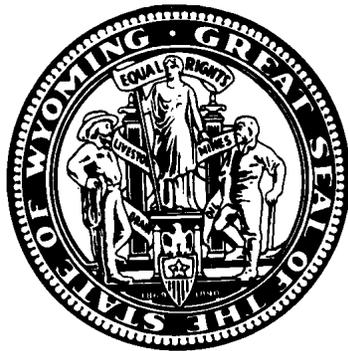


State of Wyoming



Department of Health

Comprehensive Communicable Disease Epidemiologic Profile, 2011-2015

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Director

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**State of Wyoming
Department of Health**

**Comprehensive Communicable Disease Epidemiologic
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Executive Summary

The Wyoming Department of Health Communicable Disease Unit works to create a healthier Wyoming by making resources for communicable diseases accessible, available, and acceptable to persons in Wyoming. The data presented in this document are used to drive prevention and treatment efforts in the state.

Since 1984, four hundred thirty-four (434) Wyoming residents have been diagnosed with HIV disease (HIV and/or AIDS). Forty-four (44%) were classified as HIV only while the remaining fifty-six percent (56%) were classified as AIDS.

As of December 31, 2015, 291 individuals were known to be living in Wyoming with HIV/AIDS. Of those prevalent cases, over 62% were white, 17% were of Hispanic ethnicity (any race), 12% were Black/African American and 4% were American Indian. Overall, 76% were male.

By transmission categories among adults and adolescents, nearly 49% were men who have sex with other men (MSM), 12% reported injection drug use (IDU), and approximately 10% were MSM who also reported IDU (MSM/IDU). Sixteen percent (16%) of individuals had a transmission category of heterosexual sex only. Cases among MSM have continually accounted for the largest number of HIV cases diagnosed in Wyoming. From 2011 through 2015, 42% of all newly diagnosed cases were among MSM.

In recent years (2011-2015), individuals aged 45-64 years represented the largest group newly diagnosed with HIV infection, accounting for 32% of all cases. Pediatric HIV infection remains low in Wyoming. Between 2011 and 2015, 17% of newly diagnosed cases of HIV infection among adults/adolescents were female; 67% of which reported heterosexual sex as their only risk.

Chlamydia rates decreased annually from 2012 (451 cases per 100,000 population) to 2015 (348 cases per 100,000 population). Females have accounted for more cases than males annually since 2011 in Wyoming. The highest rate of infection occurs in individuals aged 15-24 years. The rate of gonorrhea infection increased annually from 2011 to 2015. In 2015, males and females each accounted for approximately half of the gonorrhea cases. The presence of inflammatory STDs such as chlamydia and gonorrhea as well as STDs which present with lesions such as syphilis can increase the risk of acquiring and transmitting HIV.

The number of hepatitis B cases decreased from 2014 to 2015. Chronic hepatitis C cases also decreased from 2014 to 2015. Males had a higher rate of hepatitis C infection than females from 2011-2015. Coinfection with HIV and Hepatitis C is not uncommon. In Wyoming, 7.5% of HIV infected persons are known to be infected with Hepatitis C, and 3.4% are known to be coinfecting with hepatitis B.

Active tuberculosis disease (TB) has remained low in Wyoming ranging from zero to four cases annually from 2011 through 2015. In 2015, 93 individuals were started on TB medications for latent tuberculosis through the Wyoming Department of Health Communicable Disease Unit.

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Introduction

This report was created to provide an overview of HIV/AIDS, STDs, TB, and viral hepatitis B and C in Wyoming. This report will further guide Communicable Disease Prevention and Treatment Program initiatives.

There are seven sections in this report. Section one describes the demographics and economics of Wyoming. Section two provides characteristics relating to HIV/AIDS cases in Wyoming as well as trends of HIV infection over time. Section three addresses the types of HIV prevention and HIV services and available in Wyoming. Section four provides characteristics of chlamydia, gonorrhea, syphilis, and viral hepatitis B and C cases in Wyoming. Section five describes both active tuberculosis disease and latent tuberculosis infection in Wyoming. Section six addresses co-infection of HIV with other STDs, TB, and viral hepatitis to include Wyoming specific statistics. Finally, section seven provides characteristics of high risk populations in the state.

In Wyoming, HIV became a reportable disease in 1989. As of December 31, 2015 a total of 291 persons are reported to live in Wyoming with an HIV or AIDS diagnosis. All HIV/AIDS cases are reported to the Communicable Disease Surveillance Program where demographic information and risk factors are obtained. Newly diagnosed patients are referred to Disease Intervention Specialists for partner services and linkage to care.

Other communicable diseases such as chlamydia, gonorrhea, syphilis, hepatitis B, and hepatitis C are also reportable diseases in the state of Wyoming. Chlamydia is consistently the most frequently reported notifiable communicable disease in Wyoming and the US. Laboratories and providers are required to report cases of these STDs to include demographic information on the patient, treatment and risk factor information. The STD data in this report are provided for the last five years (2011-2015).

This report has several weaknesses:

- Actual numbers of STD and HIV cases are estimated to be higher than reported due to lack of symptoms in individuals who, therefore, do not seek testing;
- Risks and transmission routes are self-reported and therefore may be biased;
- Small numbers of tuberculosis cases in Wyoming make case rates unstable and difficult to interpret; and
- A new HIV, hepatitis B, or hepatitis C diagnosis may not represent a newly acquired infection.

Section 1- Wyoming Demographics and Economics

Population: According to the US Census Bureau, the total population of Wyoming was estimated to be 575,251 in 2014. County populations ranged from 2,463 (Niobrara County) to 96,389 (Laramie County). There are no Metropolitan Statistical Areas (MSAs) in Wyoming. The two largest populated cities in Wyoming are Cheyenne (62,845) and Casper (60,086).

Table 1. Population size by county, Wyoming, 2014.¹

| County | Population (%) |
|---------------|-----------------------|
| Albany | 37,811 (6.6) |
| Big Horn | 11,930 (2.1) |
| Campbell | 48,320 (8.4) |
| Carbon | 15,854 (2.7) |
| Converse | 14,097 (2.4) |
| Crook | 7,248 (1.3) |
| Fremont | 40,703 (7.1) |
| Goshen | 13,514 (2.3) |
| Hot Springs | 4,816 (0.8) |
| Johnson | 8,573 (1.5) |
| Laramie | 96,389 (16.7) |
| Lincoln | 18,567 (3.2) |
| Natrona | 81,624 (14.2) |
| Niobrara | 2,463 (0.4) |
| Park | 28,989 (5.0) |
| Platte | 8,799 (1.5) |
| Sheridan | 30,032 (5.2) |
| Sublette | 10,057 (1.7) |
| Sweetwater | 45,010 (7.8) |
| Teton | 22,930 (4.0) |
| Uinta | 20,904 (3.6) |
| Washakie | 8,322 (1.4) |
| Weston | 7,201 (1.3) |
| Total | 575,251 (100) |

Demographic Composition: The racial and ethnic composition of Wyoming's population in 2014 was estimated by the US Census Bureau to be 90.8% White, 1.0% Black, 0.9% Asian, 2.3% American Indian/Alaska Native, and 0.1% Native Hawaiian/Pacific Islander. Persons of Hispanic ethnicity (any race) comprised 9.4% of the state's population.¹

Age and Sex: The 2014 Census estimates indicated 51.0% of the population was male and 49.0% of the population was female. Individuals under the age of 18 comprised 23.8% of the population while those over the age of 65 represented 13.1% of the population. The median age of individuals who reside in Wyoming was 36.8 years in 2014.¹

Table 2. Population by age group, Wyoming, 2014.¹

| Age Group | Total | |
|----------------|---------|-------|
| | No. | % |
| Under 5 | 38,932 | 6.8 |
| 5-9 | 38,374 | 6.7 |
| 10-14 | 37,663 | 6.5 |
| 15-19 | 37,463 | 6.5 |
| 20-24 | 41,721 | 7.3 |
| 25-34 | 80,624 | 14.0 |
| 35-44 | 68,930 | 12.0 |
| 45-54 | 78,030 | 13.6 |
| 55-64 | 78,291 | 13.5 |
| 65+ | 75,223 | 13.1 |
| Total | 575,251 | 100.0 |

Poverty, Income and Education: In 2014, 11.2% of the population of Wyoming was living below the poverty line compared to 11.3% in 2011. The average per capita income was \$29,381 while the average household income was \$58,252. In 2014, 92.3% of individuals age 25 years or older had at least a high school diploma while 25.1% of Wyoming residents had a Bachelor's degree or higher.¹

Public Health Regional Structure: Each of Wyoming's counties has at least one public health office. Most of these offices offer services including, but not limited to, child/adult immunizations, HIV counseling and testing, sexually transmitted disease testing, tuberculosis screening, and communicable disease case management.

Health Indicators: As reported by *America's Health: State Health Rankings, 2015*, Wyoming ranked 25th in the nation. *America's Health Rankings* is a comprehensive, multi-dimensional, yearly analysis of the relative healthiness of the American population by state. Information is supplied by sources which include the U.S. Department of Health and Human Services, Commerce, Education, Labor, and the National Safety Council.²

Wyoming strengths included a low violent crime rate (205.1/100,000 population), a low percentage of children living in poverty (10.6 per 100,000 population, high public health funding (\$96.46 per person), low levels of air pollution (5.0 micrograms of fine particulate per cubic meter), and a small percentage of people with a lack of insurance (12.7%).

Challenges included high occupational fatalities (12 deaths per 100,000 workers), limited primary care physicians (88.7 per 100,000 population), and a low percentage of immunization coverage in children aged 19-34 months for DTaP, polio, MMR, Hib, hepatitis B, varicella, and PCV vaccines (65%).²

Section 2 – HIV/AIDS in Wyoming

Human immunodeficiency virus is the virus that can lead to AIDS. The virus can damage a person’s immune system by destroying CD4+ cells which aid the body in fighting diseases. Many people infected with HIV are unaware of their infection because symptoms may be absent. If symptoms do arise they may consist of fever, headache, body ache, and other flu-like symptoms. When a person’s immune system becomes so damaged that it can no longer fight off certain diseases and opportunistic infections, the individual is diagnosed with AIDS – now called HIV Stage 3. The Wyoming Department of Health recommends all individuals between the age of 15 and 65 years get tested for HIV at least once in their lifetime and more often with risks. According to the 2014 Behavioral Risk Factor Surveillance Survey, 31.6% of the population aged 18-64 years has been tested for HIV at least once in their lifetime and 5.6% were tested in the past year.³

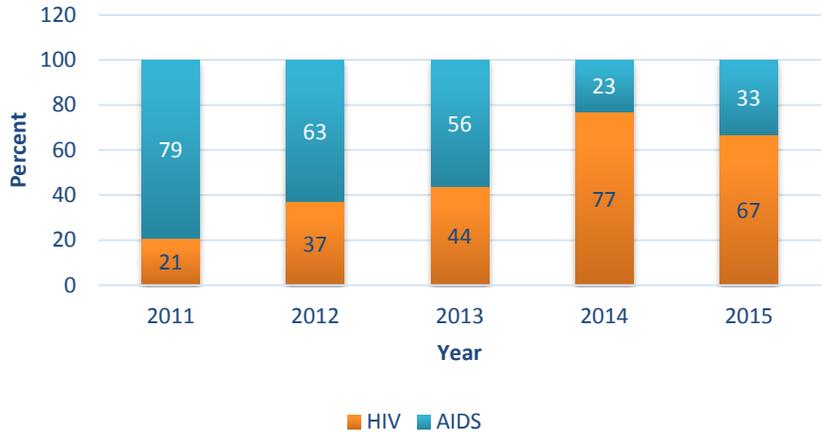
Incidence

From 2011-2015, 66 people were newly diagnosed with HIV disease. Of those diagnosed, 50% were diagnosed as an AIDS case. Characteristics of newly diagnosed cases are presented in Table 3.

Table 3. Newly diagnosed HIV/AIDS cases by selected characteristics*, Wyoming, 2011-2015.

| | <u>Number (%)</u> |
|------------------------|-------------------|
| Diagnosis | |
| HIV | 33 (50) |
| AIDS | 33 (50) |
| Gender | |
| Male | 55 (83) |
| Female | 11 (17) |
| Age Group | |
| <13 | 3 (4) |
| 13-24 | 11 (17) |
| 25-34 | 17 (26) |
| 35-44 | 14 (21) |
| 45-64 | 21 (32) |
| Race/Ethnicity | |
| White (Not Hispanic) | 41 (62) |
| Black (Not Hispanic) | 12 (18) |
| Hispanic (All Races) | 11 (17) |
| Other | 2 (3) |
| Transmission | |
| MSM | 28 (42) |
| IDU | 4 (6) |
| MSM & IDU | 3 (4) |
| Heterosexual Contact | 11 (17) |
| Perinatal Transmission | 4 (6) |
| Other/Unknown | 16 (24) |
| Total | 66 (100) |

Figure 1. Proportional distribution of newly diagnosed HIV disease among adults/adolescents by stage of infection, Wyoming, 2011-2015.



