Epidemiologic Profile of HIV in Michigan

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MDHHS

Michigan Department OF Health & Human Services

RICK SNYDER, GOVERNOR | NICK LYON, DIRECTOR

HIV & STD Surveillance & Epidemiology Section
Division of Communicable Disease
Bureau of Population Health and Epidemiology

Lansing HIV Surveillance Office
333 S. Grand Ave., 3rd Floor
Lansing, MI 48913
517-335-8165

Southfield HIV Surveillance Office
MDHHS-South Oakland Health Center
27725 Greenfield Rd, Office 57A
Southfield, MI 48076
248-424-7910

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COMMONLY USED TERMS

This list of commonly used terms is intended to assist stakeholders in understanding common epidemiological terminology. These terms will also help to better understand and navigate MDHHS HIV Surveillance Program data and reports.

Antiretroviral (ARV): A drug that inhibits the process by which the HIV virus replicates; used to treat HIV.

Case: An individual who is diagnosed with a disease or infection and reported to the Michigan Department of Health and Human Services.

Community Viral Suppression: The proportion virally suppressed (≤ 200 copies/mL) out of all people living with HIV (PLWH). Higher levels of community viral suppression reduce HIV transmission.

Confidential HIV reporting: When a person testing for HIV provides his/her name and other identifying information, and this information is reported to the health department. Patient information remains confidential.

Detroit Metro Area (DMA): Urbanized geographic area in Michigan comprised of 6 counties: Lapeer, Macomb, Monroe, Oakland, Washtenaw, and Wayne.

Epidemiology: The study of the distribution, determinates, and frequency of diseases in humans.

HIV (Human Immunodeficiency Virus): Diagnosis with HIV requires both a positive HIV screening and positive supplemental antibody test or detectable quantity on a virologic test. A standard case definition for HIV infection is used by all states for surveillance. Specific information is required in order to count a case of HIV infection, including a method to uniquely identify an individual. Each case is classified in a HIV infection stage (see below). Once a case reaches stage 3 (AIDS), the case is always considered stage 3 for surveillance purposes, even if his/her health improves.

HIV Care Continuum: A model that outlines the sequential steps or stages of HIV medical care that PLWH go through from initial diagnosis to achieving the goal of viral suppression.

HIV infection stages:

- *Stage 1*: A case does not have any of the conditions associated with severe HIV infection (called an AIDS-defining condition) and has ≥ 500 CD4 cells/μl.

- *Stage 2:* A case has no AIDS-defining condition, but the level of CD4 cells has fallen to 200-499 cells/ μl.

- *Stage 3:* Diagnosis with any one of 26 AIDS-defining conditions which are indicative of a severe immune deficiency, or a laboratory test demonstrating severe immune deficiency: CD4 count < 200 cells/μl.

HIV Mortality: Death among people infected with HIV; can refer to an HIV-related cause of death or any other cause of death.

In Care: The proportion of PLWH who visit a doctor at least once a year (assessed by CD4, viral load, or genotype test).

Incidence: The number of persons who develop a disease or infection in a certain period of time, usually a year.

Late Diagnosis: A diagnosis of stage 3 HIV infection within 30 days of initial HIV diagnosis (concurrent diagnosis). This is indicative of someone testing late in the course of their infection.

Linked to Care: The proportion of newly diagnosed PLWH who have visited a doctor at least eight days after diagnosis (assessed by CD4, viral load, or genotype test)

COMMONLY USED TERMS

New Diagnoses: The number of cases newly diagnosed over a given period of time, usually a year. In HIV surveillance new diagnoses do not necessarily represent new infections as newly diagnosed persons may have been infected for many years.

Out-state: Geographic area in Michigan that refers to all counties outside of the Detroit Metro Area.

Pre-exposure prophylaxis (PrEP): HIV prevention tool for people who do not have HIV but are at a substantial risk of getting HIV that involves taking daily ARVs in combination with other medicines that treat HIV. These medicines work to keep the virus from establishing a permanent infection.

Prevalence: The total number of persons currently living with HIV (PLWH). This population is obtained by calculating the number of persons currently alive and residing in Michigan at a given point in time, using the most recent address information available.

Rate: The number of cases divided by the number of persons in the general population (both infected and uninfected). The resulting number is standardized by multiplying by a multiple of 10, usually 1,000 or 100,000. This number allows one to compare the impact of disease (or death) between groups.

Viral Suppression Rate: The proportion virally suppressed (≤ 200 copies/mL) out of PLWH in care.

DATA SOURCES

Data were compiled from a variety of sources to provide the most complete picture of HIV in Michigan as possible. When interpreting data, keep in mind that each data source has strengths and limitations. A brief description of each data source follows.

Core HIV Surveillance Data

Enhanced HIV/AIDS Reporting System (eHARS):
This surveillance system was established by CDC in 1983 and is managed by the HIV and STD Epidemiology Section at MDHHS. It was expanded in 1989 to include confidential name-based HIV reporting. In 2005, laboratory reporting was added to the surveillance system, and in 2011 HIV cases were reportable in the Michigan Disease Surveillance System (MDSS) as electronic case reports (ECRs). Standardized case report forms and laboratory reports are used to collect sociodemographic information, exposure data, laboratory and clinical information, vital status (i.e., living or dead), and referrals for treatment or services. These data are obtained from medical record abstractions, provider reports, and from linkages with other databases. Patients are not interviewed as a part of routine core surveillance. Historically, data from eHARS have been described as "minimum estimates" of the number of HIV-positive persons living in Michigan, however, the number of acute diagnoses are increasing which means that recent infections are being caught earlier, ultimately improving the reliability of these data.

HIV Surveillance Supplemental Data

National HIV Behavioral Surveillance (NHBS):
The National HIV Behavioral Surveillance program is a CDC funded project that monitors risk behaviors and access to HIV prevention services among three identified risk groups at a national and local level. Data collection is implemented in annual cycles with each cycle focusing on one risk group, i.e., men who have sex with men (MSM), injection drug users (IDU), and heterosexuals (HET) living in targeted areas. This project is different from all other HIV surveillance activities in that it collects data from people based on behavioral and/or residential characteristics and not their HIV status; thus, most interviewees are uninfected.

Medical Monitoring Project (MMP):
The Medical Monitoring Project, an ongoing population-based surveillance project designed to assess clinical outcomes and behaviors of HIV-positive persons in the U.S. MMP, collects information on both behavioral and clinical data from confidential in-person interviews and medical record abstraction (MRA). For MMP, the surveillance period is defined as the 12 months preceding the interview, and the medical history period is defined as the time between first entry into HIV care and the start of the surveillance period.

Service Utilization Data

Michigan Ryan White Program—CAREWare:
CAREWare is a software program developed by HRSA to collect and report care utilization data for people living with HIV and is used by all Ryan White programs in Michigan. As of 2017, all Ryan White funded programs in the State of Michigan are utilizing the same CAREWare database.

HIV Prevention Data

Testing Data—Evaluation Web:
This cloud based data system is created by Luther Consulting under contract with CDC to collect and house HIV prevention measures related to funding opportunity announcement PS12-1201. These measures include HIV test events entered at the individual tester level and aggregate data like number of condoms distributed per month. Data are entered at the local level by funded local health departments and community benefit organizations. Data in Evaluation Web contains no personally identifiable information and is submitted directly to CDC through the web-based platform.

DATA SOURCES

Partner Services Data—PartnerServicesWeb
This cloud based data system is created by Luther Consulting under contract with CDC to collect and house information on HIV partner services delivery funded by PS12-1201. Local public health workers tasked with conducting partner services use this system to document client follow-up and log client responses to questions about medical care and risk behaviors. PS Web data is de-identified prior to being uploaded to CDC through Evaluation Web for reporting purposes.

Other Infectious Disease Data

STD, TB, Viral Hepatitis Data—Michigan Disease Surveillance System (MDSS):
The MDHHS Division of Communicable Diseases requires physicians, health care professionals, and laboratories to report cases of communicable diseases, including sexually transmitted diseases, Tuberculosis, and acute and chronic hepatitis C, in accordance with Michigan's Communicable Disease Rules. Cases of these infectious diseases are reported via the Michigan Disease Surveillance System (MDSS), a web-based communicable disease reporting system developed for the state of Michigan. MDSS collects basic demographic data on each case, as well as additional information such as laboratory test results, clinical information and exposure history, but completeness of reporting of the additional information varies. Each year, other infectious disease registries are matched to the HIV surveillance database in order to track trends in co-infections between HIV and other infectious diseases.

National and International Data

U.S. Bureau of the Census Population Data:
The Census Bureau collects and provides timely information about the people and economy of the United States every 10 years. Between those years, the Bureau releases annual population estimates. The Census Bureau's recently updated website includes data on demographic characteristics (e.g., age, race, Hispanic ethnicity, sex) of the population, family structure, educational attainment, income level/employment status, housing status, and the proportion of persons who live at or below the Federal Poverty Level (FPL). Summaries of the most requested information for states and counties are provided, as well as analytical reports on population changes, age, race, family structure, and apportionment. State- and county-specific data are easily accessible, and links to other web sites with census information are included.

Centers for Disease Control and Prevention (CDC):
The Centers for Disease Control and Prevention is a federal agency that conducts and supports health promotion, prevention, and preparedness activities in the United States, with the goal of improving overall public health. The CDC is a chief U.S. source for statistics about injuries and diseases. Through its *Morbidity and Mortality Weekly Report* (MMWR), the agency catalogs disease surveillance efforts and provides recommendations on preventing illnesses. The CDC works closely with state and local health departments, as well as industry experts, to develop standards, tools, training and technology to make sure disease reporting systems are integrated.

World Health Organization (WHO):
WHO's primary role is to direct international health within the United Nations' system and to lead partners in global health responses. WHO's Global Health Observatory (GHO) provides health-related statistics for more than 1000 indicators for its 194 Member States.

HIV SURVEILLANCE DATA PRODUCTS

The HIV Surveillance Program produces various data reports and fact sheets on a regular basis. This profile will provide a summary of the routine reports and special analyses that we produce and will serve as a single directory for all HIV surveillance and supplemental data for grants and other projects or presentations.

The table below provides a description of our routine reports and other special analyses. At the end of each section of this profile, you will find links that directly navigate you to each of our most recent reports as well as other resources and webpages.

Product	Description	How often are data updated?	What types of data are included?
HIV Surveillance Report	This report is the most comprehensive look at the current HIV epidemic in the state of Michigan. There are separate reports for the entire state of Michigan and the Detroit Metro Area. These reports are also presented in 2 different formats: (1) A graphical, user-friendly display and (2) Tables. Visit page 18 of this profile for links.	Annually	Prevalence New HIV diagnoses HIV mortality Linkage to care Viral suppression
Trends in New HIV Diagnoses	This report looks at the adjusted number and rate of new HIV diagnoses over a 5-year period. There are separate reports for the entire state of Michigan and the Detroit Metro Area (Southeast Michigan). Visit page 21 of this profile for links.	Annually	New HIV diagnoses
HIV Incidence Report	This report looks at the estimated number of new HIV infections. It is important to note that this is differs from the number of new HIV diagnoses as a new diagnosis does not necessarily indicate a new infection. From 2001 until 2016, Incidence was estimated using STARHS, but moving forward, HIV Incidence will be estimated using testing history and molecular data. Visit page 22 of this profile for more info.	Annually	Incidence
NHAS Indicator Report	The National HIV/AIDS Strategy is a ten-year plan that details principles, priorities, and actions to guide our collective national response to the HIV epidemic. This comprehensive plan outlines 3 goals for 2010-2020: to reduce new HIV infections, improve health outcomes, and reduce disparities. This report measures Michigan's progress toward these goals. Visit page 25 of this profile for links.	Annually	HIV care continuum New HIV diagnoses Linkage to Care HIV mortality Viral suppression
HIV Care Continuum	The Michigan HIV Care Continuum (or treatment cascade) was developed by the CDC to assess gaps in care. This report looks at the continuum of people infected with HIV, diagnosed with HIV, in care, and virally suppressed. Visit pages 24-25 of this profile for more info and links.	Annually	HIV care continuum

HIV SURVEILLANCE DATA PRODUCTS

Product	Description	How often are data updated?	What types of data are included?
HIV Testing and Partner Services Reports	HIV Testing and Partner Services initiatives are funded as a part of comprehensive HIV prevention programs for Local Health Departments and Community Based Organizations (CBOs) through CDC. These reports highlight Michigan's progress in regards to these initiatives. Visit page 27-28 of this profile for links.	Annually	Testing data Partner services data
MMP	The Medical Monitoring Project (MMP) is a public health initiative designed to learn more about the experiences and needs of people who are living with HIV. By collecting locally and nationally representative behavioral and medical record data from people living with HIV, MMP attempts to answer questions regarding those receiving HIV medical care, how easy it is to access care, and how treatment is affecting people living with HIV. Visit page 33 of this profile for more info.	Varies	MMP data
NHBS	The National HIV Behavioral Surveillance (NHBS) System is a multisite project funded by the CDC. NHBS was established to identify behaviors that place individuals at-risk for contracting HIV/AIDS. NHBS operates through activities designed to monitor HIV risk behaviors in order to assist in prevention education, service initiatives, and allocation of prevention resources. The project occurs in multiple cycles with each year targeting one of three high-risk populations including: a) men who have sex with men (NHBS-MSM); b) persons who inject drugs (NHBS-PWID); and c) heterosexuals at risk for contracting HIV (NHBS-HET). Visit pages 30-32 of this profile for more info.	Varies	NHBS data
Special Analyses	The HIV Surveillance team produces other special reports/analyses in addition to our routine reports. Our most current analyses include an *Analysis of Genotypes in Michigan, 2004-2014*, and an *HIV Mortality Fact Sheet*. Visit the following link for more info: **HIV Statistics and Data Reports** —> Special Analyses, Reports and Presentations	Varies	Molecular HIV Surveillance (MHS) data, HIV Mortality, etc.

To subscribe to receive alerts for HIV Surveillance Data and Reports as they are updated please follow the link below:

MDHHS HIV Surveillance Email Updates

HIV SURVEILLANCE STAFF CONTACTS

Staff from the Michigan Department of Health and Human Services (MDHHS) HIV and STD Surveillance and Epidemiology Section are available to assist in interpretation of this Profile as well as to provide additional analyses. Questions or comments about this document or HIV Surveillance Data and Reports may be directed to Jennifer Miller (248-424-7919). Questions about HIV Surveillance in general may be directed to your jurisdiction contact (see map below). With the cooperation of reporting sites, surveillance data will continue to guide HIV prevention strategies and resource allocation for prevention and care services in the state of Michigan.

Legend:
- Varies 248-424-7910
- Lindsey Baldwin 248-424-7907
- Lori Martin-Thames 248-424-7918
- Nilsa Mack 517-284-4917
- Yolande Moore 248-424-7920

Type Specific Coverage:

American Red Cross:
Erin Crandell-Alden 517-284-4918

Pediatrics/Perinatal: Yolande Moore 248-424-7920

Correctional Facilities and Insurance Companies: Nilsa Mack 517-284-4917

Wayne County Jail and Plasma Centers: Linda Noble 248-424-7921

Lansing Main Line: 517-335-8165
Lansing Secure Fax Line: 517-335-8121
Southfield Main Line: 248-424-7910
Southfield Secure Fax Line: 248-424-9161

SOCIODEMOGRAPHIC DESCRIPTION OF THE MICHIGAN POPULATION

Local health jurisdiction structure:
Michigan is divided into 45 local health departments (LHDs). Since many counties of Michigan have low population density, some district LHDs are composed of multiple counties. These multi-county LHDs each contain two to 10 counties and can deliver services more efficiently than single county LHDs in rural areas. LHD activities include clinical services for family planning, STD screening and treatment, maternal and child health services, special health care services for children, nutrition programs, and immunizations. Services also include sanitation, environmental monitoring, and epidemiologic investigations.

Population:
According to the 2016 Population Estimates, Michigan has the 10th largest population in the United States with a total of 9,928,298 persons. Michigan is composed of 83 counties. County populations range from a low of 2,199 persons in Keweenaw County to 1.8 million persons in Wayne County. The Detroit Metropolitan Area (DMA) represents 43% of Michigan's population. Michigan cities with populations over 100,000, in order of descending population, are Detroit, Grand Rapids, Warren, Sterling Heights, Lansing, Ann Arbor, and Lansing, with populations ranging from 672,795 to 116,020.

