[73] Guidelines for the Prevention and Treatment of Opportunistic Infections in HIV-Infected Adults and Adolescents https://aidsinfo.nih.gov/guidelines/html/4/adult-and-adolescent-oi-prevention-and-treatment-guidelines/345/hcv

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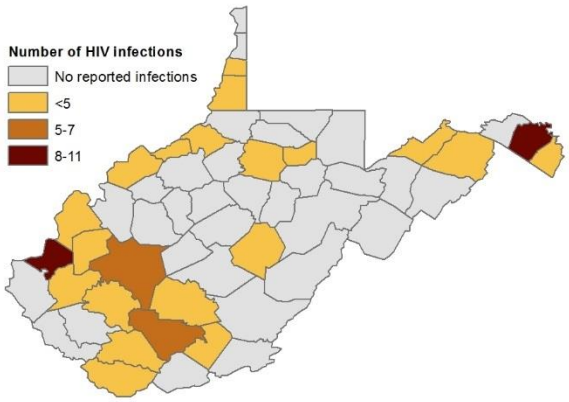
Injection drug use and HIV

Injection drug use and HIV in West Virginia

Since 2000, the rate of deaths from drug overdoses in the United States has increased 137.0%, including a 200.0% increase in the rate of overdose deaths involving opioids (opioid pain relievers and heroin).[74] West Virginia is ranked first in the United States for all drug related overdoses.[75]

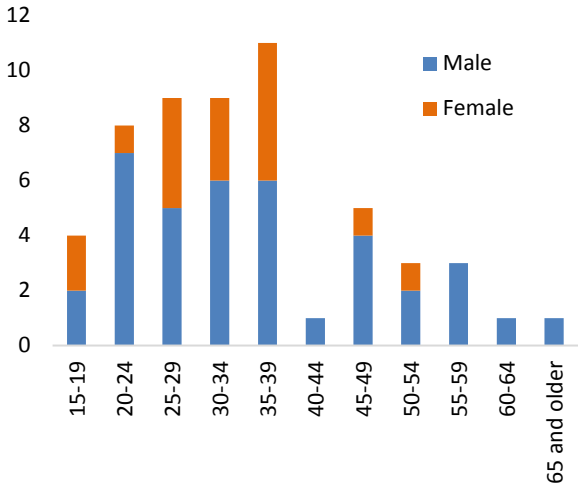
Statewide, overdose deaths have been steadily increasing. From 2013 to 2014 there was a 10.2% increase in drug related overdose deaths. In 2013, there were 570 deaths (32.2 age-adjusted rate per 100,000 people); in 2014 there were 627 deaths (35.5 age-adjusted rate per 100,000).[76] In 2015, the number of deaths increased to 735 deaths,[77] [78] a 15.6% increase in deaths as compared to 2014. The number of overdose deaths jumped again to 884 in 2016 for a 20.3% increase. There were 261 overdose deaths in the Kanawha, Putnam, and Cabell tri-county area in 2016 (Figure 37). In the area, 1 in 10 are battling addiction and there has been a 12% increase in the region in just one year.[79] [80] [81]

Figure 37. Number of diagnoses of HIV infection with IDU* risk factor by county in West Virginia, 2012–2016



*IDU includes male-to-male sexual contact and injection drug use (MSM/IDU).

Figure 38. Number of diagnoses of HIV infection by age among PWID in West Virginia, 2012-2016



Controlled prescription drugs, heroin and fentanyl

The drug addiction and abuse problem is approaching a crisis level in West Virginia with the State now leading the entire nation in overdoses. Heroin, fentanyl and controlled prescription drugs (CPDs) are at the forefront of the problem and are responsible for most the State's overdoses. In 2016, almost 85.0% of drug overdoses were due to at least one opioid.[82]

The abuse of prescription medication has been a serious issue in the State for a while. But now, users are turning to cheaper and more potent opioids - heroin and fentanyl. Nationwide, among new heroin users, 75.0% report having abused prescription opioids before using heroin.[83]

HIV in West Virginia among people who inject drugs (PWID)

Among PWID diagnosed with HIV (n=55) in West Virginia (2012–2016), most were male (69.1%), white (80%), and reported IDU only as

their exposure (67.3%). Otherwise, females made up 30.9% of infections, blacks 12.7%, Hispanic/Latino and mixed race divided equally at 3.6%. People aged 35-39 at diagnosis made up the largest percentage (20%), followed by ages 25-29 and 30-34 split evenly at 16.4%. Overall, the age group most frequently diagnosed with HIV was 25-34 (32.7%) (Figure 38). Men who reported MSM and IDU made up 32.7% of the total among HIV infected PWID.

Decrease in HIV infections due to IDU

Needle sharing is the most efficient route of transmission for HIV, yet HIV incidence has remained stable among people who inject drugs (PWID) in West Virginia. The risk for getting or transmitting HIV is very high if an HIV-negative person uses injection equipment that someone with HIV has used. This high risk is because the drug materials may have blood in them, and blood can carry HIV. [84] About 9% of diagnoses of HIV in the United States were attributed to Injection drug use (IDU), including MSM/IDU.[85]

Notwithstanding the risk of transmitting HIV by IDU, HIV diagnoses among PWID declined in the United States 48% from 2008 to 2014.[86] In West Virginia, the percentage of HIV diagnoses with a reported exposure category of IDU decreased from 16% during 1984-2011 to 9% for 2012–2016. The dual risk of male-to-male sexual contact (MSM) and IDU remained steady at 4% of total diagnoses of HIV for both time periods (1984-2011 and 2012–2016). However, an increase in IDU in nonurban areas, such as Appalachia, specifically West Virginia, has placed new populations at risk and a significant risk for an HIV outbreak similar to Scott County, Indiana.[87]

Potential HIV outbreak in West Virginia

All the conditions are suitable for an outbreak of HIV in West Virginia due to the high number of PWID, consistent supply of narcotics, and PWID who may not be aware of their HIV positive status. Centers for Disease Control and Prevention conducted a study to determine other locations within the United States that were vulnerable to rapid spread of HIV infection among PWID.[88] The research identified 28 out of West Virginia's 55 counties ranked among the top 220 at highest risk in the nation (Figure 39). The West Virginia Bureau for Public Health has been coordinating with local health departments, treatment centers, and non-profit organizations providing syringe services programs throughout the State in order to reduce the risk of rapid transmission of HIV infection due to IDU. Research has shown that syringe access and disposal programs are the most effective, evidence-based HIV prevention tool for PWID.[89]