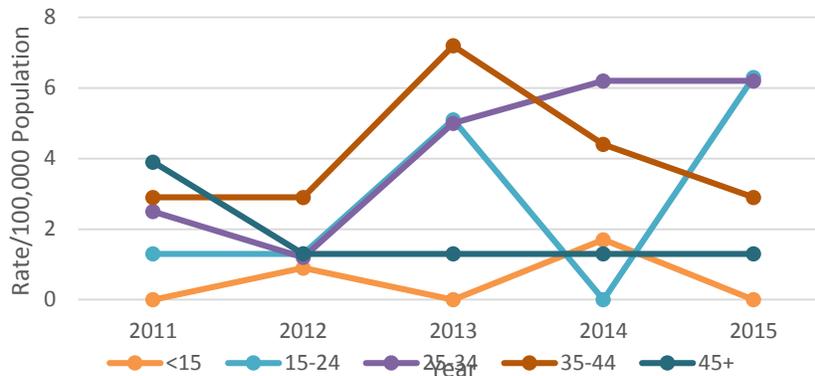
As shown in Figure 1, 21% of newly diagnosed cases were classified as HIV and 79% were classified as AIDS in 2011. From 2011-2015, this number improved to 67% diagnosed as HIV and 33% of newly diagnosed cases were classified as AIDS. This may indicate that individuals are getting tested at an earlier stage of infection than in previous years.

Figure 2. HIV/AIDS incidence rates by gender, Wyoming, 2011-2015.



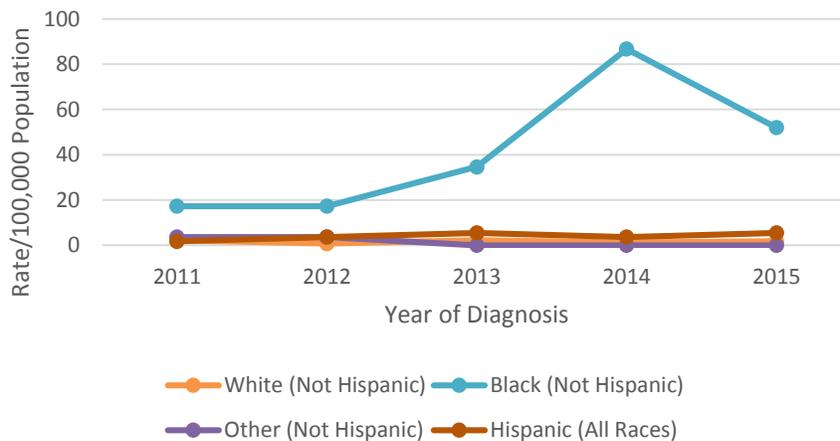
By gender, males had a higher rate of infection from 2011-2015, increasing from 2014 to 2015. The rate of infection among females remained stable from 2011-2015.

Figure 3. Newly diagnosed HIV/AIDS case rate by age group, Wyoming 2011-2015.



The 15-24 and 25-34 year old age group had the highest rate of infection in 2015. These two age groups were the only two age groups that had a rate increase from 2014 to 2015.

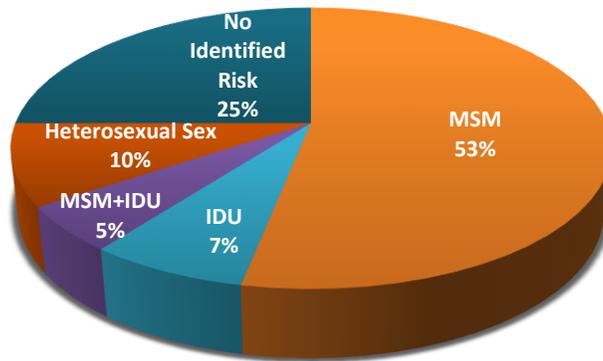
Figure 4. HIV/AIDS incidence rates by race/ethnicity, Wyoming, 2011-2015.



A racial disparity exists among newly diagnosed HIV/AIDS cases. Non-Hispanic Whites make up 85% of Wyoming's population and 62% of cases from 2011-2015, where as non-Hispanic Blacks only account for 1% of Wyoming's population but 18% of cases. The rate of infection among Whites, Hispanics, and those who reported other races remained stable from 2011-2015. The rate of infection in non-Hispanic Blacks increased (Figure 4).

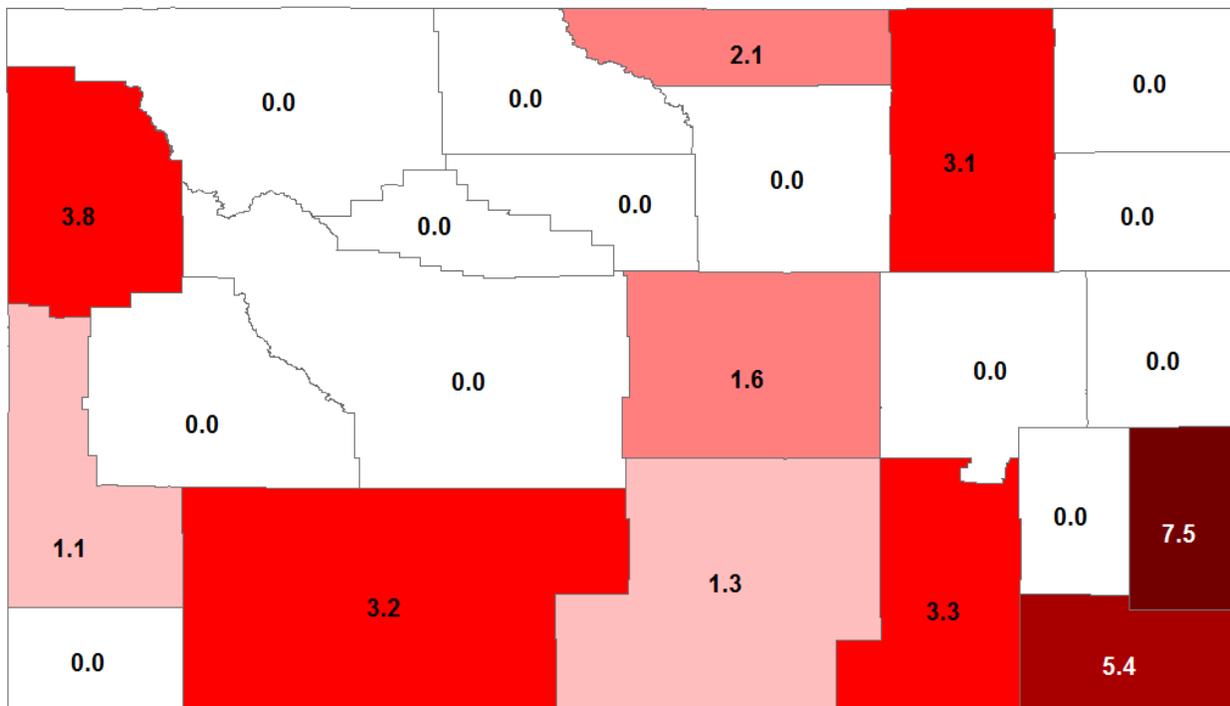
Cases of HIV/AIDS among men who have sex with other men (MSM) represent the largest number of cases among men and women from 2011-2015. Men also reported heterosexual sex (10%), injection drug use (IDU) only (7%), and both IDU and MSM (5%). Approximately 25% of men diagnosed from 2011-2015 had no risk factor identified.

Figure 5. Newly diagnosed HIV/AIDS cases among males by transmission category, Wyoming, 2011-2015.



From 2011-2015, nine adult females were reported with newly diagnosed HIV disease in Wyoming. Cases among females attributed to heterosexual sex accounted for the majority of cases among females from 2011-2015 (67%). For the remaining 33%, no risk was identified. No females reported injection drug use during this time period.

Figure 6. Five year average incidence rate of HIV by county, Wyoming, 2011-2015.



Goshen County had the highest incidence rate from 2011 -2015, followed by Laramie County and Teton County. Thirteen of the twenty-three counties in Wyoming reported no new cases of HIV.

Prevalence

Prevalent cases include persons ever diagnosed with HIV disease residing in Wyoming. In 2015, there were 291 prevalent cases in Wyoming. Of those, 44% were classified as HIV and 56% were classified as AIDS. The number of prevalent cases has been increasing in males and females since 2011. Of the 291 prevalent cases in 2015, 76% were male.

Figure 7. Number of prevalent cases by gender, Wyoming, 2011-2015.

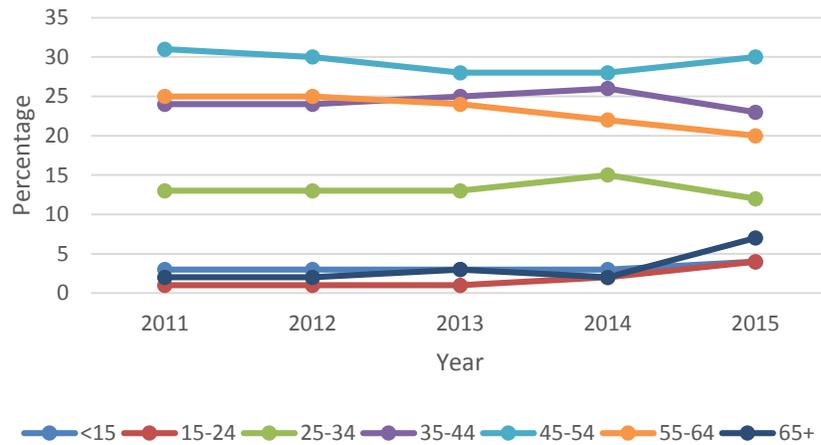


Non-Hispanic Whites accounted for the highest percentage of cases from 2011-2015, followed by Hispanics of all races, and non-Hispanic Blacks. The proportion of non-Hispanic White cases slightly decreased over the five year period, while the proportion of Hispanic, all races and non-Hispanic Black cases increased.

Table 4. Prevalence of HIV/AIDS by race, Wyoming, 2011-2015.

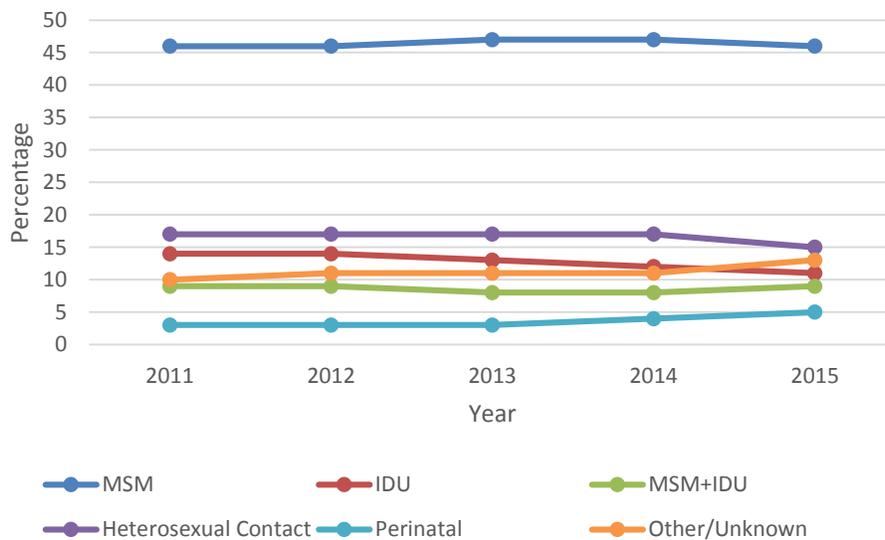
| Race | Year | | | | |
|--|--------------|--------------|--------------|--------------|--------------|
| | 2011 N(%) | 2012 N(%) | 2013 N(%) | 2014 N(%) | 2015 N(%) |
| Hispanic, All Races | 33 (15) | 35 (16) | 38 (16) | 40 (16) | 51 (18) |
| American Indian/Alaska Native | 9 (4) | 10 (4) | 10 (4) | 10 (4) | 12 (4) |
| Black, Not Hispanic | 20 (9) | 21 (9) | 23 (10) | 28 (11) | 36 (12) |
| White, Not Hispanic | 150 (68) | 150 (67) | 157 (67) | 161 (65) | 181 (62) |
| Multiple Race/Other, Not Hispanic | 8 (4) | 8 (3) | 8 (3) | 7 (3) | 11 (4) |
| Total | 220(100) | 224(100) | 236(100) | 246(100) | 291(100) |

Figure 8. Percent of prevalent HIV/AIDS cases by age group, Wyoming, 2011-2015.



