

North Dakota

**HIV, TB, STD
and Hepatitis**

Epidemiological Profile

2010



NORTH DAKOTA
DEPARTMENT *of* HEALTH

North Dakota Department of Health
Division of Disease Control

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Summary

- At the time of the 2010 U.S. Census, North Dakota had 672,591 residents; 90 percent were white.
- At the time of the 2010 U.S. Census, the median household income was \$34,604, with 11.9 percent of individuals and 8.3 percent of households below the poverty level.
- From 1984 to 2010, 505 cases of HIV/ AIDS were reported to the North Dakota Department of Health, 294 (58%) of which were diagnosed in North Dakota.
- Thirty-four percent of all cases diagnosed in North Dakota were classified as AIDS at first diagnosis.
- There were 227 people known to be living in North Dakota with HIV/ AIDS as of Dec. 31, 2010, while 181 people with HIV/ AIDS died in North Dakota between 1984 and 2010.
- Eighty-five percent of all HIV/ AIDS cases diagnosed in the state between 1984 and 2010 were between the ages of 20 and 49.
- The average HIV/ AIDS incidence rate from 2006 to 2010 for blacks was 37.2 per 100,000, whereas it was 1.4 per 100,000 and 2.8 per 100,000 for whites and American Indians, respectively.
- Male-to-male sexual relations remains the most frequently reported risk factor for HIV/ AIDS; however, there has been an increase in reports of HIV/ AIDS contracted through heterosexual relations, with 35 percent of cases diagnosed in North Dakota between 2006 and 2010 identifying this risk.
- There were 3,721 HIV tests reported in North Dakota during 2010; 13 were positive.
- The North Dakota CARES Program serves 101 (45%) of the 227 people living with HIV/ AIDS in North Dakota; 74 percent are male.
- The rates of chlamydia and gonorrhea are highest among blacks at 2,757 per 100,000 and 485 per 100,000, respectively.
- Racial and ethnic minorities compose the majority of all tuberculosis (TB) disease cases in North Dakota at 77 percent.
- There were 55 cases of chronic hepatitis B, zero cases of acute hepatitis B, four cases of acute hepatitis A and 486 cases of hepatitis C reported in North Dakota in 2010.
- The most common co-morbidity with HIV between 2006 and 2010 was hepatitis C, representing 41 percent.

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Introduction

The North Dakota Department of Health (NDDoH) receives funding from the U.S. Centers for Disease Control and Prevention (CDC) to collect information about HIV infection and AIDS diagnoses among North Dakota residents. The HIV/AIDS data are used to characterize and predict the changing epidemic at the local, regional and national levels. North Dakota HIV/AIDS data are summarized annually to help the NDDoH to:

- Monitor the incidence and estimated prevalence of HIV/AIDS in the state.
- Assess the risks for HIV infection and develop effective HIV prevention programs.
- Develop surveillance methods to allow for a more current estimate and characterization of HIV/AIDS risks and needs.
- Justify necessary federal and state funding to support continued HIV/AIDS prevention, services and surveillance activities.

This report includes HIV/AIDS data regarding North Dakota residents for the reporting period ending Dec. 31, 2010.

HIV Surveillance in North Dakota

In North Dakota, HIV/AIDS became a reportable condition in 1984, at which time the NDDoH established a surveillance system to track newly diagnosed HIV/AIDS cases. Standardized case report forms are used by regional field epidemiologists to collect sociodemographic information, mode of exposure, laboratory and clinical information, vital statistics (i.e., living or dead), and referrals for treatment of services. HIV surveillance data may underestimate the level of recently infected people because some infected individuals either do not know they are infected or have not sought medical care. Additionally, new cases are reported at all points along the clinical spectrum of disease when first diagnosed. Consequently, HIV infection data may not necessarily represent the characteristics of people who have recently been infected with HIV.

Methods

HIV Surveillance Data

A diagnosis of AIDS and/or HIV is legally reportable in North Dakota and must be reported to the Department of Health according to North Dakota Century Code Chapter 23-07-01 and North Dakota Administrative Code Chapter 33-06-01. Reports of HIV/AIDS cases can be provided by physicians, hospitals, laboratories and other institutions. These data are stored in the HIV/AIDS Reporting System (HARS) database. Statistics and trends presented in this report were derived from HIV/AIDS case data reported to the NDDoH cumulatively from 1984 through Dec. 31, 2010. To protect the privacy of individuals diagnosed with HIV or AIDS, no county data will be released. Data reported as persons with HIV/AIDS should be interpreted as individuals who have either been diagnosed with HIV or AIDS the first time, as some people may have progressed to AIDS before ever being diagnosed with HIV.

HIV Counseling and Testing Data

There are 31 HIV counseling, testing and referral (CTR) sites throughout North Dakota that provide free services to at-risk individuals. These sites include local public health units, community-based organizations and college health facilities. HIV counseling and testing data are collected to analyze the characteristics of the population accessing the services in an attempt to reach the populations most at risk for HIV infection.

North Dakota CARES Program Data

The North Dakota CARES (Comprehensive HIV/AIDS Resources and Emergency Services) Program provides financial assistance for medical services and antiretroviral medication to HIV/AIDS clients who qualify through the Health Resources and Service Administration (HRSA) under Part B of the Ryan White HIV/AIDS Treatment Modernization Act of 2009. North Dakota CARES data are collected to assess the population of HIV/AIDS clients who are receiving medical care.

STD Surveillance Data

The Sexually Transmitted Disease (STD) Program offers STD clinical services, including testing and treatment. The program conducts statewide surveillance to determine STD incidence and trends. In addition, the program conducts partner counseling and referral services for people with gonorrhea, syphilis and complicated chlamydia to reduce the spread of these diseases.

Viral Hepatitis Surveillance Data

The Hepatitis Program receives reports of hepatitis A, B and C acute and chronic infections from various reporting sources. Acute hepatitis infections are investigated to determine postexposure immunoprophylaxis. Basic demographic information is collected on chronic hepatitis B and C cases. Morbidity is based on reported positive lab results. There is under-reporting of both acute and chronic infections in North Dakota. Morbidity also is based on U.S. Centers for Disease Control and Prevention (CDC) case definitions. Hepatitis C virus infection past or present (chronic hepatitis C) classification is given to those infected with the hepatitis C virus and the numbers do not distinguish between resolved and active infections. Hepatitis B virus infection, chronic classification is given to those infected with the hepatitis B virus and includes both confirmed and probable cases. Case interviews and partner notification are not included. Year 2005 is baseline year for viral hepatitis data due to the implementation of an electronic reporting system and more stringent follow-up. Current data was not de-duplicated prior to 2005.

Women of child bearing age, 14 to 44 years, who are hepatitis B positive, are followed-up to determine if they are pregnant. Pregnant women who are hepatitis B positive are then followed by the perinatal coordinator in the immunization program. The coordinator ensures the hospital has hepatitis B immune globulin (HBIG) for administration to the baby at time of delivery. The coordinator also confirms the baby is given the hepatitis B vaccine series and ensures serology testing is done at completion of the vaccine series to ensure the child is not infected and immune to the hepatitis B virus.

Hepatitis C Testing and Hepatitis A and B Vaccination

There are 11 HIV CTR sites throughout North Dakota that offer hepatitis C screening and counseling and hepatitis B and A vaccinations free-of-charge for those in high risk populations.

Population Profile of North Dakota

Population

North Dakota is a rural state with a population of 672,591, according to the 2010 U. S. Census. There are 356 incorporated communities. Nine cities have populations above 10,000; 15 cities have populations above 2,500. County populations in North Dakota range from 675 to 139,918 people. Four counties, two along the eastern border with Minnesota, account for 49 percent of the state’s population, demonstrating the complexity of population dispersion in North Dakota.

Demographic Composition

The demographic composition describes who is living in North Dakota. The population is broken down by gender, age and race/ethnicity. At the time of the 2010 U.S. Census, the population was split almost evenly between males and females. The median age was 36.2 years. The majority of the population was white (90%), while African Americans and American Indians comprised 1.2 percent and 5.4 percent, respectively.

Table 1 - Demographics of General Population		Number	Percentage
Gender			
Male		337,641	50.2
Female		334,950	49.8
Age			
Median age (years)		36.2	N/A
Race/Ethnicity			
White		605,332	90.0
Black or African American		8,071	1.2
American Indian and Alaska Native		36,320	5.4
Asian		6,726	1.0
Native Hawaiian and Other Pacific Islander		230	0.0
Some other race		3,806	0.6
Two or more races		12,106	1.8

* Due to rounding, totals may not add up to 100%

Social Characteristics

The social characteristics of North Dakota include education, marital status and place of birth. These characteristics describe the social background and interaction of the population of North Dakota.

A majority (88.7%) of the population age 25 and older had graduated from high school at the time of the 2010 U.S. Census. More than half (55%) of the population older than

age 15 was married. Only 2.3 percent of the population was born in a country other than the United States. Of those who were foreign born, 21.6 percent originated from Europe and 29.5 percent originated from Asia.

Table 2 - Social Characteristics of General Population	Number	Percentage
Education of People Age 25 Years and Older (n=408,469)		
High school graduate or higher	426,176	88.7
Bachelor's degree or higher	112,329	27.5
Marital Status of People Age 15 Years and Older (n=522,663)		
Never married	154,708	29.6
Now married, not separated	285,897	54.7
Separated	4,181	0.8
Widowed	35,541	6.8
Divorced	42,336	8.1
Place of Birth		
Native born	657,121	97.7
Foreign born	15,470	2.3
Region of Origin of Foreign Born (n=14,435)		
Europe	3,124	21.6
Asia	4,264	29.5
Africa	2,077	14.4
Oceania	159	1.1
Latin America	1,802	12.5
Northern America	3,009	20.8

* Due to rounding, totals may not add up to 100%

Economic Characteristics

Economic characteristics describe the lifestyle of the population of North Dakota, as well as the ability to access medical care. Economic characteristics include annual household income level and the percentage of the population living below the poverty level.

In 2010, 56.9 percent of the population had an income level of between \$35,000 and \$99,999. The mean earnings per household were \$58,440, and the median household income was \$45,140. More than 12 percent (12.3%) of individuals and 7.4 percent of families were below the poverty level.

Table 3 - Economic Characteristics of General Population	Number	Percentage
Families at Income Level (n=168,636)		
Less than \$10,000	6,317	3.7
\$10,000 to \$14,999	4,903	2.9
\$15,000 to \$24,999	12,301	7.3
\$25,000 to \$34,999	16,468	9.8
\$35,000 to \$49,999	26,416	15.7
\$50,000 to \$74,999	41,705	24.7
\$75,000 to \$99,999	27,819	16.5
\$100,000 to \$149,999	22,404	13.3
\$150,000 to \$199,999	5,327	3.2
\$200,000 or more	4,976	3.0
Total Household Income		
Mean earnings (dollars)	\$58,440	N/A
Median household income (dollars)	\$45,140	N/A
Below Poverty Level		
Individuals	82,729	12.3
Families (n=168,636)	12,479	7.4

* Due to rounding, totals may not add up to 100%

Trends in HIV/AIDS in North Dakota

Cumulative HIV/AIDS Data

HIV/AIDS has been a reportable condition in North Dakota since 1984. The cumulative reported infections include cases newly diagnosed in the state, as well as cases diagnosed elsewhere who moved to North Dakota. As of Dec. 31, 2010, a cumulative total of 505 HIV/AIDS cases have been reported in North Dakota, including 189 AIDS cases and 316 HIV (non-AIDS) cases. Of the cumulative total of HIV/AIDS cases, 227 were known to still be living in North Dakota as of Dec. 31, 2010. Table 4 outlines the cumulative cases and those still living in North Dakota.

Table 4 - Profile of HIV/AIDS Population	Cumulative Cases		Living in N. D.	
	Number	Percentage*	Number	Percentage*
Disease Status at Diagnosis				
HIV	316	63	115	51
AIDS	189	37	112	49
Gender				
Male	418	83	175	77
Female	87	17	52	23
Age Group at Diagnosis				
< 15	25	5	2	1
15 - 24	92	18	11	5
25 - 34	189	37	27	12
35 - 44	128	25	76	33
45 - 54	50	10	73	32
55 - 64	19	4	31	14
≥ 65	2	<1	7	3
Race/Ethnicity				
American Indian	50	10	19	8
Black	63	12	43	19
Hispanic (all races)	18	4	10	4
Asian/Pacific Islander	3	1	2	1
White	370	73	153	67
Multi-race (non-Hispanic)	1	<1	0	0
Risk Factors				
Male to male sexual relations (MSM)	249	49	102	45
Heterosexual relations	118	23	34	15
Injecting drug use (IDU)	22	4	19	8
MSM/IDU	38	8	9	4
Perinatal transmission	33	7	0	0
Other	13	3	2	1
No risk identified	32	6	61	27
Total	505		227	

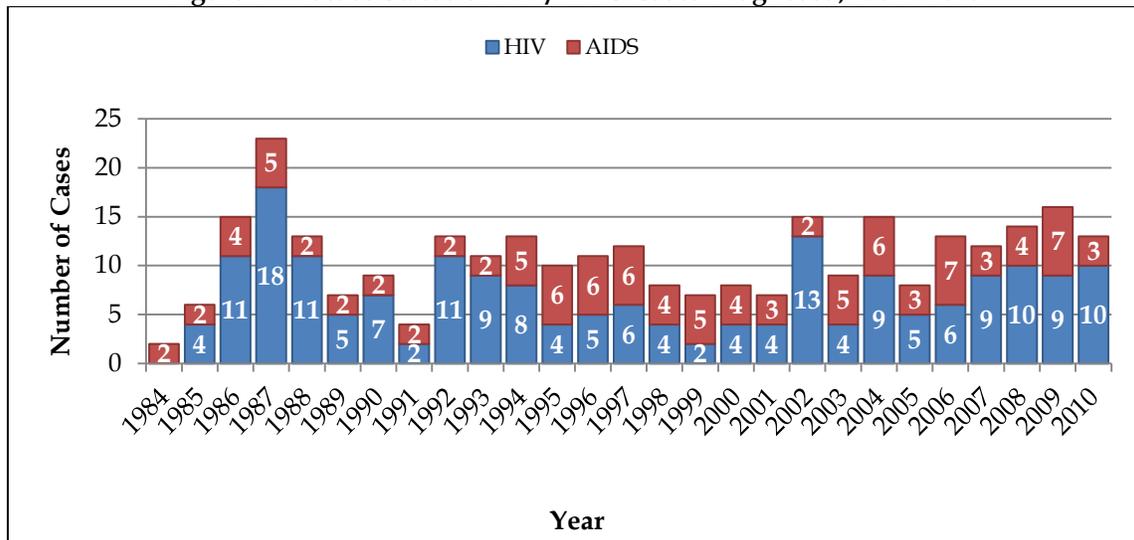
* Due to rounding, totals may not add up to 100%

Incidence of HIV/AIDS 1984 - 2010

The following figures describe HIV/AIDS cases that were diagnosed in North Dakota, and exclude cases that were diagnosed elsewhere and moved to the state.