Figure 39. County-level vulnerability to rapid spread of HIV infection among persons who inject drugs

Data source: Centers for Disease Control and Prevention, 2016

[74] Increases in Drug and Opioid Overdose Deaths — United States, 2000–2014 https://www.cdc.gov/mmwr/pdf/wk/mm6450.pdf
[75] Heroin, Fentanyl and CPD use in West Virginia: Dangerous Trends on the Rise https://www.getsmartaboutdrugs.gov/westvirginia/problem/problem
[76] Increases in Drug and Opioid Overdose Deaths — United States, 2000–2014 https://www.cdc.gov/mmwr/pdf/wk/mm6450.pdf
[77] West Virginia Health Statistics Center, Vital Statistics System, Drug Overdose Database
[78] https://www.nytimes.com/interactive/2017/06/05/upshot/opioid-epidemic-drug-overdose-deaths-are-rising-faster-than-ever.html
[79] 2015 National Survey on Drug Use and Health, September 2016
[80] Centers for Disease Control and Prevention, Increases in Drug and Opioid Involved Overdose Deaths
[81] West Virginia Health Statistics Center, Vital Statistics System, Drug Overdose Database
[82] *West Virginia Health Statistics Center, Vital Statistics System, Drug Overdose Database, March 20, 2017.*
[83] *Heroin Overdose Data. Center of Disease Control and Prevention*
Source: https://www.cdc.gov/drugoverdose/data/heroin.html
[84] HIV and Injection Drug Use https://www.cdc.gov/hiv/pdf/risk/cdc-hiv-idu-fact-sheet.pdf
[85] HIV and Injection Drug Use https://www.cdc.gov/hiv/risk/idu.html
[86] https://www.cdc.gov/vitalsigns/hiv-drug-use/index.html
[87] Janowicz, HIV Transmission and Injection Drug Use: Lessons From the Indiana Outbreak; Top Antivir Med. 2016;24(2):90-92. ©2016, IAS–USA.
[88] Michelle M Van Handel, et al. County-level Vulnerability Assessment for Rapid Dissemination of HIV or HCV Infections among Persons who Inject Drugs, United States; JAIDS Journal of Acquired Immune Deficiency Syndromes: 1 November 2016 - Volume 73 - Issue 3 - p 323–331
[89] Office of the Surgeon General (2000): Evidence-based Findings on the Efficacy of Syringe Exchange Programs: An Analysis of the Scientific Research Completed Since April 1998. US Department of Health and Human Services: Washington DC.

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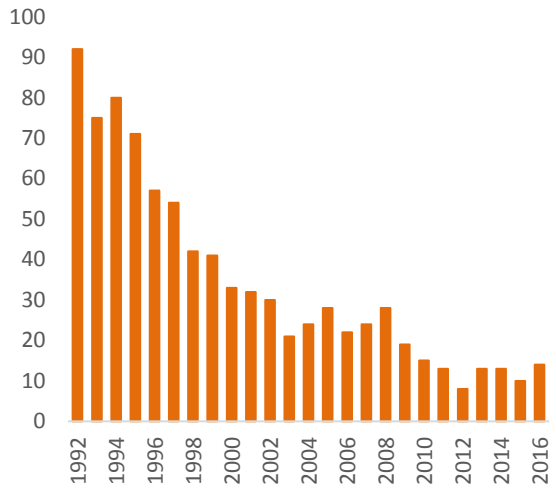
Tuberculosis and HIV coinfection

Tuberculosis (TB) is a disease caused by the bacterium *Mycobacterium tuberculosis*. Although the bacterium primarily attacks the lungs, it can reside in any part of the body, such as the brain, kidney, or spine. TB is an airborne, communicable disease that is spread when people infected with TB in the lungs or throat sneeze, cough, or speak, placing TB bacteria in the air that is then ingested by surrounding people.

Worldwide, TB is one of the leading causes of death in those living with HIV, with the risk of developing TB being approximately 26 to 31 times greater in persons living with HIV (PLWH) compared to those without HIV infection. Among those who have latent TB infection, HIV infection is the biggest risk factor for progressing to active TB disease.

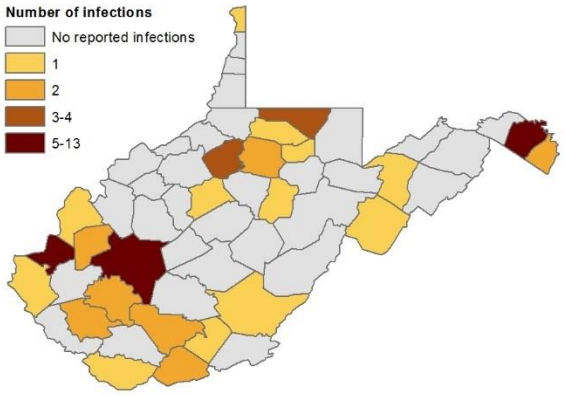
Figure 40. Number of active TB infections reported by year in West Virginia, 2009-2016



Treatment of TB

Persons with latent TB infection are prescribed one or more of these medications to prevent TB disease: isoniazid, rifampin, and rifapentine. Treatment regimens last anywhere from three to nine months. The treatment regimen for TB disease includes the first-line anti-TB agents isoniazid, rifampin, ethambutol, and pyrazinamide. The initial phase of the treatment last two months, and the continuation phase lasts anywhere from four to seven months.

Figure 41. Number of active TB infections reported by county in West Virginia, 2009-2016



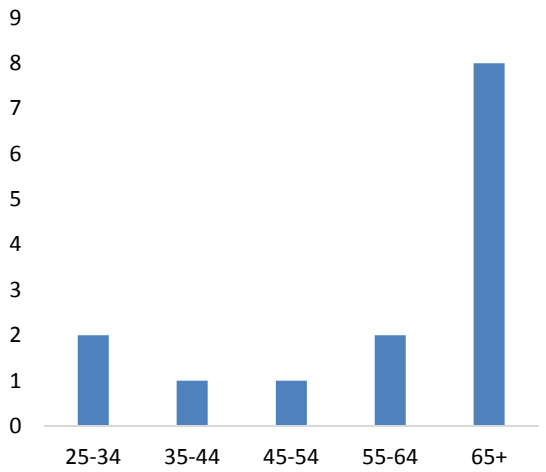
TB in the United States

In 2016, 9,287 cases of TB were reported in the United States (US), at a rate of 2.9 cases per 100,000. Foreign-born persons accounted for 67.9% of the cases. Among foreign-born persons, the highest TB incidence in 2016 was among Asians (26.9 cases per 100,000), followed by non-Hispanic blacks (22.3) and Hispanics (10.0).[90]

TB in West Virginia

The number of TB infections reported from 1992-2016 in West Virginia have been decreasing overall since 1992 (Figure 40).[91] From 2012 to 2016, West Virginia reported 58 active cases of TB.