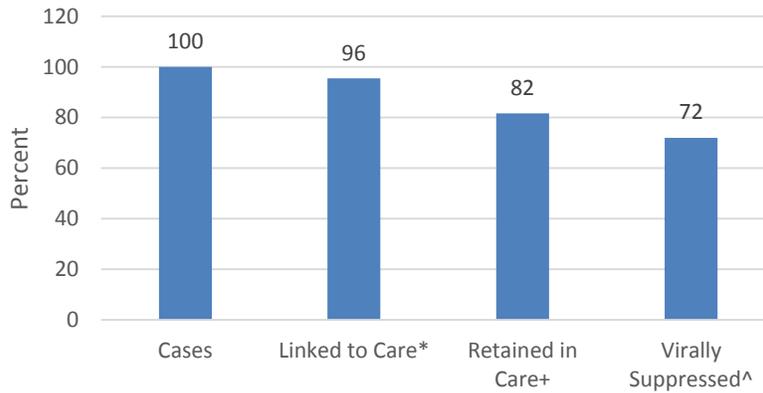
The prevalence of those aged 15-24 years and over 65 years increased from 2011 to 2015. The prevalence of those aged 25-34 years, 35-44 years, and 55-64 years declined over the five year period, while those under the age of 15 and between the ages of 45-54 years remained stable.

Figure 9. Percent of prevalent HIV/AIDS cases by transmission category, Wyoming, 2011-2015.



As shown in Figure 9, cases among MSM have continued to represent the largest proportion of individuals with HIV/AIDS residing in Wyoming. The number of individuals with a transmission category of heterosexual sex and those classified as IDU slightly decreased from 2014 and 2015 while those with a transmission category of perinatal and MSM+IDU increased.

Figure 10. 2015 HIV Care Continuum, Wyoming.



*Ever had a CD4 or viral load test after diagnosis

+Had at least 1 CD4 or viral load test in 2015

^Had a viral load of less than 200 copies/mL in 2015

The HIV Care Continuum illustrates the sequential steps of medical treatment, from diagnosis to viral suppression, for those infected with HIV. The model allows programs to assess at which point of the continuum HIV services can be most improved. In 2015, 95.5% of HIV cases residing in Wyoming were ever linked to care, 73% were retained in care, and 69% had a viral load less than 200 copies/mL. The Communicable Disease Unit has two projects in place to help improve retention in care and viral suppression.

Table 5. HIV deaths and case fatality rate, Wyoming, 2011-2015.

| Year | Number of Newly Reported Cases | Number of Deaths | Case Fatality Rate % |
|--------------------------------|--------------------------------|------------------|----------------------|
| Cumulative through 2010 | 344 | 146 | 42 |
| 2011 | 14 | 1 | 7 |
| 2012 | 8 | 1 | 13 |
| 2013 | 16 | 1 | 6 |
| 2014 | 13 | 1 | 8 |
| 2015 | 15 | 0 | 0 |
| Total | 410 | 150 | 37 |

Wyoming has had 150 deaths since HIV became reportable in 1989. The case fatality rate, or the number of cases in a time period divided by the number of deaths, has decreased overtime. The case fatality rate from 1989-2010 was 42%, which decreased to 37% through 2015.

Section 3- Wyoming HIV Services & Prevention

The HIV Services Program is comprised of the Ryan White Part B/ADAP (AIDS Drug Assistance Program), Ryan White Part C-EIS (Early Intervention Services) and the Housing Opportunities for Persons with AIDS (HOPWA) programs. A combined application serves for enrollment for any services provided through federal and state dollars intended to benefit HIV positive clients.

RYAN WHITE CARE ACT

According to the Health Resources and Services Administration (HRSA), the populations most impacted by the HIV epidemic are those at high risk for poverty, those who lack health insurance, and those who are disenfranchised from the health care system. In August 1990, Congress enacted the Ryan White CARE Act to improve the availability of care for low-income, uninsured, and underinsured individuals and families affected by HIV disease. Congress most recently reauthorized the CARE Act in October 2009. The CARE Act legislation is divided into distinct program areas: Part A, Part B, Part C, Part D, AIDS Education and Training Centers (AETC), and Dental Reimbursement Program (DRP).

The State of Wyoming, through various grants and grantees, currently receives Ryan White CARE Act funding under Part B, Part C, and AETC.

HOPWA

Housing Opportunities for Persons with AIDS, more commonly referred to as HOPWA, is a program funded by the U.S. Department of Housing and Urban Development (HUD). The program is designed to help low-income individuals who are living with HIV/AIDS to stabilize their housing, which is a key factor contributing to health and well-being. Examples of HOPWA services include rental assistance, utility assistance, mortgage assistance, housing supportive services, and case management.

The purpose of the Communicable Disease Services Program funding is to improve the quality, availability, and organization of health care and supportive services for individuals and families living with HIV disease. In addition, the funding provides access to needed pharmaceuticals through the AIDS Drug Assistance Program (ADAP), which is a component of Part B.

In 2015, 180 individuals, or 62% of prevalent cases, were enrolled in the HIV Services Program in Wyoming. The program spends approximately \$125,000 per month providing prescription medications, medical care, diagnostic laboratory testing, and other supportive services such as housing and transportation.

Table 6. Characteristics of persons enrolled in HIV Services, Wyoming, 2015.

| | Persons Enrolled | |
|------------------|------------------|------------|
| | # | % |
| Gender | | |
| Male | 141 | 78 |
| Female | 39 | 22 |
| Race* | | |
| White | 147 | 82 |
| Black | 22 | 12 |
| Asian | 1 | 1 |
| American Indian | 11 | 6 |
| Ethnicity | | |
| Hispanic | 25 | 14 |
| Non-Hispanic | 155 | 86 |
| TOTAL | 180 | 100 |

*Multiple values can be indicated for any given client, therefore the total count may exceed the total number of enrolled clients.

HIV PREVENTION

The Wyoming Department of Health, through a cooperative agreement with the Centers for Disease Control and Prevention (CDC) provides low-cost or free testing at 42 clinics throughout the state. Prevention efforts in Wyoming include the knowyo.org campaign which provides HIV, STD, and hepatitis B and C education, Knowyo vouchers for low- or no-cost HIV, STD, and hepatitis B and C testing, and a map of clinics which accept the vouchers and provide testing throughout the state. The Wyoming Department of Health also provides free testing events for special occasions and HIV awareness days. A total of 2,733 people were tested through the www.knowyo.org voucher program in 2015. Table 7 lists the characteristics of individuals who were tested for HIV through the knowyo.org campaign in Wyoming.

Table 7. HIV Tests performed by HIV Prevention Program funded sites, Wyoming, 2015.

| | Persons Tested | |
|----------------------------------|----------------|--------------|
| | # | % |
| Gender | | |
| Male | 1310 | 48 |
| Female | 1411 | 52 |
| Transgender F to M | 0 | 0 |
| Transgender M to F | 0 | 0 |
| Unknown | 12 | <1 |
| Race | | |
| White | 2082 | 76 |
| Black | 70 | 3 |
| Asian | 49 | 2 |
| American Native | 42 | 2 |
| Native Hawaiian/Pacific Islander | 6 | <1 |
| Unknown | 144 | 5 |
| Hispanic | 340 | 12 |
| Risk Category | | |
| Injection drug use | 116 | 4 |
| Shared injection drug equipment | 11 | <1 |
| Sex with male | 1303 | 48 |
| Sex with female | 972 | 36 |
| Sex with HIV+ | 14 | <1 |
| Sex with IDU | 142 | 5 |
| Sex with MSM | 131 | 5 |
| Other/Unknown | 44 | 2 |
| TOTAL | 2733 | 100.0 |

The Communicable Disease Prevention Program also provides condom dispensers and condoms to clinics, bars, movie theaters, and other locations which make condoms more accessible and available to Wyoming residents. In 2015, the Program supplied 102 condom dispensers for use in 16 counties in which over 275,000 condoms were distributed.

The Communicable Disease Prevention Program partners with the Wyoming Department of Health Adolescent Health Program to deliver the Personal Responsibility Education Program (WyPREP). The goals of this comprehensive sex education program are to delay initiation of sexual activity, prevent teen pregnancy, and prevent STDs, including HIV. The program teaches youth skills to avoid risky sexual behavior, which translate to avoiding drugs, alcohol, and bullying. The Wyoming program includes adult preparation subjects intended to increase parent/child communication, negotiation and refusal skills, and encourage youth to think about the effects that being sexually

active may have on their lives. WyPREP encourages abstinence and also teaches youth about condoms and contraceptives should they choose to become sexually active.

Section 4- Sexually Transmitted Diseases and Hepatitis

CHLAMYDIA

Chlamydia is a sexually transmitted bacterial infection caused by *Chlamydia trachomatis*. Approximately 75% of females and 50% of males infected with chlamydia show no symptoms. If symptoms do occur, they present within one to three weeks after exposure. Symptoms may include abnormal discharge from the infected site, burning during urination, itching, and pain during intercourse. If left untreated chlamydia can cause pelvic inflammatory disease (PID). Symptoms of PID can include abdominal pain, fever, and chronic pelvic pain. PID can damage the fallopian tubes and cause infertility. Individuals infected with chlamydia are at greater risk for an HIV infection.

Figure 11. Chlamydia rates per 100,000 population, Wyoming and United States, 2011-2015.⁴⁻⁷

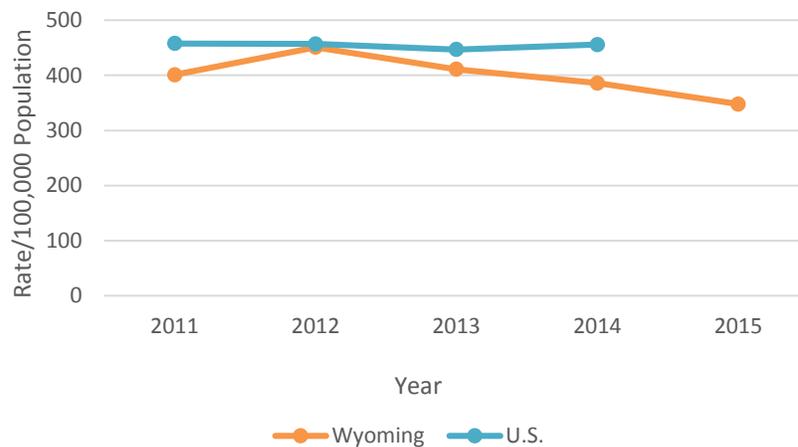
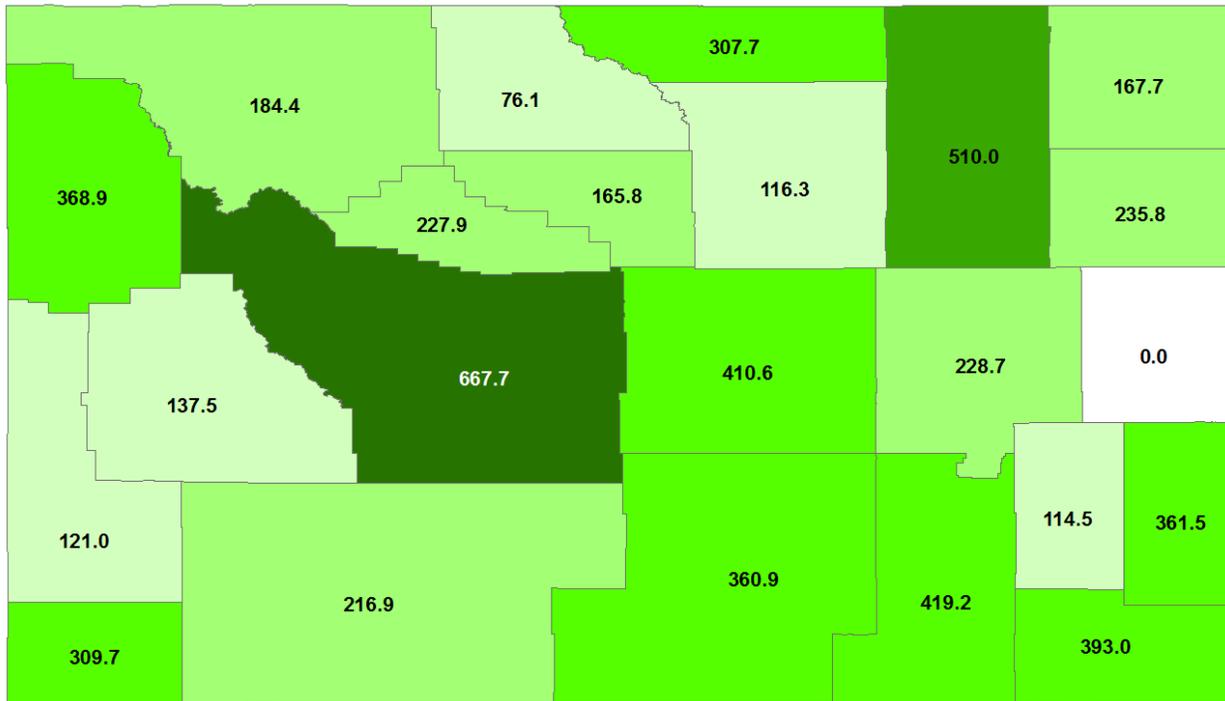


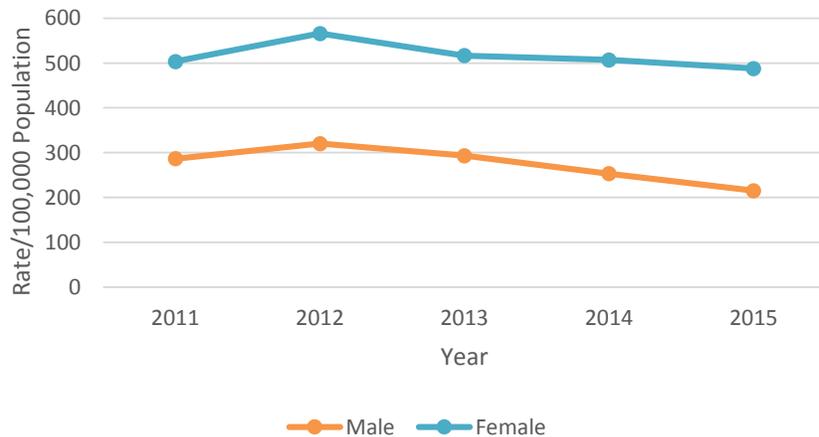
Figure 11 displays the overall rate of chlamydia in Wyoming against the total rate of chlamydia in the United States. National data for 2015 have not yet been published. From 2013 to 2014 the Wyoming rate has declined and remained below the national rate which increased.⁴⁻⁷

Figure 12. Chlamydia rates per 100,000 population by county, Wyoming, 2015.