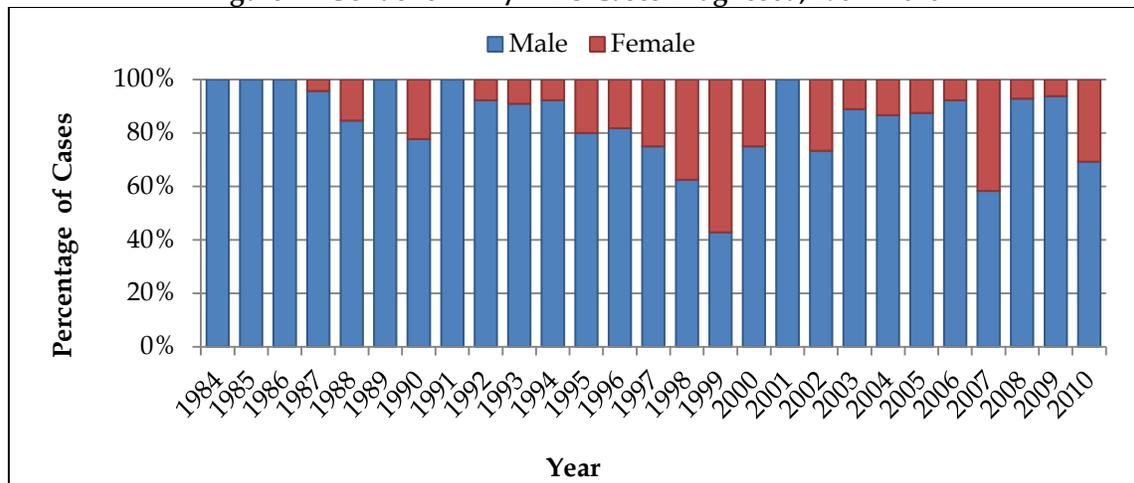
Due to North Dakota's low incidence of HIV/AIDS, trends in diagnosis and reporting are difficult to interpret. On average, there are 10 cases per year that are diagnosed in North Dakota. Thirty-five percent of the cases diagnosed in North Dakota since 1984 were classified as AIDS at the time of diagnosis. In total, 294 HIV/AIDS cases were diagnosed in the state between 1984 and 2010.

Figure 1- Disease Status of HIV/AIDS Cases Diagnosed, 1984 - 2010



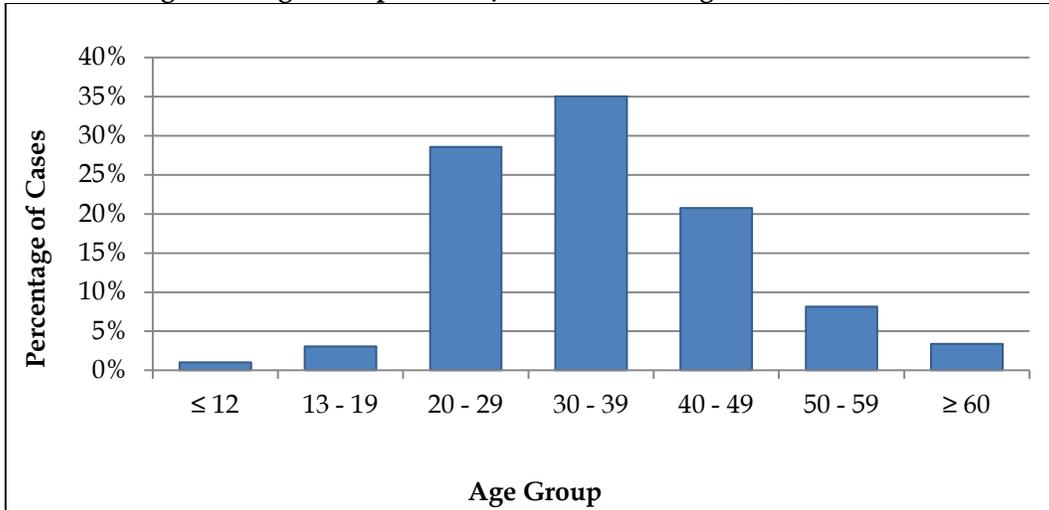
There is a clear gender disparity in the diagnosis of HIV/AIDS. Eighty-five percent of all cases diagnosed in North Dakota since 1984 are male. However, the proportion of women diagnosed with HIV/AIDS has been increasing in the last 15 years.

Figure 2 - Gender of HIV/AIDS Cases Diagnosed, 1984 - 2010



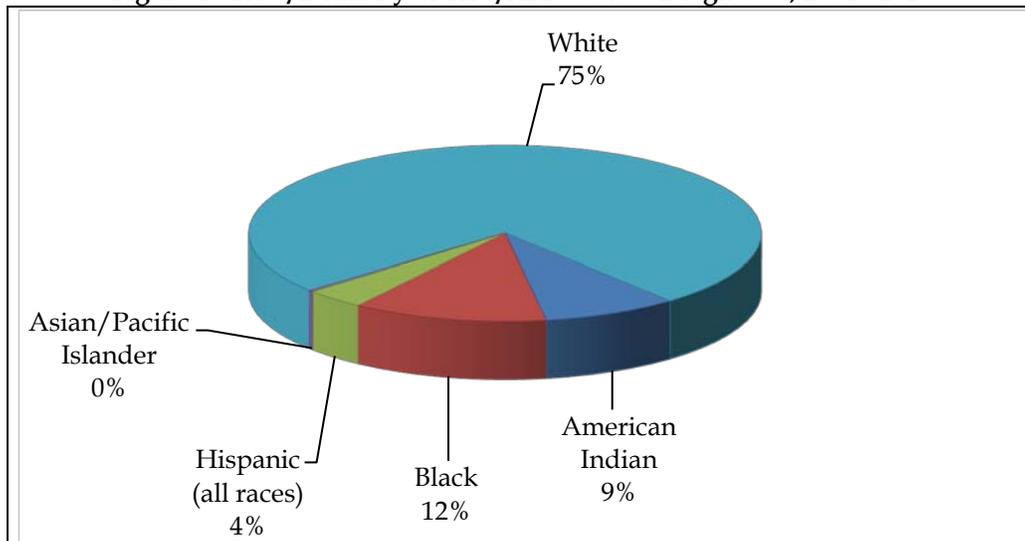
The predominant ages affected by HIV/AIDS were 30 to 39. Eighty-five percent of all HIV/AIDS cases diagnosed in the state are between the ages of 20 and 49.

Figure 3 - Age Groups of HIV/AIDS Cases Diagnosed, 1984 - 2010



Although they make up less than one percent of the population of North Dakota, blacks represent 12 percent of all HIV/AIDS cases diagnosed in the state. A similar disparity is seen with American Indians, who make up 5.3 percent of the state population, and account for 9 percent of all HIV/AIDS diagnoses in the state.

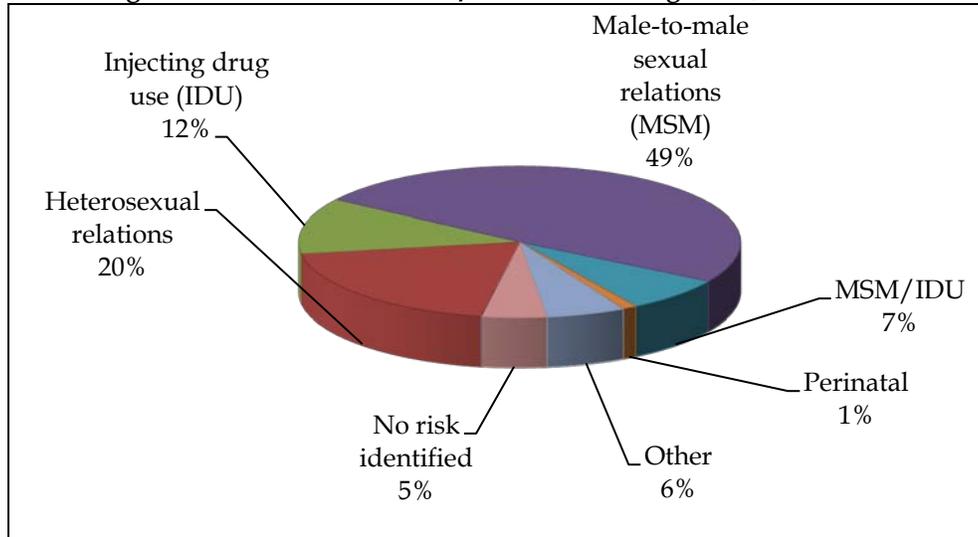
Figure 4 - Race/Ethnicity of HIV/AIDS Cases Diagnosed, 1984 - 2010



Male-to-male sexual relations remain the most frequently reported risk factor associated with HIV/AIDS, with heterosexual relations in a distant second place. Nearly half of all HIV/AIDS cases diagnosed in North Dakota reported having male-to-male sexual relations. In the last 15 years, however, reports of heterosexual relations as a risk factor have increased in conjunction with the increase in female HIV/AIDS diagnoses.

Injecting drug use remains a major risk factor associated with HIV/ AIDS in North Dakota.

Figure 5 - Risk Factors of HIV/AIDS Cases Diagnosed, 1984 - 2010

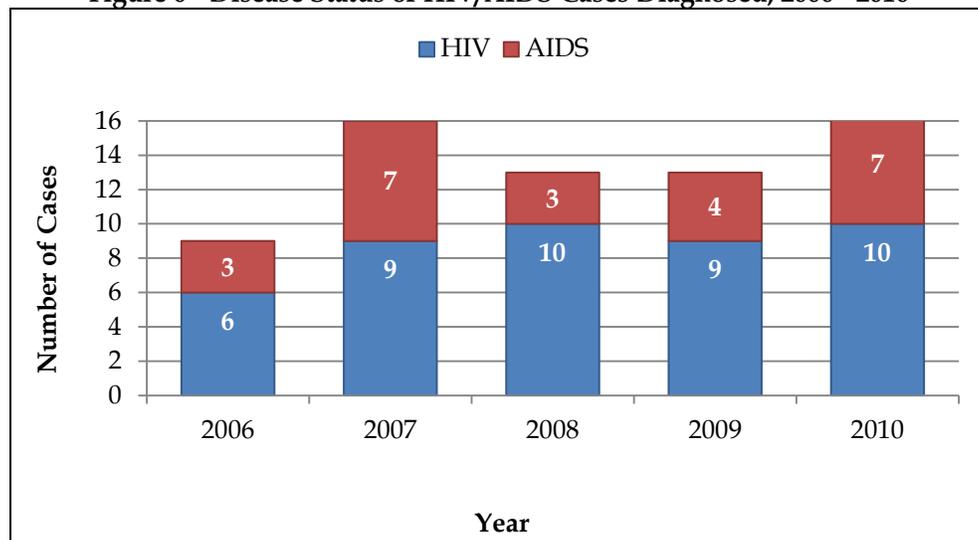


Incidence of HIV/AIDS, 2006 - 2010

The following figures describe HIV/ AIDS cases diagnosed in North Dakota between 2006 and 2010. These figures are intended to present an in-depth look at HIV/ AIDS trends during this time period.

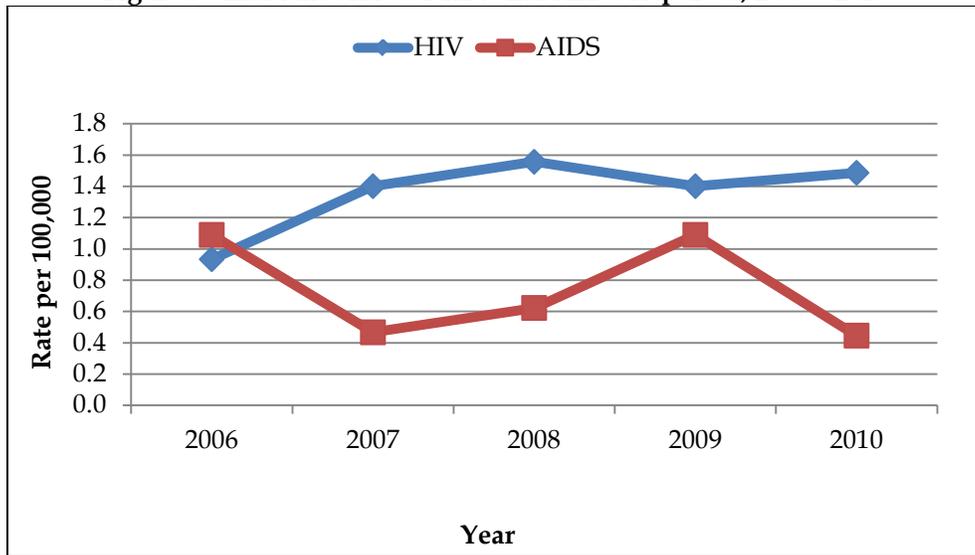
Between 2006 and 2010, 68 cases of HIV/ AIDS were diagnosed in North Dakota. Of those cases, 35 percent were classified as AIDS at diagnosis.

Figure 6 - Disease Status of HIV/AIDS Cases Diagnosed, 2006 - 2010



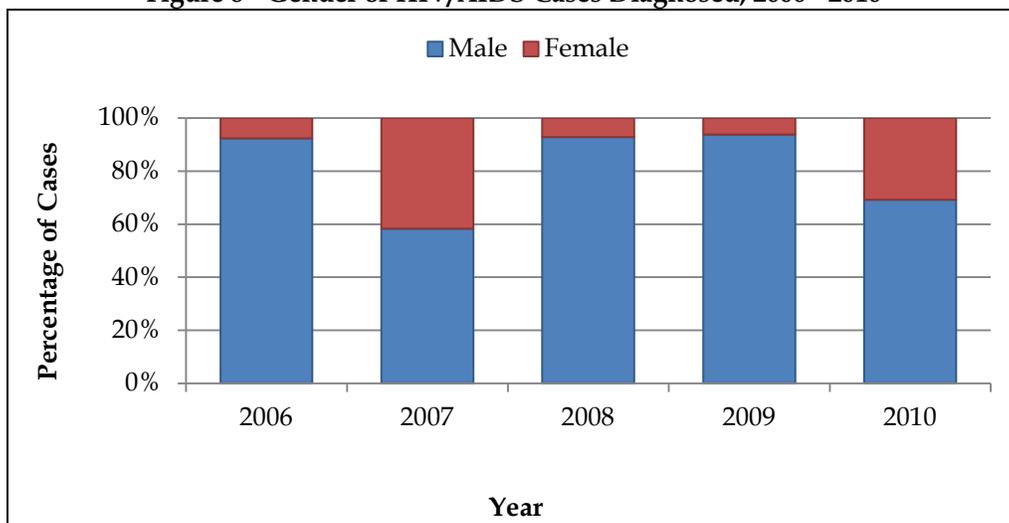
There was an average incidence rate of 2.1 per 100,000 for HIV/AIDS between 2006 and 2010. The incidence rate of HIV (non-AIDS) has been higher than that of AIDS over the last five years. The average incidence rate of HIV over this time period was 1.4 per 100,000, while for AIDS it was 0.7 per 100,000.

Figure 7 - Incidence Rate of HIV and AIDS Reported, 2006 - 2010



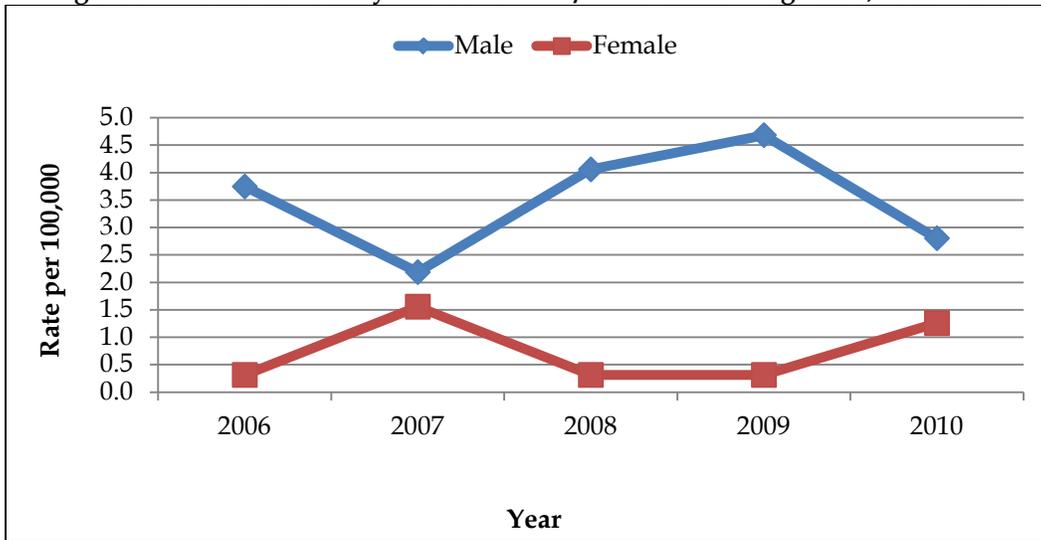
The majority (82%) of HIV/AIDS cases diagnosed between 2006 and 2010 are male.