Age and sex:
According to the 2016 Population Estimates, the median age of Michigan residents is 39.5 years, 1.5 years older than the median age in the 2010 Census. Six percent of the population is under 5 years of age; 33% are younger than 24 years of age; and 15% of the population are 65 or older. The largest proportion of individuals is 45-64 years of age. The proportion of males in the overall population is lower than the proportion of females (49% vs. 51%, respectively). Proportions in each age group are similar between males and females. There has been very little estimated change in any sex/age group since the 2010 Census.

Race/ethnicity:
According to the 2016 Population Estimates, the racial and ethnic composition of the state is 75% white, non-Hispanic; 14% black, non-Hispanic; 5% Hispanic; 3% Asian/Native Hawaiian or Other Pacific Islander; less than 1% American Indian/Alaska Native; and 2% multiracial or other race. Proportions of each racial/ethnic group are similar between males and females. There was little change in any racial or ethnic group between the 2010 Census and the 2016 population estimates.

When broken down by geographic area, the racial/ethnic distribution of Michigan changes. In the Detroit Metro Area, non-Hispanic white persons make up 67% of the population compared to 83% in Out-State Michigan. The largest difference between the two areas of Michigan is among non-Hispanic black persons, who make up 23% of the population in the Detroit Metro Area and only 7% in Out-State Michigan. All other racial/ethnic groups (Hispanic, Asian/Native Hawaiian or Other Pacific Islander, American Indian/Alaska Native, and multiracial persons/persons of other race) have relatively equal representation throughout the state, although persons of other race make up a slightly higher proportion of the population in Out-State Michigan. The percent distributions of racial/ethnic groups by sex are relatively equal in both areas.

Poverty, income, employment, and insurance:
In 2016, the median household income in Michigan was estimated to be $52,492 (up 2.8% since 2015), compared to the United States median income of $59,039. About 15% of Michigan residents' yearly incomes fell below the Federal Poverty Level (FPL), compared to 14% of all persons in the United States. Among persons under 18 years of age, 21% had family incomes that fell below the FPL in Michigan compared to 20% nationally. In 2016, 6% of Michigan residents were unemployed which was equal to the proportion nationally.

In 2016, 5% of Michigan residents did not have health insurance. Three percent of Michigan residents under 18 years of age were uninsured. These proportions are lower than those seen nationally.

SUMMARY OF THE HIV EPIDEMIC

The HIV epidemic in Michigan:

At the end of 2016, 15,629 persons were known to be living with HIV in Michigan, over half (53%) of whom had progressed to stage 3 HIV infection (AIDS) (based on current residence). Currently, there is at least 1 person living with HIV in every county of the state. The statewide prevalence of HIV is distributed disproportionately. Most PLWH are diagnosed and live in the Detroit Metro Area where 43% of the state's population lives but 64% of all persons living with HIV in Michigan reside.

The overall rate of new HIV diagnoses in Michigan remained stable between 2011 and 2015 (See page 19 for information on the 2017 *Annual Review of HIV Trends in Michigan*). However, HIV continues to disproportionately impact certain racial and ethnic groups. Rates of new diagnoses among black males are more than 11 times higher than among white males, and rates among black females are over 15 times higher than among white females. Black males and females make up 14% of the general population in Michigan but 56% of persons living with HIV.

The risk transmission category with the highest number of new diagnoses, as well as the majority of all prevalent cases, remains men who have sex with men (MSM). The number of diagnoses among people who inject drugs (PWID) has declined several times in the past, but did not show a decrease this time around, and persons with a risk of heterosexual sex represent an increasingly larger proportion of new diagnoses.

The rates among 20-24 year olds are the highest of any age group. Nearly three quarters (71%) of all new cases among adolescents and young adults (13-24 year olds) are residents of the Detroit Metro Area at diagnosis. Closer analyses of these data reveal that this trend is due to an increase in HIV among young black MSM. Teens newly diagnosed with HIV are more likely to be black MSM compared to adults 20 years and older (67% vs. 32%, respectively).

In Michigan, people living with HIV (PLWH) in care are very likely to be virally suppressed, improving the individual's prognosis and reducing transmission. However, 19% of PLWH in the state are not in care (aka unmet need). Unmet need is not equally distributed among PLWH. Teens, black persons, Hispanics, PWID, and foreign-born persons consistently have higher rates of unmet need.

The number of reported deaths among persons living with HIV has been decreasing steadily since the advent of antiretroviral (ARV) treatment. In 2014, there were 279 reported deaths among HIV infected persons.

HIV in the United States and world:

The most recent data show that in 2014, Michigan had the 19th highest number of persons living with HIV in the United States.[1] Nationally, the number of persons living with HIV increased 11.9% between 2010 and 2014 while the annual number of new diagnoses decreased 8.5%. At the end of 2014, an estimated 955,081 persons were living with HIV in the US. In 2014, the estimated national rate of new HIV diagnoses was 12.6 per 100,000 population. From 2010 through 2014 in the United States, the annual number of deaths of persons with diagnosed HIV infection decreased 11.6% (Centers for Disease Control and Prevention. *HIV Surveillance Report 2015*, vol. 27. https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2015-vol-27.pdf).

According to the World Health Organization, an estimated 1.8 million new HIV diagnoses and 1.0 million HIV-related deaths occurred during 2016 worldwide, bringing the total number of persons living with HIV to 36.7 million. This translates to nearly 5,000 new HIV diagnoses each day (*Summary of the global HIV epidemic 2016*. http://www.who.int/hiv/data/epi_core_2016.png?ua=1).

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1. National statistics in this section include all 50 states, with confidential name-based HIV infection reporting as of 2008.

HIV PREVALENCE

Since 2001, the HIV Surveillance program has produced semi-annual reports for a wide audience. Beginning in 2016, these reports were overhauled and split into two parts containing the most commonly requested regional data. The old surveillance reports utilized residence at diagnosis (the CDC standard) and therefore any person diagnosed in Michigan, regardless of their current location, was included. However, due to population changes, as well as the extended lifespan among people living with HIV (PLWH), it is more appropriate to include only those currently living in Michigan. Due to differences in the underlying dataset, do not compare any numbers or figures in the new surveillance reports to old surveillance reports.

Overview:

The Michigan Department of Health and Human Services (MDHHS) estimates that there are 17,970 persons currently living with HIV in the state of Michigan, of whom 15,629 were reported as of December 31, 2016. This estimate of HIV prevalence is based on the CDC national estimate that 13% of PLWH are unaware of their infection and therefore unreported. The unadjusted number of new HIV diagnoses, number of deaths among HIV-positive persons, and HIV prevalence are presented in Figure 1. New diagnoses and deaths have leveled off, but in general, prevalence continues to rise.

Figure 1: New diagnoses, deaths, and prevalence of HIV in Michigan, by year, January 2017
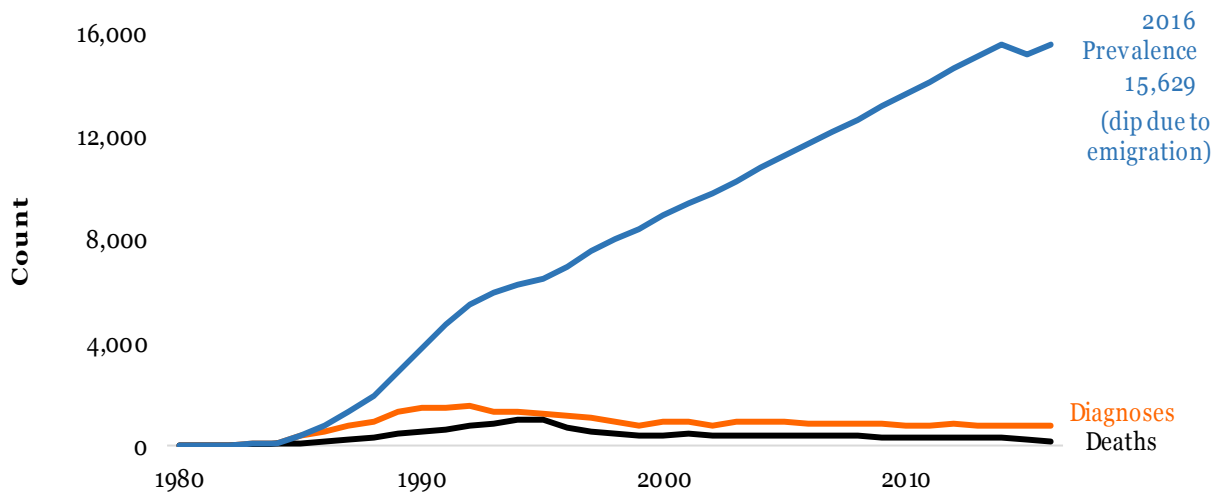
The majority of persons living with HIV (PLWH) are black men and/or gay and bisexual men. Of women living with HIV, the vast majority are black (Figure 2).

Figure 2: Michigan HIV prevalence represented as 100 people, January 2017
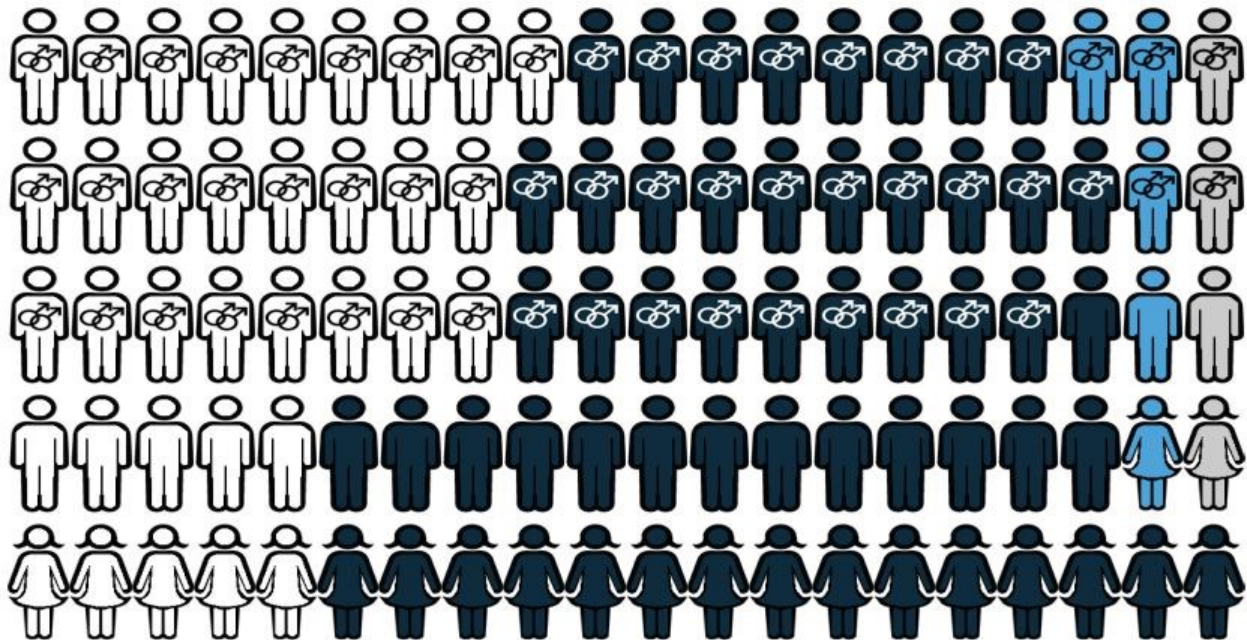
Icon Key

	White	Black	Latino(a)	Other	
Men					Men with this symbol acquired HIV via sex with men (MSM)
Women					

Prevalence by geographic area:

HIV infections are distributed disproportionately in Michigan. The Detroit Metro Area (DMA) only makes up 43% of the Michigan population, yet 65% of those living with HIV reside in the DMA. The rest of the state (Out-State) has 35% of Michigan's prevalent HIV infections, but 57% of the population (Figure 3, page 16).

The city of Detroit has the highest HIV prevalence rate in Michigan at 714.8 cases per 100,000 population. Of the 83 counties in Michigan, the 10 counties with the highest prevalence rates are Wayne (excluding Detroit), Oakland, Kent, Ingham, Washtenaw, Berrien, Kalamazoo, Jackson, Calhoun, and Genesee.

HIV PREVALENCE

Figure 3: Prevalent HIV infection cases by population and area of residnce, January 2017

■ Percent of prevalent HIV cases in Michigan
□ Percent of Michigan's Population
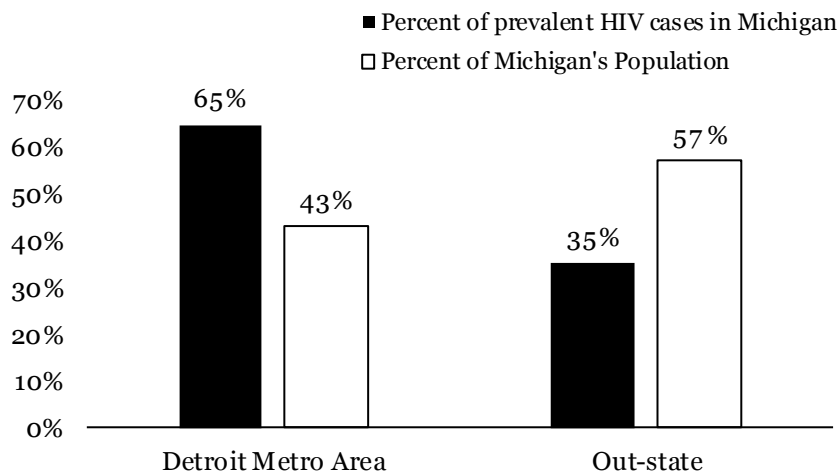
Prevalence by risk:
Men who have sex with men (MSM) make up 53% of all PLWH in Michigan, and continue to be the most affected risk group statewide. Heterosexuals constitute 19% of PLWH in Michigan, of which, 78% are female. Persons who inject drugs (PWID) are 3rd, behind MSM and heterosexuals, and make up 11% (including MSM/PWID) of all PLWH in Michigan.

Figure 4: Prevalent HIV infection cases by risk transmission category, January 2017
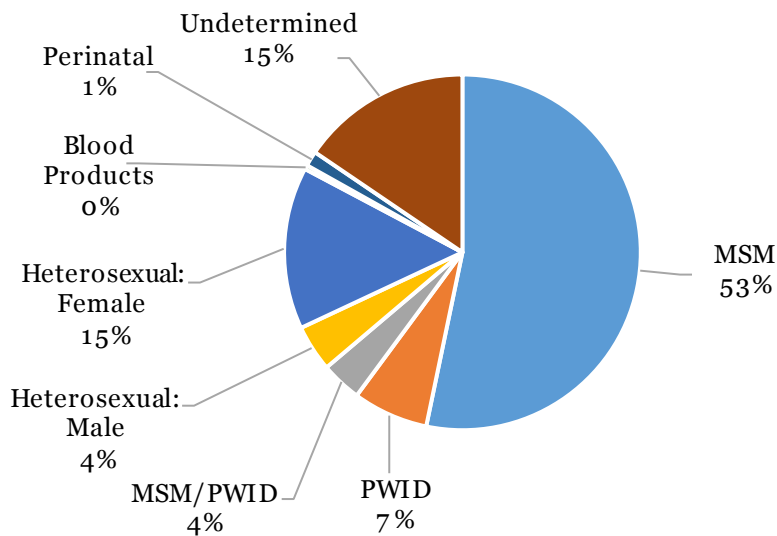
HIV PREVALENCE

Prevalence by age:
Figure 5 shows the breakdown of PLWH by current age. The majority are between the ages of 50-59.

Figure 5: Prevalent HIV infection cases by current age, January 2017
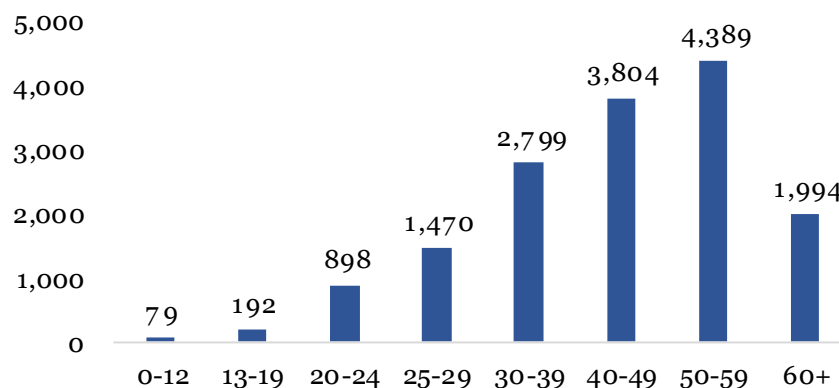
Prevalence by race and sex:
Figure 6 shows the disparities in the HIV epidemic by race and sex. Black males make up the highest number of PLWH and have the highest prevalence rate, indicating that the impact is greatest on this group compared to other race/sex groups. The prevalence rate among black males is 15 times that of white males and the rate among black females is almost 18 times that of white females. Hispanics are also disproportionately impacted compared to whites. The prevalence rate among Hispanic males is more than twice that of white males, and the prevalence rate among Hispanic females is almost 4 times that of white females.