Figure 42. Number of active TB infections reported by age in West Virginia, 2016



During 2016, males represented 64.0% of active TB infections in West Virginia. People born in the United States accounted for 64.0% (n=9) of the cases and 36.0% (n=5) were foreign-born. None of the cases were Hispanic/Latino. Among those who were born in the US, most (57.1%) were white, black (28.6%), and Asian (14.3%). People aged 50 or older represented 71.4% of the cases (Figure 42). Cabell County (n=13, 22.4%) had the most reported infections followed by Kanawha County (n=6), and Berkeley County (n=5) (Figure 41).

TB and HIV coinfection

Of the 58 active TB cases reported in West Virginia from 2013-2016,[92] none were found to be co-infected with HIV. However, three people diagnosed with a latent TB infections (LTBI) were also coinfected with HIV, 2012–2016. In contrast to the demographic profile of the TB cases in West Virginia, two co-infection cases were female, one male, and located in different counties (Wayne County, Logan County, and Hardy County), and one person was foreign-born. Two of the co-infection cases were non-Hispanic/black, one non-Hispanic white and were between the ages of 25-34 (n=1), 45-54 (n=1), 55-64 (n=1).

[90] MMWR, Vol. 66 / No. 11 March 24, 2017 https://www.cdc.gov/mmwr/volumes/66/wr/pdfs/mm6611a2.pdf

[91] West Virginia TB Profile, Annual Report 2016 http://www.dhhr.wv.gov/oeps/tuberculosis/Documents/2016%20WV%20TB%20Profile%20FINAL.pdf

[92] West Virginia DHHR, BPH, OEPS, Division of Tuberculosis Elimination (data only available electronically from 2013 onward)

HIV and Mortality

HIV and mortality in the United States

In the United States, 6,721 people died from HIV and AIDS in 2014. Human immunodeficiency virus (HIV) remains a significant cause of death for certain populations. In 2014, it was the 8th leading cause of death for those aged 25-34 and 9th for those aged 35-44.[93]

HIV and mortality in West Virginia

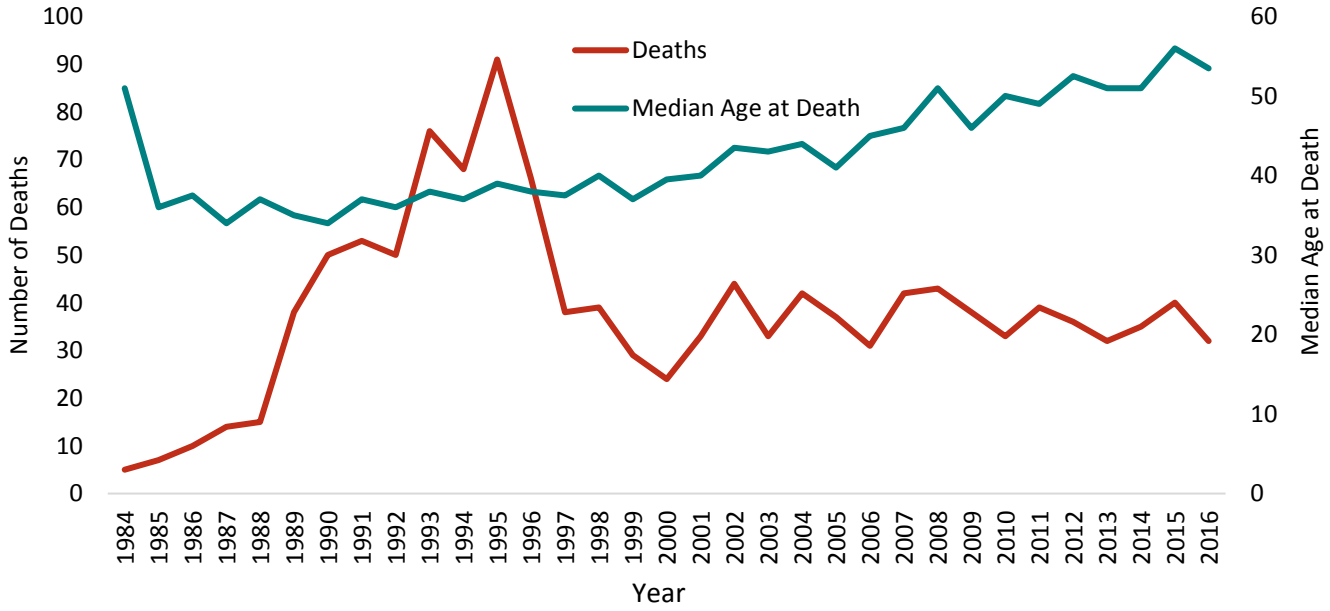
As of 2016, 1,263 people diagnosed with an HIV infection in West Virginia have died (Figure 43). Many died due to HIV infection (including stage 3 [acquired immunodeficiency syndrome, AIDS]). With the advent of antiretroviral therapy (ART) introduced in the mid-1990s, the number of deaths per year due to HIV have fallen substantially, from a high of 91 deaths in 1995 to 32 deaths in 2016. The median age at death has increased. From 1984-2011, the average age at death was 40.8 years old as compared to 52.8 years old from 2012–2016, a gain of 12 years. ART has not only increased the longevity of people living with HIV, but when taken consistently also prevents the propagation of infections.

HIV and mortality facts at a glance:

- The annual number of deaths among people with HIV declined from 91 deaths recorded for 1995 to 32 deaths that occurred during 2016.
- During 2012-2016, HIV remained the leading underlying cause of death (49.5%) among people diagnosed with HIV. Cardiovascular disease (17%) was second and malignancy (9%) was third.