Figure 8 - Gender of HIV/AIDS Cases Diagnosed, 2006 - 2010



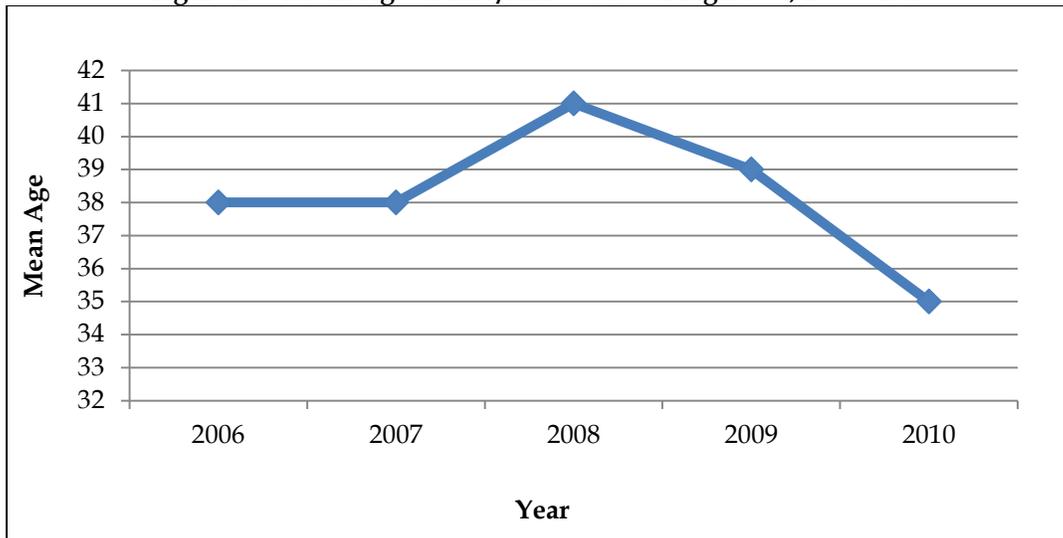
An increase in HIV/AIDS among women can be seen in the incidence rates from 2006 to 2010. The incidence rate of HIV/AIDS in females was 1.3 per 100,000 in 2010, whereas it was 0.3 per 100,000 in 2006.

Figure 9 - Incidence Rate by Gender of HIV/AIDS Cases Diagnosed, 2006 - 2010



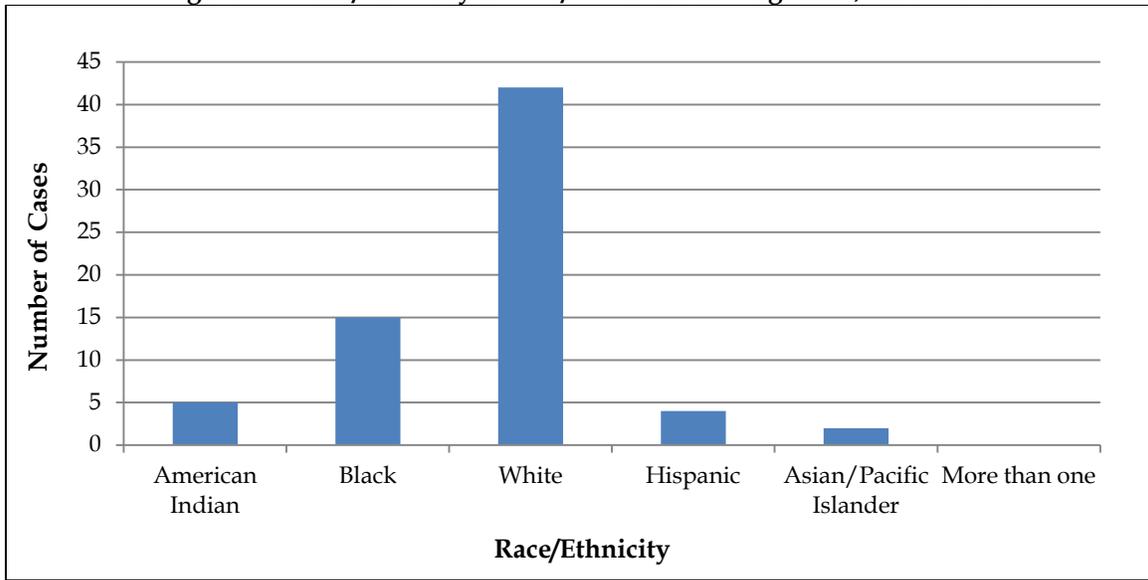
The mean age of individuals diagnosed with HIV/ AIDS between the years of 2006 and 2010 is 38. This is consistent with the mean age of HIV/ AIDS cases diagnosed in North Dakota since 1984, which is 36.

Figure 10 - Mean Age of HIV/AIDS Cases Diagnosed, 2006 - 2010



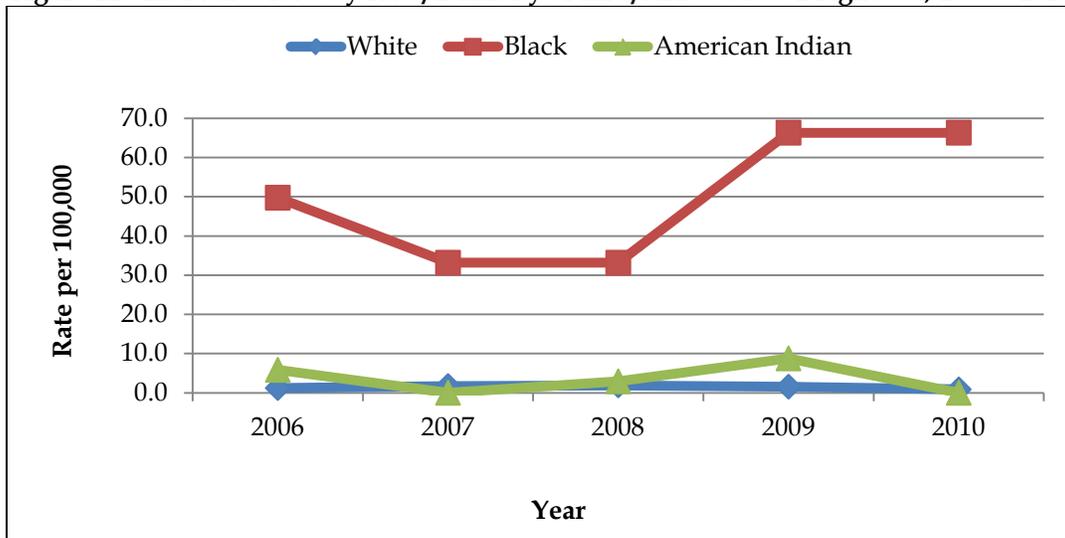
As noted with historical data, minorities are affected disproportionately by HIV/ AIDS. This also is apparent by looking at five year incidence data. Between 2006 and 2010, 15 percent of HIV/ AIDS cases diagnosed in North Dakota identified themselves as black.

Figure 11 - Race/Ethnicity of HIV/AIDS Cases Diagnosed, 2006 - 2010



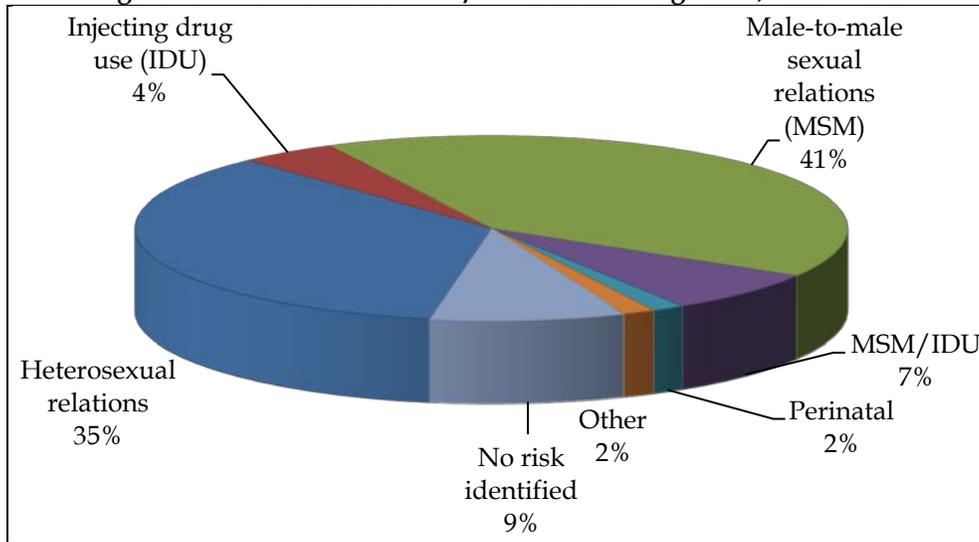
The HIV/AIDS incidence rate for blacks in North Dakota also is significantly higher than that of whites and American Indians. The average HIV/AIDS incidence rate from 2006 to 2010 for blacks was 49.8 per 100,000, whereas it was 1.4 per 100,000 and 3.5 per 100,000 for whites and American Indians, respectively.

Figure 12 - Incidence Rate by Race/Ethnicity of HIV/AIDS Cases Diagnosed, 2006 - 2010



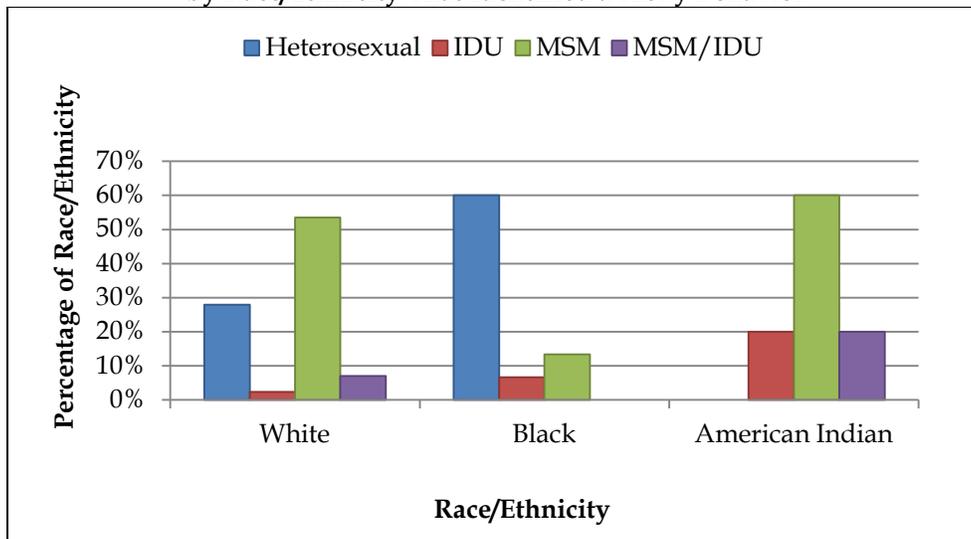
While male-to-male sexual relations remained the most frequently reported risk factor for HIV/AIDS between 2006 and 2010, heterosexual relations was also a major risk factor identified. Thirty-five percent of HIV/AIDS cases diagnosed between 2006 and 2010 reported having heterosexual relations. Only 20 percent of the cumulative HIV/AIDS cases reported having heterosexual relations.

Figure 13 - Risk Factors of HIV/AIDS Cases Diagnosed, 2006 - 2010



The race/ethnicity groups reported different risky behaviors at diagnosis of HIV/AIDS between 2006 and 2010. A greater proportion of newly diagnosed white and American Indian HIV/AIDS clients reported having male-to-male sexual relations, whereas a greater proportion of newly diagnosed black HIV/AIDS clients reported having heterosexual relations than any other race.

Figure 14 - Percentage of HIV/AIDS Cases Diagnosed, 2006 - 2010, by Race/Ethnicity That Identified a Risky Behavior

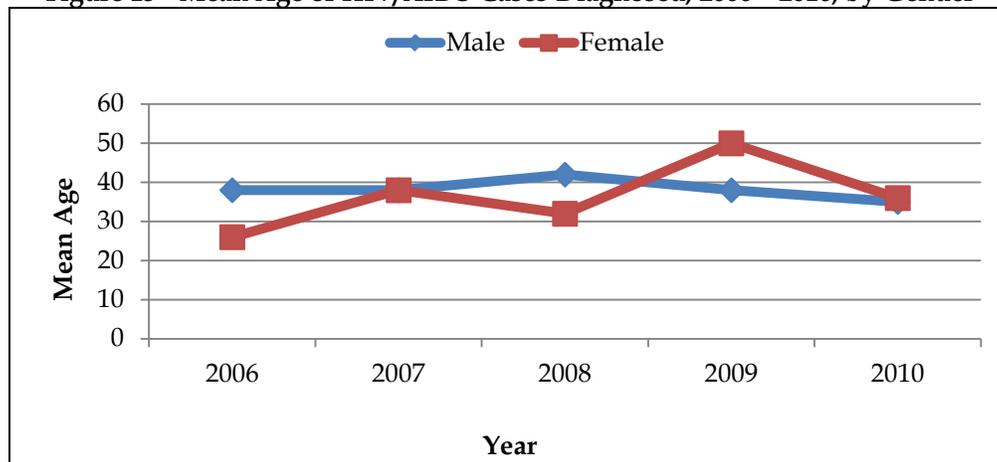


HIV/AIDS and Gender, 2006 - 2010

Gender plays an important role in the prevention of HIV/AIDS. Generally, males have been affected the most by the epidemic because they comprise the majority of HIV/AIDS cases in the United States. However, in recent years, HIV/AIDS among females has been increasing. The following figures analyze the effect of gender on HIV/AIDS in North Dakota.

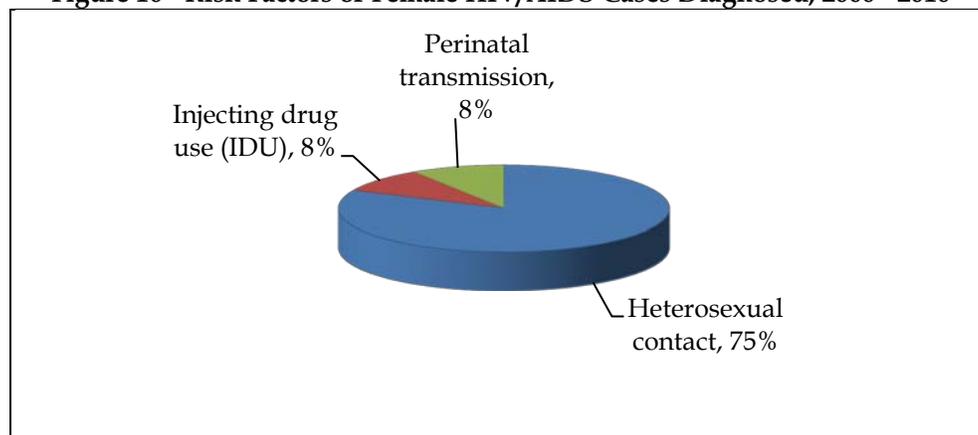
Females diagnosed with HIV/AIDS in North Dakota between 2006 and 2010 were, on average, younger than their male counterparts at the time of diagnosis. Females were diagnosed with HIV/AIDS at an average age of 36, which is two years younger than the average age at which males were diagnosed.