Fremont County reported the highest rate of infection in 2015, followed by Campbell County, Albany County, and Natrona County. All counties except Niobrara County reported at least one chlamydia infection during 2015.

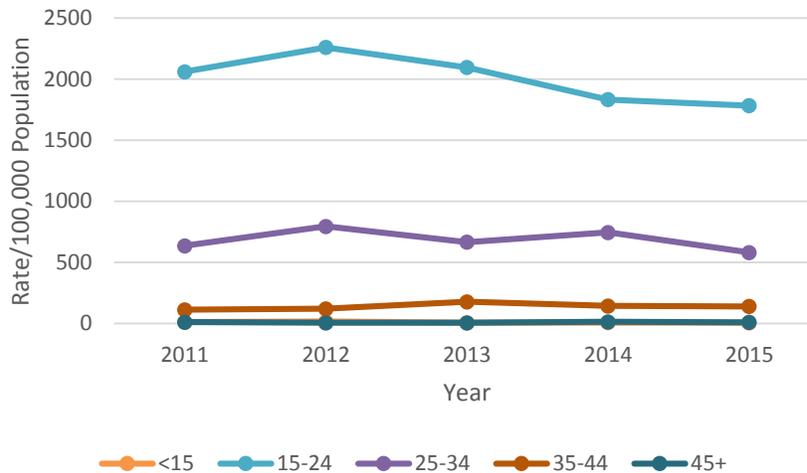
Figure 13. Chlamydia case rate per 100,000 population by gender, Wyoming, 2011-2015.



Screening efforts are targeted at all sexually active women under the age of 25 and women over the age of 25 that have risks. Reported chlamydia cases have decreased in Wyoming since 2012.

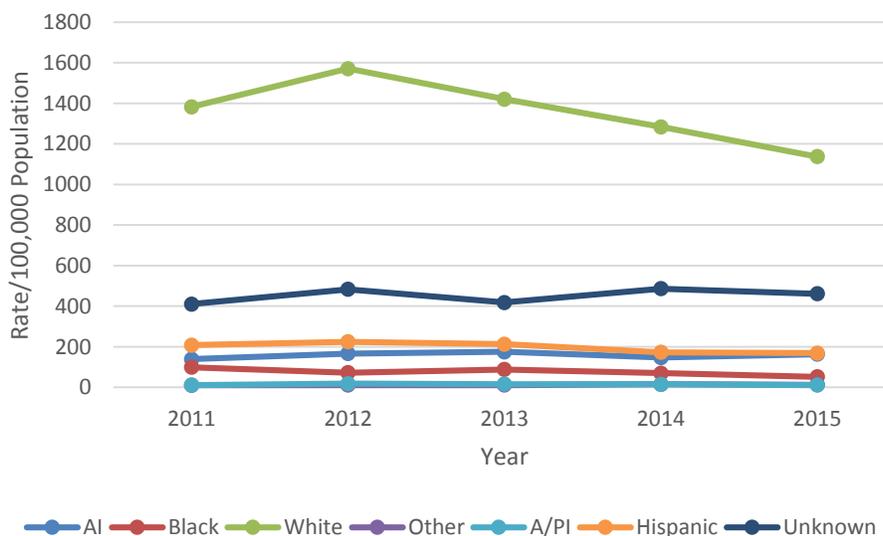
Females had a higher rate of infection than males from 2011-2015. In 2015, females accounted for 69% of all reported chlamydia infections.

Figure 14. Chlamydia rates per 100,000 population by age group, Wyoming, 2011-2015.



The highest rates of chlamydia infection are found in those aged 15-24 years. In 2015, those in the 15-24 year old age group had a three times higher rate of chlamydia than 25-29 year olds. The rate of infection in all age groups decreased from 2014 to 2015.

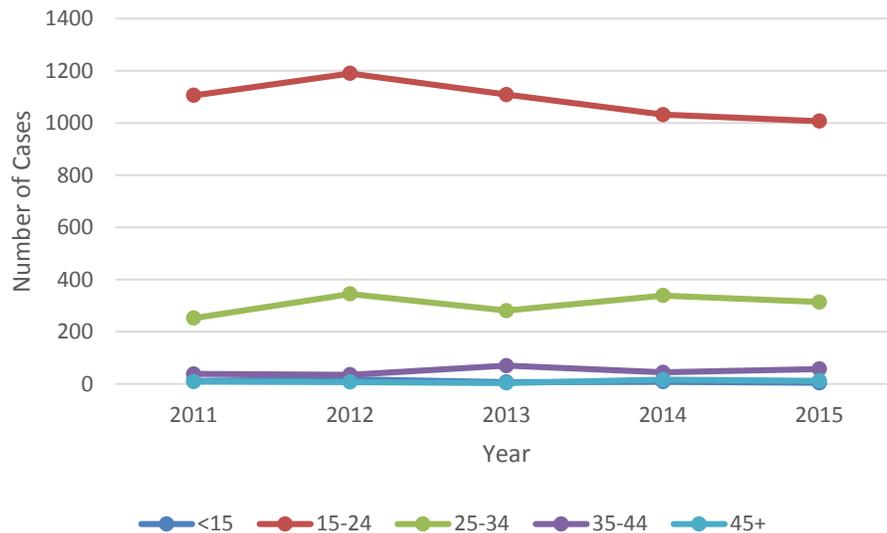
Figure 15. Chlamydia cases by race/ethnicity, Wyoming, 2011-2015.



The highest number of reported chlamydia cases from 2010-2015 was among Non-Hispanic White individuals which has decreased since 2012. The unknown race category accounts for the second

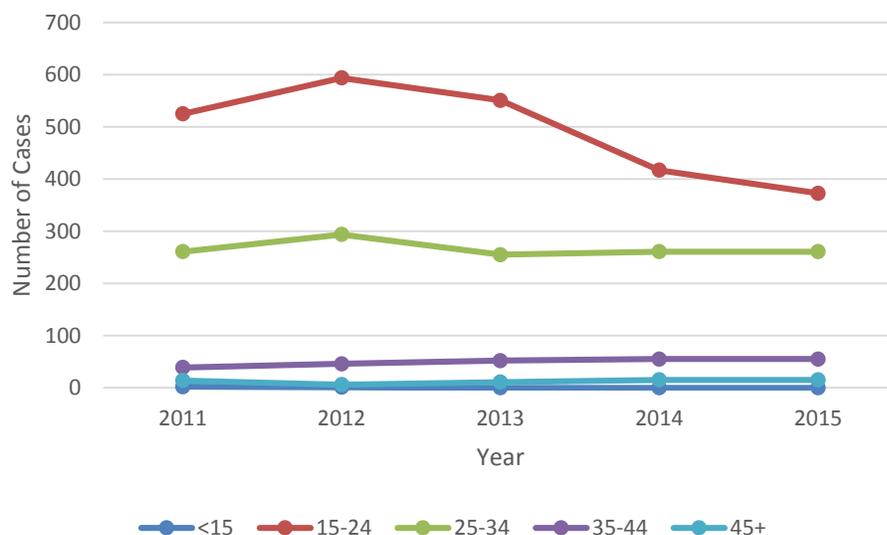
largest number of cases. This is likely due to private provider reporting which often do not contain information regarding race and ethnicity. The number of cases reported among all races and those with an unknown race decreased from 2014 to 2015 except for cases reported among American Indians which increased from 147 cases to 163.

Figure 16. Chlamydia cases by age group, females, Wyoming, 2011-2015.



Among females, those aged 15-24 years accounted for the highest number of cases. In 2015, 72% of all reported chlamydia cases among females were in the 15-24 year age group and 23% were in individuals aged 25-34 years.

Figure 17. Chlamydia cases by age group, males, Wyoming, 2011-2015.



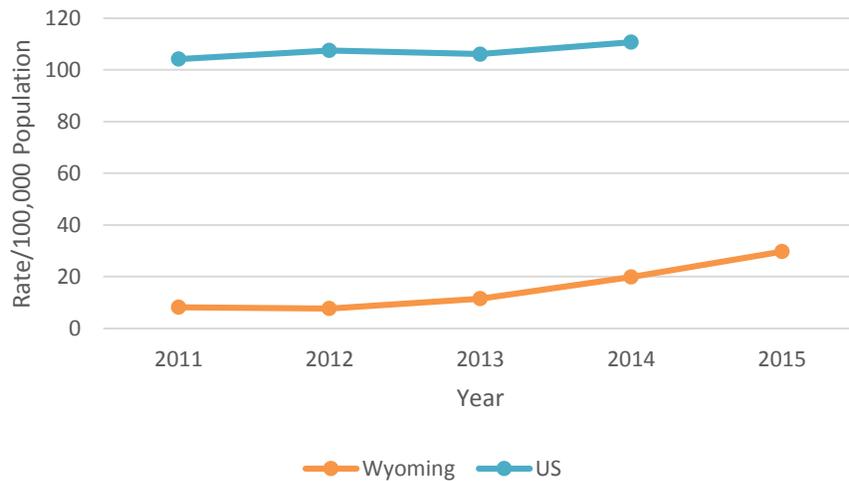
Among males, those aged 15-24 years accounted for the most cases (53%) from 2011-2015, though this number has decreased over time. The number of infections in males aged 25-34 years increased from 2013 to 2015 and accounts for 37% of infections.

GONORRHEA

Gonorrhea is a bacterial infection caused by *Neisseria gonorrhoeae* that is transmitted by unprotected oral, anal, and/or vaginal sex. Symptoms and complications of gonorrhea are similar to those of chlamydia (Page 19).

Targeted screening for gonorrhea occurs in all sexually active males and females under the age of 25 and those over 25 that have had a new partner within the past 60 days, multiple sex partners in the past 60 days, PID, are men who have sex with other men, or had an STD infection in the past 12 months.