From 2012–2016, 176 deaths were recorded in West Virginia among persons diagnosed with an HIV infection (Figure 44 page 58). The majority of deaths occurred among men (n=141, 80.1%). Whites represented 71% (n=125) of the deaths, blacks 23.3% (n=41), while Hispanic/Latinos and other race, including mixed race were evenly split at 2.8% (n=5 each). Deaths occurred most frequently among the 50-59 age group (32.4%),

Figure 43. Number HIV deaths and median age at death by year in West Virginia from 1984–2016



followed by those aged 60 years and older (26.7%), and age group 40-49 (24.4%). Male-to-male sexual contact (MSM) was the mode of transmission with the highest number of deaths (n=76, 43.2%), injection drug use (IDU), including MSM/IDU accounted for 46 (26.1%) deaths, heterosexual contact 45 (25.6%) deaths, and other, including risk not identified contributed 7 (12.1%) of the total deaths.

During 2012–2016, HIV remained the leading underlying cause of death (49.5%) among people with HIV. Cardiovascular disease (17%) was second and malignancy (9%) was the third. Of concern are the high proportion of deaths due to substance abuse and violence, specifically suicide (Table 2).

Nationally, the suicide rate has increased 24.0%, from 10.5 to 13.0 per 100,000 population.[94] Among the deaths recorded in West Virginia, 5 (4.5%) people with diagnoses with HIV infection, intentional self-harm (suicide) was the underlying cause of death. The percentage of deaths due to suicide was 2.8 times the national (1.6%) percent total of deaths.[95]

Since 2000, the rate of deaths from unintentional poisoning (drug overdose) in the United States has increased 137.0%, including a 200.0% increase in the rate of overdose deaths involving opioids (opioid pain relievers and heroin).[96] West Virginia is ranked number one in the United States for drug-related overdoses.[97] Unintentional poisoning (narcotics, drugs, hallucinogens, and other medicaments) accounted for 6.3% of deaths in West Virginia among people with a diagnoses of HIV infection, which was 2.4-fold the percentage (2.6%) reported in previous research.[98]

Young people, infected with HIV on the latest ART will likely have a near normal life-expectancy.[99, 100] The West Virginia HIV/AIDS Surveillance and Prevention Program is committed to identifying people infected with HIV, linking those individuals to ART treatment and health care services, slowing the propagation of HIV, increasing the number of people at medium to high risk who take pre-exposure prophylaxis (PrEP), reducing the number of HIV infected people from entering

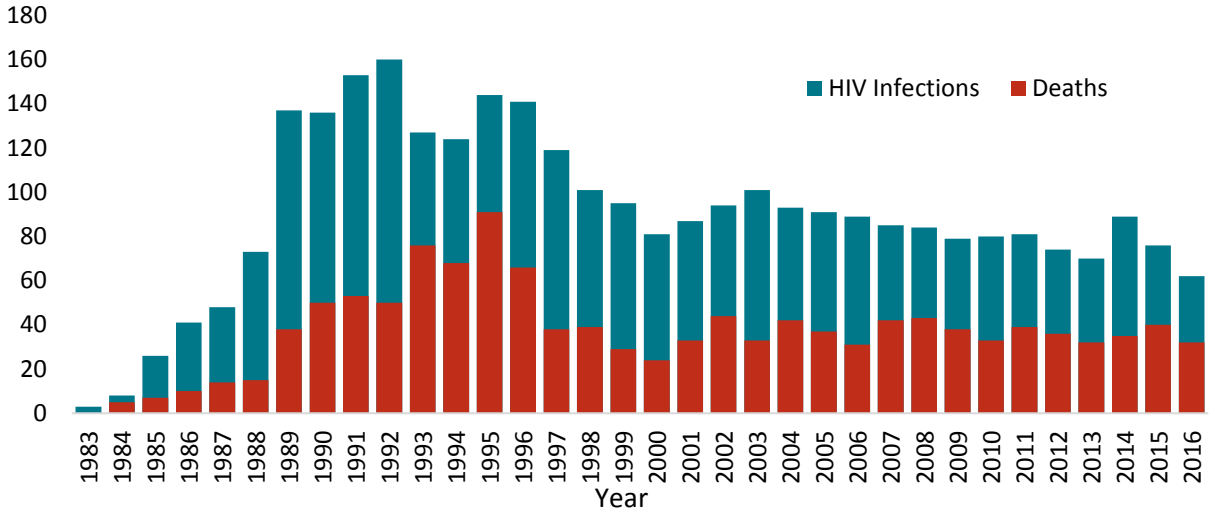
Table 2. Underlying cause of death among HIV infected people originally diagnosed in West Virginia, 2012–2016

Cause of death	No. of deaths	Percent
HIV Disease	55	49.5
Cardiovascular disease	19	17.1
Malignancy	10	9.0
Unintentional poisoning (drug overdose)	7	6.3
Violent death		
Intentional self-harm (suicide)	5	4.5
Assault (homicide)	2	1.8
Motor vehicle accident	1	0.9
Diabetes mellitus	2	1.8
Mental and behavioral disorders	2	1.8
Digestive system disease	2	1.8
Other†	6	5.4
Total*	111	100.0

*Out of the 176 deaths recorded for 2012-2016, 111 had an assigned or underlying cause of death available for analysis. The remaining 65 records, the underlying cause of death were not available or missing.
†Deaths classified as other were: encephalitis, cirrhosis of liver, renal failure, abnormal reaction to amputation, pneumonitis due to food and vomit, and ill-defined, unspecified cause of mortality.

stage-3 (AIDS) and decreasing the number of diagnoses of AIDS to zero in West Virginia.

Figure 44. Number of diagnosis of HIV infection and deaths by year in West Virginia, 1983–2016



[93] Basic Statistics https://www.cdc.gov/hiv/basics/statistics.html

[94] Increase in Suicide in the United States, 1999-2014 https://www.cdc.gov/nchs/products/databriefs/db241.htm

[95] National Vital Statistics Report, https://www.cdc.gov/nchs/data/nvsr/nvsr65/nvsr65_04.pdf

[96] Increases in Drug and Opioid Overdose Deaths — United States, 2000–2014 https://www.cdc.gov/mmwr/pdf/wk/mm6450.pdf

[97] Heroin, Fentanyl and CPD use in West Virginia: Dangerous Trends on the Rise https://www.getsmartaboutdrugs.gov/westvirginia/problem/problem

[98] The Antiretroviral Therapy Cohort Collaboration, Causes of Death in HIV-1–Infected Patients Treated with Antiretroviral Therapy, 1996–2006: Collaborative Analysis of 13 HIV Cohort Studies, Clin Infect Dis. 2010 May 15; 50(10): 1387–1396.