Figure 6: Reported prevalence rate by race and sex, January 2017
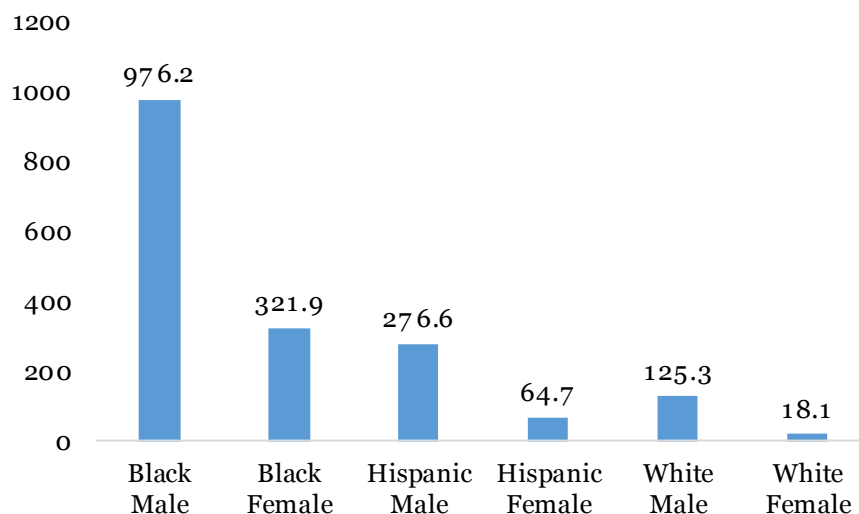
HIV PREVALENCE

Prevalence among transgender persons:
In April 2010, the Michigan Department of Health and Human Services (MDHHS) added a current gender variable to the adult HIV case report form (ACRF) in an effort to collect data on HIV-positive gender-variant minorities, such as transgender persons. It is important to note that collection of the current gender variable is quite new, and numbers presented here are considered a minimum estimate of the actual number of HIV-positive transgender persons in Michigan.

As of January 2017, there were 152 transgender persons currently living with HIV in Michigan. The majority (81%) are black, and almost half (45%) are currently between the ages of 13 and 29.

Only 78% of black transgender persons living in Michigan are in care, of which just 71% are virally suppressed. They have low care and viral suppression rates compared to white transgender persons. They also have low rates compared to all persons living with HIV in Michigan (Figure 7) indicating a need for service professionals and organizations to target programs and interventions toward this group.

Many transgender people face stigma, discrimination, social rejection, and exclusion that prevent them from fully participating in society, including access to health care, placing them at an increased risk for HIV.

The Centers for Disease Control and Prevention (CDC) are currently pursuing a high-impact prevention approach to maximize the effectiveness of current HIV prevention methods among transgender persons. These interventions include *National Transgender HIV Testing Day* and supporting health department demonstration projects that provide PrEP support services and data-to-care activities (see page 26 for more information on Data to Care in Michigan).

Figure 7: Care and Viral Suppression rates among black and white transgender persons currently living with HIV in Michigan, January 2017
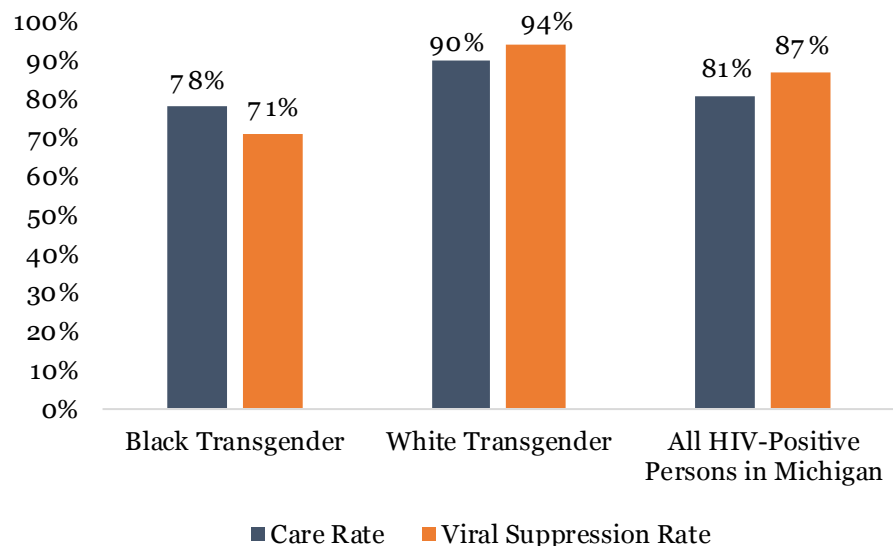
To explore current, pressing issues regarding the epidemic, including HIV Prevalence, please review the most recent *Annual HIV Surveillance Reports* at the links below:

Statewide Infographics

Statewide Tables

Detroit Metro Area Infographics

Detroit Metro Area Tables

City of Detroit Infographics

City of Detroit Tables

CLICK HERE TO SUBSCRIBE TO HIV SURVEILLANCE DATA AND REPORTS!

TRENDS IN NEW HIV DIAGNOSES

To evaluate trends in new HIV diagnoses in Michigan over time, we estimated the number of persons newly diagnosed with HIV infection between 2011 and 2015 by adjusting the number of reported cases to account for those who may not have been reported to the health department by January 1, 2017. These adjustments were made by weighting the data.

We used regression modeling on the adjusted data to assess significant changes in annual rates of new diagnoses overall and by race, sex, and age. Rates for race and sex subgroups were calculated using annual population estimates released by the Census Bureau in 2016. Rates for age at diagnosis were calculated using the 2015 Bridged-Race Population Estimates produced by the Population Estimates Program of the U.S. Census Bureau in collaboration with the National Center for Health Statistics. For risk groups, we analyzed annual counts since there are no reliable denominator data available for rate calculation. Trends overall and in subgroups are described using average annual percent changes in rates (or counts) of new diagnoses. Only significant trends and their corresponding percent changes are shown.

Overview:
The number and rate of new HIV diagnoses remained stable in Michigan between 2011 and 2015, with an average of 777 new cases each year (7.8 cases per 100,000 population) (Figure 8). It is important to note that when assessing stability over the five-year period we only compare the first and last years of new diagnoses.

Figure 8: Adjusted number and rate of new HIV diagnoses in Michigan, 2011-2015
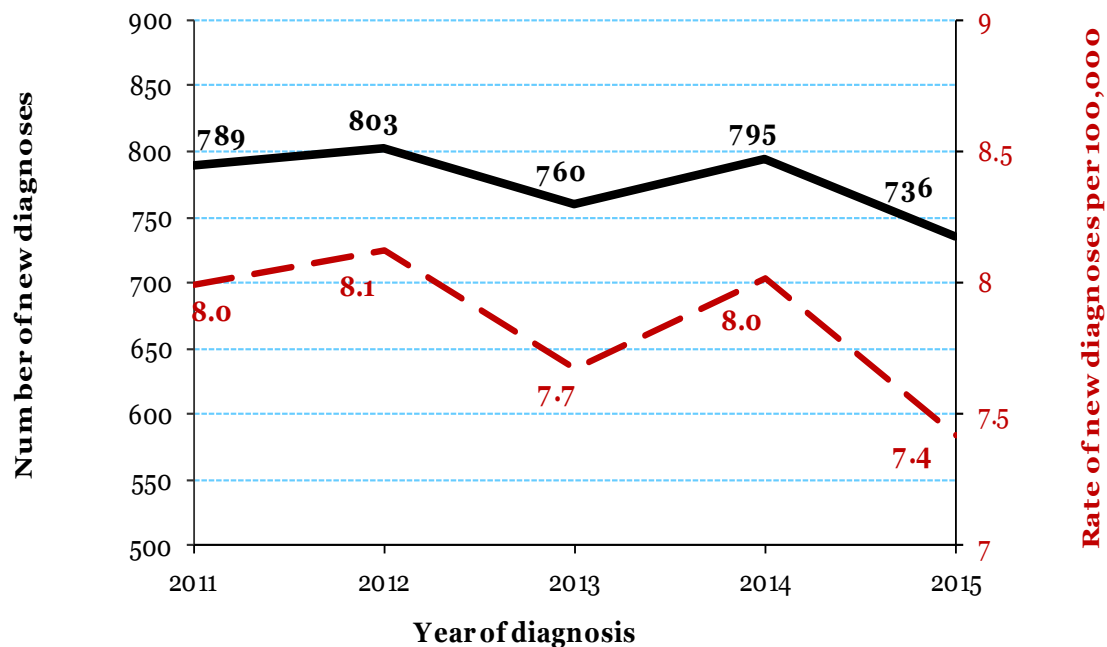
New diagnoses by residence at diagnosis:
The Detroit Metro Area (DMA) continues to see the highest rates of new diagnoses. Between 2011 and 2015, 67% of new HIV diagnoses in Michigan resided in the DMA compared to 33% in Out-state Michigan. Within the DMA, the city of Detroit made up 51% of new HIV diagnoses.

In 2016 the unadjusted rate of new HIV diagnoses in Detroit was 37.5 per 100,000 population. That is almost 4 times higher than Saginaw county which has the next highest rate of new diagnoses behind Detroit (9.9 per 100,000 population). Other counties with high rates of new diagnoses in Michigan include Ingham, Genesee, Wayne County (excluding Detroit), Washtenaw, Oakland, and Kent.
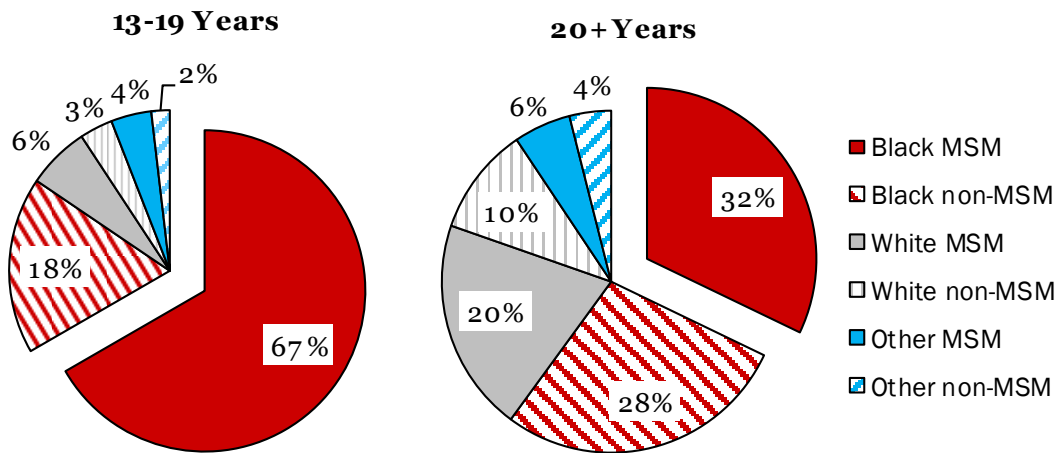
TRENDS IN NEW HIV DIAGNOSES

New diagnoses by age at HIV diagnosis and risk:
Between 2011 and 2015, the rate of new diagnoses decreased significantly among persons 13-19 years of age by an average of 13% per year. Rates in all other age groups remained stable.

Of all teens diagnosed between 2011 and 2015, 85% are black compared to 60% of persons diagnosed at older ages. Furthermore, teens are much more likely to be black males who have sex with males (MSM) compared to adults 20 years and older (67% vs. 32%, respectively) (Figure 9). This underscores a continued need for prevention campaigns tailored to young black MSM as the rates in this group have widened the already large racial gap among persons living with HIV.

Figure 9: MSM vs. non-MSM risk by race and age at HIV diagnosis, 2011-2015

13-19 Years

20+Years

- ■ Black MSM
- ▨ Black non-MSM
- ▨ White MSM
- □ White non-MSM
- ■ Other MSM
- ▨ Other non-MSM

New diagnoses by race, sex, and risk:
The rate of new diagnoses remains highest among black persons of both sexes compared to all other race/sex groups. In 2015, the adjusted rate among black males was 11 times that of white males and the rate among black females was about 15 times that of white females. These disparities have persisted since MDHHS began analyzing trends in Michigan.

Between 2011 and 2015, the number of new HIV diagnoses remained stable among all risk groups. MSM continue to make up the majority of new HIV diagnoses by risk, followed by heterosexuals. Figure 10 illustrates trends among MSM by race. MSM were more than half of all new diagnoses between 2011 and 2015 (57%). Of these newly diagnosed MSM, 58% were black. Though there was no significant increase in the number of black MSM cases as has been seen in the past, black males continue to make up the largest proportion of all MSM cases in Michigan.

Figure 10: Race among new MSM diagnoses in Michigan, 2011-2015

page 20
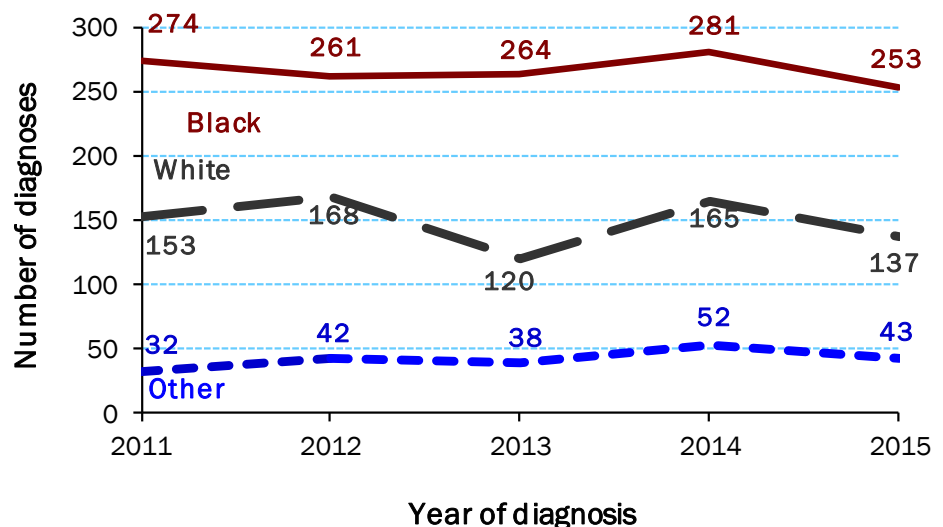
TRENDS IN NEW HIV DIAGNOSES

Perinatal diagnoses:

The majority of persons diagnosed with HIV between the ages of 0-12 years were infected perinatally. Of the 3,296 women reported to be living with HIV in Michigan, approximately 18% are unaware of their HIV status. The predominant risk factor for females diagnosed with HIV during child-bearing age (15-49 years) is heterosexual contact. This HIV prevalence data coupled with the fact that nearly 50% of pregnancies in the United States are unplanned (https://www.cdc.gov/healthcommunication/toolstemplates/entertainmented/tips/UnintendedPregnancy.html) underscore the importance of screening females for HIV and other infectious diseases during pregnancy.

According to [MDHHS Guidelines for Testing and Reporting Perinatal HIV, Hepatitis B, and Syphilis](), all pregnant females in Michigan are to be tested as early as possible at diagnosis of pregnancy and again at 26-28 weeks gestation, regardless of perceived risk and/or whether they had a previous negative test result. It is also recommended that females who are considered high-risk be tested again at 36 weeks gestation or at delivery. The addition of third trimester testing as a best practice guideline is consistent with MDHHS's commitment to being a part of the national effort to eliminate mother-to-child transmission of HIV and other infectious diseases.

Despite best efforts, mother-to-child transmissions of HIV and other infectious diseases are still prevalent. Figure 11 shows the number of perinatal diagnoses of HIV, hepatitis B, hepatitis C, and syphilis between 2012 and 2016. Perinatal transmissions of hepatitis C and syphilis have increased while perinatal hepatitis B transmissions have decreased over the past five years. Perinatal HIV transmissions remained relatively stable between 2012 and 2016, but in 2014, missed opportunities led to 3 mother-to-child transmissions that could have been avoided if MDHHS guidelines were followed.