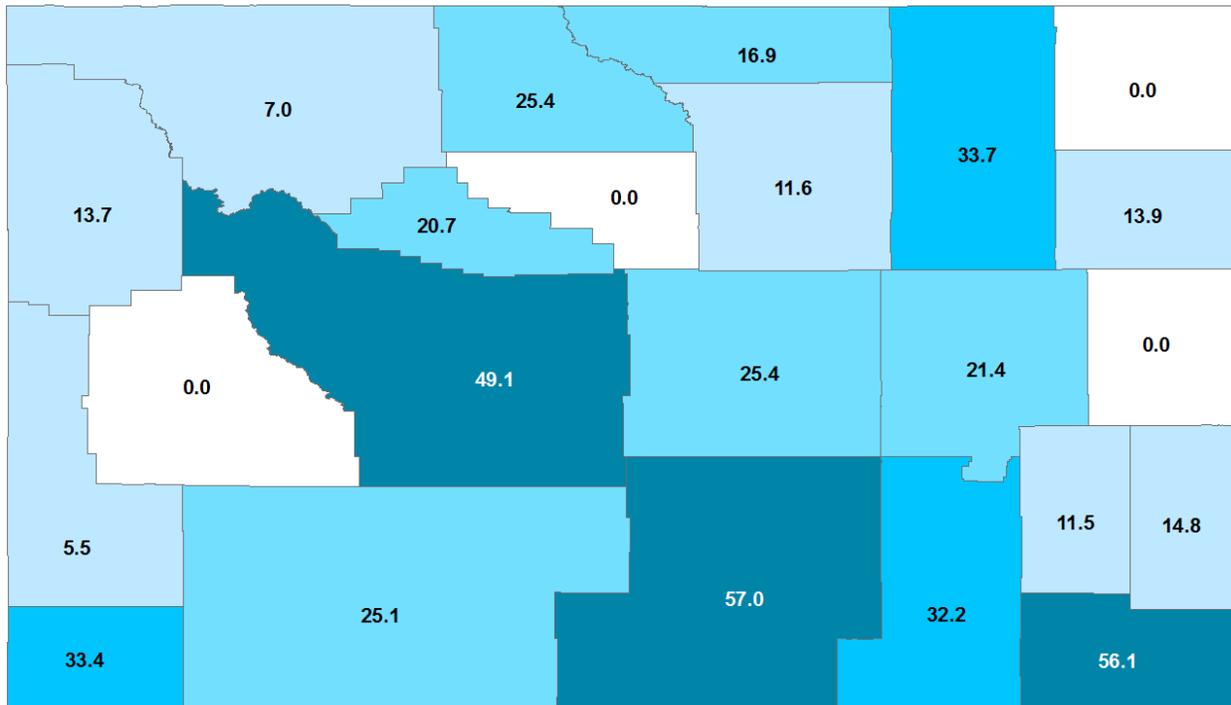
Figure 18. Gonorrhea rate per 100,000 population, Wyoming and U.S., 2011-2015^{*,4-7}



^{*}Rate of infection for the US in 2015 was unavailable at the time of this report.

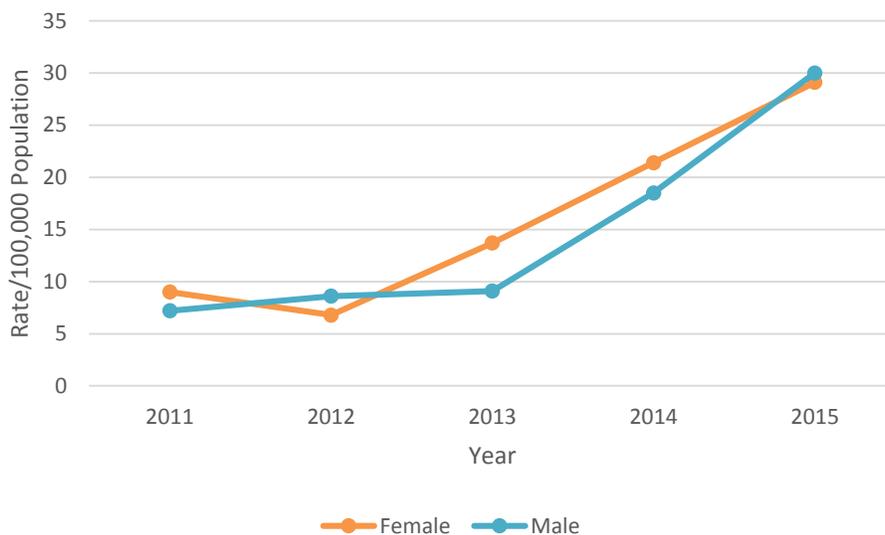
The gonorrhea rate in Wyoming increased three fold from 2012 (9.4/100,000) to 2015 (29.7/100,000) but remained lower than the U.S. rate.

Figure 19. Gonorrhea rates per 100,000 population by county, Wyoming, 2015.



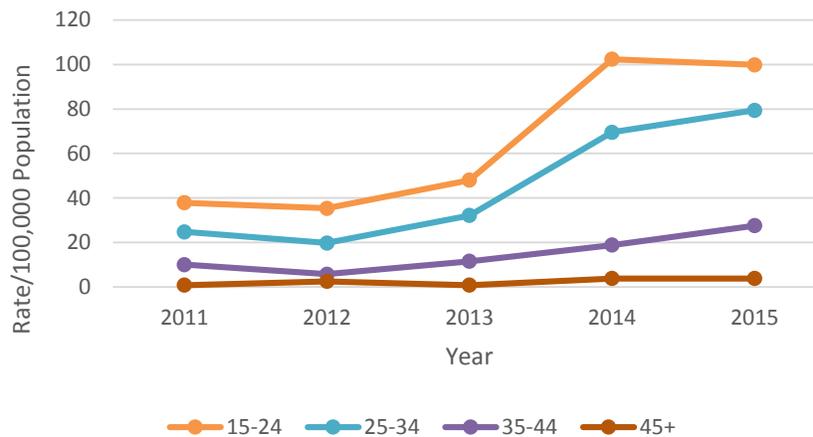
Carbon, Laramie, and Fremont Counties reported the highest rate of infection in 2015 while Sublette, Washakie, Crook, and Niobrara reported no cases.

Figure 20. Gonorrhea rates per 100,000 population by gender, Wyoming, 2011-2015.



Gonorrhea infection in males and females increased from 2012 to 2015. The rate of infection in males exceeded that of females in 2015. The most commonly reported risk factors among males and females were inconsistent condom use and recent exposure to an STD.

Figure 21. Gonorrhea case rate per 100,000 population by age group, Wyoming, 2011-2015.



Individuals age 15-24 years had the highest rate of infection from 2011 to 2015 which decreased from 2014 to 2015. Those aged 25-34 years had the second highest rate of infection which increased from 2014 to 2015. The rate among those aged 35-44 years also increased from 2014 to 2015.

SYPHILIS

Syphilis is a sexually transmitted bacterial infection caused by the bacterium *Treponema pallidum*. Syphilis is passed from person to person by direct contact with a syphilis sore which are often found on the penis, in the mouth, anus, or vagina. A syphilis infection may increase the chances of acquiring an HIV infection. Many people with syphilis do not show symptoms for many years. If symptoms do present, a painless sore, or chancre, will develop at the site of infection 10 to 90 days after exposure. This is indicative of the primary stage of syphilis. The chancre may last 3 to 6 weeks and will disappear on its own.

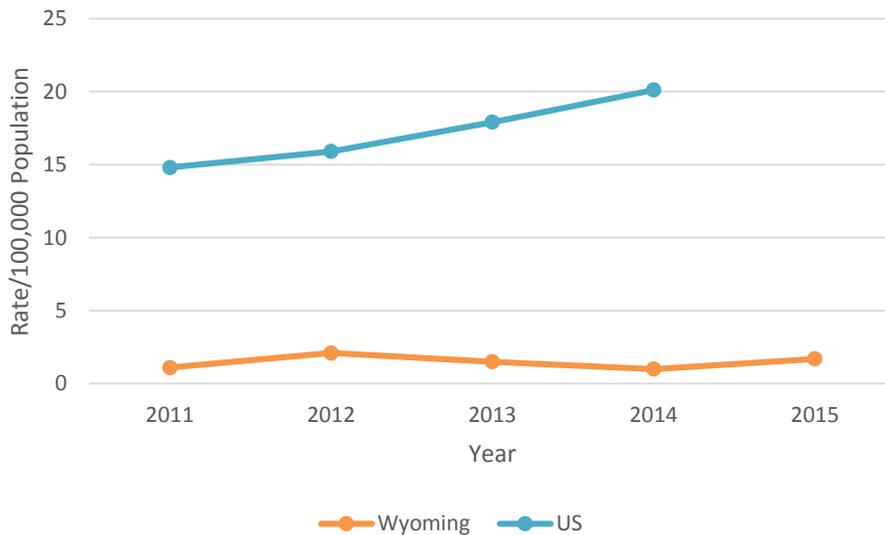
A skin rash and mucous patches indicate the secondary stage of syphilis. The rash can develop on one or more areas of the body and usually does not itch. The rash may develop when the chancre is still present or several weeks after the chancre has disappeared. Other symptoms of secondary syphilis may include fever, alopecia, headaches, weight loss, muscle aches, swollen lymph nodes, or fatigue. Like the chancre, symptoms of secondary syphilis will resolve without treatment.

If left untreated syphilis may lay dormant in the body for several years. This is called latent syphilis. If left untreated syphilis may damage organs and other body parts such as the brain, kidneys, eyes, nerves, blood vessels, bones, joints, and heart. Signs and symptoms of this late stage of syphilis may include difficulty coordinating muscle movements, blindness, dementia, numbness, paralysis, and death.

Syphilis rates are low in Wyoming and screening is recommended for MSM, pregnant women, HIV positive individuals, individuals who are symptomatic, or have a history of incarceration of greater

than six months. During the period 2011-2015, twelve cases of early (primary, secondary, or early latent) syphilis were reported in Wyoming. Males accounted for all early syphilis cases during that time period. Twenty-four late latent cases were reported during the same time period, of those 63% were female.

Figure 22. Syphilis rate per 100,000 population – all stages, Wyoming and United States, 2011-2015.*4-7



*U.S. data for 2015 has not yet been published

The rate of syphilis in the United States increased each year from 2011-2015.⁴⁻⁷ The rate of syphilis infection in Wyoming increased slightly from 2014 to 2015 but remained relatively stable from 2011 to 2015.

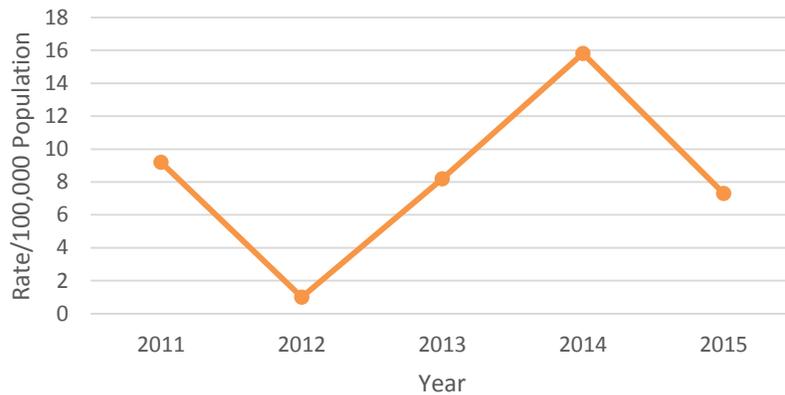
HEPATITIS B

Hepatitis B is transmitted through infected blood products as well as seminal and vaginal fluids. Risk factors for hepatitis B infection include:

- Infants born to infected mothers
- Sex partners of infected individuals
- Persons infected with an STD
- Men who have sex with men
- Individuals with multiple sex partners
- Injection drug users
- Household contacts of infected individuals
- Individuals in healthcare settings who are exposed to blood on the job
- Hemodialysis patients
- Travelers to regions with a Hepatitis B antigen prevalence of 2% or greater
- Individuals who work for developmentally disabled persons¹²

There were 31 cases of reported acute hepatitis B from 2011-2015. Females accounted for 55% of the total reported cases.

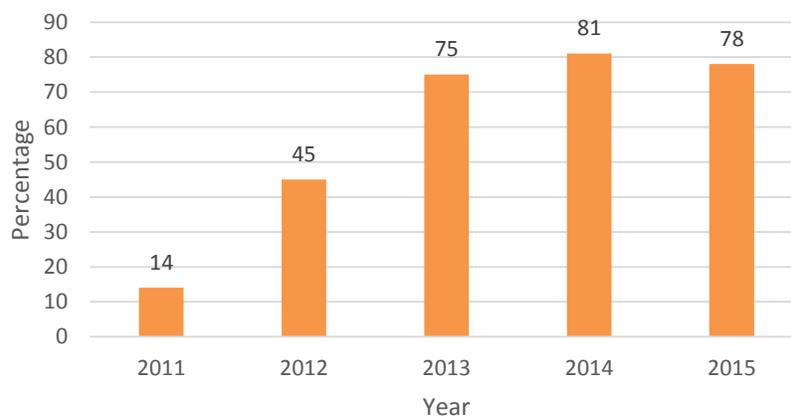
Figure 23. Newly reported chronic hepatitis B rate per 100,000 population, Wyoming, 2011-2015.



There were 239 cases of reported chronic hepatitis B from 2011-2015. Males accounted for 56% of the total reported.

The Wyoming Department of Health has identified incarcerated individuals or persons with a history of incarceration as a priority population for hepatitis B vaccination and screening. The Department pays for vaccinations in this population and for any adult who has never before been vaccinated. As of October 2011, all state prisons have initiated mass inmate vaccinations. WDH has published hepatitis B screening and vaccination recommendations to include these populations as a priority.

Figure 24. Percent of Wyoming Department of Corrections inmates with a completed hepatitis A and B vaccine series, Wyoming, 2011-2015.



The Communicable Disease Unit aims to maintain a vaccine completion rate of 80% at Wyoming Department of Corrections facilities. From 2011 to 2015, the percentage of inmates completing the vaccine series increased from 14% to 78%.