[99] Ingrid T Katz, Brendan Maughan-Brown; Improved life expectancy of people living with HIV: who is left behind?; The Lancet HIV, Volume 4, Issue 8, 2017, pp. e324-e326

[100] The Antiretroviral Therapy Cohort Collaboration; Survival of HIV-positive patients starting antiretroviral therapy between 1996 and 2013: a collaborative analysis of cohort studies; Lancet HIV 2017; 4: e349–356 http://ac.els-cdn.com/S2352301817300668/1-s2.0-S2352301817300668-main.pdf?_tid=2c762256-7b8a-11e7-b708-00000aab0f6b&acdnat=1502122084_021d1f1b18a6b79fec594e02011dc042

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Centers for Disease Control and Prevention
www.cdc.gov/hiv

HIV continuum of care

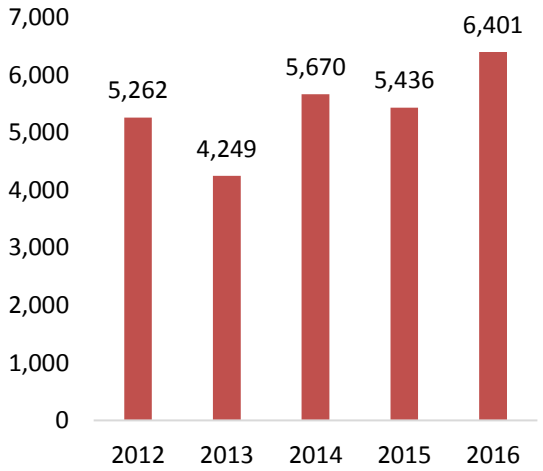
The HIV care continuum begins with a diagnosis of HIV infection (Figure 45). The only way to know for sure that people are infected with the HIV virus is to get an HIV test. People who don't know they are infected are not accessing the care and treatment they need to stay healthy. They can also unknowingly pass the virus on to others. There are an estimated 300 people living with HIV (PLWH) in West Virginia who do not know they have been infected. On average, there were over 5,403 people tested for HIV in West Virginia per year during 2012–2016. Screening is also an opportunity to link people at very high risk of an HIV infection, who test negative, to a health care provider for PrEP (pre-exposure prophylaxis).[101]

An estimated 12.1% of PLWH in West Virginia (15.0% in the United States)[102] do not know they are infected with HIV. To achieve viral suppression and prevent the spread of HIV, a focused effort on routine screening must continue. In West Virginia, multiple agencies and organizations are working together in order to identify those who do not know their HIV status, engage them in care, and ensure their adherence to care and treatment. CDC recommends that all adolescents and adults be tested for HIV infection at least once, and that persons at increased risk for HIV infection be tested at least annually.[103]

Getting and staying in medical care

Once a person is known to be infected with the HIV virus, it is important to be connected to an HIV healthcare provider who can offer treatment and prevention counseling to help PLWH stay as healthy as possible and prevent passing HIV on to others. Because there is no cure for HIV, treatment is a lifelong process. To stay healthy, PLWH need to receive regular HIV medical care.

Figure 45. Number of HIV screening tests* in West Virginia by year, 2012-2016



Data source: EvaluationWeb *Paid by State

Getting on antiretroviral therapy

Antiretrovirals are drugs that are used to prevent a retrovirus, such as HIV, from making more copies of itself. Antiretroviral therapy (ART) is the recommended treatment for HIV infection. It involves using a combination of three or more antiretroviral drugs from at least two different HIV drug classes every day to control the virus. United States clinical guidelines recommend that everyone diagnosed with HIV receive treatment, regardless of their CD4 cell count or viral load. Treatment with ART can help people with HIV live longer, healthier lives, and has been shown to reduce sexual transmission of HIV by 96.0% percent.[104]

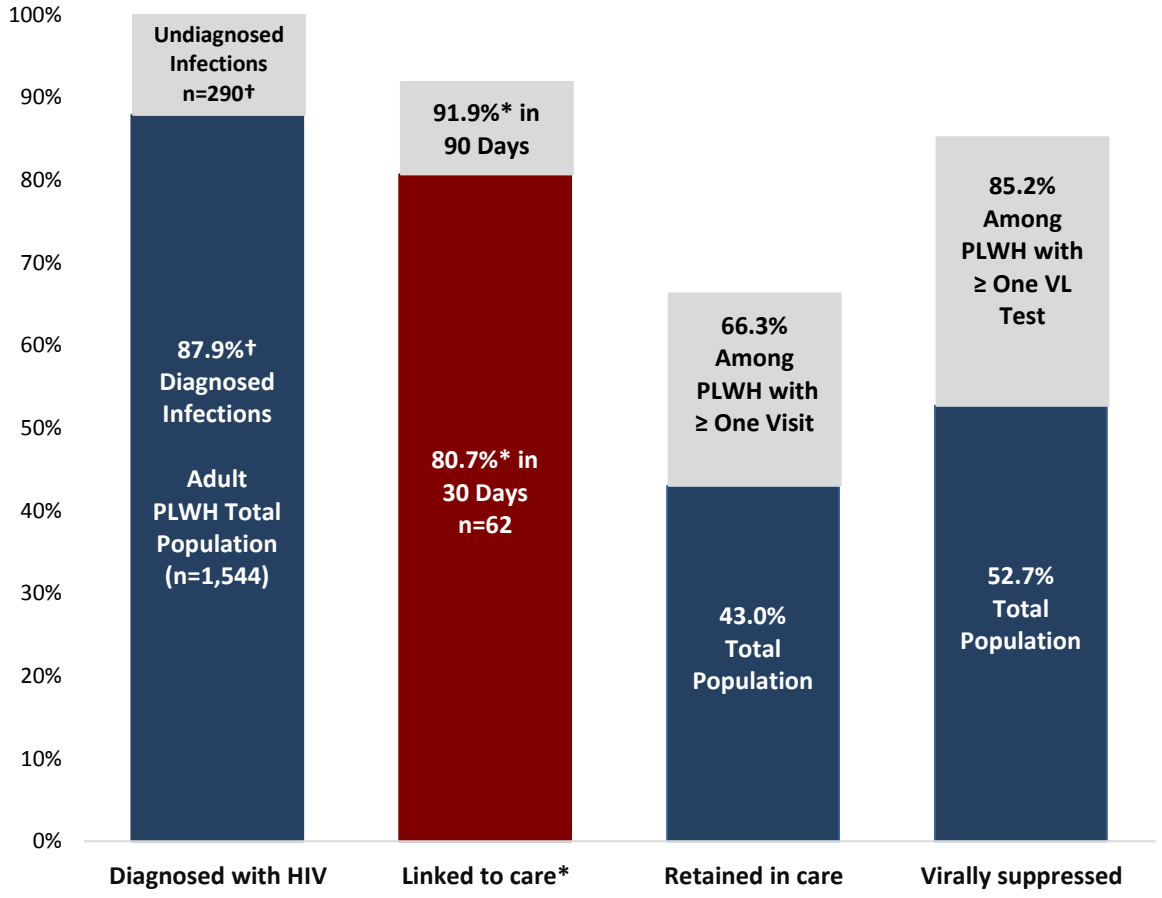
Implementation of ART by direct HIV care service organizations such as the Ryan White HIV/AIDS Program,[105] the largest program providing HIV primary care and support services to PLWH in the United States, including West