Figure 11: New Perinatal Diagnoses by birth year, 2012-2016
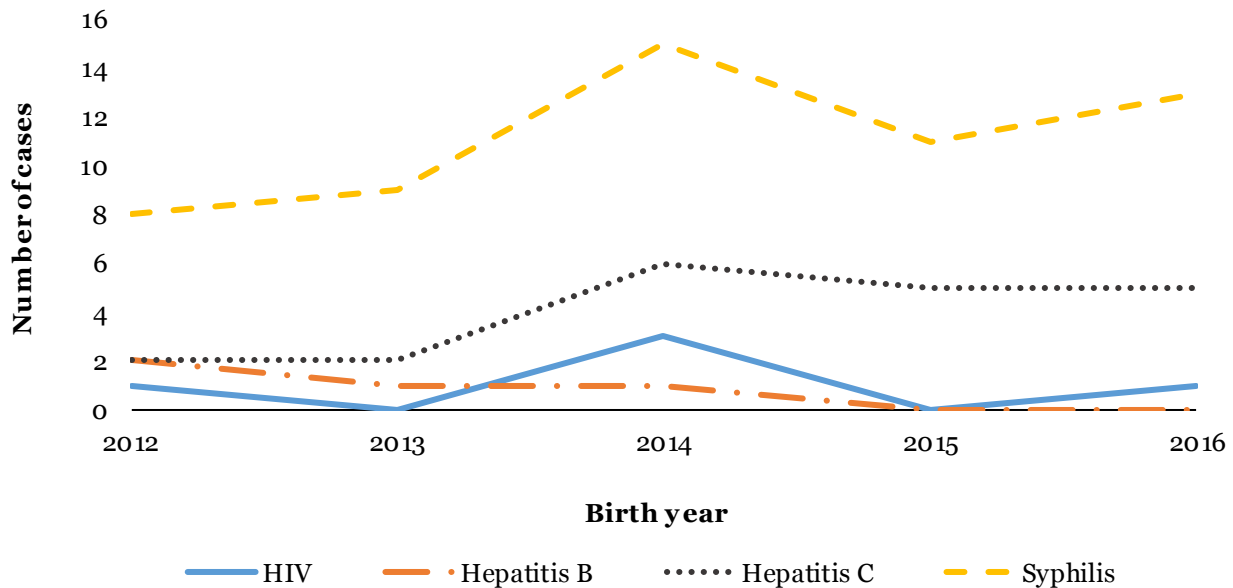
To explore more trends in new HIV diagnoses**, please visit the most recent *Annual Review of HIV Trends* report at the links below:

Statewide Trends

Detroit Metro Area Trends

***Data on unadjusted numbers and rates of new HIV diagnoses may also be found in the Annual Surveillance Report (see [page 18]() for links to this report).*

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ESTIMATES OF HIV INCIDENCE RATES

Michigan's total HIV incidence rate was stable overall for 2010-2014. In 2014, Michigan had an estimated 651 new infections or 7.8 new infections per 100,000 people (Figure 12). It is important to note that when assessing stability over the five-year period we only compare the first and last years of new infections.

Figure 12: Estimated number and rate of new HIV infections in Michigan, 2010-2014
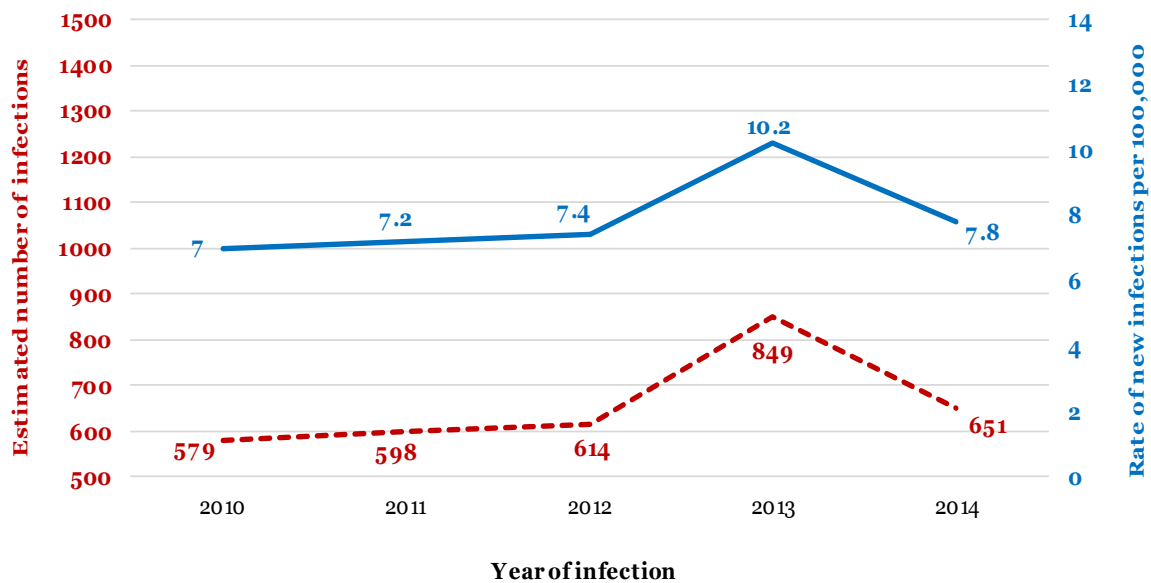
No significant changes in estimates of recent infection were detected for 2010-2014 in Michigan. In 2013, there was an unusual rise in the estimated count and rate of new infections. This rise was not statistically significant and may have been due to the sensitivity of the model to changes in underlying testing patterns and small sample sizes. Counts and estimates returned to more typical levels in 2014.

HIV incidence data differ from traditionally reported prevalence data and from the number of new diagnoses. Incidence data estimate the total number of diagnosed and undiagnosed new infections in a particular year. Prevalence data measure everyone living with HIV, including newly diagnosed cases that may have been infected at any time.

To explore HIV incidence rates in more detail, please visit our most recent *HIV Incidence Report at* the link below:

Estimates of HIV Incidence Rates in Michigan, 2010-2014

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HIV CARE AND SERVICES

Out-state Ryan White Services:
The Michigan Department of Health and Human Services, Division of HIV and STD Programs, HIV Care and Prevention Section supports a comprehensive continuum of HIV prevention and care services throughout the state of Michigan. In collaboration with other Ryan White (RW) Parts, this includes targeted outreach, HIV counseling and testing, linkage to medical care, and an array of core and support services. In accordance with the National HIV/AIDS Strategy, all of these services are aimed at reducing HIV incidence, increasing access to care, decreasing HIV-related health disparities, and improving the health outcomes of people living with HIV.

This summary includes data from 13 funded Part B outstate sub-recipients in Michigan. This statewide, sub-recipient network includes local health departments, federally qualified health centers, medical clinics, and community-based AIDS service organizations. These sub-recipients provide quality services with the ultimate goal of achieving viral suppression. MDHHS also implements the AIDS Drug Assistance Program, which improves access to life-saving HIV medications and the Michigan Dental Program, which improves access to oral health care for PLWH who are eligible. Below is a summary of Ryan White Part B Services and associated outcomes for April 1, 2016 – March 21 2017.

Two outstate agencies, additionally, receive RW Part C and D funds whose data is not reported in this summary.

Table 1: Ryan White services and summary data: April 1, 2016—March, 31, 2017

Ryan White Service Categories	#of Clients Served	# of Units Provided	Outcome Measure*
AIDS Drug Assistance program (ADAP)	3,009	62,484 (prescriptions filled)	87.68% VS
Early Intervention Services	252	7,574 (15-minute increments)	89.13% VS
Emergency Financial Assistance	197	327 (payments)	6.45% Gap
Food bank/home Delivered Meals	372	2,936 (food bank items)	9.98% Gap
Health Education/Risk Reduction	4	15 (sessions)	0% Gap
Health Insurance Premium & Cost-sharing Assistance	178	478 (payments)	6.1% Gap
Linguistic	11	17 (sessions)	0% Gap
Medical Case Management	1,840	55,887 (15-minute increments)	84.56% VS
Medical Nutritional Therapy	32	64 (sessions or supplements)	0% Gap
Medical Transportation	888	10,518 (one-way trips)	8.28% Gap
Mental Health Services	134	2,682 (15-minute increments or 1 occurrence of payment)	7.75% Gap
Non-medical Case Management	1,041	7,909 (15-minute increments)	9.09% Gap
Outpatient/Ambulatory Medical Care	881	10,322 (medical visit activities)	87.64% VS
Oral Health	1,029	6,047 (dental office visits)	88.75% VS
Psychosocial Support	332	1,781 (sessions)	2.2% Gap
Substance Abuse-Outpatient	3	8 (payments)	33.33% Gap
Outreach for Michigan Department of Corrections**	50	612 (15-minute increments)	64% Enrolled

*Outcome measures include: Viral load suppression (VS) - indicates the percentage of clients with a HIV viral load less than 200 copies/mL at last HIV viral load test; and Gap in HIV Medical Visit (Gap) - indicates the percentage of clients who did not have a medical visit, viral load, or CD4 count in the last 6 months.

** This outreach is funded by Part B Minority AIDS Initiative (MAI). The outcome for this specific service is the percentage of B MAI clients that are enrolled in a medication access program upon incarceration release.

For more information about MDHHS Ryan White Program and services, please visit the link below:

State of Michigan Ryan White Program Resources

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HIV CARE AND SERVICES

Linkage to Care and Viral Suppression:

Viral suppression is typically the final, and most important, stage in an HIV care continuum. An individual is considered to be virally suppressed if he/she has less than or equal to 200 copies of HIV virus per milliliter of blood (≤200 copies/mL). Consistent suppression of the virus in an individual is an indication that he/she has routine access to care and is adherent to treatment. Those who maintain low viral loads also have the best long term prognosis. Additionally, transmission of the HIV virus is extremely low among virally suppressed individuals – less than one transmission per 100 PLWH per year. The transmission rate among persons retained in care, but not suppressed is 4 times higher, and the rate among those diagnosed but not in care is over 13 times higher.

Figure 13: Michigan HIV care continuum, 2016
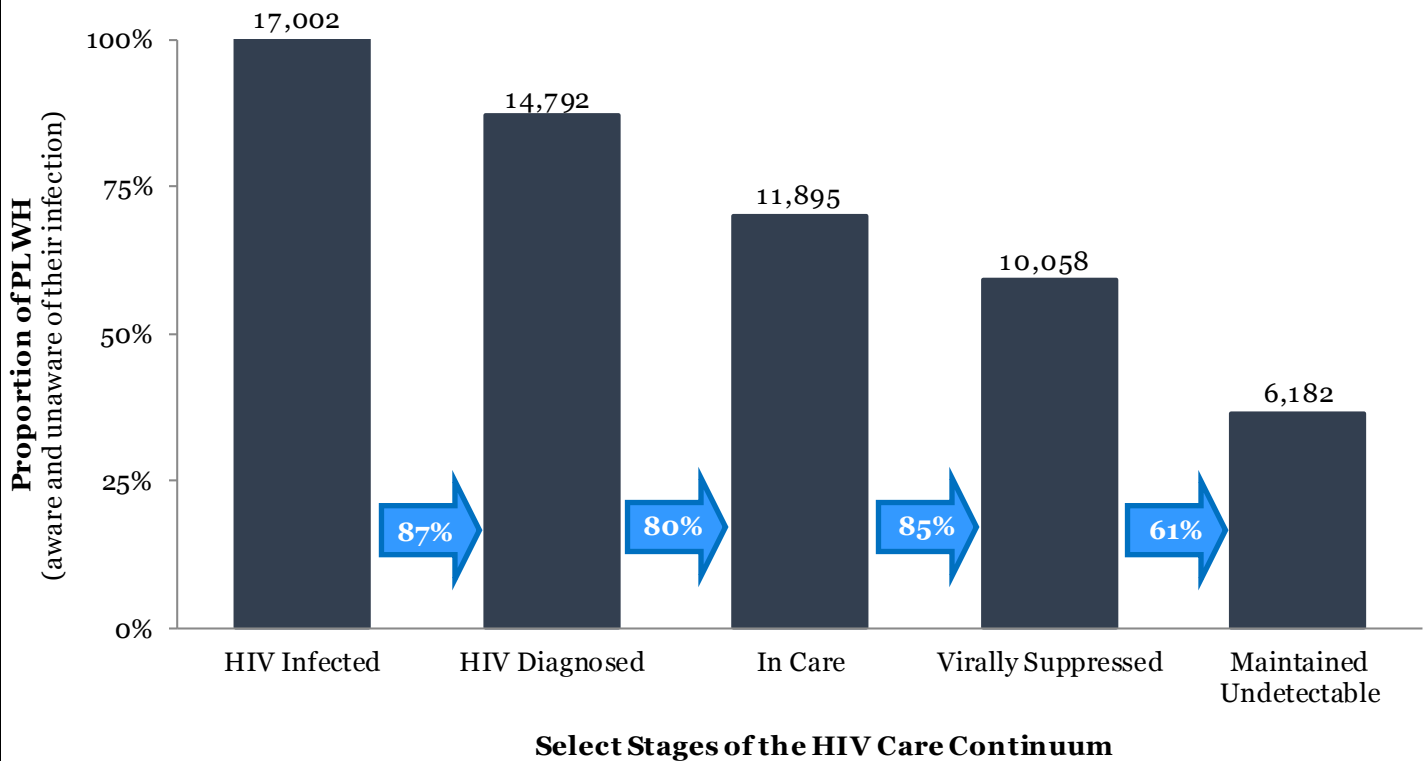
In order to achieve viral suppression a person must first be linked to care. Individuals are considered to be linked once a viral load, CD4, and/or genotype lab test is collected at least eight days following diagnosis. This eight day lag is to exclude labs collected during the diagnostic process – for example, if an individual's CD4 count is low during an ER visit, the medical staff may then test the individual for HIV, that person has not been "linked to care" as the ER is not an HIV care provider. Excluding those first eight days, the speed at which an individual is linked to care, is related to future care engagement.

HIV CARE AND SERVICES

Figure 14: Linkage timeliness among newly diagnosed PLWH

The sooner persons are linked to care the more likely they will remain in care years after diagnosis
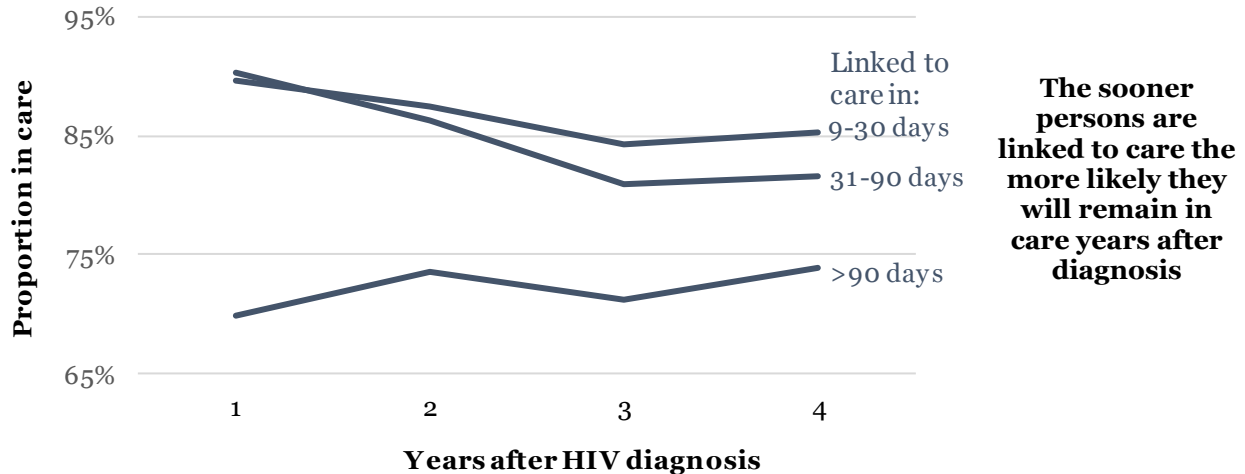
In Michigan, community viral suppression (the proportion virally suppressed of all persons diagnosed with HIV) is increasing steadily. Improved community viral suppression results in fewer HIV transmissions, and there are two ways in which it can further improve. The first is to increase viral suppression among PLWH already in care. In Figure 15, this would mean closing the gap between those in care (dotted line) and those virally suppressed (solid line) – a challenge as the gap is already small. The other option is to improve the proportion of PLWH in care. Community viral suppression is increasing faster than the proportion in care, a trend that appears to be occurring without intervention. Therefore, linking and retaining PLWH in care will be an effective focus as viral suppression will follow.