Figure 15 - Mean Age of HIV/AIDS Cases Diagnosed, 2006 - 2010, by Gender



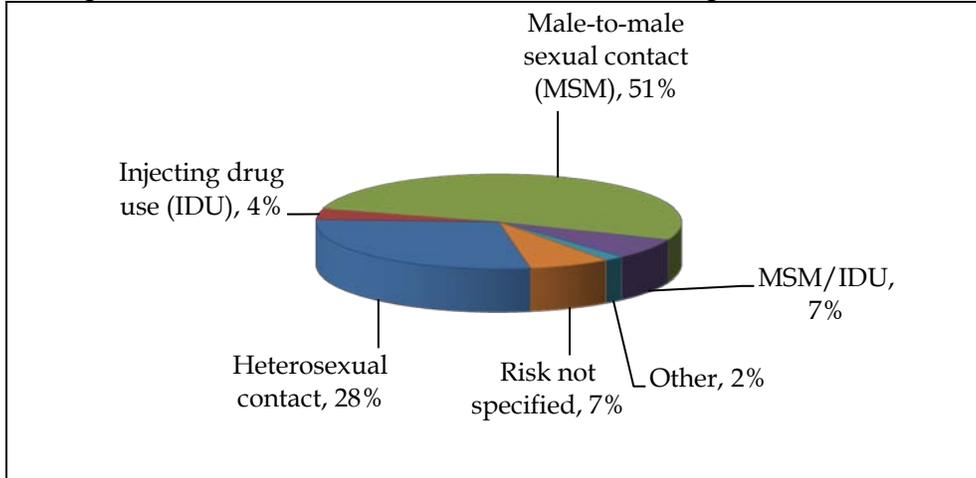
The risk factors reported by males and females at the time of their HIV/AIDS diagnosis varied greatly from 2006 to 2010. As was expected, a higher proportion of females than males reported having heterosexual relations. Unexpectedly, a higher proportion of females than males reported injecting drug use as a risk factor.

Figure 16 - Risk Factors of Female HIV/AIDS Cases Diagnosed, 2006 - 2010



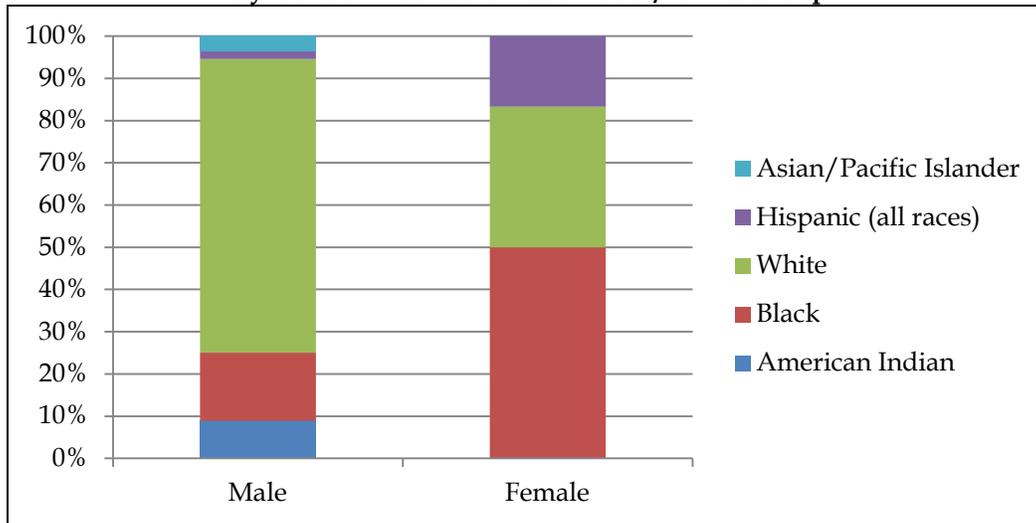
Between 2006 and 2010, a higher proportion of males reported having heterosexual relations, and a lower proportion reported injecting drug use than the cumulative HIV/ AIDS cases.

Figure 17 - Risk Factors of Male HIV/AIDS Cases Diagnosed, 2006 - 2010



A higher proportion of females than males diagnosed with HIV/ AIDS between 2006 and 2010 were black. Also, no females diagnosed during this time period were American Indian.

Figure 18 - Percentage of HIV/AIDS Cases Diagnosed, 2006 - 2010, by Gender That Identified a Racial/Ethnic Group

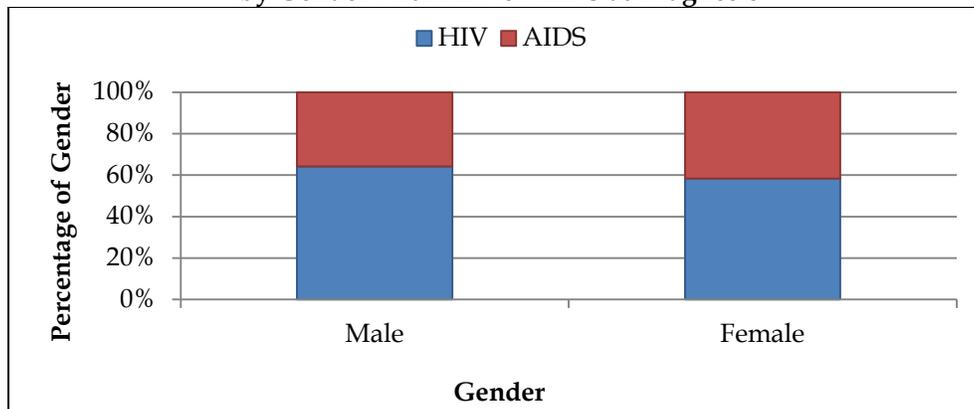


Factors that Affect Disease Status at HIV/AIDS Diagnosis

Many factors may influence whether an individual will be classified as having HIV (non-AIDS) or AIDS at the initial HIV/AIDS diagnosis. Limited access to medical care and social stigma are examples of possible influences on disease status at diagnosis. The following figures address some of these issues by analyzing HIV/AIDS cases diagnosed in North Dakota between 2006 and 2010.

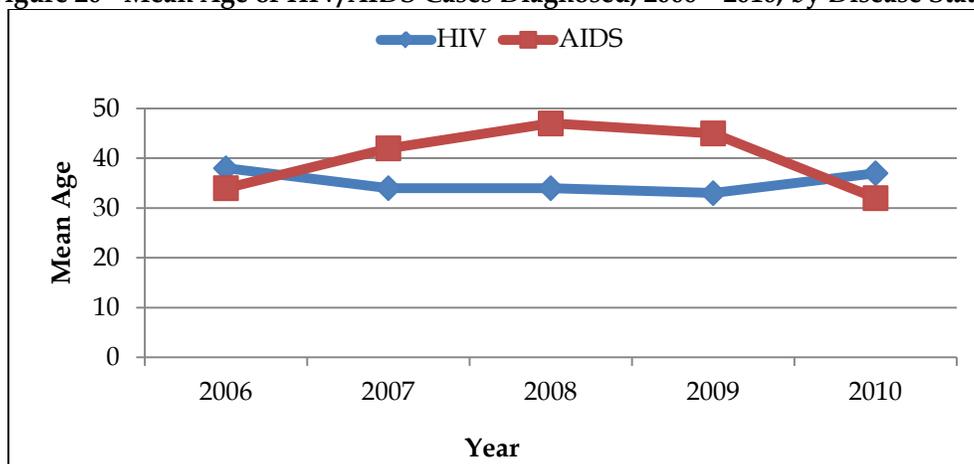
Gender is a factor that may affect disease status at diagnosis of HIV/AIDS. Between 2006 and 2010, a slightly higher proportion of females were classified as having AIDS at their initial HIV/AIDS diagnosis.

Figure 19 - Percentage of HIV/AIDS Cases Diagnosed, 2006 - 2010, by Gender With HIV or AIDS at Diagnosis



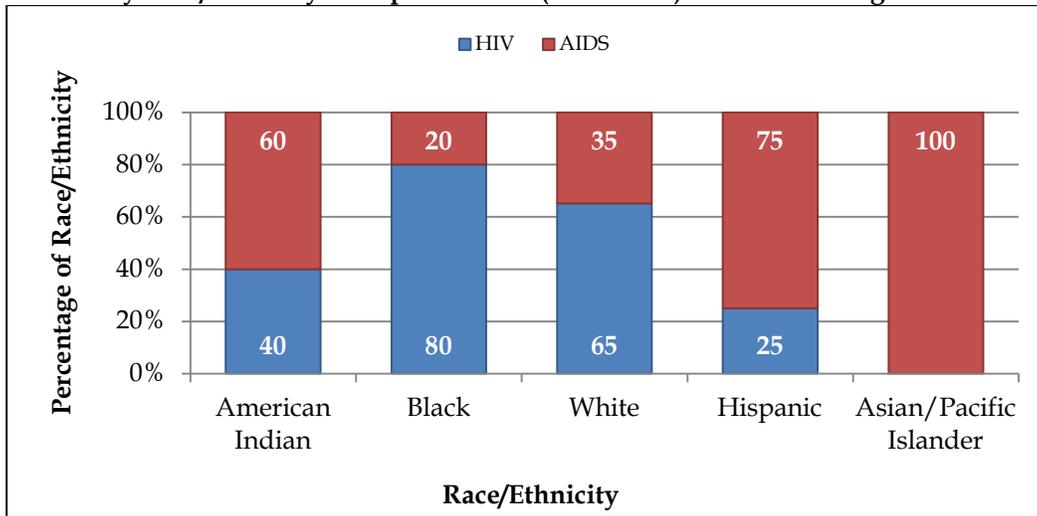
On average, individuals who were diagnosed with AIDS at their initial HIV/AIDS diagnosis between 2006 and 2010 were older than those diagnosed with HIV (non-AIDS). The average age of HIV/AIDS clients with AIDS at their initial diagnosis was five years older than those with HIV (non-AIDS).

Figure 20 - Mean Age of HIV/AIDS Cases Diagnosed, 2006 - 2010, by Disease Status



Sixty percent of American Indians and 75 percent of Hispanics diagnosed with HIV/AIDS in North Dakota from 2006 to 2010 were diagnosed with AIDS. Of black and white HIV/AIDS clients diagnosed during this same time period, 20 percent and 35 percent, respectively, were diagnosed with AIDS. There was one new diagnosis of HIV/AIDS among Asians/Pacific Islanders that was classified as AIDS.

Figure 21 - Percentage of HIV/AIDS Cases Diagnosed, 2006 - 2010, by Race/Ethnicity Group With HIV (non-AIDS) or AIDS at Diagnosis

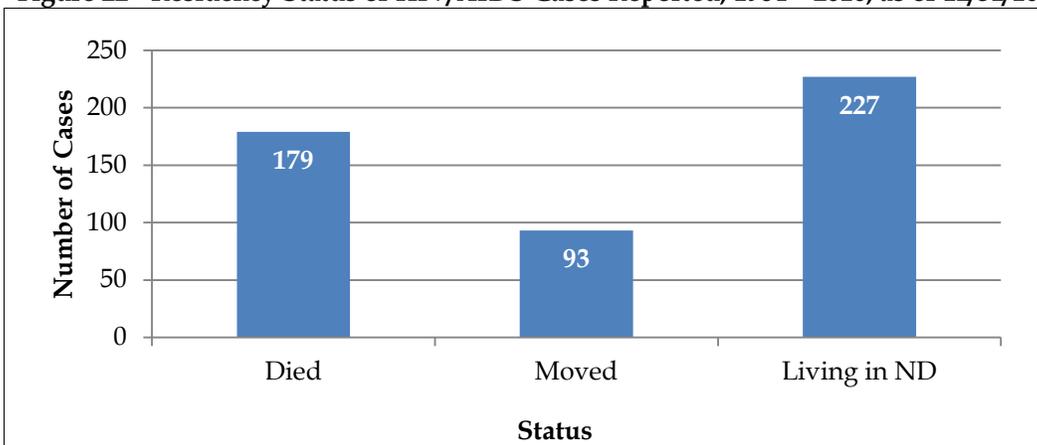


Vital Status of HIV/AIDS Cases

Of the 505 HIV/AIDS cases reported since 1984, only 227 were known to be living in North Dakota as of Dec. 31, 2010. Of the cases not currently living in the state, some have died and some have moved. The following figures concentrate on the characteristics of HIV/AIDS mortality in North Dakota.

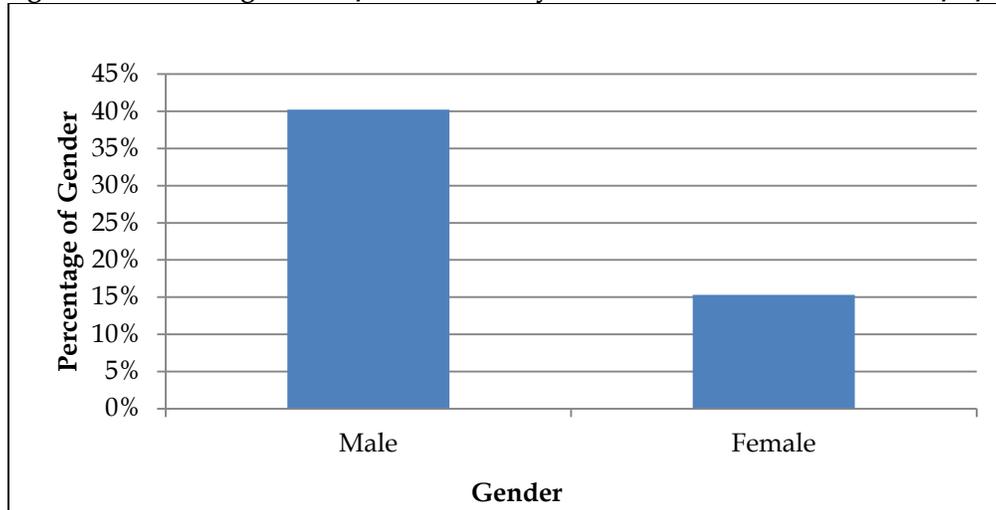
Of the 505 HIV/AIDS cases reported in North Dakota since 1984, 93 have moved out of the state and 179 have died.

Figure 22 - Residency Status of HIV/AIDS Cases Reported, 1984 - 2010, as of 12/31/10



Forty percent of all male HIV/AIDS cases reported in North Dakota have died, while only 15 percent of all female cases have died.

Figure 23 - Percentage of HIV/AIDS Cases by Gender That Have Died as of 12/31/10



HIV Counseling and Testing

There are 31 HIV counseling, testing and referral (CTR) sites throughout North Dakota that provide free services to at-risk individuals. These sites include local public health units, community action facilities and college health facilities. The CTR sites provide not only HIV testing, but also risk reduction counseling to those being tested. Referrals for specialized services also may be provided at the CTR sites. The following data were collected from state CTR sites and other testing facilities that submitted *HIV Counseling and Testing Report* forms.

In 2010, 3,721 tests for HIV were performed at CTR sites in North Dakota, which is a 26 percent increase from 2009. Of those tested, there were 13 positive tests for a positivity rate of 0.5 percent. Most of the HIV testing during 2009 was performed at family planning facilities (51%). Eighteen percent of tests were performed at colleges and universities and 32 percent were performed in other types of facilities, such as community action. Males made up 50 percent of individuals tested for HIV at CTR sites in North Dakota during 2010. The majority of individuals tested at state CTR sites were white and between the ages of 19 and 34.

	Total Tests		Positive Tests	
	Number	Percentage ¹	Number	Percentage ^{1,2}
Gender				
Male	1,852	50	9	69
Female	1,844	50	4	31
Race/Ethnicity				
White	2,936	79	9	69
Black	205	6	2	15
Asian/Pacific Islander	68	2	2	15
American Indian	385	10	0	0
Multiple races	52	1	0	0
Declined	26	1	0	0
Age Group				
≤ 13	4	<1	0	0
13 - 18	238	6	0	0
19 - 24	1,177	46	6	46
25 - 34	1,202	32	3	23
35 - 44	336	9	2	15
≥ 45	239	6	2	15
Total	3,696		13	

¹Due to rounding totals may not add up to 100%

²In this case, percentage refers to percentage of total positive tests

**Due to missing case information, sum of columns may not equal Total

The most common risk behaviors reported by individuals receiving HIV testing at state CTR sites during 2010 were sex without a condom (42%), sex with a male (26%), sex with a female (20%) and sex while using drugs or alcohol (4%).