HEPATITIS C

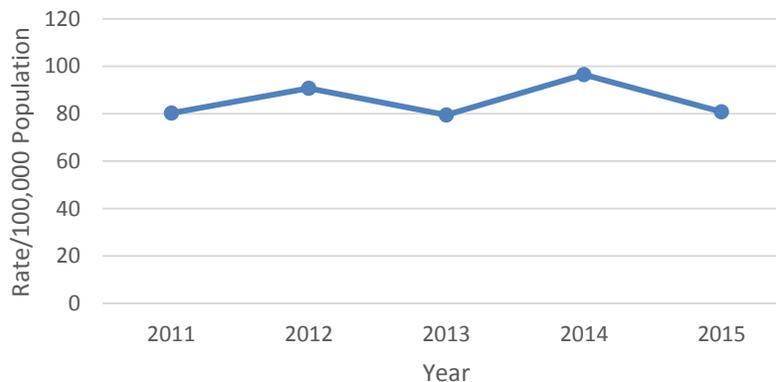
Hepatitis C virus (HCV) is spread primarily through contact with contaminated blood and blood products, but has also recently been documented to be transmitted through sexual activity.

Populations at high risk for exposure to hepatitis C include:

- Current or former injection drug users
- Recipients of clotting factor concentrates before the year 1987
- Recipients of blood transfusions or donated organs before July of 1992
- Long-term hemodialysis patients
- Individuals with a known exposure to HCV
- HIV-infected individuals
- Infants born to infected mothers⁸

Approximately 75%-85% of individuals newly infected with HCV will develop a chronic infection while the remaining 15%-25% will clear the virus without treatment. Of individuals infected with HCV, 60%-70% will develop chronic liver disease. Therefore, it is recommended that those diagnosed with chronic HCV get vaccinated for HBV and hepatitis A virus to prevent poor medical outcomes from these secondary liver infections.⁸

Figure 25. Newly reported confirmed and probable* chronic hepatitis C rate per 100,000 population, Wyoming, 2011-2015.

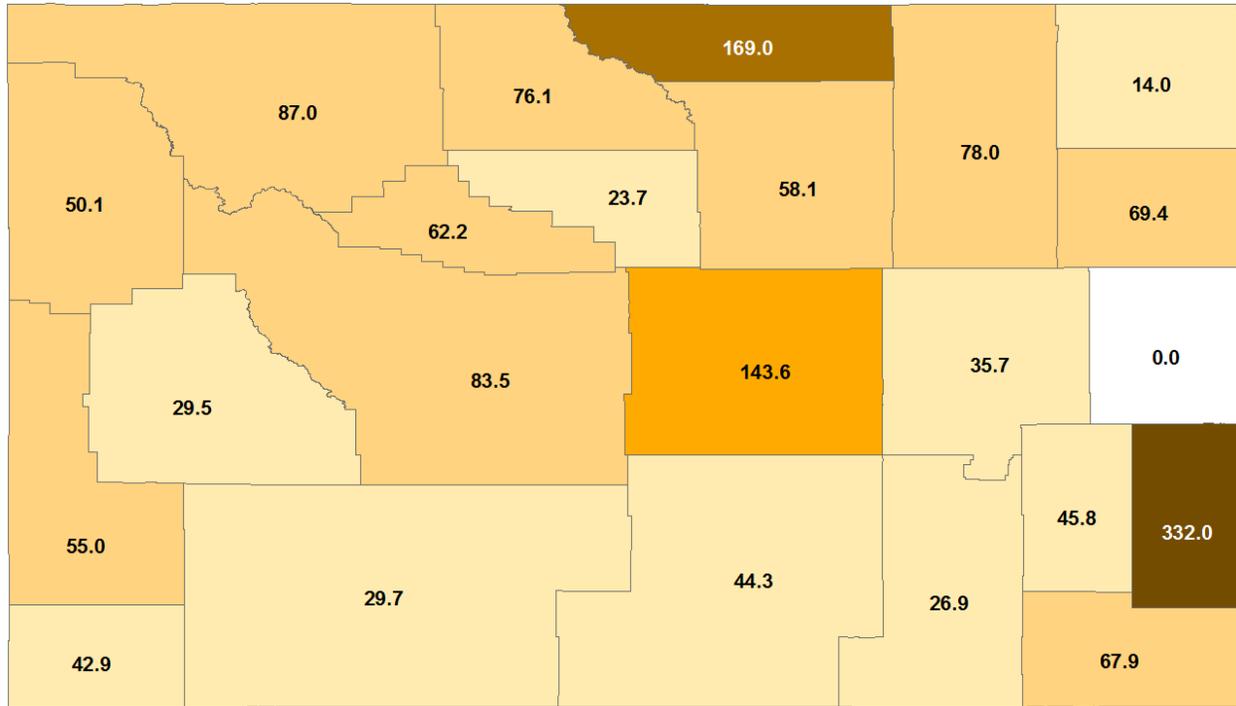


*Probable refers to those with a reactive hepatitis C antibody test with a signal to cutoff ratio > 3.6

The rate of chronic hepatitis C decreased from 2014 to 2015 but remained relatively stable from 2011 to 2015. The Communicable Disease Unit prioritizes risk ascertainment, risk reduction education, and treatment referrals to those 36 years old and younger. Of the 97 newly reported

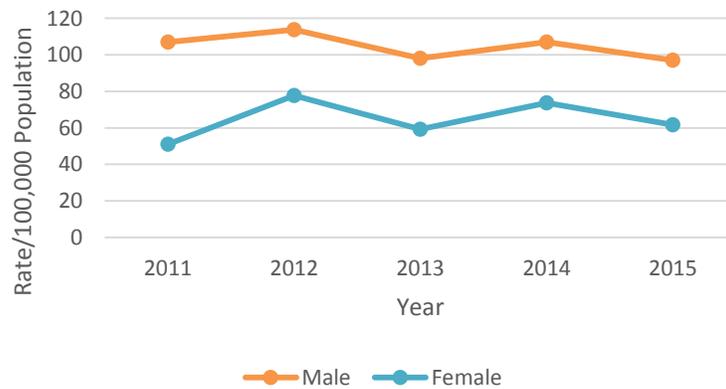
hepatitis C infection in 2015 under the age of 36, risk factors were obtained for 58%. Of those, most reported injection drug use and/or incarceration (87.5%).

Figure 26. Newly reported confirmed and probable viral hepatitis C case rate per 100,000 population by county, Wyoming, 2015.



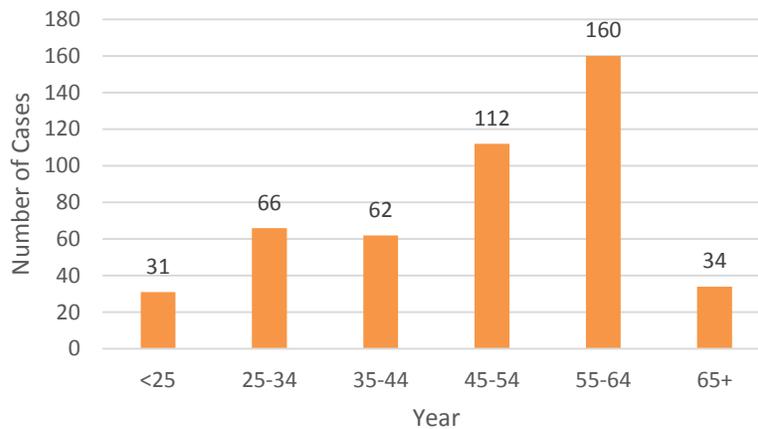
A higher rate of infection is typical for Goshute County where the Wyoming Medium Correctional Institute is located and which is the intake facility for all people incarcerated by the Wyoming Department of Corrections. WMCI routinely screens this population for viral hepatitis C. Also showing a higher rate of infection than the rest of the counties are Natrona and Sheridan counties.

Figure 27. Newly reported chronic hepatitis C confirmed and probable case rate per 100,000 population by gender, Wyoming, 2011-2015.



Males consistently had a higher rate of infection than females from 2011 to 2015. The rate of infection in both males and females decreased from 2014 to 2015.

Figure 28. Number of newly reported chronic hepatitis C confirmed and probable cases by age group, Wyoming, 2011-2015.



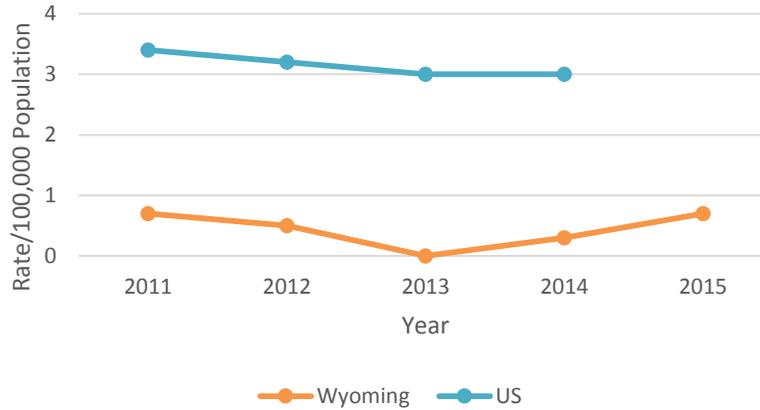
Individuals aged 55-64 accounted for 34% of infections, followed by those aged 45-54 years who accounted for an additional 24% of infections in 2015. This information is consistent with the information from the CDC regarding an increased risk of infection in individuals born between 1945 and 1965.⁹

Section 5- Tuberculosis

TUBERCULOSIS

Tuberculosis (TB) is one of the leading causes of death worldwide attributed to an infectious disease. Worldwide approximately 9 million people develop active TB disease and 2 million people die from TB. TB is caused by *Mycobacterium tuberculosis* and is spread person to person through droplet nuclei in the air. An infected person expels the TB bacteria during coughing, sneezing, speaking, and singing. Transmission occurs when an individual inhales the contaminated droplet nuclei. The probability that TB will be transmitted depends on the infectiousness of the infected individual, the environment in which the exposure occurred, the length of the exposure, and the virulence of the tubercle bacilli. Transmission can be reduced by isolating the infected person and providing treatment as soon as possible. Tuberculosis may develop in to active disease that is infectious, or can remain latent in the body which is not infectious but if not treated may develop into active disease.¹⁰

Figure 29. Active tuberculosis case rate* per 100,000 population, Wyoming and U.S., 2011-2015.¹¹



*A low number of cases (<20) causes unstable rates which are difficult to interpret

Wyoming is a low incidence state with only 13 cases reported from 2011-2015. Of those, 77% reported a risk factor of being born in a country with a high prevalence of TB. The case rate of active TB disease increased from 2014 to 2015; however, this is difficult to interpret due to the low number of reported cases each year. The rate in Wyoming remains lower than that of the U.S. and has met the Healthy People 2020 goal of maintaining a case rate below 1.0/100,000 people.

Table 8. Number of TB infected individuals enrolled in TB medication services annually, Wyoming, 1992-2015

| Year | Number | Year | Number |
|------|--------|------|--------|
| 1992 | 300 | 2004 | 201 |
| 1993 | 322 | 2005 | 167 |
| 1994 | 231 | 2006 | 220 |
| 1995 | 219 | 2007 | 153 |
| 1996 | 220 | 2008 | 200 |
| 1997 | 194 | 2009 | 148 |
| 1998 | 248 | 2010 | 171 |
| 1999 | 272 | 2011 | 167 |
| 2000 | 212 | 2012 | 167 |
| 2001 | 262 | 2013 | 103 |
| 2002 | 194 | 2014 | 112 |
| 2003 | 204 | 2015 | 93 |

Targeted efforts are placed on detection and treatment of latent TB infection (LTBI). Populations in which there is a greater risk for TB infection in Wyoming include IDUs; homeless individuals; those born in Asia, Africa, or South America; those with parents born in Asia, Africa, or South America; and individuals that reside in a congregate setting (e.g., incarceration). If an individual has a latent

infection, there is a 10% chance the infection will progress to active disease in his/her lifetime. To prevent the development of active disease in individuals with a latent infection, the Wyoming Department of Health Communicable Disease Unit provides financial assistance for medication coverage.

Section 6- Coinfection

TB AND HIV

Though Wyoming has a low incidence of tuberculosis, it still remains a threat in individuals infected with HIV. TB is one of the leading causes of death in HIV positive individuals worldwide.

Individuals who are infected with HIV and latent TB are much more likely to develop active TB disease. An individual who has both an HIV infection and active TB disease has an AIDS-defining condition. Newly diagnosed HIV individuals should be tested for TB, and those with active TB disease should be tested for HIV. From 2011 to 2015, no HIV/TB coinfecting cases were reported.