Virginia, shows how effective ART can be for viral suppression. Overall, clients receiving HIV care through the Ryan White HIV/AIDS Program achieve high rates of viral suppression (over 85.0% in 2014-2016; Charleston Area Medical Center Ryan White HIV/AIDS Program) and the percentage of clients with viral suppression has increased over time.[106] There are about 1,100 PLWH in West Virginia who are enrolled in the Ryan White HIV/AIDS Program.

Achieving viral suppression

By taking ART regularly, PLWH can achieve viral suppression, meaning having a very low blood level of HIV. Taking ART is not a cure. HIV remains in a person's body. But lowering the amount of virus circulating in the body with medicines can help PLWH stay healthy, live longer, and greatly reduce the chances of passing HIV on to others.[107] [108]

Figure 46. West Virginia continuum of care



Data Sources: West Virginia HIV/AIDS Surveillance Program, an estimated 1,544 West Virginians living with HIV disease as of 12/31/2015 (no federal prison).

†Estimated undiagnosed HIV infections from 2009-2013 HIV surveillance data, n=2,400 (residing or died within West Virginia, including federal prison).

*91.9% of those diagnosed in 2015 at three months. Linked to care within one month to align with the National HIV/AIDS Strategy 2020 (no federal prison).

Data-to-Care

Data-to-Care is a new public health strategy that aims to use HIV surveillance data to identify HIV-diagnosed individuals not in care, link them to care, and support the HIV Care Continuum (Figure 46).[109] West Virginia is developing a combination health department/healthcare provider model - a combination approach.

The focus is on linking or re-engaging HIV-diagnosed persons to care since HIV treatment confers important individual-level health benefits and population-level prevention benefits. Data-to-Care is one strategy for identifying these individuals, by using HIV surveillance data routinely collected by state and local health departments, and then linking to or re-engaging them in care. Applying the proven public health strategy of using surveillance data to intervene directly in disease control reflects a shift from the more typical use of HIV surveillance data for descriptive and monitoring purposes.

Data-to-Care programs use laboratory reports and other datasets, such as Medicaid and the Ryan White HIV/AIDS Program received by the West Virginia HIV/AIDS Surveillance Program, as markers of HIV care and analyze them to identify individuals who either never linked to care after diagnosis or who did not continue to receive care. The program then offers individuals on this list for outreach by health departments, providers, or both to assist them with getting into HIV care.[110]

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[101] HIV/AIDS, HIV Basics, PrEP https://www.cdc.gov/hiv/basics/prep.html
[102] Trent-Adams, Sylvia; Charting the Course to End HIV Transmission in the United States; Public Health Reports Vol. XX(X) 1-3 2017
[103] HIV/AIDS: HIV Testing https://www.cdc.gov/hiv/testing/index.html Page last updated: September 21, 2017
[104] Effective Interventions https://effectiveinterventions.cdc.gov/en/HighImpactPrevention/PublicHealthStrategies/DatatoCare.aspx
[105] About the Ryan White HIV/AIDS Program https://hab.hrsa.gov/about-ryan-white-hivaids-program/about-ryan-white-hivaids-program
[106] Health Resources and Services Administration. Ryan White HIV/AIDS Program: annual client-level data report 2015. http://hab.hrsa.gov/data/data-reports. Published 2015.
[107] Lundgren JD, Babiker AG, Gordin F, et al; Insight Start Study Group. Initiation of antiretroviral therapy in early asymptomatic HIV infection n. *N Engl J Med*. 2015;373(9):795-807
[108] El-Sadr Wm, Lundren J, Neaton JD, et al; Strategies for Management of Antiretroviral Therapy (SMART) Study Group CD4+ count-guided interruption of antiretroviral treatment. *N Engl J Med*. 2006;335(22):2283-2296.
[109] Effective Interventions https://effectiveinterventions.cdc.gov/en/HighImpactPrevention/PublicHealthStrategies/DatatoCare.aspx
[110] Data to Care: Using HIV Surveillance Data to Support the HIV Care Continuum https://www.cdc.gov/data-to-care.pdf