Table 6 - Risk Factors of Individuals Tested for HIV in North Dakota during 2010	Responses	
	Number	Percentage ¹
Risk Factors		
Sex with male	1,313	26
Sex with female	977	20
Sex without condom	2,076	42
Sex with an IDU	161	3
Sex with HIV-positive	18	<1
IDU	83	<1
Sex with anonymous partner	96	<1
Sex while using drugs/alcohol	221	4
No Indicated Risk	35	<1
Total	4,980	

¹ Due to rounding totals may not add up to 100%.

North Dakota CARES Program

North Dakota CARES (Comprehensive HIV/AIDS Resources and Emergency Services) is a program that assists low-income North Dakota residents living with HIV or AIDS to access confidential health and supportive services. In order to be a part of the CARES program, one must be a resident of North Dakota, have a gross income of less than 300 percent of the Federal Poverty Level (FPL) and have proof of HIV infection.

Services available for clients in the North Dakota CARES Program include case management, drug assistance, outpatient services, supportive services and emergency assistance. This program is funded by a federal grant, and services available are subject to change because of changes in funding.

As of December 31, 2010, the North Dakota CARES Program serves 101 (45%) of the 227 people living with HIV/AIDS in North Dakota. The majority of clients are male (74%), which can be compared with the 77 percent of males living in North Dakota with HIV/AIDS. The highest risk factors for clients include 38 percent heterosexual contact and 42 percent MSM. Following behind was injecting drug use with 7 percent MSM/IDU, IDU with 6 percent, perinatal transmission with 1 percent and 6 percent were unknown or unidentified. Fifty-one percent of the clients have been diagnosed with AIDS, while 49 percent have not yet met the criteria for AIDS diagnosis. Fifty-one percent of the clients fall between the ages of 25 and 44 and 45 percent between 45 and 64.

Sexually Transmitted Diseases Other Than HIV/AIDS

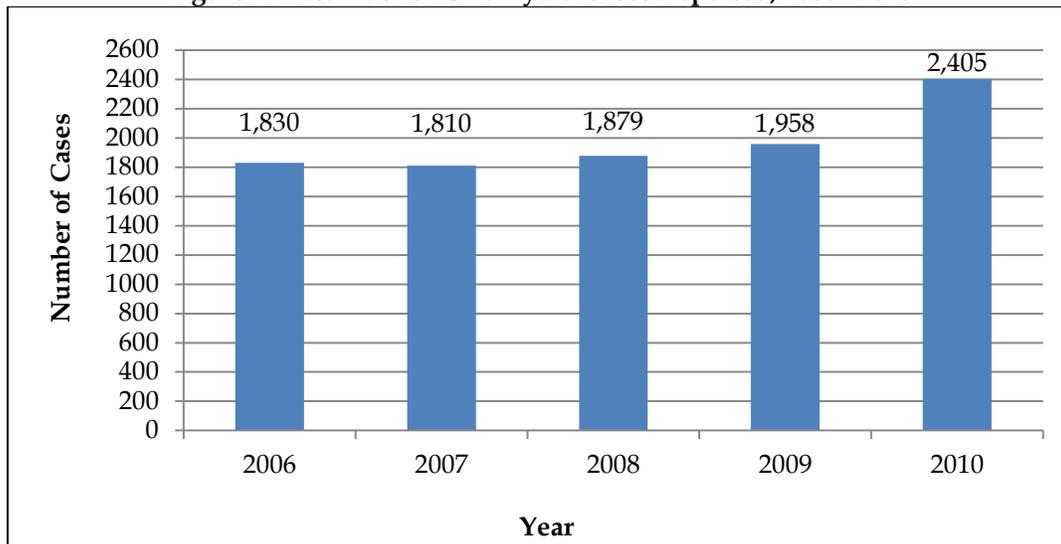
Surveillance of sexually transmitted diseases (STDs) other than HIV/AIDS is an important part of HIV/AIDS prevention. Individuals with STDs, such as chlamydia, gonorrhea and syphilis are two to five times more likely to contract HIV from an infected individual than those without an STD. Also, an HIV-infected individual with another STD is more likely to transmit HIV to a sex partner than an individual with only HIV.

Chlamydia

Infections caused by the bacterium *Chlamydia trachomatis* occur in more than one million Americans every year. If left untreated, chlamydia can cause pelvic inflammatory disease and sterility in women.

The average annual number of chlamydia cases reported in North Dakota was 1,976 between 2006 and 2010. In 2010, the incidence rate of chlamydia in North Dakota was 374.6 per 100,000. This is lower than the national average of 409.2 per 100,000 reported in 2009 when North Dakota was ranked the 40th highest rate of all 50 states.

Figure 24 - Number of Chlamydia Cases Reported, 2006 - 2010



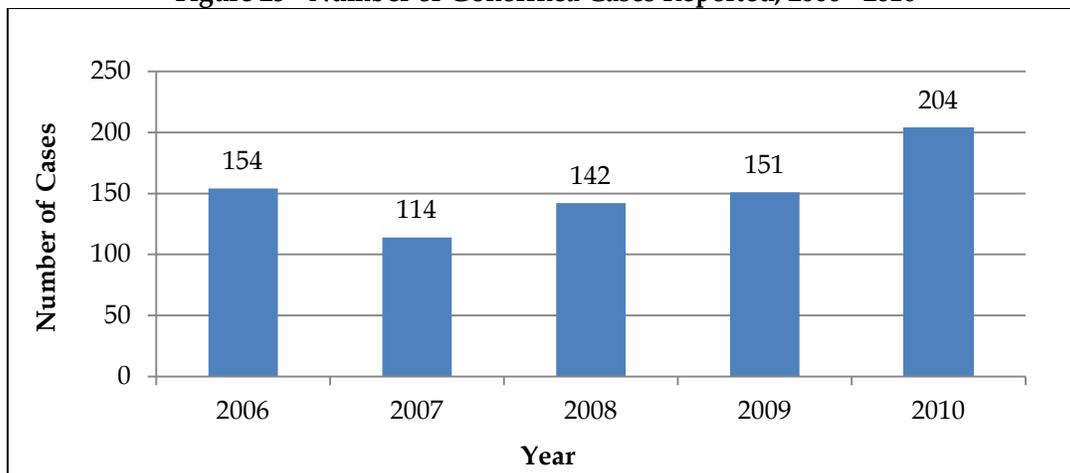
Gonorrhea

Gonorrhea is caused by the bacterium *Neisseria gonorrhoeae*, and accounts for an estimated 700,000 new infections per year in the United States. Complications of gonorrhea are similar to that of chlamydia.

There was an average of 153 cases of gonorrhea per year reported in North Dakota between 2006 and 2010. In 2010, the incidence rate was 31.8 per 100,000. This is lower

than the national average of 99.1 per 100,000 reported in 2009 when North Dakota was ranked the 43rd highest rate of all 50 states.

Figure 25 - Number of Gonorrhea Cases Reported, 2006 - 2010



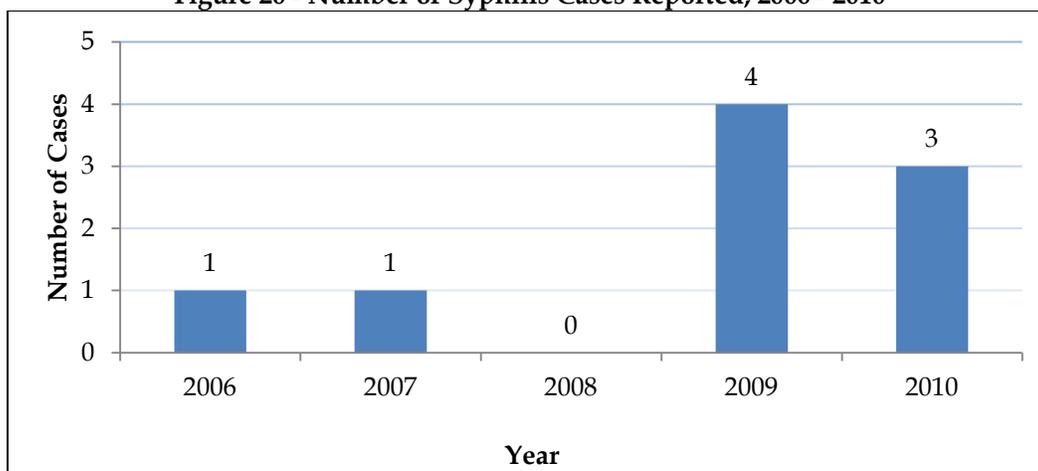
Syphilis

Syphilis, also known as the great imitator because of its indistinct signs and symptoms, is caused by the bacterium *Treponema pallidum*. In 2008, over 46,000 Americans reported having any stage of syphilis. If left untreated, syphilis can cause complications that range in severity from a rash to death.

Between 2006 and 2010, nine cases of syphilis were reported in North Dakota. In 2009, North Dakota's primary and secondary syphilis incidence rate was ranked 41st in the United States with 0.6 per 100,000.

Figure 26

Figure 26 - Number of Syphilis Cases Reported, 2006 - 2010



For both chlamydia and gonorrhea, more females than males were reported to have these infections in 2010. The majority of chlamydia and gonorrhea cases were reported

in people age 15 to 29. As with HIV/AIDS, there is a clear racial disparity with chlamydia and gonorrhea. Blacks have the highest rates of these diseases, with 2,757.2 per 100,000 for chlamydia and 485.1 per 100,000 for gonorrhea.

Table 7 - Chlamydia and Gonorrhea Cases Reported in 2010	Chlamydia	Gonorrhea
Number by Gender		
Male	823	62
Female	1,577	88
Number by Age Group		
10-14	15	2
15-19	625	45
20-24	1,151	85
25-29	398	32
30-34	129	21
35-39	50	11
40-44	17	4
45-54	8	2
55-64	5	2
>64	0	0
Rate by Race/Ethnicity		
Black	2,757.2	485.1
American Indian	1,254.4	229.8
Hispanic	475.2	64.2
White	142.8	10.3
Asian	166.3	55.5
Total	2,405.0	204.0

* Due to rounding, totals may not add up to 100%

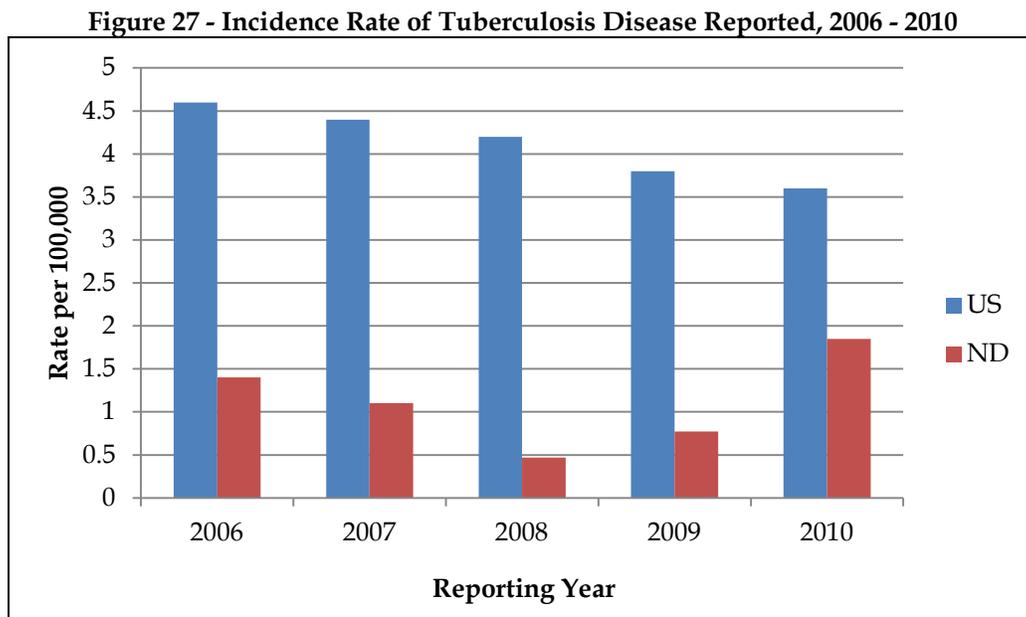
**Due to missing case information, sum of columns may not equal Total

Tuberculosis

Tuberculosis (TB) is an infection caused by a group of bacteria called the *Mycobacterium tuberculosis* complex. TB can infect many parts of the human body, but it is only infectious when the bacteria are aerosolized, as in cases of disease in the lungs, larynx or mouth. Without proper treatment, TB can be a deadly disease. The mortality rate is increased in people with HIV infection. An HIV-infected individual is 20 to 37 times more likely to develop TB disease than an HIV-negative one because of the virus's ability to weaken the immune system. Also, TB disease causes HIV to progress to AIDS more quickly than HIV-positives without TB.

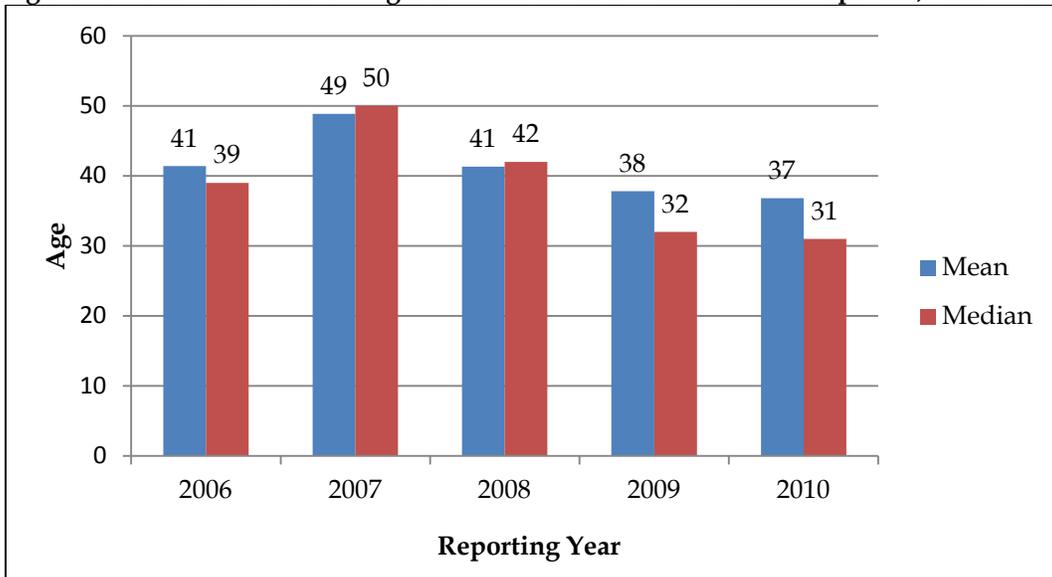
HIV and TB co-infection is a worldwide problem. In 2009, there were an estimated 1.1 million HIV-positive TB patients worldwide. It is estimated that 80 percent of these co-infected people live in sub-Saharan Africa. Of those HIV-infected individuals, one-third or more will develop TB disease. While America may comprise only four percent of the global total of HIV-TB co-infected individuals, it is still a serious public health problem. The following figures describe the epidemiology of TB in North Dakota from 2006 to 2010.

Between 2006 and 2010, there were 37 cases of TB disease reported in North Dakota. The number of annual TB cases ranged from three to twelve, resulting in incidence rates between 0.5 and 1.8 per 100,000. This is well below the national average of 3.6 to 4.6 per 100,000 during the same time period.