HIV AND VIRAL HEPATITIS B & C

Injection drug use is one of the main ways to become infected with HIV as well as hepatitis C virus (HCV). Between 50%-90% of HIV positive injection drug users are coinfecting with HCV nationally. Because coinfection with HCV may affect treatment of HIV infection, it is imperative that HIV positive individuals know their HCV status. Hepatitis C can be successfully treated in HIV individuals. HIV positive individuals who are not infected with Hepatitis C should take preventive steps against HCV.

Table 9. Hepatitis A and B vaccination status of HIV-infected persons, Wyoming, 2011 and 2015*.

| Vaccinations | % Vaccinated 2011 | % Vaccinated 2015 |
|----------------------------------|--------------------------|--------------------------|
| Fully Vaccinated for Hepatitis A | 5.4 | 24.7 |
| Fully Vaccinated for Hepatitis B | 7.7 | 25.7 |

*All results were pulled from the WylIR- Wyoming Immunization Registry is a database in which immunizations of Wyoming residents are documented. It is possible more people are vaccinated but not documented in the WylIR.

As of June, 2012, 7.5% of HIV infected persons in Wyoming were also infected with hepatitis C. An additional 3.4% of HIV infected persons were co-infected with hepatitis B. The Wyoming Department of Health recommends hepatitis A & B vaccinations for all HIV infected individuals. In 2012, the Communicable Disease Services Program amplified their efforts to ensure those with HIV infection are receiving recommended vaccines. Table 9 represents the vaccination status of HIV infected persons residing in Wyoming.

STDS AND HIV

Individuals infected with STDs are up to five times more likely to acquire HIV infection than those uninfected. An individual with HIV infection and another STD is more likely to spread the HIV infection through sexual contact than an HIV infected individual with no additional STD. There is

significant biological evidence which shows that HIV is more likely to be transmitted and acquired if other STDs are present. STDs have been shown to increase susceptibility through genital ulcers and inflammation. Individuals infected with HIV and other STDs are likely to shed HIV in their genital secretions.

Section 7 – Characteristics of High-Risk Populations

CHLAMYDIA/GONORRHEA

Adolescents

In this report adolescents are defined as individuals age 13-24 years while adults are those over 24 years old. Individuals age 15-24 have the highest rates of chlamydia and gonorrhea infection compared to any other age group. Adolescents tend to have more risk behaviors for acquiring a chlamydia and/or gonorrhea infection, such as multiple partners, new partners, and incorrectly or inconsistently using condoms. Adolescents are also at a greater biological risk for acquiring chlamydia or gonorrhea.

SYPHILIS

Men who have sex with men

The Wyoming Department of Health has identified men who have sex with men to be at increased risk of syphilis infection. In the US, the CDC reported that MSMs accounted for more cases of syphilis than men who have sex with women and women who have sex with men and/or women.¹² From 2011 to 2015, males accounted for 58% of reported syphilis infections.

HIV Infected

Syphilis chancres can make transmission and acquisition of HIV infection easier. Individuals with syphilis are two to five times more likely to acquire HIV if exposed. An initial syphilis screening followed by additional annual screenings if the person is at risk are recommended for those infected with HIV.¹²

HIV

Men who have sex with men

By exposure and transmission categories, MSMs continue to account for the largest number of newly diagnosed cases of HIV infection in Wyoming. Between 2011 and 2015, 42% of all adult and adolescent HIV disease was among MSM. Among males, 53% of cases were MSM. Men who have sex with other men who also reported inject drug use, represented 4% of male cases during 2011-2015.

Injection drug users

Between 2011 and 2015, 6% of newly identified adult and adolescent HIV disease was among injection drug users (IDUs). By gender, 7% of HIV disease among males was attributed to injection drug use while 0% of newly diagnosed HIV disease among females was attributed to IDU.

Women with positive partners

Seventeen percent of newly identified HIV disease was among adult and adolescent females between 2011 and 2015. Among adult females (9), 67% of cases were attributed to heterosexual sex, all of which indicated sex with an HIV positive partner.

HEPATITIS B

Globally, 350 million people are infected with hepatitis B, 1.2 million of which occur in the US.⁸ In 2010, 30 chronic and 3 acute cases of hepatitis B were reported. Risk factor data for individuals infected with hepatitis B in Wyoming is incomplete.

Asian and Pacific Islanders (API)

APIs make up 5% of the US population but account for more than 50% of hepatitis B infections. An estimated 70% of APIs that reside in the US were either born in or have parents who were born in a hepatitis B endemic country. The CDC estimates that 1 of every 12 APIs are living with hepatitis B and do not know it.⁸

Injection drug users

Injection drug users are at risk for hepatitis B from sharing needles and other drug equipment. In 2003, an outbreak of hepatitis occurred in Wyoming among injection drug users. As a result of the outbreak, the Wyoming Department of Health added the recommendation for hepatitis B vaccinations for adults at risk of hepatitis B infection.

Men who have sex with men

The CDC reports men who have sex with men account for 15-25% of new infections. The CDC and Wyoming Department of Health recommend hepatitis B screening and vaccination for MSM.⁸

HEPATITIS C

Injection drug users and incarcerated people

The CDC estimates that 1/3 of injection drug users between the ages of 18-30 years are infected with hepatitis C, and 70-90% of older injection drug users are infected.¹² The National Hepatitis Corrections Network estimates 17.4% of incarcerated people are chronically infected with hepatitis C compared to 1% of the general population.¹³ Of the reported cases under the age of 36 years with risk factor data, 87.5% reported current or a history of injection drug use, incarceration, or both.

Individuals born between 1945 and 1965

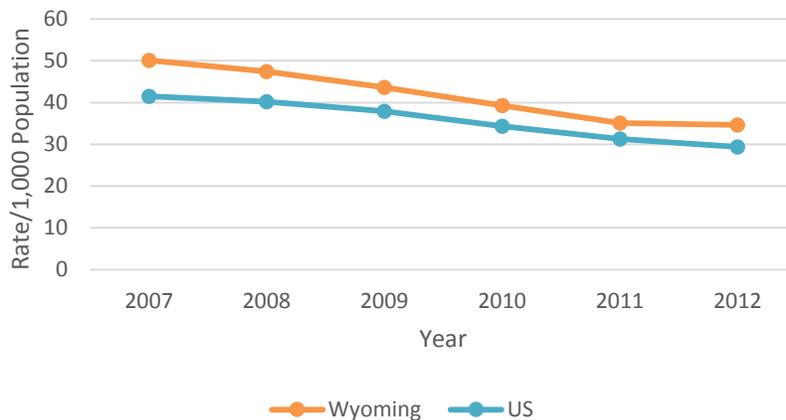
The CDC reports individuals born between 1945 and 1965 account for approximately 75% of hepatitis C cases in the U.S.⁹ In 2015, 34% of viral hepatitis C cases were reported among those aged 55 to 64.

DIRECT MEASURES OF RISK BEHAVIOR

Sexual Behaviors: The Youth Risk Behavior Survey for Wyoming (YRBS-WY) is a self-administered questionnaire given to a representative sample of 6th through 12th grade students throughout the state every other year. In 2015, only high school students completed the survey. The 2015 survey included responses from 2,424 students from 40 public, charter, and alternative schools. The YRBS-WY is not without limitations. The survey is administered during school, therefore, potentially under-representing high risk populations which are more likely to be absent from school. The survey may also under-represent students in older grade levels as they are more likely to not be in school.

The 2015 YRBS-WY indicates that 41.9% (13 students per classroom of 30) of high schools students have engaged in sexual intercourse. Overall, 12.9% of students indicated having four or more sex partners in their lifetime. Of those who have had sexual intercourse, 52.7% indicated using a condom during their most recent time, a decrease of 6% from 2011. Approximately 11.4% of students who participated in the survey indicated they had been tested for HIV at some point in their life.¹⁴

Figure 30. Teen (15-19 years) birth rate per 1,000 population, Wyoming and U.S., 2007-2012.¹⁵



The Wyoming Department of Health Maternal and Child Health Program routinely collects data on teen birth rates. Teen birth rates declined from 2007 to 2012 from 50.1 to 34.6 births per 1,000

population. Though teen birth rates have been declining in Wyoming since 2007, Wyoming rates are consistently higher than teen birth rates for the United States.¹⁵

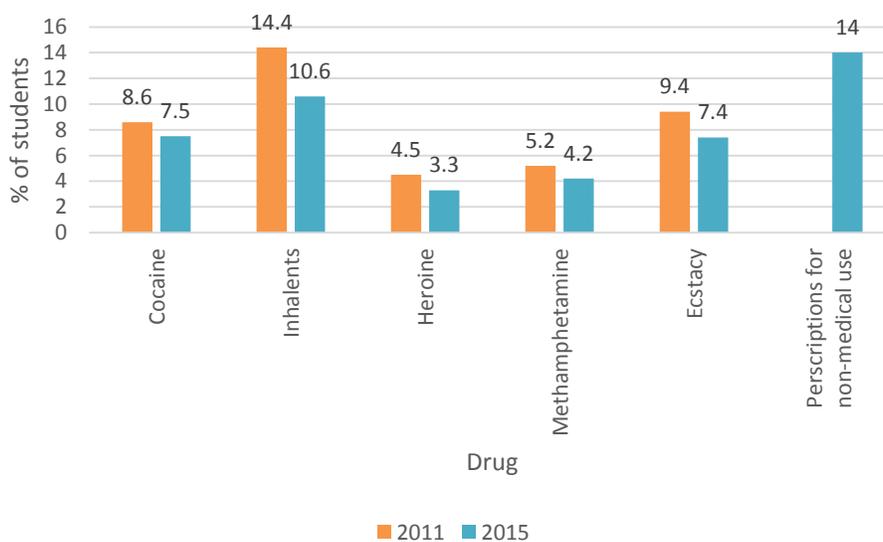
Substance Use: The National Survey on Drug Use and Health (NSDUH) and the YRBS provide data on risk behaviors related to substance use. The NSDUH is conducted by SAMHSA’s Office of Applied Studies (OAS) and is a source of information on the prevalence, patterns, and consequences of alcohol, tobacco, and illicit drug use of U.S. civilians age 12 years and older.

Table 10. Percent of population with select substance use by age group, NSDUH, Wyoming, 2013-2014.¹⁶

| Age Group (years) | Any Illicit Drug Use in the Past Month | Marijuana Use in the Past Month | Illicit Drug use Other Than Marijuana in the Past Month |
|-------------------|--|---------------------------------|---|
| 12-17 | 3 | 5 | 1 |
| 18-25 | 11 | 18 | 3 |
| ≥26 | 19 | 29 | 6 |

The NSDUH defines illicit drugs as marijuana/hashish, cocaine, inhalants, hallucinogens, heroin, and any other prescription-type psychotherapeutic drug used non-medically. During 2013 to 2014, NSDUH estimated that 34,000 Wyoming residents over the age of 12 had used illicit drugs in the previous month. An estimated 10,000 Wyoming residents used illicit drugs other than marijuana which includes heroin, cocaine, hallucinogens, inhalants, or prescriptions used for a non-medical purpose. Table 10 displays the percentage of the population with select substance use by age group.¹⁶

Figure 31. Percent of high school students who report select drug use in their lifetime, YRBS, Wyoming, 2015.¹⁴



The YRBS also collects information on substance use of middle and high school students. Figure 31 shows the percentage of high school students who have ever used illicit drugs other than marijuana in their lifetime. In 2015, prescription drugs used for non-medical purposes was the most commonly report drug used, followed by inhalants, and cocaine. The percentage of students who have used illicit drugs decreased for every drug category from 2011 to 2015 except prescriptions. Prescription drug use for non-medical purposes was not evaluated in the 2011 YRBS survey. In addition, the YRBS indicates that 3.3% of high school students have ever used needles to inject drugs.¹⁴

The Treatment Episode Data Set (TEDS) provides data that may identify behaviors related to injection drug use. TEDS is maintained by the Substance Abuse and Mental Health Services Administration. Substance use treatment admission data from state and federally funded facilities in the state of Wyoming are routinely reported in TEDS quarterly updates.

Table 11. TEDS drug use data, Wyoming, 2012.¹⁷

| Drug | Number | Rate of admissions/100,000 Population |
|---------------------------|---------------|--|
| Heroin | 69 | 14 |
| Cocaine | 43 | 9 |
| Methamphetamines | 638 | 133 |
| Non-heroin Opioids | 240 | 50 |

It is noted in the TEDS 2002-2012 State Profile that Wyoming had one of the five highest increases in heroin admissions from 2002 (2/100,000 population) to 2012 (14/100,000 population). In 2012, the highest rate of admissions was among methamphetamine users (Table 11).¹⁷

Appendix A: Profile Data Sources

1. Population Data

U.S. Census Bureau

Overview: The Census Bureau collects and provides timely information about the people and economy of the U.S. The Census Bureau's website (<http://www.census.gov>) includes data on demographic characteristics of the population, family structure, educational attainment, income level, and housing status. Data are available for all geographic areas to the block level. Summaries of the most requested information for states and counties are provided, as well as analytical reports on population changes, race, age, family structure, and apportionment.