Figure 15: Trends in care and viral suppression
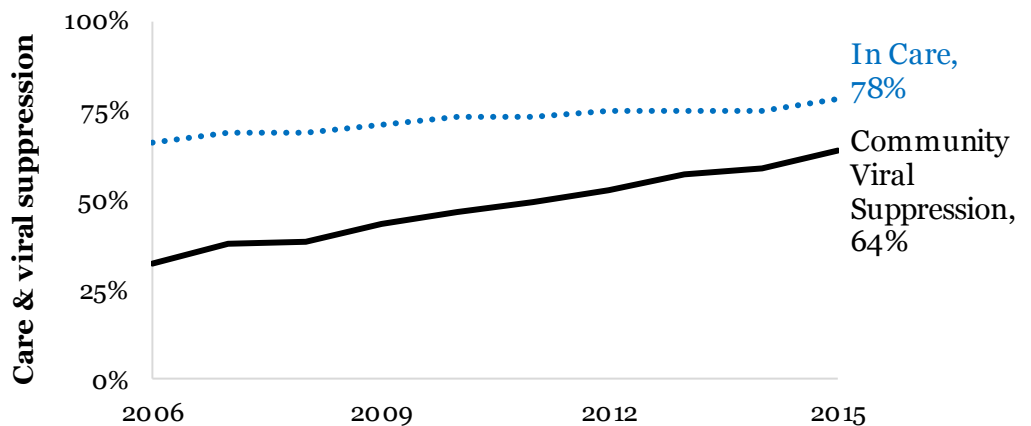
For more information on linkage to care, care, and viral suppression** among demographic and/or geographic groups, please visit the links below:

Michigan NHAS Annual Indicator Report

**Michigan and the Detroit Metro Area's HIV Care Continuum**

**Data on linkage to care, care and viral suppression may also be found in the Annual Surveillance Report (see page 18 for links to this report).

DATA TO CARE

A new project in Michigan, Data to Care, also known as Link-up Detroit, seeks to bolster the care continuum numbers by increasing the number of people living with HIV (PLWH) who are in care. Date to care (D2C) is a CDC supported initiative that uses HIV surveillance data to identify PLWH that are currently not in care (NIC). Once those individuals are identified, steps can be taken to ensure they receive the support they need to be engaged into care. By increasing the number of people in care, we then have a larger pool of people that can then become virally suppressed, bolstering the final and most important step of the care continuum. The NIC list is generated using eHARS, a CDC-supplied surveillance application. NIC status is determined by the absence of standard HIV laboratory tests that a person in care would have. NIC is further broken down into two categories; never linked and fallen out of care. The former applies to recently diagnosed individuals (between 90 and 365 days prior to list creation) who have no labs or those whose only labs are within 8 days of diagnosis. The latter includes PLWH for over a year with no labs in the previous 15 months.

The D2C program in Michigan is being piloted by the Detroit Health Department with support from the Michigan Department of Health and Human Services. Detroit was chosen as the pilot location due to its high percentage of NIC individuals. Approximately 33% of all Michigan's NIC population reside in the city of Detroit. The following care continuum for Detroit illustrates the population of people that the D2C program is attempting to engage. In Detroit, there are approximately 1,126 PLWH that have either fallen out of care or were never engaged in care after diagnosis.

Figure 16: City of Detroit HIV care continuum, 2015
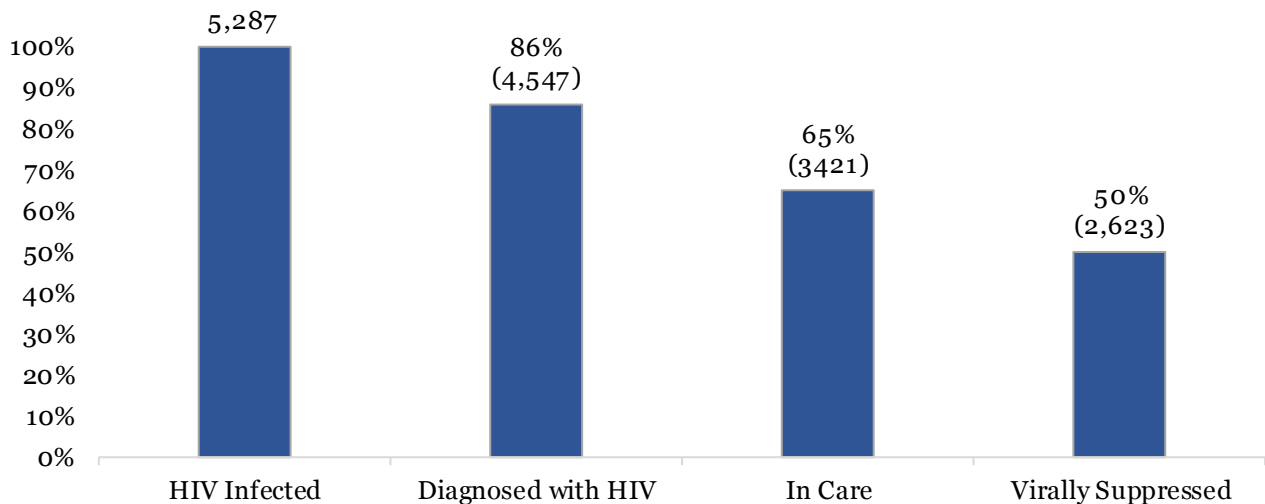
The D2C program makes use of many in-program evaluation procedures to ensure the program is effectively assisting people get into care and supporting the care continuum. The D2C program also records the barriers to care of NIC individuals so in the future these problems can be mediated, preventing PLWH from falling out of care. The protocol also has many built-in checks and balances along with the fluidity to adapt if programmatic elements need to be adjusted. Through continual evaluation and quality improvement, the Detroit D2C Pilot Program hopes to create a model that will be replicable throughout the entire state of Michigan.

For more information on the Data to Care Project, please visit the Data to Care (Link-up Detroit) website at the link below:

Link-Up Detroit
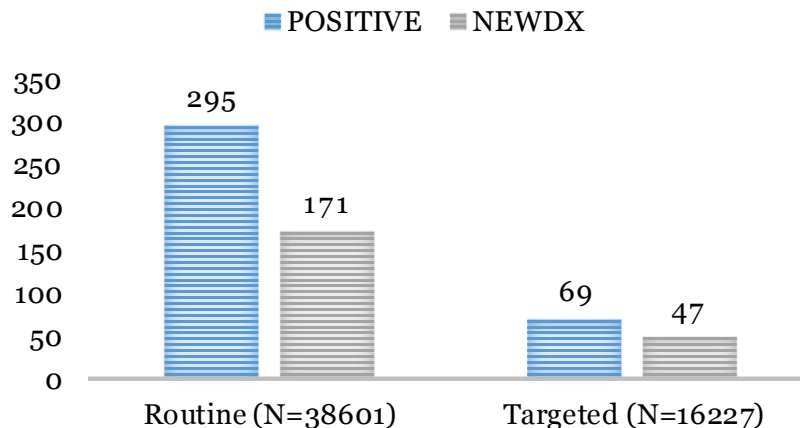
HIV PREVENTION

HIV testing:

HIV Testing initiatives are funded as part of comprehensive HIV prevention programs for health departments and community based organizations through PS 12-1201 funding. HIV testing begins a continuum of services delivered which aim to link HIV-positive individuals to care with the goal of viral suppression. For HIV-negative persons, referrals and risk reduction activities aim to keep the individual negative and address other health concerns.

Figure 17: 2017 testing events
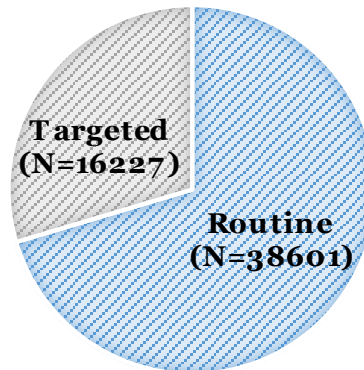
HIV Test events were categorized as either routine or targeted based on location of testing event. Routine HIV tests were administered at local health departments or CBOs (Community Benefit Organizations). Targeted testing occurred at emergency rooms or primary care visits in Detroit. Some targeted testing was offered as "opt-out" testing, screening patients at medical visits unless testing is declined. Through these HIV prevention efforts, 364 people tested positive, of which 218 new HIV cases were identified, counseled, and referred for HIV care and prevention services. This accounts for approximately one quarter of all 2017 HIV diagnoses in Michigan. Other positive testers had been previously diagnosed and were offered linkage to care and other services.

Figure 18: Surveillance verified positive test counts

For the most current report of MDHHS funded HIV Testing in Michigan, please visit the link below:

HIV Testing Report

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HIV PREVENTION

HIV Partner Services:

Partner Services (PS) are a comprehensive set of services available to persons recently diagnosed with HIV or previously positive but new to Michigan. New HIV cases are assigned to local health department staff to contact, interview, offer referrals, for medical care, case management, and other services, as well as discuss partner notification. Partners named by the index client are notified confidentially and offered HIV testing and counseling.
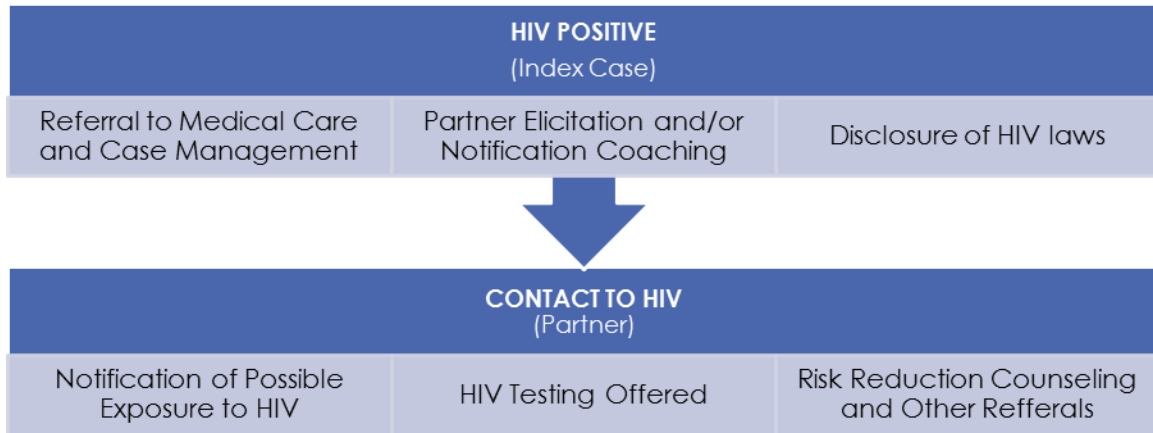
In 2017, 1,113 cases were assigned to local health department and MDHHS disease investigation specialists for partner services. Of those, 786 (71%) cases were located and interviewed for partner services. Those interviewed for partner services have higher probability of being linked to care and becoming virally suppressed than those who are unable to locate or who refuse partner services.

Figure 19: Care rates among partner services indexes
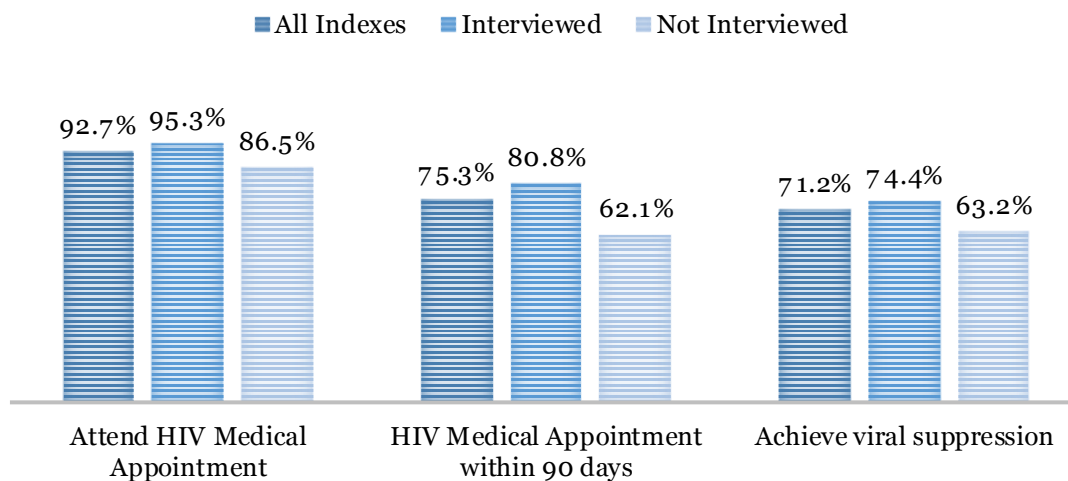
For the most current report of Partner Services delivery in Michigan, please visit the link below:

HIV Partner Services Report

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MOLECULAR HIV SURVEILLANCE

Molecular HIV Surveillance (MHS) is conducted via the collection of HIV genotypes (characterization of HIV nucleotide sequences). Newly diagnosed individuals should receive a genotyping test to establish a baseline assessment of their HIV strain prior to ARV treatment. This test is recommended by the American Medical Association, World Health Organization, and the International AIDS Society. Michigan began collecting genotype data as part of the variant, atypical, and drug resistant strain (VARHS) monitoring program that was funded by the CDC starting in 2005. Genotypes are currently collected electronically as directed by a 2006 law that necessitates mandatory reporting of all HIV labs. CDC has developed four overarching goals that are made possible by the timely and accurate reporting of HIV genotypes. The four goals are as follows: 1) assess the prevalence of drug resistant strains of HIV, 2) describe HIV transmission patterns, 3) identify clusters and potential outbreaks, and 4) monitor the genetic diversity (variant and atypical strains) of HIV. Historically, HIV clusters were assembled by the CDC and sent to the state for investigation and follow-up. The following images are an example of what these CDC reports look like. The reports also include a line list of each individual's demographic, risk, and clinical information.

Secure HIV-Trace:
Recently MDHHS has partnered with the CDC to access a new web-based application that will allow the MDHHS to create, manage, and store new clusters at a local level. MDHHS can also decide what additional HIV surveillance data, when used together with genetic distance, may help establish clusters; this may include data such as information generated by partner services investigations or STD data. This on-site cluster identification tool will allow MDHHS to create cluster reports and initiate follow-up in a much timelier manner. Pictured below is an example of a number of clusters located in the state of Michigan. Each grey circle represents one individual cluster. Alongside the group of clusters is an individual cluster that has been expanded to show each person that is in that particular cluster. The ability to sort by select variables can also be seen when the cluster is expanded. In this case the cluster is sorted by sex and age.
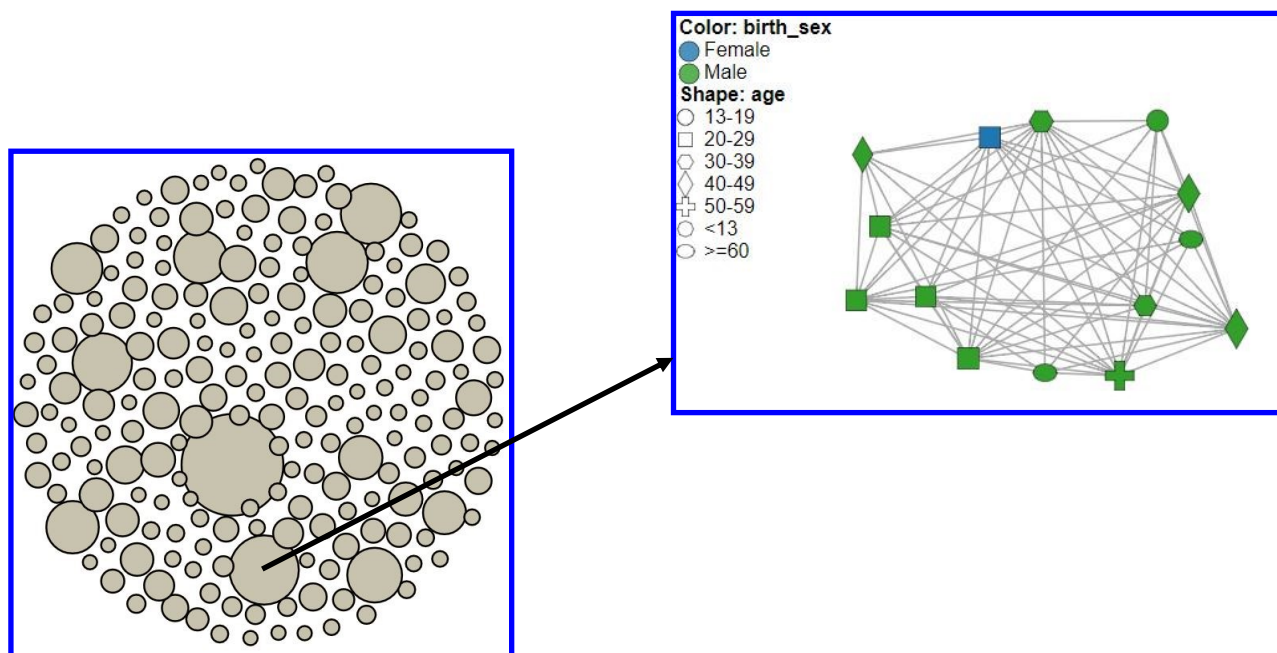
For more information regarding the continued efforts to incorporate MHS into Michigan's comprehensive HIV response plan or for data on HIV genotypes please visit the links below:

Molecular HIV Surveillance Technical Guidance Document

MDHHS MHS Website

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National HIV Behavioral Surveillance:

The National HIV Behavioral Surveillance (NHBS) program is a CDC funded project that monitors risk behaviors and access to HIV prevention services among three identified risk groups at a national and local level. Data collection is implemented in three annual cycles with each cycle focusing on one risk group, i.e., men who have sex with men (MSM), persons who inject drugs (PWID), and heterosexuals living in targeted areas (HET). In 2016, the HET cycle focused solely on women who exchanged sex for money, drugs, services, etc. This project is different from all other HIV surveillance activities because it collects data from people based on behavioral and/or residential characteristics and not their HIV status; most interviewees are not infected with HIV.