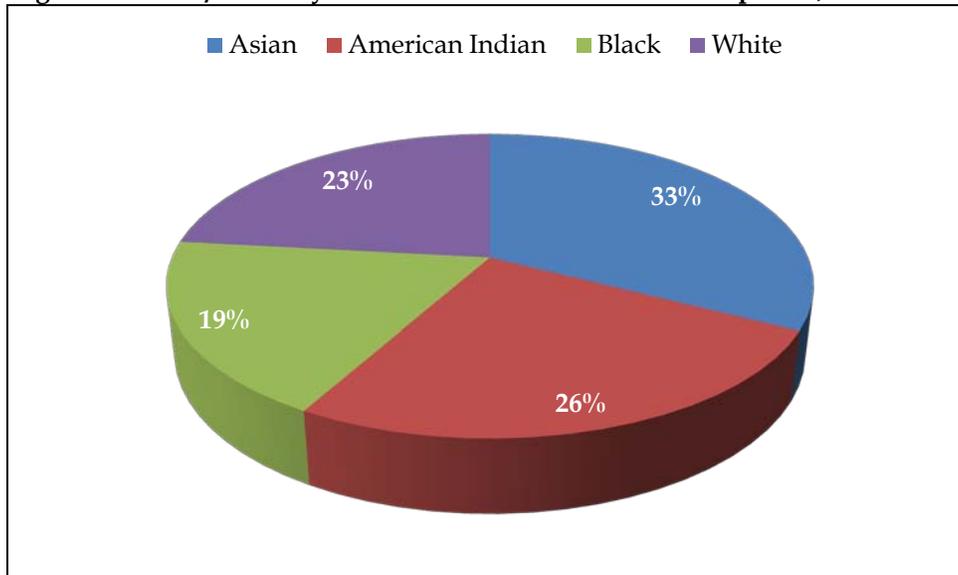
The mean and median ages of TB disease cases remained consistent between 2006 and 2010. The overall mean and median ages for this time period were 41 and 39.

Figure 28 - Mean and Median Ages of Tuberculosis Disease Cases Reported, 2006 - 2010



There is a distinct racial disparity among cases of TB disease, with the majority of them being of a racial or ethnic minority. From 2006 to 2010, 23 percent of the cases were white, while the other 77 percent were American Indians, Asian and black.

Figure 29 - Race/Ethnicity of Tuberculosis Disease Cases Reported, 2006 - 2010



Viral Hepatitis

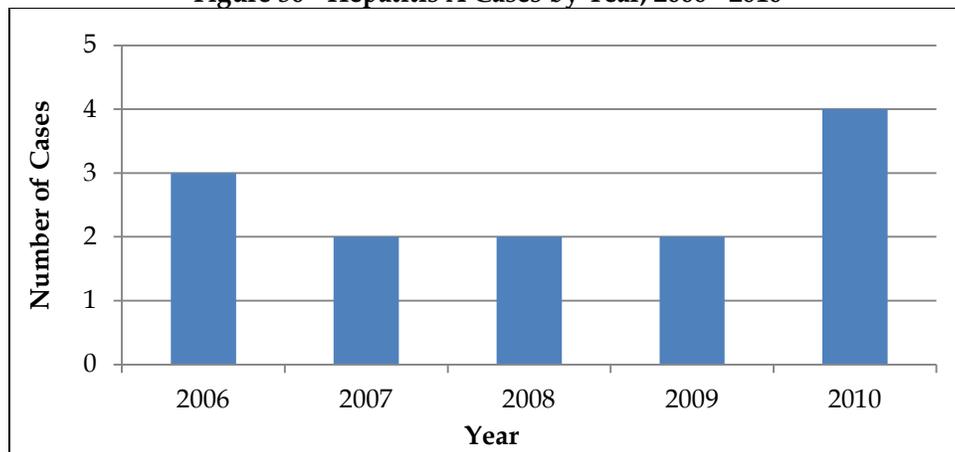
Hepatitis is the general term that means “inflammation of the liver.” Many factors can cause hepatitis, including toxins, drugs, viruses and parasites, and other factors. Six viruses have been identified to cause viral hepatitis: hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV), hepatitis E virus (HEV) and hepatitis G virus (HGV). In the United States and in North Dakota, HAV, HBV and HCV are the most common types of viral hepatitis.

Hepatitis A

Hepatitis A is a liver disease caused by HAV. HAV is spread through contact with objects, food or drinks contaminated by the feces of an infected person. Those at highest risk for developing hepatitis A include people with travel to or who live in countries where hepatitis A is common, men who have sex with men, people who use illegal drugs, people who live with someone who has hepatitis A, and those who have sexual contact with someone who has hepatitis A. Some people who have hepatitis A do not have symptoms. Possible symptoms, usually appearing two to six weeks after exposure and lasting two to six months, include: fever, fatigue, loss of appetite, nausea, vomiting, dark urine and jaundice. Rates of hepatitis A in the United States are currently at the lowest they have been in 40 years. The hepatitis A vaccine was introduced in 1995, and currently all children are routinely recommended to be vaccinated.

In 2010, North Dakota had four cases of acute hepatitis A, an incidence of 0.62 per 100,000 (Figure 30). The most recent national hepatitis surveillance data were published in 2008. In 2008, the incidence of hepatitis A in the United States was 0.9 per 100,000 and 2,585 cases of acute hepatitis A were reported in the United States. An estimated 22,000 new infections, including those that are asymptomatic and not reported, occurred in 2008 in the United States. Since the introduction of hepatitis A vaccinations, cyclical epidemics of this disease, once common in North Dakota, haven’t been reported.

Figure 30 - Hepatitis A Cases by Year, 2006 - 2010

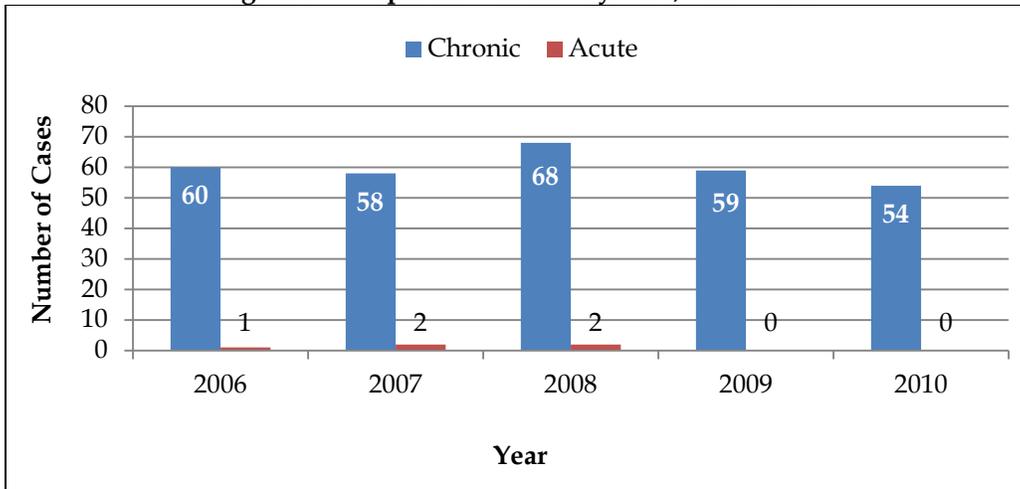


Hepatitis B

Hepatitis B is a liver disease caused by HBV. HBV can be spread through blood, semen or other body fluids infected with HBV. Those at a greater risk for becoming infected with hepatitis B include sexual contacts of infected individuals, men who have sex with men, household contacts of chronically infected people, injection drug users, infants born to infected mothers and people who have contact with infected blood. Hepatitis B can be either acute or chronic. Acute hepatitis B infections are short-term illnesses that occur within the first six months of exposure to HBV. Acute infection can, but does not always, lead to chronic infection. Chronic hepatitis B is a long-term illness that occurs when HBV remains in a person's body. Hepatitis B infections can lead to chronic disease and can cause serious liver damage including cirrhosis of the liver or liver cancer. A majority of those infected, especially older children and adults with HBV, do not experience symptoms. Acute hepatitis B symptoms, appearing usually three months after exposure and lasting a few weeks to six months, include fever, fatigue, loss of appetite, nausea, vomiting, dark urine and jaundice. Those with chronic hepatitis B may experience similar symptoms to acute hepatitis B, but most individuals will remain symptom free for as long as 20 or 30 years. Between 800,000 and 1.4 million people in the United States have chronic hepatitis B infection. An estimated 5,000 to 8,000 people become chronically infected each year in the United States. Since the introduction of the hepatitis B vaccine, there has been a dramatic decrease in new hepatitis B infections in the United States, with 208,000 in 1980 and 38,000 in 2008 (2008 is most current year of published national viral hepatitis surveillance data). In North Dakota, an average of 63 chronic hepatitis B cases and one acute hepatitis B cases was reported each year in 2006 through 2010.

In North Dakota, there were 55 cases of chronic hepatitis B and zero cases of acute hepatitis B reported in 2010 (Figure 31). The incidence of chronic hepatitis B in North Dakota for 2010 was 8.56 per 100,000. In 2010, there were zero cases of acute hepatitis B reported in North Dakota as compared to 4,033 acute hepatitis B cases reported in the U.S. The estimated incidence rate of acute hepatitis B is 1.5 per 100,000 for the United States.

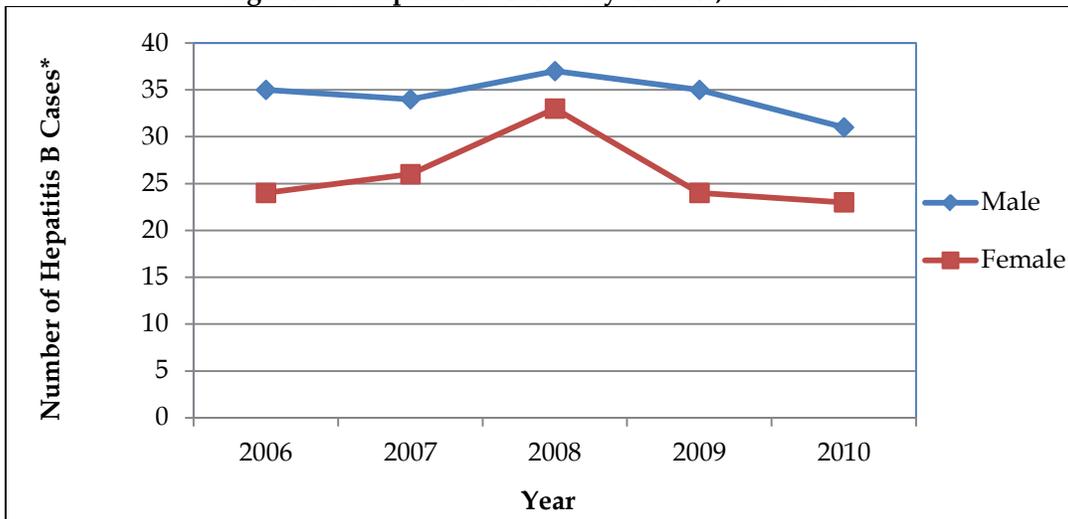
Figure 31 - Hepatitis B Cases* by Year, 2006 - 2010



*Includes acute and chronic infections

The median percentage of chronic and acute hepatitis B cases occurring in males from 2006 to 2010 in North Dakota is 57 percent (Figure 32). In 2010, the percentage of reported chronic and acute hepatitis B cases in males was consistent with the five year median.

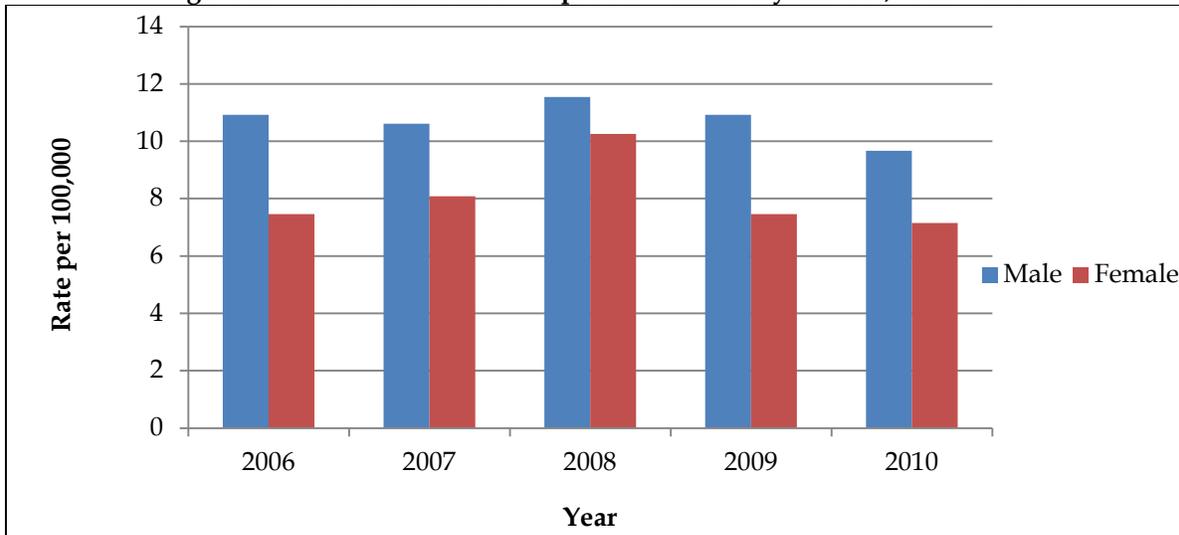
Figure 32 - Hepatitis B Cases* by Gender, 2006 - 2010



*Based on positive lab results, includes acute and chronic

In North Dakota, the 2010 incidence rate of acute and chronic hepatitis B cases is higher among males (9.67 per 100,000) compared to females (7.15 per 100,000) (Figure 33). The five year median of acute and chronic hepatitis B cases reported among males and females is 10.9 and 7.46 per 100,000, respectively. Historically, the rate of acute hepatitis B has been higher in males than females.

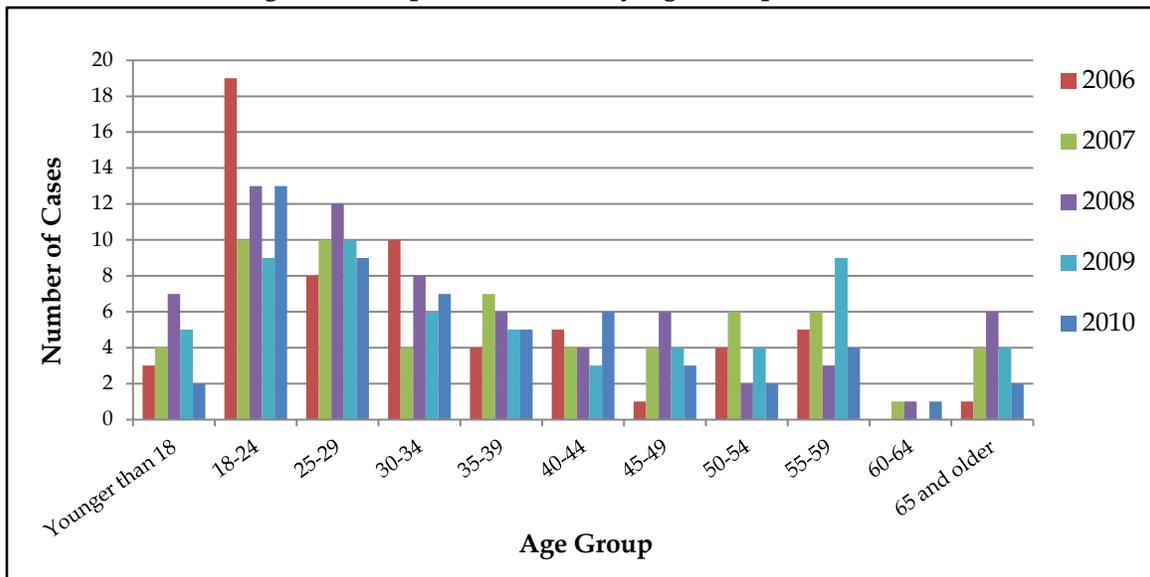
Figure 33 - Incidence Rates of Hepatitis B Cases* by Gender, 2006 - 2010



*Based on reported positive lab results, includes acute and chronic infections

In North Dakota, the most frequently reported age groups of chronic and acute hepatitis B cases in 2010 were age 18 to 24 and 25 to 29 with 13 and 9 cases, respectively (Figure 34). The age group 30 to 34 was the third most frequently reported age group with seven cases in 2010. Fifty-three percent of cases reported in 2010 were age 18 to 34. From 2006 to 2010, the most frequently reported age group was 18 to 24 except in 2009 when age 25 to 29 was the most frequently reported age group.