Population: The U.S. Population.

Strengths: The Census provides data on the entire U.S. population which is available in smaller subgroups such as states, counties, and cities.

Limitations: The Census is only taken every ten years which may under-represent changes in data through time. This also makes it difficult to compare changes in HIV/STD and risk factor data with demographic and economic changes in the population.

2. Core HIV/AIDS Surveillance

Overview: Since the human immunodeficiency virus was identified, the CDC and other professional organizations have recommended reporting of HIV infections to health authorities as an integral part of AIDS surveillance activities. As part of ongoing HIV surveillance, health departments educate providers on reporting requirements and establish liaisons with laboratories that test for HIV infection. Moreover, HIV/AIDS surveillance programs routinely evaluate the completeness of HIV reporting and conduct follow-up on HIV cases.

Population: All persons who test positive for Human Immunodeficiency Virus (HIV).

Strengths: Based upon previous evaluations, HIV infection (non-AIDS) reporting in Wyoming was found to be 99% complete within six months of diagnosis.

Limitations: HIV surveillance data may underestimate the level of recently infected persons as people may not seek testing and may not know they are infected. Reporting of behavioral risk information may not be complete as these data are self-reported.

3. Behavioral Surveys

Behavioral Risk Factor Surveillance System (BRFSS)

Overview: The BRFSS is a state-based random digit-dialed telephone survey of adults that monitors state-level prevalence of the major behavioral risks associated with premature morbidity and mortality. Currently all 50 states participate in the BRFSS with help from the CDC. The BRFSS

includes home telephones and cellular telephones. Each month, a sample of households is contacted and one person in the household who is 18 years or older is randomly selected for an interview. In Wyoming, approximately 6,000 interviews are conducted. Multiple attempts are made to contact the selected household. The interview can be done in English or Spanish. Information regarding the Wyoming BRFSS can be found at <http://www.health.wyo.gov/phsd/brfss/index.html>.

Population: All non-institutionalized adults, 18 years and older that reside in Wyoming with a home or cellular telephone.

Strengths: Data from the BRFSS survey are population-based; thus, estimates about testing attitudes and practices can be generalized to the adult population of Wyoming. Information collected from the BRFSS survey may be useful for planning community-wide education programs.

Limitations: BRFSS data are self-reported and may be subject to recall bias or refusal. BRFSS respondents are contacted by telephone and are therefore not representative of those without telephones. BRFSS does not interview those who are incarcerated, in nursing homes, or other institutionalized settings. The extent of HIV behavioral risk information collected by the BRFSS is limited and inferences can only be made at the state level.

Youth Risk Behavior Survey (YRBS)

Overview: The YRBS was established to monitor six priority high-risk behaviors that contribute to the leading causes of morbidity, mortality, and social problems among youth and young adults in the United States. YRBS was developed to collect data that are comparable nationally, statewide, and locally. It is a state-wide, self-administered questionnaire given to a representative sample middle and high school students (6th-12th grade). The survey includes information on sexual behaviors which contribute to STDs including HIV, and unintentional pregnancy. Questions are also asked about exposure to HIV prevention education materials, sexual activity (age of debut, number of partners, condom use, preceding drug or alcohol use), contraceptive use, and pregnancy history. Information about the YRBS in Wyoming can be found at <http://edu.wyoming.gov/DataInformationAndReporting/YouthRiskBehaviorSurvey.aspx>.

Population: The YRBS surveys a representative sample of 6th-12th grade students at the state level.

Strengths: The YRBS is a population-based sample of adolescents in public school systems in Wyoming. The YRBS questionnaire is administered to students anonymously during school. Efforts are made to survey students who are not in attendance. Inferences from YRBS estimates can be drawn about behaviors and attitudes of adolescents in public schools, which make information useful for developing community-wide prevention programs aimed at younger persons. The YRBS uses a standardized questionnaire so comparisons can be made across participating jurisdictions. Jurisdictions have the opportunity to ask specific questions to meet their needs.

Limitations: The 2015 YRBS excluded middle school children. The YRBS relies on self-reported information which may lead to under- or over-reporting. Since the YRBS questionnaire is administered in school, the data are only representative of children who are enrolled in school and cannot be generalized to all youth. Students at highest risk may be more likely to be absent from

school or to have dropped out of school and therefore might be underrepresented. The YRBS does not ask about different types of sex or gender of sexual partners.

4. Substance Abuse Data

Treatment Episode Data Set (TEDS)

Overview: TEDS is a national data set maintained by the Office of Applied Studies, Substance Abuse and Mental Health Services Administration (SAMHSA). Data are captured annually on more than 1.5 million records of treatment admissions for substance abuse. TEDS is comprised of data that are routinely collected by States to help monitor their individual substance abuse treatment programs. TEDS collects information on client demographics, information about the number of prior treatments, usual route of administration for each problem substance, frequency of use, age at first use, and services provided. Facilities that report TEDS data usually receive state funding for the provision of substance abuse treatment.⁶

Population: Individuals admitted to substance abuse treatment facilities reporting to TEDS.

Strengths: While TEDS does not represent the total demand for substance abuse treatment, it does include a significant proportion of all admissions to substance abuse treatment. TEDS includes admissions that constitute a burden on public funds.

Limitations: TEDS is based on admission records and does not represent individuals, as one individual receiving treatment within the same calendar year would be considered two admissions. Also, TEDS is unable to follow individual clients through a sequence of treatment episodes because individuals are given unique IDs at the state level to protect confidentiality. TEDS data does not include data from private entities or federal agencies and can under represent individuals receiving treatment from those facilities.

The National Survey on Drug Use and Health (NSDUH)

Overview: The NSDUH is a source of information on the prevalence, patterns, and consequences of alcohol, tobacco, and illegal drug use and abuse in the general U.S. civilian, non-institutionalized population, age 12 years and older. The survey is currently conducted by SAMHSA's Office of Applied Studies (OAS).

Population: Non-institutionalized, civilian U.S. population age 12 years and older.

Strengths: NSDUH is a national, standardized survey of drug use behaviors among the general population. To increase the level of honest reporting, since 1999, information has been collected using a combination of computer-assisted interviewing methods. This provides respondents with a more private and confidential means of responding to questions about substance use and other sensitive behaviors.

Limitations: States must rely on statistical estimates as direct data is only available for some states. NSDUH estimates represent behaviors in the general population, thus the survey may underestimate the level of substance use in the population at highest risk for HIV. Furthermore, the data for the NSDUH are self-reported and are subject to recall bias or refusal which can result in under- or over-reporting.

5. HIV Services Data

Wyoming HIV Services Data

Overview: The Wyoming Department of Health provides services to individuals infected with HIV through Ryan White Part B, AIDS Drug Assistance Program (ADAP), Ryan White Part C-EIS (Early Intervention Services) and the Housing Opportunities for Persons with AIDS (HOPWA) programs.

Population: Wyoming HIV Services Data includes individuals infected with HIV or with an AIDS diagnosis, residents of Wyoming with permanent Wyoming addresses and a valid Wyoming driver's license or ID, and meet the income guidelines.

Strengths: All individuals enrolled in Care in Wyoming are represented by these data.

Limitations: Data from the HIV Services Program cannot be generalized to all individuals with HIV/AIDS in Wyoming.

6. STD Surveillance

STD Case Reporting

Overview: The Wyoming Department of Health STD Program conducts statewide surveillance to determine sexually transmitted disease (STD) incidence and to monitor trends. In Wyoming, chlamydia, gonorrhea, and syphilis are reportable STDs.

Population: All persons who are diagnosed with an infection that meets the CDC case definition for the infection and are reported to the STD Program. CDC case definitions can be found at <http://www.cdc.gov/std/stats09/app-casedef.htm>.

Strengths: STD surveillance data can serve as the surrogate marker for unsafe sexual practices and demonstrate the prevalence of STDs in the state. STD data are widely available at the state and county level. Because of shorter incubation time and periods between exposure and infection, STDs can serve as a marker of recent unsafe sexual behavior. In addition, STDs can facilitate transmission or acquisition of HIV infection.

Limitations: STDs are reportable, but requirements vary across states. Reporting of STDs from private sector providers may be less complete.

Appendix B: Glossary of Terms

AIDS (HIV Stage 3): AIDS stands for acquired immunodeficiency syndrome. An HIV-infected person receives a diagnosis of AIDS after developing one of the CDC-defined AIDS indicator illnesses (see *opportunistic infection*) or on the basis of certain blood tests (i.e. having a CD4+ count of less than 200 or a CD4+ percent of less than 14). A positive HIV test result does not automatically indicate AIDS.

Bias: Bias occurs when there is a systematic error in data that leads to erroneous results.

CDC: The Centers for Disease Control and Prevention (CDC), within the U.S. Department of Health and Human Services, is the lead federal agency for protecting the health and safety of the people of the United States. The CDC accomplishes its mission through developing and applying disease prevention and control, environment health, and health promotion and education activities designed to improve public health in the U.S. The CDC provides the majority of funding for HIV prevention, and all of the funding for HIV surveillance activities in Wyoming.

Exposure Categories: In order to monitor how HIV is being transmitted, HIV/AIDS cases are classified into one of several exposure (risk) categories developed by the CDC.

- Men who have sex with men (MSM) refers to men who report having had sexual contact with other men.
- Injection drug user (IDU) cases are those who report ever using drugs that require injection.
- High-risk heterosexual contact (HRH) cases have reported heterosexual contact with a partner who is at increased risk for HIV infection, i.e., a man who has sex with other men, an IDU, or a partner with documented HIV infection.
- Hemophilia/Transfusion/Transplant cases are those who report having received a transfusion of blood or blood products prior to 1985.
- Perinatal cases are cases of HIV infection in children resulting from transmission from an HIV positive mother.
- Unspecified or “no identified risk (NIR)” cases are those cases who have no reported history of exposure at the time of publication. This category includes persons for whom the surveillance protocols to document risk information have not yet been completed, persons whose exposure history is incomplete because they have died, persons who have declined to disclose their risk behavior or who deny any risk behavior, and persons who do not know the HIV status or risk behaviors of their sexual partners.

HIV: HIV is an acronym for “Human Immunodeficiency Virus,” which is the virus that causes AIDS. A person who has contracted the virus is said to be HIV-positive or HIV-infected.

HIV Disease: In the context of this document, HIV disease describes both individuals who have been diagnosed as HIV positive only and those diagnosed with AIDS. Individuals with either carry the HIV virus.

Incidence: Incidence refers to the number of new cases of disease that occur in a population during

a specified time period, usually a year.

Perinatal: The word “Perinatal” means “around birth” and is used to describe events that occur during labor and birth, and immediately following delivery. When “Perinatal” is used to describe communicable disease transmission, however, this word applies more broadly and describes any time that a mother may pass the communicable disease to her child – either while she is pregnant, during birth, or through breastfeeding.

Prevalence: Prevalence refers to the total number of persons with a specific disease or condition at any given time.

Proportion (percentage): A proportion is a type of ratio in which the numerator is included in the denominator. Since the numerator is a subset of the denominator, a proportion can be thought of as a ration of a “part” of the “whole.” A proportion is usually expressed as a percentage.

Rate: A rate is a special type of ratio that includes a specification on time. In epidemiology, rates express the probability or risk of disease or other events in a defined population over a specified time period, often one year.

Ryan White CARE Act: The Ryan White Comprehensive AIDS Resources Emergency Act was created to provide federal assistance to increase the availability of primary health care and support services for persons living with HIV disease, to increase access to care for underserved populations, and to improve the quality of life for those affected by HIV. The CARE Act was first enacted by Congress in 1990 and was reauthorized in 1996 and 2000.

HRSA implements the CARE Act and directs assistance through the following channels:

- **Title I** provides support to Eligible Metropolitan Areas (EMAs) with the largest numbers of reported AIDS cases, to meet emergency service needs of persons living with HIV;
- **Title II** provides support to all states and territories to improve the quality, availability, and organization of health care and support services for persons living with HIV and their families;
- **Title III** supports outpatient early intervention HIV services through funding to public and private nonprofit entities;
- **Title IV** funds public and private nonprofit entities to conduct projects to coordinate services to children, youth, women, and families with HIV/AIDS; and
- **Part F** provides support for Special Projects of National Significance (SPNS) to develop and evaluate innovative models of HIV/AIDS care, for AIDS Education and Training Centers (AETC) and to conduct education and training for health care providers, and for the HIV/AIDS Dental Reimbursement Program to assist with providing oral health services to HIV-infected patients.

Surveillance: In a public health context, surveillance refers to the routine, systematic collection of data on diseases or other important health conditions in order to monitor where the condition occurs and to determine the risk factors associated with the condition.

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