Table 2: Demographic characteristics of self-reported HIV negative participants

	MSM, 2014		PWID, 2015		HET, 2016	
	n	%	n	%	n	%
Race						
Black	202	45%	396	67%	480	90%
Hispanic	35	8%	9	1%	6	1%
White	183	41%	166	28%	32	6%
Multi/Other	27	6%	16	3%	18	3%
Age						
18-19	24	5%	2	<1%	21	4%
20-24	90	20%	17	3%	45	8%
25-29	96	21%	43	7%	54	10%
30-39	111	25%	79	13%	106	20%
40-49	71	16%	63	11%	128	24%
50+	55	12%	383	65%	182	34%
Gender						
Male	447	100%	383	65%	N/A	--
Female	N/A	--	202	34%	536	100%
Transgender	N/A	--	2	<1%	N/A	--
Residence						
Detroit	216	48%	509	87%	498	93%
Wayne (non-Detroit)	99	22%	63	11%	36	7%
Oakland	132	30%	15	2%	2	<1%
Education						
Less than high school	45	10%	182	31%	165	32%
High school/GED	153	34%	246	42%	205	40%
Some college, assoc/tech degree	160	36%	148	25%	126	25%
Bachelor's degree or higher	89	20%	11	2%	18	3%
Annual Income						
Less than $15,000	309	69%	480	82%	454	91%
$15,000 - $24,000	75	17%	51	9%	49	9%
$25,000 - $39,000	127	28%	56	9%	10	<1%
Total	**447**	**100%**	**587**	**100%**	**536**	**100%**

BEHAVIORAL AND CLINICAL OUTCOMES

NHBS methods:
Data collection activities include a standardized core questionnaire used to collect information about risk behaviors for HIV infection, HIV testing, and access to and use of HIV prevention services among eligible adults. Participants were at least 18 years of age.

Participants of the MSM cycle were recruited from venues in the Detroit area. Prior to data collection, formative assessment activities were conducted to identify venues attended by MSM. A venue was defined as an area, location, or building (public or private) in Wayne County (or Oakland County beginning 2014) attended by MSM for a purpose other than receiving medical care or services related to HIV. Adults eligible for the survey were male and had sex with a male (oral or anal) in their lifetime.

Both the IDU and HET cycles recruit Wayne County residents (or Oakland County beginning 2015) via respondent driven sampling (RDS). For RDS, a few well connected and representative individuals from the risk community, called "seeds", are selected. The seeds find three to five participants who, in turn, recruit an additional three to five persons in the same risk group. These waves of interviewees are recruited until the desired sample size is reached. Adults eligible for the IDU survey had used drugs intravenously in the preceding 12 months. Adults eligible for the HET survey had to have sex (oral, vaginal and/or anal) with a person of the opposite sex in the preceding 12 months. In order to be an eligible recruiter in the HET cycle, participants had to be of low socioeconomic status or education.

A higher proportion of self-reported HIV negative participants tested positive for HIV in 2014.

NHBS MSM cycle:
The Michigan Department of Health and Human Services participated in the 2008, 2011, and 2014 MSM cycles and is currently participating in the 2017 cycle. Detroit and Wayne County residents have always been included. Oakland County residents were added in 2014, explaining the increase observed in white and higher educated participants compared to 2008 and 2011. In 2017, Macomb County residents will also be eligible to participate.

Figure 20: Self-reported HIV-negative participants who tested positive

2011	7%
2014	11%
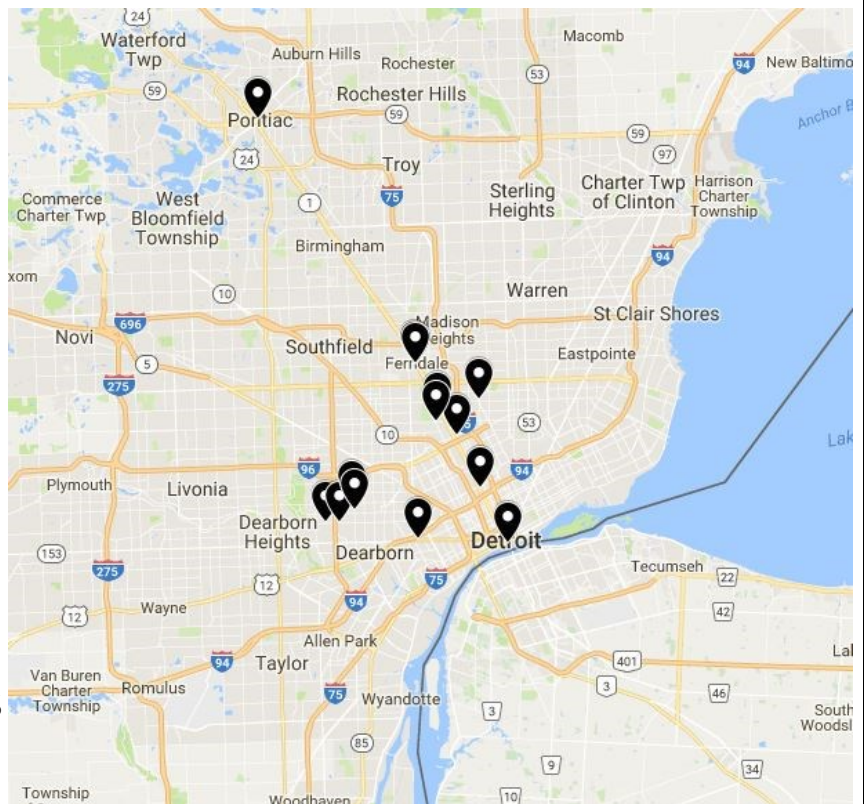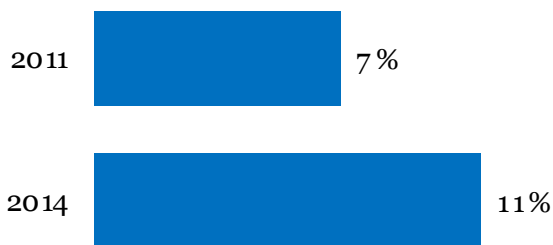
BEHAVIORAL AND CLINICAL OUTCOMES

Figure 21: Proportion of self-reported HIV-negative participants who had heard of people taking ARVs to prevent HIV

2011 10%

2014 24%
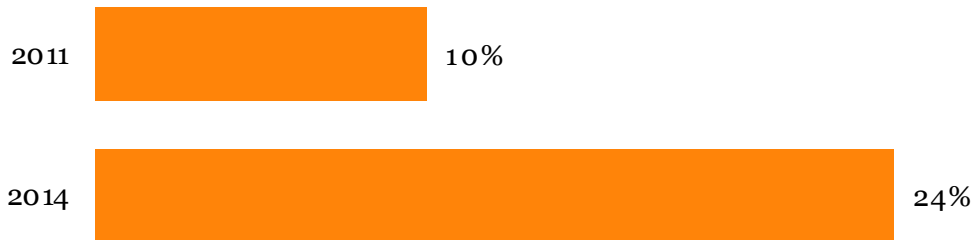
The proportion of self-reported negative participants who had heard of people taking ARV meds to prevent HIV more than doubled between 2011 and 2014.

NHBS PWID cycle:
Michigan participated in the NHBS IDU cycle in 2005, 2009, 2012, and 2015. Of the 587 participants who self-reported HIV negative, only 23% (less than one in four) reported using a sterile needle during every injection.

NHBS HET cycle:
Of the 514 women who reported number of sex partners in the past 12 months, 71% (366) had 3 or more partners. Ten percent had been diagnosed with Chlamydia in the preceding 12 months, 4% with Gonorrhea, and <1% with Syphilis.

Figure 22: Number of sex partners reported in the past 12 months among heterosexual women (n=514)

- 1-2 partners 29%
- 3-5 partners 30%
- 6+ partners 41%
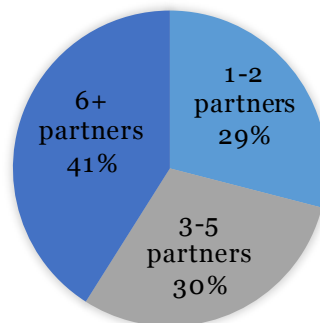
More information about National HIV Behavioral Surveillance, as well as analyses and reports, can be found at the link below:

[MDHHS NHBS Website](#)

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BEHAVIORAL AND CLINICAL OUTCOMES

Medical Monitoring Project:

The Medical Monitoring Project (MMP) is a Centers for Disease Control and Prevention (CDC)-sponsored initiative housed within the HIV surveillance program. Part of the goal of the project is to ascertain the met and unmet needs of those living with HIV. Michigan is one of 23 project areas in the United States participating in this study (Figure 20). In 2009-2014, the sampling method was three-tiered: with project areas being sampled first, then HIV care facilities, and finally individual participants. A sample of 400 participants were drawn for each cycle year. Unadjusted participation rates varied from 53% in 2009 to 77% in 2014 for facilities and 37% in 2009 to 48% in 2014 for participants (Table 1).

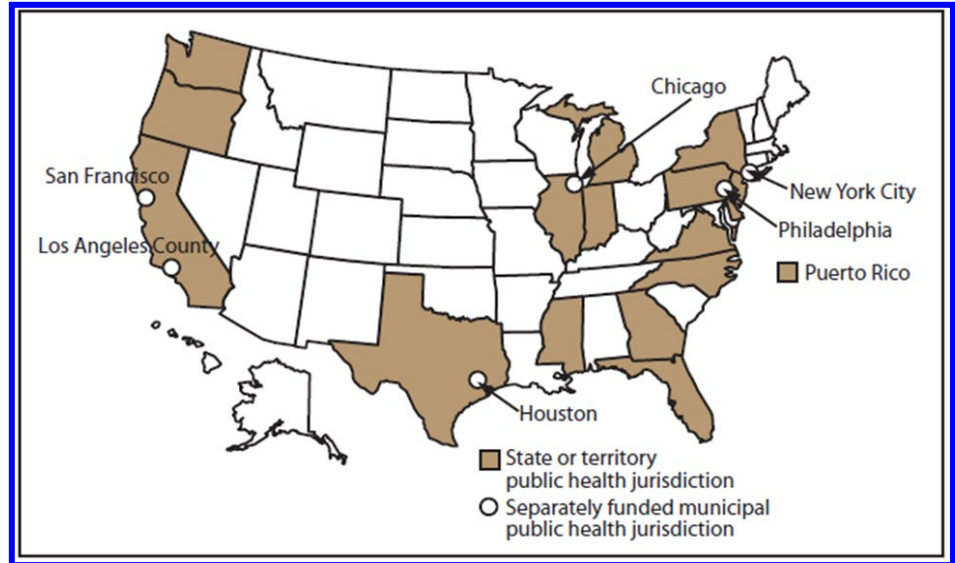**Figure 23: Map of participating MMP project areas, 2009-2014**

Data were collected via interviews and medical record abstractions during June through the following May of each cycle year. The type of data collected include sociodemographic data, clinical characteristics, STD testing and infection, depression, substance abuse, sexual behavior, met and unmet need for ancillary services, and prevention activities of HIV-infected patients currently in care.

Trend analysis of data from 2009-2014 showed an increase in STD testing, an increase in ART use, increased viral suppression, and increased utilization of dental services among patients in care.

Table 3: Summary of Michigan MMP response rates, 2009-2014

MMP Cycle	Participating Facilities % (Unadjusted)	Patients with MRA and Interview Data % (Unadjusted)
2009	53	37
2010	65	31
2011	59	37
2012	69	41
2013	77	41
2014	77	48

More information about the Medical Monitoring Project, as well as analyses and reports, can be found at the link below:

MDHHS MMP Website

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STD AND STD/HIV CO-INFECTION

Program overview:
Sexually Transmitted Diseases (STDs), including gonorrhea, syphilis, and chlamydia result in excessive morbidity, mortality, and health care costs, particularly among women, adolescents, and newborns. The goals of the MDHHS STD Prevention Program are: 1) prompt reporting of cases, 2) the provision of screening and treatment services for Michigan's citizens, and 3) the application of interviewing and case finding activities to reduce complications and intervene in the spread of disease.

STD health disparities in Michigan:
The burden of STDs is disproportionately high for black persons in Michigan. Black persons are six times more likely to be diagnosed with chlamydia, fourteen times more likely to be diagnosed with gonorrhea, and ten times more likely to be diagnosed with syphilis compared to white persons.

Among persons diagnosed with syphilis, 1 out of 3 are also living with an HIV infection.
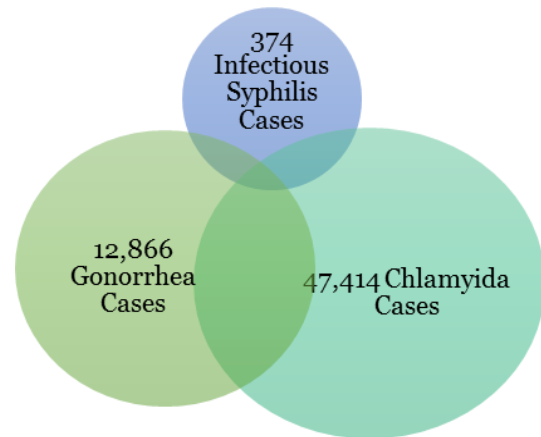
Figure 24: Michigan STD cases, 2016