Appendix

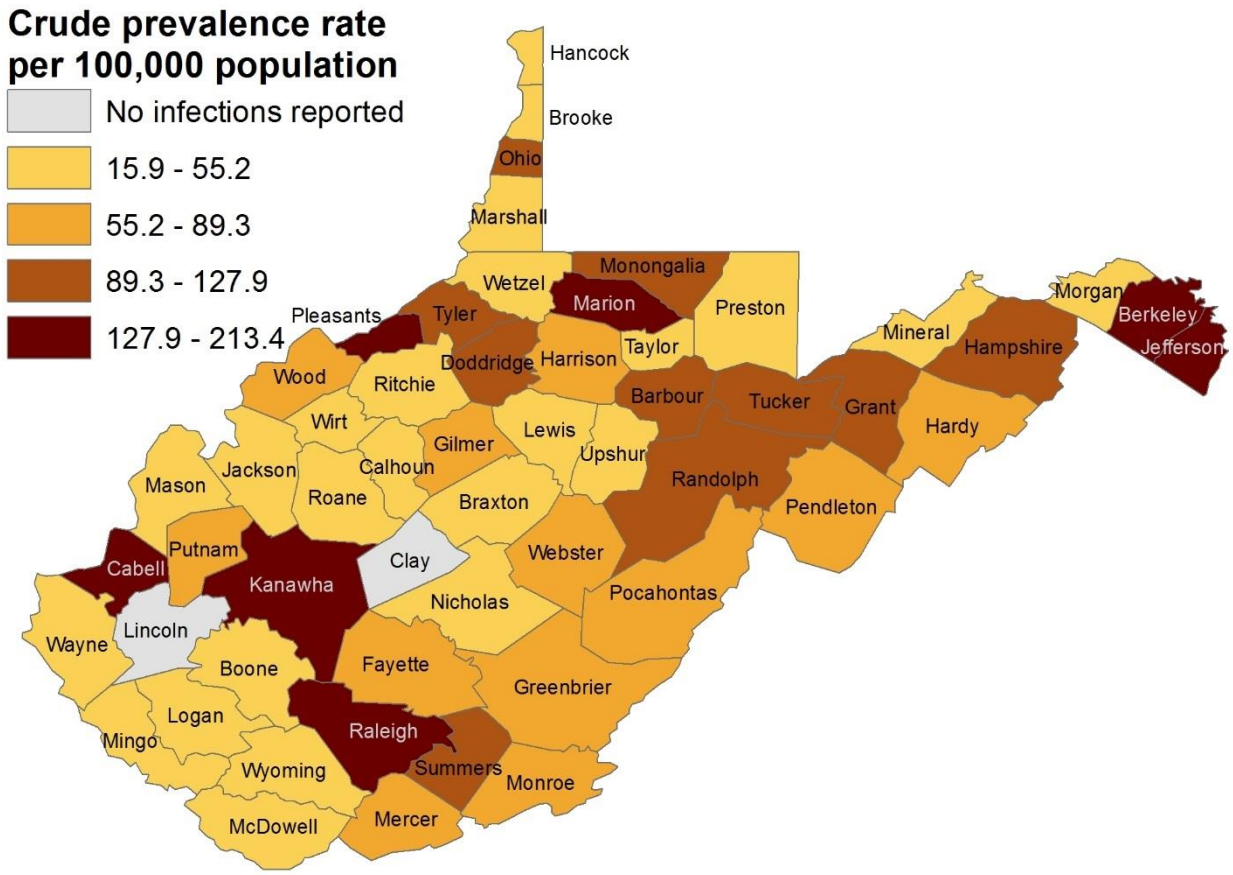
Table 3. Rates of persons living with diagnosed HIV in West Virginia by county, December 31, 2016

County	No.	Adjusted Population by County*	Crude rate by County	County	No.	Adjusted Population by County*	Crude rate by County
Barbour	16	15,753	101.6	**Mineral**	10	27,419	†36.5
Berkeley	164	76,860	213.4	**Mingo**	10	28,609	†35.0
Boone	12	25,856	46.4	**Monongalia**	106	82,896	127.9
Braxton	5	14,887	†33.6	**Monroe**	11	14,767	†74.5
Brooke	13	25,767	50.5	**Morgan**	8	15,131	†52.9
Cabell	163	98,002	166.3	**Nicholas**	7	26,896	†26.0
Calhoun	<5	7,677	†39.1	**Ohio**	48	48,024	100.0
Clay	<5	10,460	†0.0	**Pendleton**	6	8,299	†72.3
Doddridge	7	7,496	†93.4	**Pleasants**	15	7,609	197.1
Fayette	43	48,178	89.3	**Pocahontas**	7	9,246	†75.7
Gilmer	5	7,250	†69.0	**Preston**	15	29,703	50.5
Grant	11	11,441	†96.1	**Putnam**	40	52,238	76.6
Greenbrier	28	34,887	80.3	**Raleigh**	127	80,217	158.3
Hampshire	20	20,457	97.8	**Randolph**	28	28,618	97.8
Hancock	12	33,078	36.3	**Ritchie**	5	10,473	†47.7
Hardy	9	12,828	†70.2	**Roane**	<5	15,640	†19.2
Harrison	53	69,516	76.2	**Summers**	15	13,163	114.0
Jackson	11	28,352	†38.8	**Taylor**	9	16,291	†55.2
Jefferson	64	42,721	149.8	**Tucker**	7	7,413	†94.4
Kanawha	347	202,591	171.3	**Tyler**	12	9,713	123.5
Lewis	5	17,132	†29.2	**Upshur**	9	23,699	†38.0
Lincoln	<5	22,386	†0.0	**Wayne**	18	43,443	41.4
Logan	16	38,185	41.9	**Webster**	7	9,841	†71.1
Marion	42	27,673	151.8	**Wetzel**	5	17,916	†27.9
Marshall	23	57,310	40.1	**Wirt**	<5	5,947	†50.4
Mason	9	35,966	†25.0	**Wood**	70	89,093	78.6
McDowell	11	26,284	†41.9	**Wyoming**	7	26,032	†26.9
Mercer	46	63,773	72.1	**Total**	**1,746**	**1,831,102**	**95.4**

*The adjusted population by county was calculated based on the 2010 Census, county population, adjusted by the estimated 2016 population for West Virginia.

†Reported numbers less than 12, as well as estimated rates based on these numbers, should be interpreted with caution because the numbers have underlying relative standard errors greater than 30.0% and are considered unreliable.

Figure 47. Crude rates of persons living with diagnosed HIV in West Virginia by county, 2016



Source: West Virginia DHHR, BPH, OEPS, DSH, HIV/AIDS Surveillance Program

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Figure 48. Crude rates of persons living with diagnosed HIV in West Virginia by county, 2016