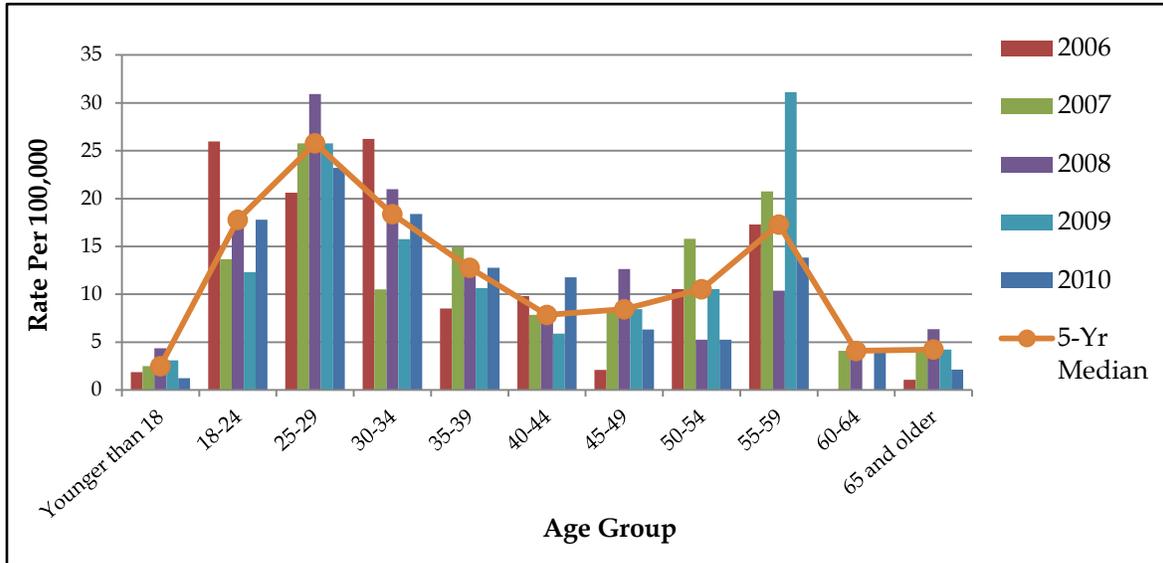
Figure 34 - Hepatitis B Cases* by Age Group, 2006 - 2010



*Based on reported positive lab results, includes acute and chronic

In 2010, the age group with the highest incidence rate, 23.2 per 100,000, was age 25 to 29 (Figure 35). Between 2006 and 2010, the five year median incidence rate was highest among age 25 to 29 at 25.8 per 100,000.

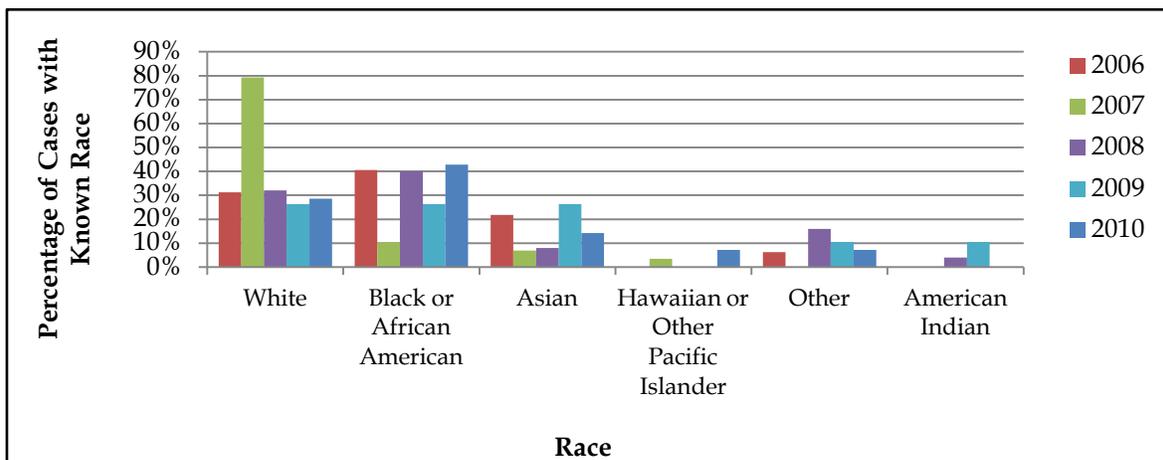
Figure 35 - Incidence Rates of Hepatitis B Cases* by Age Group, 2006 - 2010



*Based on reported positive lab results, includes acute and chronic

In North Dakota, the percentage of hepatitis B cases of unknown race has been increasing from 48 percent in 2006 to 74 percent in 2010. No case follow-up is conducted on chronic hepatitis B infections. From 2006 to 2010, the highest percentage of hepatitis B cases with known race was reported to be black or African American, except in 2007 when the highest percentage of cases was reported to be white (Figure 36). There were no cases of hepatitis B infections reported among American Indians in 2010.

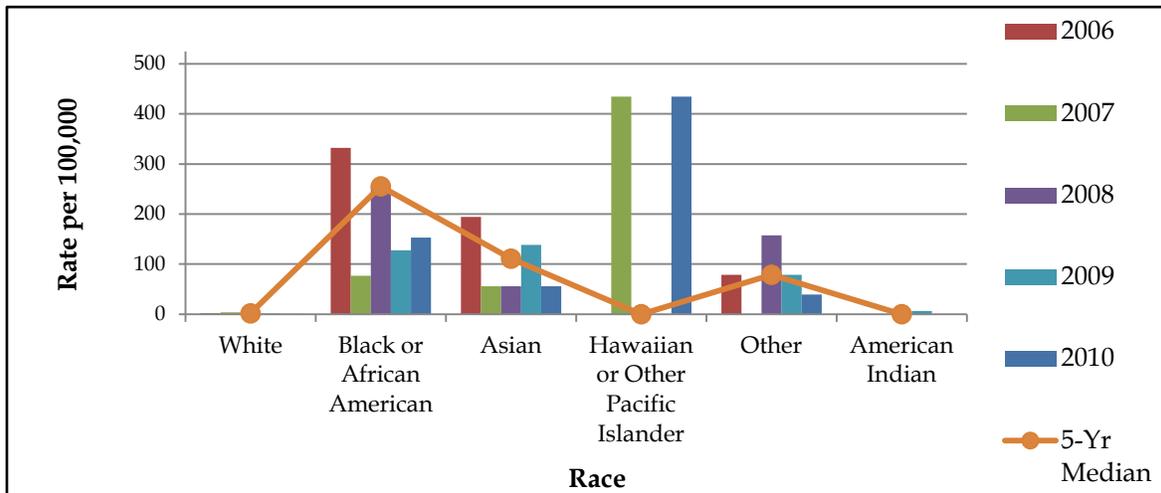
Figure 36 - Hepatitis B* Cases by Race, 2006 - 2010



*Based on reported positive lab results, includes acute and chronic

In 2010, the incidence rate of hepatitis B infections, acute and chronic, among the black or African American population was 40 percent less than the five year median (Figure 37). The incidence rate of hepatitis B cases was highest among Hawaiian or Other Pacific Islander in 2010 and was 434.8 per 100,000. However, there was only one reported case of hepatitis B among Hawaiian or Other Pacific Islanders in 2010. The incidence rate of hepatitis B cases among black or African Americans was 153.2, Asians 55.46 and white 0.67 per 100,000.

Figure 37 - Incidence Rates of Hepatitis B Cases* by Race, 2006 - 2010



*Based on reported positive lab results, includes acute and chronic

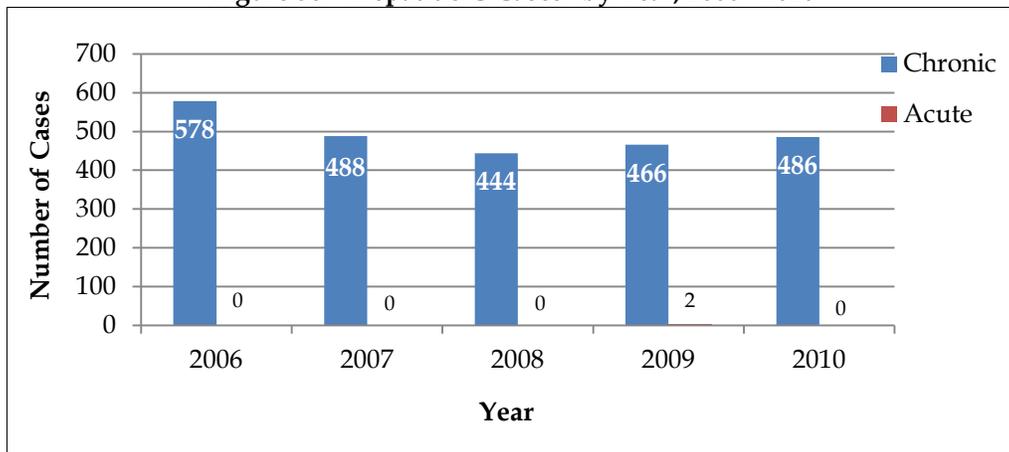
Hepatitis C

Hepatitis C is a liver disease caused by HCV. HCV is spread when blood from an infected person enters the body of someone who is not infected. Those at a greater risk for becoming infected with hepatitis C include current and past injection drug users, HIV-infected individuals, children born to mothers infected with HCV, people who received body piercing or tattoos done with nonsterile instruments, people who received a blood product for clotting problems made before 1987 and recipients of donated blood, blood products and organs prior to 1992. Before 1992, when widespread screening of the blood supply began in the United States, hepatitis C was commonly spread through blood transfusions and organ transplants. Hepatitis C can be either acute or chronic. Acute hepatitis C infections are short-term illnesses that occur within the first six months of exposure to HCV. Acute infection can, but does not always, lead to chronic infection. Acute hepatitis C symptoms, appearing two weeks to six months after exposure, include fever, fatigue, loss of appetite, nausea, vomiting, dark urine and jaundice. Chronic hepatitis C is a long-term illness that occurs when HCV remains in a person's body. Chronic hepatitis C infections can lead to serious liver damage, including cirrhosis of the liver or liver cancer, and is the leading indication for liver transplants in the United States. Most people with chronic hepatitis

C do not experience symptoms until liver problems have developed. Currently, an estimated 3.2 million people in the United States have chronic hepatitis C infection. Most people infected with HCV do not know they are infected because they don't look or feel sick.

Data for North Dakota are incomplete and interpretation of this data is difficult because the findings are based primarily on laboratory data. There was an average of one acute and 492 past or present infections of hepatitis C each year between 2006 and 2010 in North Dakota. In 2010, there were zero cases of acute hepatitis C in North Dakota and 486 past or present hepatitis C infections (Figure 38). In the United States, there were 849 cases of acute hepatitis C in 2007. The number of acute cases is estimated to be 17,000 after adjusting for asymptomatic infection and underreporting.

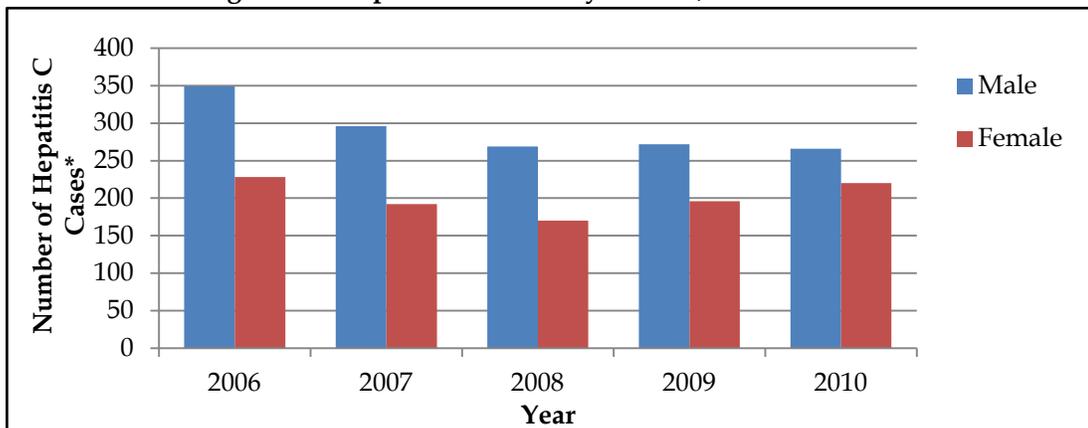
Figure 38 - Hepatitis C Cases* by Year, 2006 - 2010



*Based on reported positive lab results, includes acute, past and present infections

In 2010, 55 percent of hepatitis C cases were reported to be male (Figure 39). The five-year median of hepatitis C cases reporting to be males is 60 percent.

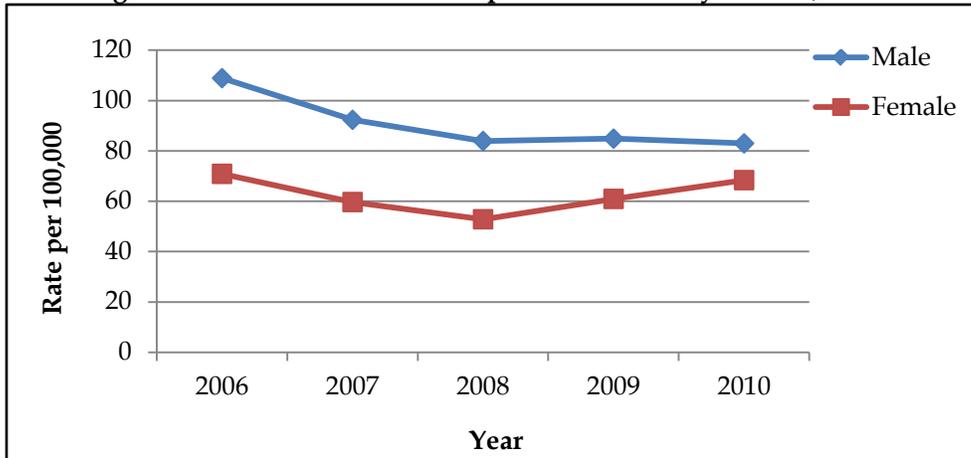
Figure 39 - Hepatitis C Cases* by Gender, 2006 - 2010



*Based on reported positive lab results, includes acute, past and present infections

In 2010, the incidence of hepatitis C cases, acute and past or present infections, in males and females was 82.9 and 68.4 per 100,000, respectively (Figure 40). The five year median of hepatitis C cases reported among males and females is 84.9 and 60.9 per 100,000, respectively.