374 Infectious Syphilis Cases

12,866 Gonorrhea Cases

47,414 Chlamyida Cases

Figure 25: STD rate disparities among black, white, and Hispanic persons, 2016

Rate per 100,000

Chlamydia (n=47,414): Black 1134.0, White 191.5, Hispanic 335.6
Gonorrhea (n=12,866): Black 464.1, White 32.6, Hispanic 68.1
Syphilis (n=374): Black 43.0, White 5.1, Hispanic 13.2
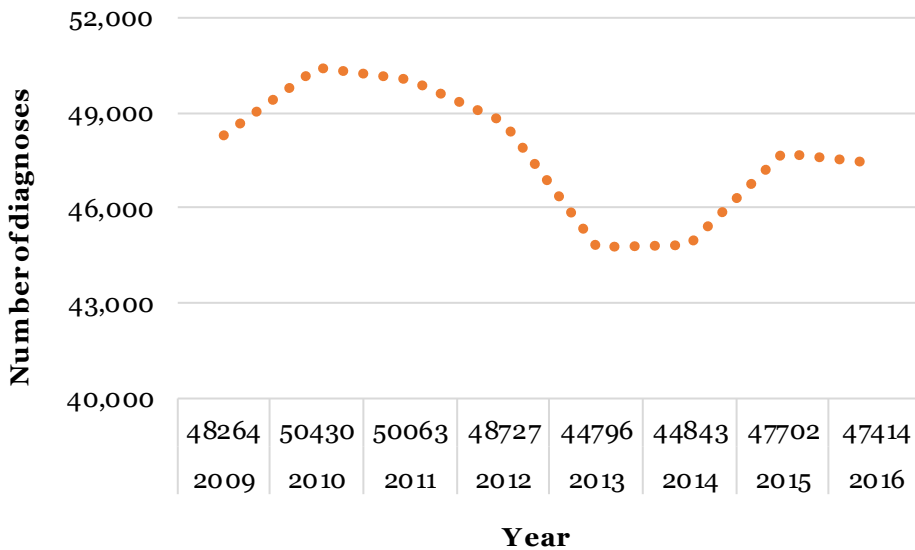
■ Black ■ White ■ Hispanic
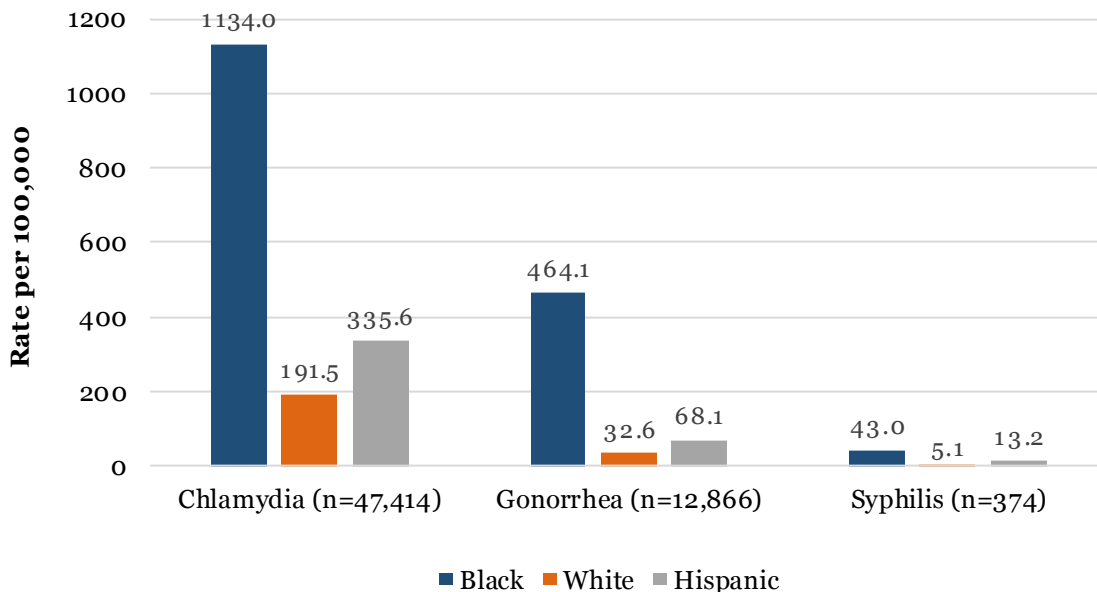
Chlamydia:
Except for influenza, chlamydia is the most frequently reported communicable disease in Michigan and the US. Nearly 48,000 cases of chlamydia were diagnosed in Michigan in 2016. An estimated 75-90% of individuals with chlamydia have no symptoms, making diagnoses difficult and routine screening critical.

STD AND STD/HIV CO-INFECTION

Figure 26: Chlamydia diagnoses in Michigan, 2009-2016

	48264	50430	50063	48727	44796	44843	47702	47414
	2009	2010	2011	2012	2013	2014	2015	2016

Year

While both men and women can be infected with chlamydia, it disproportionately impacts young females. Chlamydia is the most common cause of infertility in women and if left untreated, it can cause more serious complications. In 2016, 35% of chlamydia cases were among black persons and 31% were among white persons. black and white women are equally affected by this disease. However, the rate among women is three times higher than men who are infected with chlamydia. Over two-thirds (69%) of chlamydia cases were among 15-25 year olds.

Gonorrhea:
Gonorrhea can occur in the genitals, rectum, and throat. The majority of gonorrhea cases have moderate to no symptoms, making testing vitally important.

In Michigan, there was a decline in reported gonorrhea from 2008-2014. However, Figure 27 shows that there has been a significant increase each of the last two years. This is of particular concern, given the potential for resistance to the bacteria.

In Michigan, gonorrhea is equally present in both men and women. At least 50% of persons diagnosed with gonorrhea were black.

Figure 27: Gonorrhea diagnoses, 2015-2016

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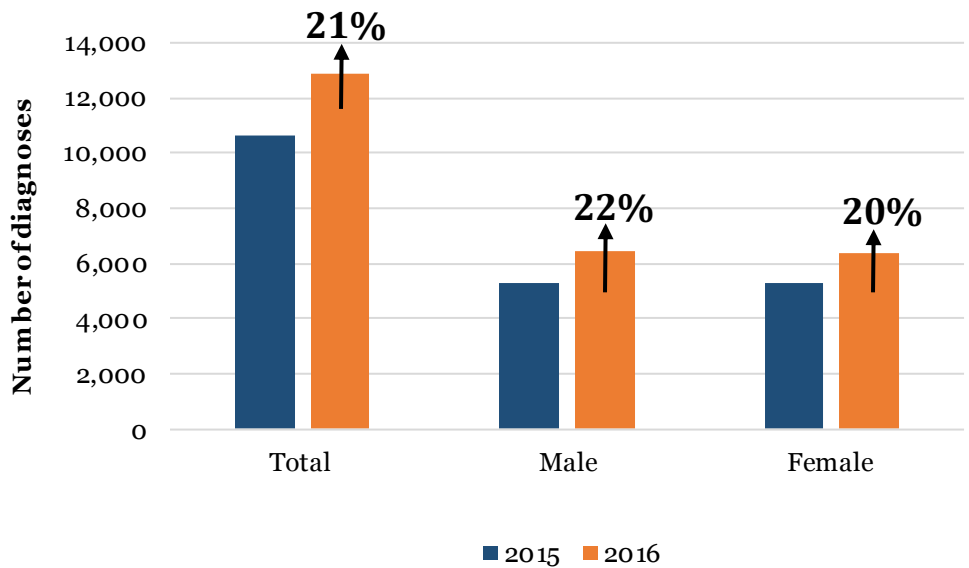
STD AND STD/HIV CO-INFECTION

Syphilis:

Syphilis has several distinctive stages, including congenital syphilis. Individuals diagnosed with syphilis may not have any signs or symptoms. Symptoms such as chancres (sores) or a characteristic rash on the hands or body may indicate Primary or Secondary syphilis (P&S). Signs and symptoms are usually absent for early or latent stages of syphilis. If syphilis is left untreated, neurosyphilis or ocular syphilis can occur and affect the nervous system, or any part of the eye. In pregnant women, untreated syphilis can cause serious complications with an unborn child, causing congenital syphilis.

Figure 28 shows the relative contribution of males, MSM, and HIV-positive cases to P&S syphilis. Three-quarters of all men are MSM and almost half of all MSM P&S cases were also HIV infected individuals.

Figure 28: Cascade of primary and secondary syphilis cases, 2016 (n=374)
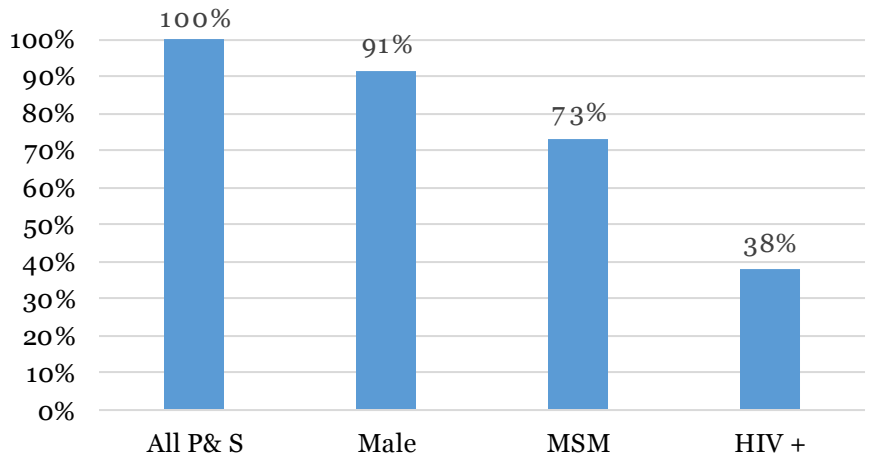
The disparities by race and sexual risk factor are striking. Within each race group, the majority of cases are among MSM. A much smaller number of cases are among women, heterosexual men, and men of unknown risk.

Figure 29: Syphilis cases by race and sexual risk factor, 2016
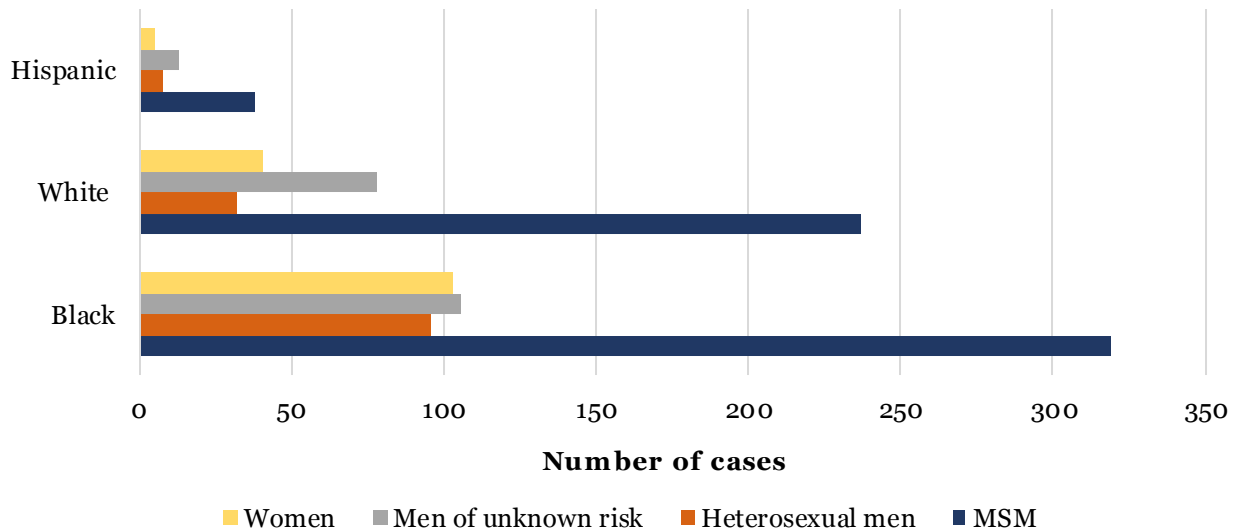
Congenital syphilis:

Congenital syphilis occurs when a pregnant mother with untreated syphilis infection passes it onto their fetus or newborn baby, and can cause serious health challenges that include pre-mature birth, low birth weight, stillborn birth, or death shortly after birth. In 2016, Michigan had 13 cases of congenital syphilis.

Lymphogranuloma venereum (LGV):
LGV is a genital ulcer disease caused by an uncommon strain of chlamydia. Symptoms may include a lesion or pimple around the genital area but may resolve over time. In addition, lymphadenopathy or proctitis may occur. LGV can be treated with doxycycline.

LGV is reportable in Michigan. Prior to 2015, the last reported case of LGV was in 2008. Beginning with 4 case reports of LGV in September 2015, there were 44 cases reported by the end of 2016. All cases of LGV were men who have sex with men (MSM), all were infected with HIV (including 6 new HIV diagnoses), 93% were black, and 74% were residents of Detroit. Since August 2016, only a few sporadic cases of LGV have been reported.

Figure 30: Confirmed, probable, and suspect LGV incidence, 2015- 2016 (n=44)
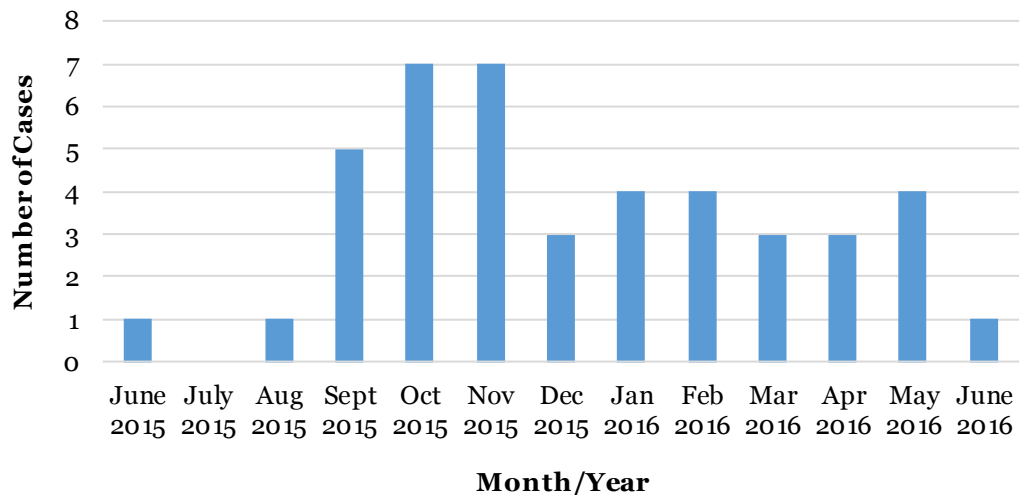

STD and HIV co-infections:
Persons with an STD are more likely to be infected with HIV. Linked cases from the HIV and STD registries in Michigan were analyzed to show the burden of co-infections on various types of populations. Figure 31 represents the proportion of individuals who have ever been diagnosed with HIV and an STD in 2016. A disparate number of co-infections are black MSM.

Figure 31: Proportion diagnosed with HIV and an STD, 2016

522 Gonorrhea and HIV
- 93% Male
- 84% MSM
- 65% Black

371 Chlamydia and HIV
- 87% Male
- 75% MSM
- 62% Black

124 P&S Syphilis and HIV
- 99% Male
- 91% MSM
- 67% Black
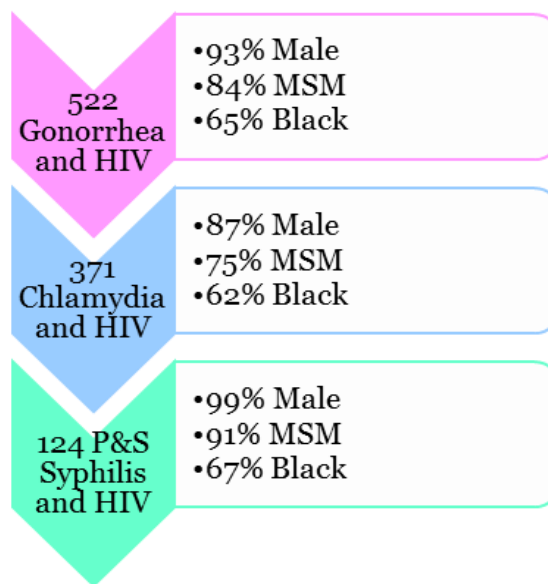
For more information on the STD Prevention Program or more STD data please visit the link below:

MDHHS STD Website

CLICK HERE TO SUBSCRIBE TO HIV SURVEILLANCE DATA AND REPORTS!

HEPATITIS C AND HCV/HIV CO-INFECTION

Chronic HCV:

Similar to HIV, Hepatitis C Virus (HCV) is transmitted primarily through exposure to infected blood, which can result from sharing infected injection-drug use equipment, needle-stick injuries involving contaminated blood, receipt of blood or blood products before the availability of a standard screening test in 1992 and inadequate infection control in health-care settings. Much less often, HCV transmission occurs among infants born to HCV-infected mothers or during sexual contact. Since there is no vaccine available, the best way to prevent hepatitis C is by avoiding behaviors that can spread the disease, especially sharing injection drug use works.

While the majority of infections are asymptomatic, those who are symptomatic may experience fever, fatigue, decreased appetite, nausea, vomiting, abdominal pain, dark urine, and jaundice. About 75–85 % of newly infected persons develop chronic infection and 60–70% of chronically infected people develop chronic liver disease; 5–20% of chronically infected people develop cirrhosis and 1–5% die from cirrhosis or liver cancer.