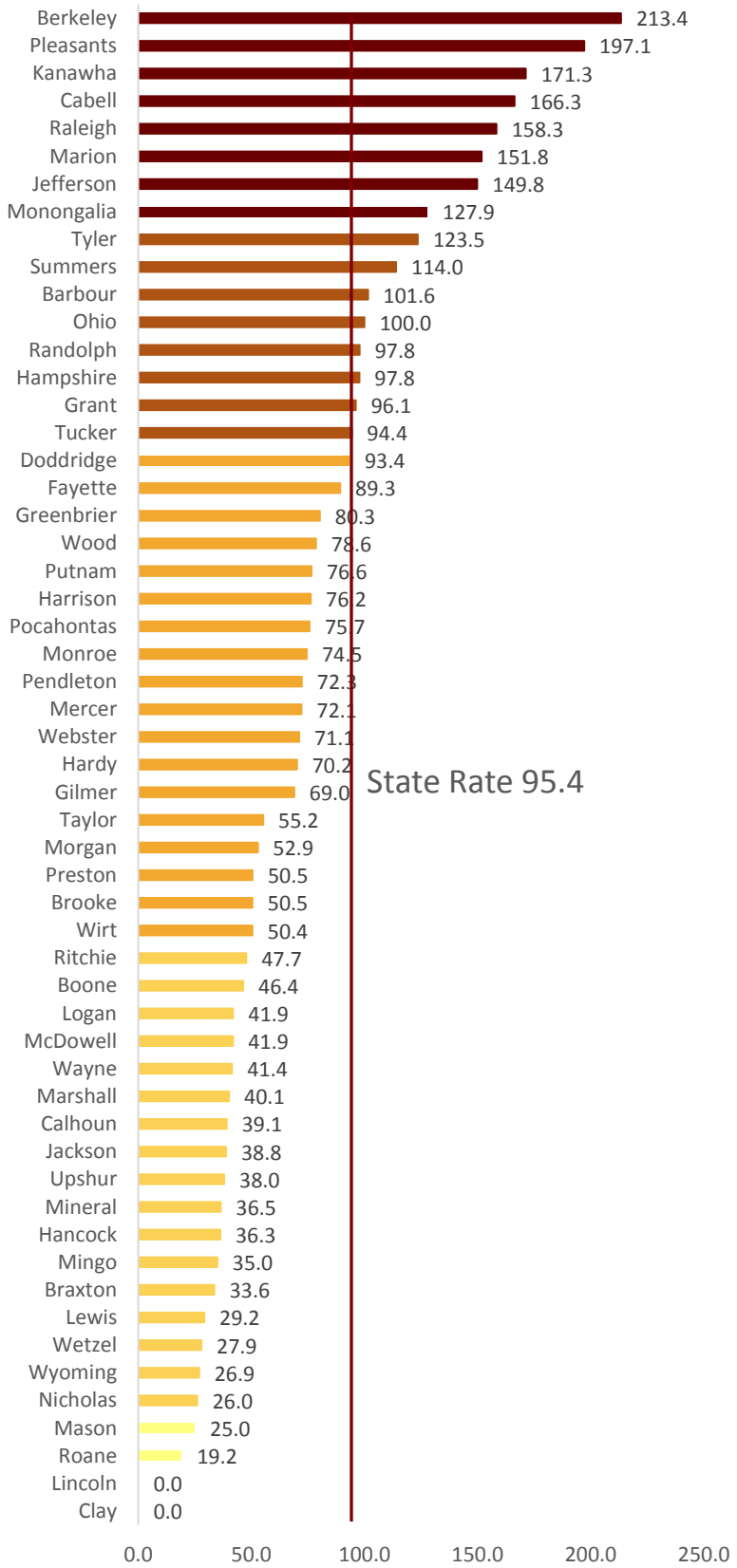
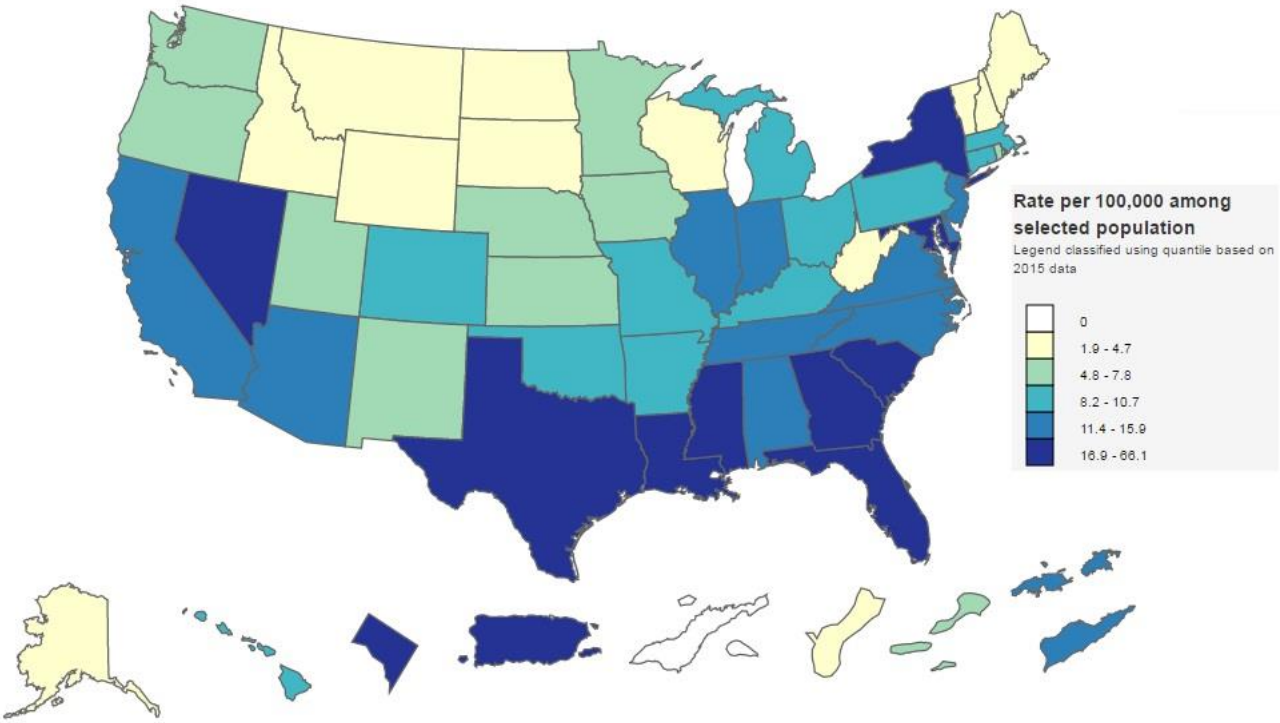


Figure 49. Diagnoses of HIV, all races/ethnicities, both sexes, ages 13 and above, for the United States and Territories of the United States, 2015 (West Virginia with 4.7 new diagnoses per 100,000)



Source: NCHHSTP AtlasPlus https://www.cdc.gov/nchhstp/atlas/index.htm

Click on the link below to access the *West Virginia HIV/AIDS Surveillance Report 2017* that contains the companion tables, graphs, and maps for this report:

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