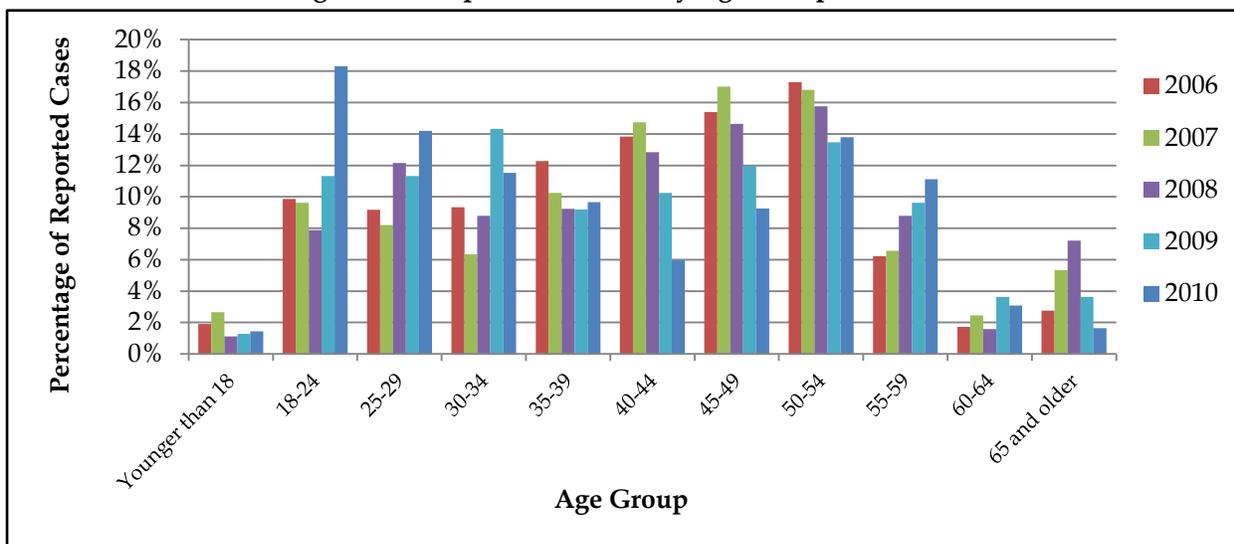
Figure 40 - Incidence Rates of Hepatitis C Cases* by Gender, 2006 - 2010



*Based on reported positive lab results, includes acute, past and present infections

Since 2006, more than 40 percent of reported hepatitis C cases occurred in 40-to-59-year-olds (Figure 41). The percentage of cases being reported from age 18 to 24 has been increasing since 2009. Eighty-nine (18.3 percent) hepatitis C cases were reported in this particular age group in 2010. Identifying individuals who are chronically infected with hepatitis C at a younger age is important in reducing serious liver damage including cirrhosis and cancer and mortality resulting from hepatitis C infections.

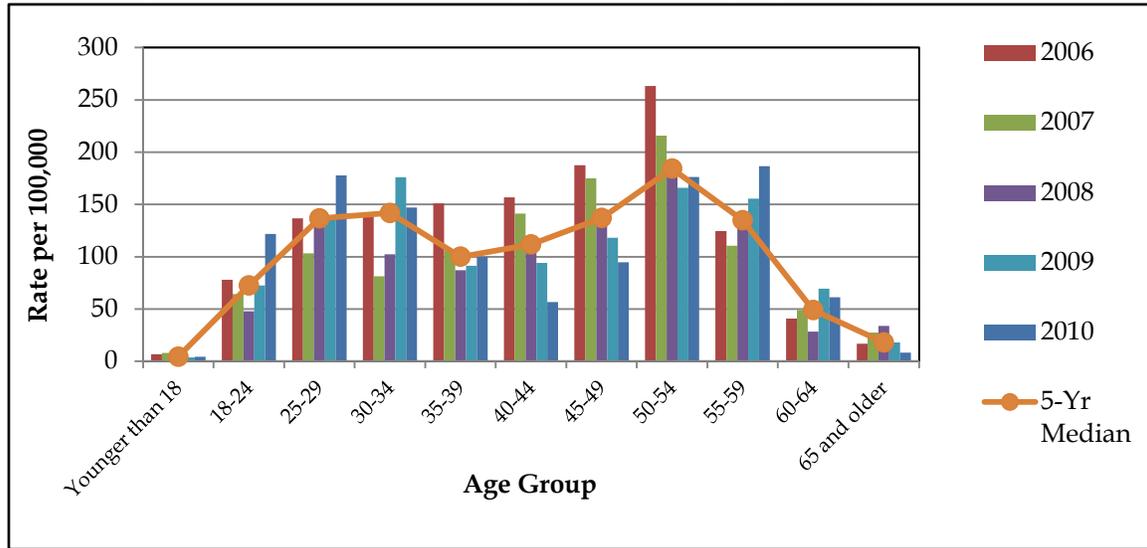
Figure 41 - Hepatitis C Cases* by Age Group, 2006 - 2010



*Based on reported positive lab results, includes acute, past and present infections

In 2010, the highest incidence occurred in the age group 55 to 59 compared to age 30 to 34 in 2009 and 50 to 54 in 2006 to 2008 (Figure 42). The incidence rate is 41 percent higher than the five year median rate in this particular age group. Since 2008, the incidence rate of hepatitis C cases had been increasing among 18-to-24 and 55 to 59 while the rate has been decreasing among ages 40 to 44 and 45 to 49.

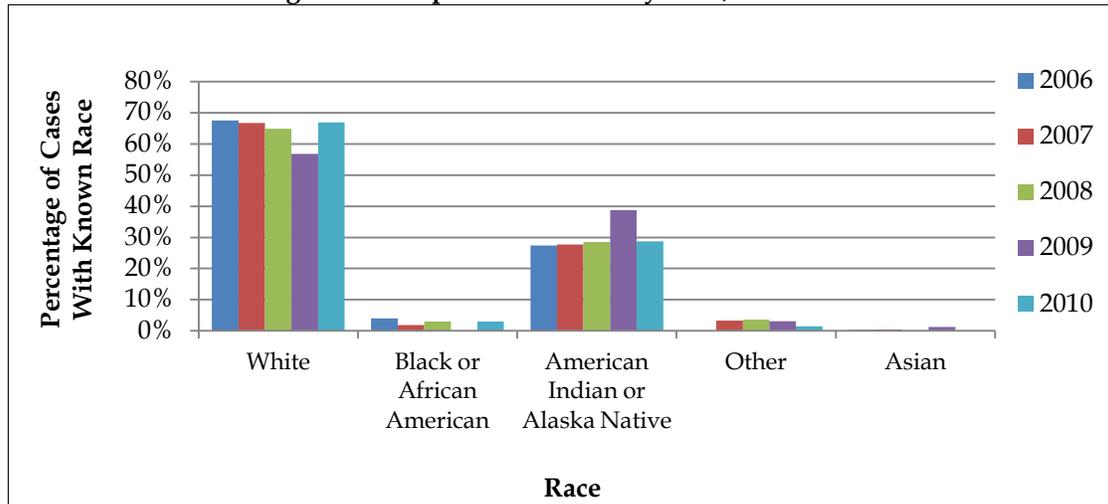
Figure 42 - Incidence Rates of Hepatitis C Cases* by Age Group, 2006 - 2010



*Based on reported positive lab results, includes acute, past and present infections

In North Dakota, whites are the highest percentage of reported hepatitis C cases with known race since 2006. However, since 72 percent of cases are reported to the NDDoH with unknown race, interpretation of this data should be made with caution. In 2010, of those with known race, 67 percent of hepatitis C cases were white, followed by American Indian or Alaska Native at 29 percent (Figure 43).

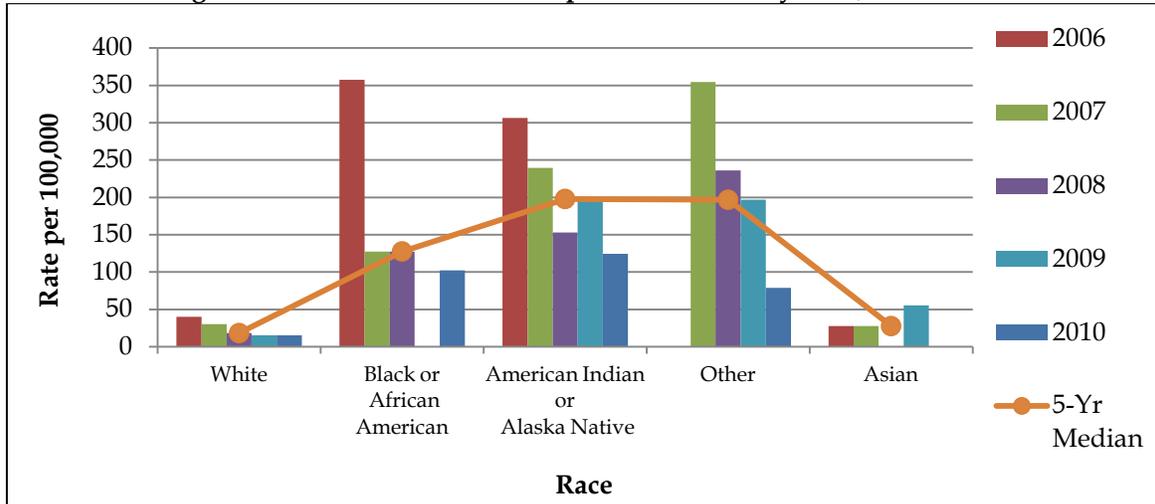
Figure 43 - Hepatitis C Cases* by Race, 2006 - 2010



*Based on reported positive lab results, includes acute, past and present infections

The racial disparity of hepatitis C infections is greatest among the American Indian or Alaska Native population. The five-year median incidence rate among the American Indian or Alaska Native population is 197.9 per 100,000, compared to 18.4 per 100,000 for the white population (Figure 44). In 2010, the incidence of hepatitis C among American Indian or Alaska Natives was 37 percent lower compared to the five-year median.

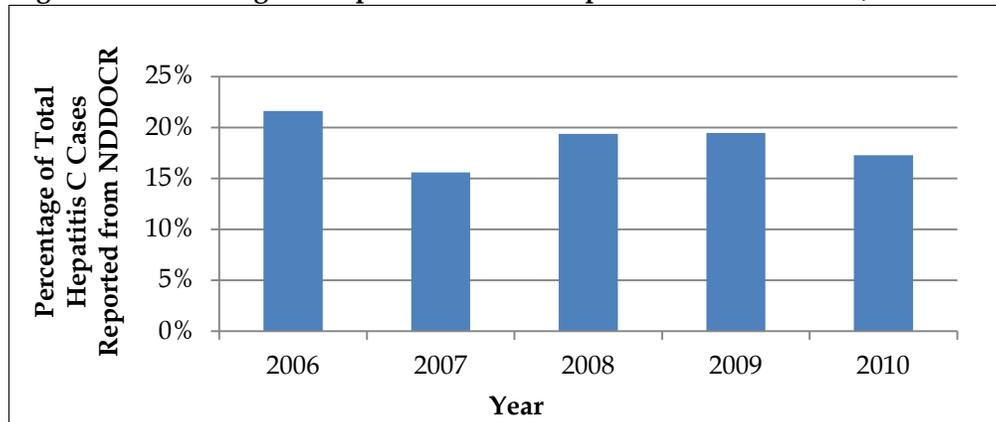
Figure 44 - Incidence Rates of Hepatitis C Cases* by Race, 2006 - 2010



*Based on reported positive lab results, includes acute, past and present infections

The North Dakota Department of Corrections and Rehabilitation (NDDOCR) screens all inmates for hepatitis C upon intake. The facilities included in the NDDOCR are the North Dakota State Penitentiary, James River Correctional Center, Missouri River Correctional Center and the Dakota Women’s Correctional and Rehabilitation Center. In 2010, 17 percent of past or present hepatitis C cases reported were from the NDDOCR (Figure 45). In 2010, 1,098 inmates were screened for hepatitis C at NDDOCR and 162 (14.8 percent) were positive, compared to 1,091 inmates screened and 197 (18.1 percent) positive in 2009.

Figure 45 - Percentage of Hepatitis C Cases* Reported from NDDOCR, 2006 - 2010



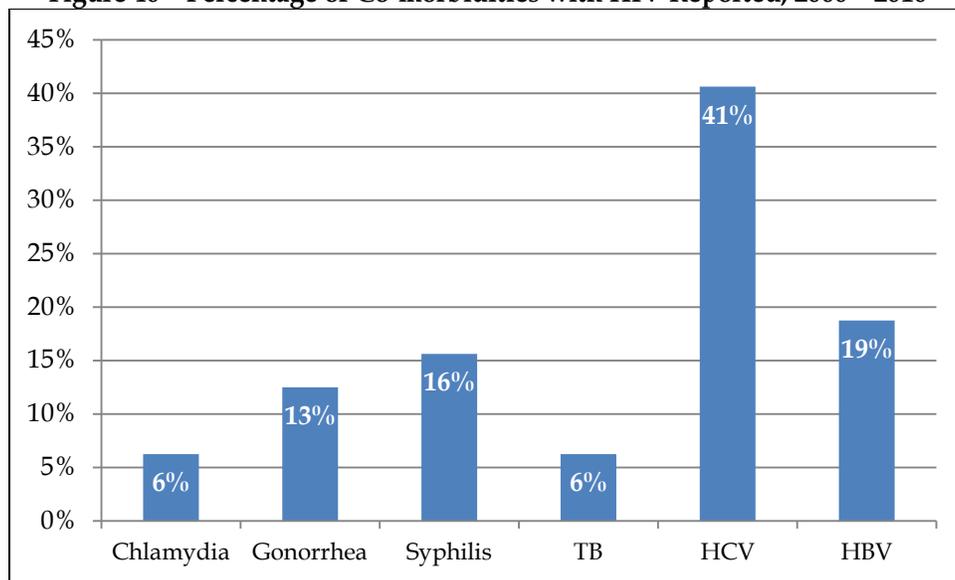
*Based on reported positive lab results, includes acute, past and present infections

HIV/AIDS Co-infection

Co-infection with other diseases of public health importance is a common occurrence among HIV/AIDS patients because of the nature of the disease and the risky behavior associated with it. The devastating effects of HIV to the immune system make people more susceptible to certain diseases, such as TB. High-risk sexual behaviors not only put people at risk for HIV but also chlamydia, gonorrhea, syphilis and HBV. Finally, injection drug users are at risk for acquiring HIV and HCV. Co-infection with HIV is a complicated and dangerous condition. An estimated one-quarter of HIV-infected people in the U.S. also are infected with HCV. HIV-infected injection drug users are commonly (50 to 90%) co-infected with HCV.

Between 2006 and 2010, 143 cases of HIV/AIDS were reported to the NDDoH, 21 percent (30 cases) of which reported co-infection with one or more of the following diseases during the same time period: chlamydia, gonorrhea, syphilis, TB, HCV and HBV. The most common co-infection was HCV, with 41 percent of all the co-morbidity cases.

Figure 46 - Percentage of Co-morbidities with HIV Reported, 2006 - 2010



Certain risk behaviors were more frequently associated with specific HIV co-infections. Heterosexual contact was most frequently associated with HIV and chlamydia co-morbidity. The most common risk factor associated with HIV and gonorrhea co-morbidity is male-to-male sexual contact. The same was true with syphilis. HBV and HIV co-infection was commonly associated with heterosexual contact.

Table 8 - Risk Factors of HIV/AIDS Cases with Co-Morbidities, 2006 - 2010

	Co-Morbidities					
	Chlamydia	Gonorrhea	Syphilis	TB	HCV	HBV
Risk Factors						
Male-to-male sexual contact (MSM)	0	3	4	1	2	1
Injecting drug use (IDU)	0	0	0	0	2	0
MSM/IDU	0	0	0	0	2	1
Heterosexual contact	2	1	1	1	4	3
Other	0	0	0	0	1	0
Risk not specified	0	0	0	0	2	1

Technical Notes

Case Definition Changes

The CDC AIDS case definition has changed over time based on knowledge of HIV disease and physician practice patterns. The original definition was modified in 1985. In 1987, definition revisions incorporated a broader range of AIDS opportunistic infections and conditions and used HIV diagnostic tests to improve the sensitivity and specificity of the definition. In 1993, the definition expanded to include HIV-infected individuals with pulmonary tuberculosis, recurrent pneumonia, invasive cervical cancer, or CD4 T-lymphocyte counts of less than 200 cells per ml or a CD4+ percentage of less than 14. As a result of the 1993 definition expansion, HIV-infected persons were classified as AIDS earlier in their course of disease than under the previous definition. Regardless of the year, AIDS data are tabulated in this report by the date of the first AIDS defining condition in an individual under the 1993 case definition.

The case definition for HIV infection was revised in 1999 to include positive results or reports of detectable quantities of HIV virologic (non-antibody) tests. The revisions to the 1993 surveillance definition of HIV include additional laboratory evidence, specifically detectable quantities from virologic tests.

The perinatal case definition for infection and remission of symptoms among children younger than 18 months who are perinatally exposed to HIV was changed to incorporate the recent clinical guidelines and the sensitivity and specificity of current HIV diagnostic tests in order to more efficiently classify HIV-exposed children as infected or not infected.

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