Figure 32: Chronic Hepatitis C cases per 100,000 persons in Michigan, 2012-2016
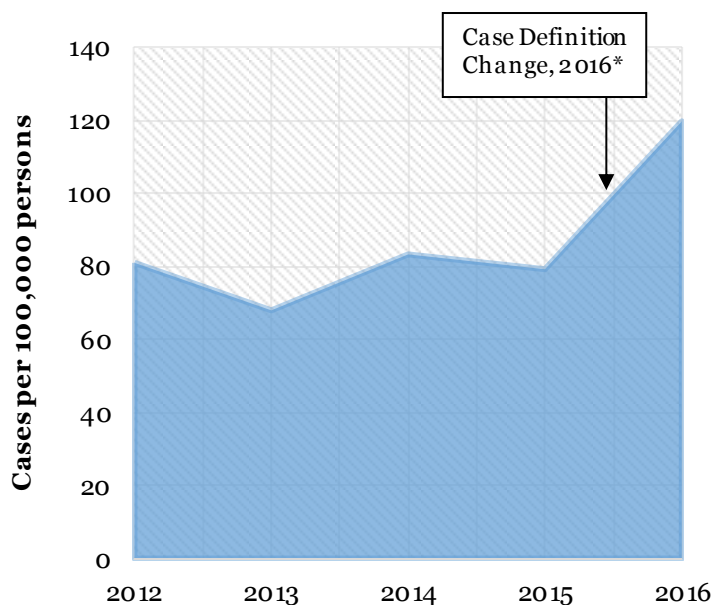

Table 4: Chronic Hepatitis C cases per 100,000 population in Michigan, 2012-2016

Year	Michigan Cases	Rate per 100,000
2012	8,005	80.99
2013	6,719	67.98
2014	8,233	83.30
2015	7,833	79.25
2016*	11,883	119.76

With an estimated 3.5 million chronically infected persons nationwide, HCV infection is the most common blood-borne infection in the United States. Worldwide, about 150 million people are chronically infected with HCV, and more than 350,000 people die every year from hepatitis C-related liver diseases.

In 2016, there were 11,883 cases of chronic HCV reported to MDSS, with a rate of 119.76 cases per 100,000 population. This was a notable increase from previous years, where chronic HCV rates remained relatively stable. There was a change in the Chronic Hepatitis C case definition in 2016, which may be partly responsible for the increase seen in 2016.

HEPATITIS C AND HCV/HIV CO-INFECTION

HCV and HIV co-infection:

In general, the number of new HCV/HIV co-infection diagnoses has trended downward in recent years. However, since most of these individuals are living longer (largely because of improvements in HIV linkage to care and viral suppression) prevalence of co-infection has increased.

Figure 33: Number of new HIV/HCV co-infection diagnoses, 2004-2016

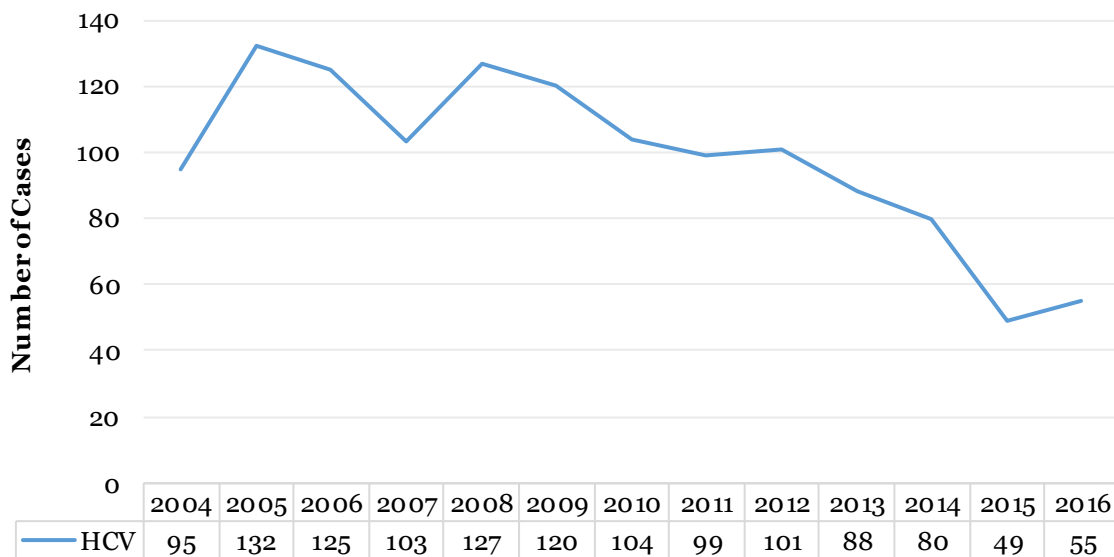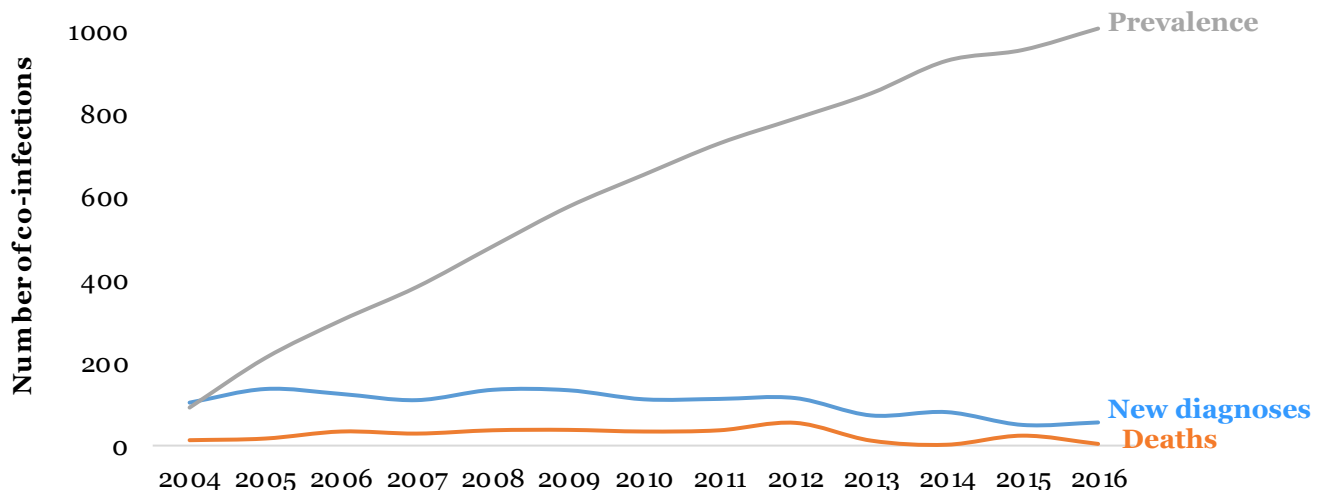|	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
HCV	95	132	125	103	127	120	104	99	101	88	80	49	55

Figure 34: Incidence, prevalence, and deaths of diagnosed HCV/HIV co-infection in Michigan, 2004-2016

HEPATITIS C AND HCV/HIV CO-INFECTION

Between 2004 and 2015, 1,191 people were reported in Michigan with HIV/HCV co-infection. Table 7 shows a break-down of the HCV/HIV co-infected population in 2016 versus 2004-2015. In recent years there has been a shift from primarily PWID to MSM in this co-infected population. While sexual transmission of HCV is rare, it has been reported in HIV-infected MSM populations.

Table 5: HCV/HIV co-infection data in Michigan

Variable	2016 HCV/HIV Co-infections		2004-2015 HCV/HIV Co-infections	
Total Co-infections	55		1,191	
Sex				
Male	45	*(81.8%)*	845	*(70.9%)*
Female	10	*(18.2%)*	338	*(28.4%)*
Unknown	0	*(0.0%)*	8	*(0.7%)*
Race				
White	8	*(14.5%)*	335	*(28.1%)*
Black or African American	44	*(80.0%)*	731	*(61.4%)*
Hispanic	1	*(1.8%)*	47	*(3.9%)*
Asian	0	*(0.0%)*	15	*(1.3%)*
American Indian or Alaskan Native	0	*(0.0%)*	2	*(0.2%)*
Multi/Other/Unknown	2	*(3.6%)*	61	*(5.1%)*
HIV Transmission Risk				
MSM	24	*(43.6%)*	223	*(18.7%)*
IDU	19	*(34.5%)*	517	*(43.4%)*
MSM/IDU	5	*(9.1%)*	137	*(11.5%)*
Blood Recipient	0	*(0.0%)*	42	*(3.5%)*
Heterosexual	3	*(5.5%)*	143	*(12.0%)*
Perinatal	0	*(0.0%)*	2	*(0.2%)*
Unknown/Undetermined	4	*(7.3%)*	127	*(10.7%)*
Age at Co-infection				
0-19	0	*(0.0%)*	7	*(0.6%)*
20-29	7	*(12.7%)*	57	*(4.8%)*
30-39	9	*(16.4%)*	149	*(12.5%)*
40-49	8	*(14.5%)*	374	*(31.4%)*
50-59	15	*(27.3%)*	472	*(39.6%)*
60+	16	*(29.1%)*	132	*(11.1%)*

For more data on Viral Hepatitis or HCV/HIV Co-infections, see the most recent Viral Hepatitis Surveillance Report at the link below:

2016 Viral Hepatitis Annual Surveillance Report

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TUBERCULOSIS AND TB/HIV CO-INFECTION

Tuberculosis Disease (TB) is an infectious disease resulting from Mycobacterium tuberculosis infection. Typically the disease manifests in the lungs (pulmonary TB), but it can manifest in any other site of the body (extrapulmonary TB). An individual with pulmonary TB disease can spread the disease to others if they expel M. tuberculosis bacteria into the air through activities such as coughing.

Of the estimated 2-3 billion individuals infected with M. tuberculosis, an estimated 5-15% will develop TB disease in their lifetime. However, those who are also infected with HIV have a much higher probability of developing the disease. As such, HIV is considered one of the greatest risk factors for developing TB disease.[1] Globally, it is estimated that people living with HIV are 26 times more likely to develop TB disease over their lifetime than those who are HIV-negative.[2] Therefore, it is essential to know the HIV status of persons with TB to ensure appropriate treatment.

In order to start quantifying HIV infection among TB cases in the U.S., HIV status was added to the individual TB case report in 1993. At that time only 21% of the 477 cases reported in Michigan had HIV status documented. Through 1999, incomplete reporting remained a challenge to reliably estimating HIV-TB coinfection with only 25% of the 349 reported MI cases having HIV status documented. Since that time reporting has been gradually improving each year, and in 2016, HIV status was known and reported for almost 90% of the 133 persons with TB in Michigan (Figure 35).

Figure 35: Number of incident TB cases and number of cases with known HIV status reported on the TB case report form by year of case report, Michigan, 1993-2016
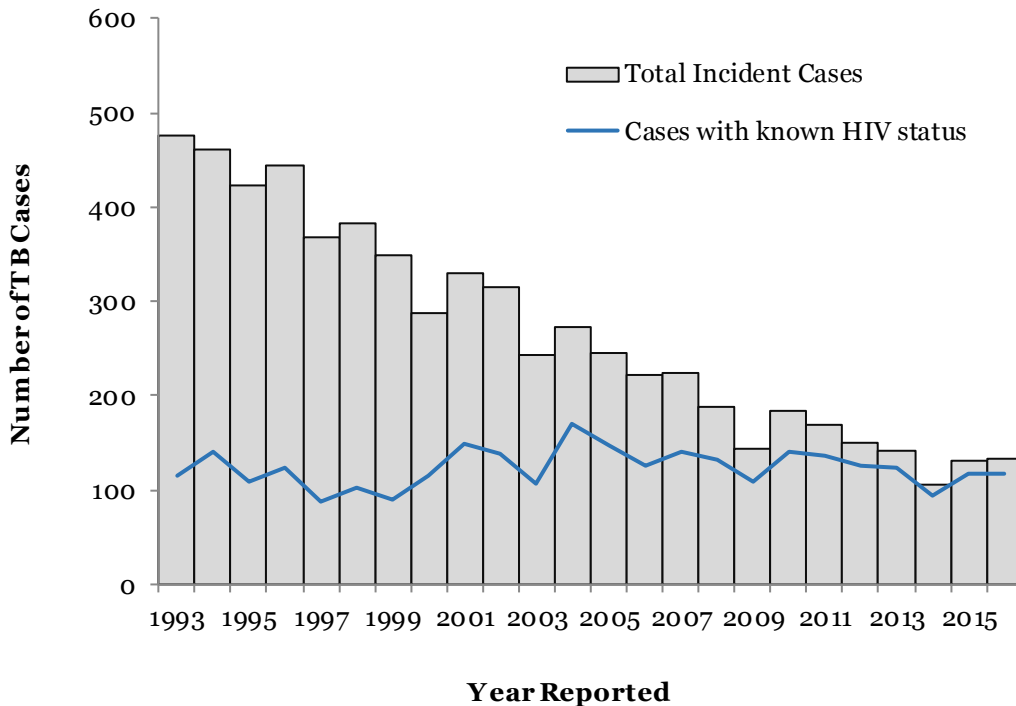
1. World Health Organization. (2016) Global Tuberculosis Report 2016. Geneva: World Health Organization. Available: http://apps.who.int/iris/bitstream/10665/250441/1/9789241565394-eng.pdf?ua=1. Accessed 12 September 2017.
2. World Health Organization. (2015) Global Tuberculosis Report 2015. Geneva: World Health Organization. Available: http://apps.who.int/iris/bitstream/10665/191102/1/9789241565059_eng.pdf?ua=1. Accessed 12 September 2017.

TUBERCULOSIS AND TB/HIV CO-INFECTION

Overall, the estimate of HIV infection among persons with TB who had a known HIV testing result (positive, negative, or indeterminate) has decreased each year. When reporting started in 1993, 37% of Michigan's cases with known HIV status were HIV positive. In 2004, 10% were positive, and in 2016 less than 2% were positive (Figure 36). As the number of Tuberculosis cases reported each year decreases, the proportion of those co-infected with HIV is likely to remain somewhat consistent if one or two cases continue to be identified each year.

Figure 36: Proportion of TB cases identified as HIV positive in the TB case report form by year of case report, Michigan, 1993-2016
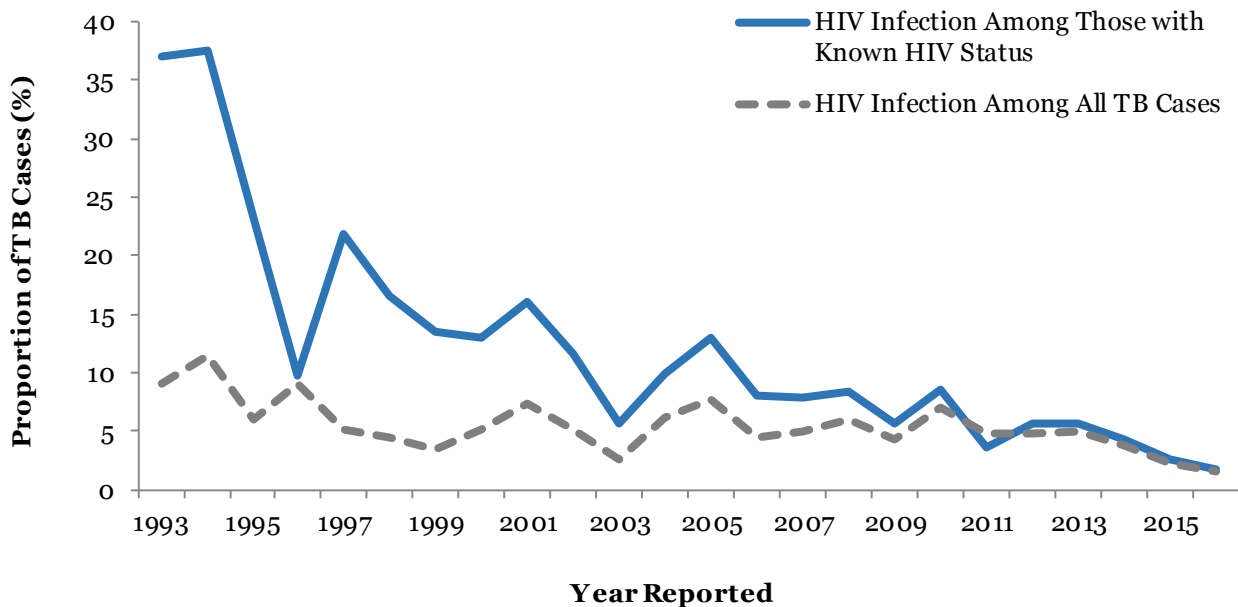
For more information on Tuberculosis as well as TB/HIV co-infection data and reports, please visit the link below:

MDHHS TB Website

CLICK HERE TO SUBSCRIBE TO HIV SURVEILLANCE DATA AND REPORTS!

MORE INFORMATION...

**Michigan Department of Health and Human Services
HIV Surveillance Program**

248-424-7910

517-335-8165

www.michigan.gov/hivstd —> HIV Case Reporting and Data

**Michigan Department of Health and Human Services
HIV Prevention and Care Section**

517-241-5900

www.michigan.gov/hivstd —> HIV Care
www.michigan.gov/hivstd —> HIV Prevention

Centers for Disease Control and Prevention

www.cdc.gov/hiv

World Health Organization

www.who.int/hiv/en