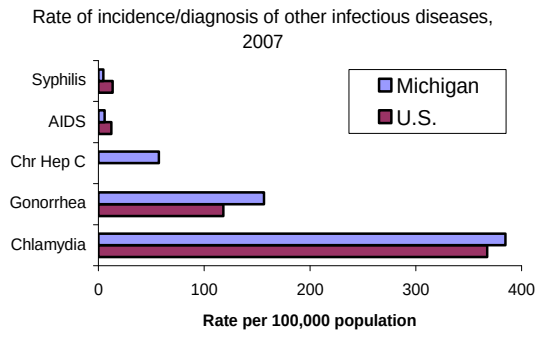
Infectious Diseases

Indicator Definition: Annual rate of new cases of chronic hepatitis C, HIV/AIDS, and other Sexually Transmitted Infections (STIs) such as Chlamydia and Gonorrhea.

Indicator Overview:

- Infectious diseases are spread throughout populations as a result of contact with the infectious agent, for example through blood exposure or unprotected sex. A subset of these cannot be prevented by vaccination. Rates of these types of diseases reflect a population's knowledge and hygiene practices.



MI to U.S. Comparison

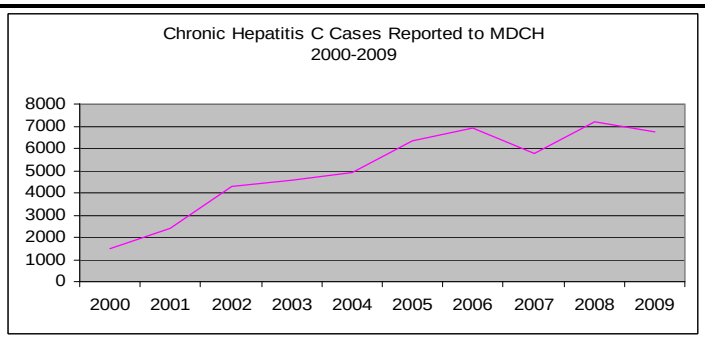
The picture of infectious diseases, other than those that are vaccine preventable, in the U.S. and Michigan are similar. Chronic hepatitis C is not a nationally reportable disease. The rate of infection of Gonorrhea and Chlamydia is higher in Michigan than the U.S., however the rates of infection and diagnosis of Syphilis and AIDS are higher nationally.

Chronic Hepatitis C

Hepatitis C is a disease of the liver caused by infection with the hepatitis C virus, in which the newly acquired (or acute) infection can progress to a chronic, long-term infection. Fifteen to 25% of those acutely infected will resolve the infection on their own. However, the majority of infected people will develop chronic infection. Chronic hepatitis C infection can progress to fibrosis, cirrhosis, end-stage liver disease and death. Ten to 20% of those chronically infected will develop cirrhosis within 20 to 30 years after infection. Hepatitis C is the leading indicator for liver transplantation.

Hepatitis C is primarily transmitted through the sharing of needles, syringes and other drug paraphernalia during injection drug use. Hepatitis C can also be transmitted during sexual contact, from mother to child during birth and via occupational exposure to blood. Historically, the virus was transmitted through blood transfusions prior to 1992 and during receipt of blood products developed before 1987.

	2009 reported cases of chronic hepatitis C, rate per 100,000
Total	68
Gender	
Male	91
Female	45
Race	
African American	71
American Indian	63
Asian/Pacific Islander	16
Caucasian	28
Age	
0-19	4
20-24	39
25-29	49
30-34	40
35-39	41
40-44	67
45-49	138
50-54	236
55-59	282
60-64	150
65-69	69
70 and over	24

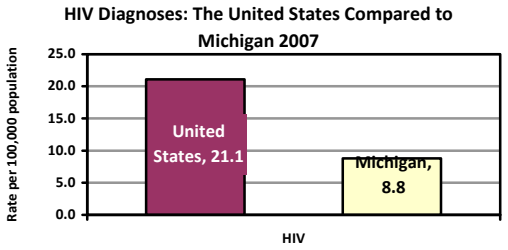


If the Trend Continues

An estimated 60 to 70% of those currently chronically infected with hepatitis C are unaware of their infection, so the actual disease burden is much higher than the number of cases reported to MDCH. Using data from the NHANES study, the Centers for Disease Control and Prevention estimate that 1.3% of the U.S. population is chronically infected with hepatitis C. Therefore, MDCH estimates that approximately 130,000 Michigan residents are chronically infected with hepatitis C. Reported cases of chronic hepatitis C will continue to increase over time as the hepatitis C-infected population ages, becomes symptomatic and is tested for hepatitis C. Health care costs associated with care for hepatitis C-infected patients are expected to increase substantially in upcoming years.

HIV/AIDS

Two strains of HIV infect humans: HIV-1 and HIV-2. HIV-1 is more virulent and more easily transmitted; it is the source of the majority of HIV infections throughout the world. HIV-2 is less easily transmitted and is largely confined to Africa. The most prevalent mode of transmission of HIV is from men who have sex with men (MSM), however transmission from heterosexual sex has been increasing.



MI to U.S. Comparison

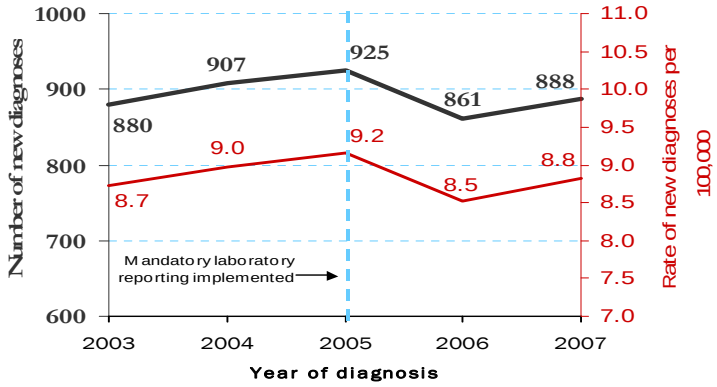
Between 2003 and 2007, the rate of new HIV diagnoses in Michigan remained stable (8.7 per 100,000 in 2003 and 8.8 per 100,000 in 2007). However, the estimated number of newly diagnosed HIV/AIDS cases in the 34 states with confidential name-based HIV infection reporting increased by 15 percent. Michigan is considered to be a state of moderate morbidity for HIV and has remained consistently lower than the rate in the U.S. over the past decade.

Characteristics: HIV Diagnoses in 2007

	Rate
Race	
Black	37.6
White	3.5
Race/Sex	
Male	14.0
Black Male	57.8
White Male	6.3
Female	3.0
Black Female	19.5
White Female	0.8
Age at HIV Diagnosis	
0 -12 years	0.2
13 -19 years	7.3
20 -24 years	16.5
25 -29 years	16.6
30 -34 years	16.6
35 -39 years	17.8
40 -44 years	18.5
45 -49 years	12.3
50 -54 years	10.1
55 -59 years	4.2
60+ years	1.5
Transmission Risk	**(Percent)**
MSM	48%
IDU	7%
Heterosexual Sex	19%
Unknown	24%

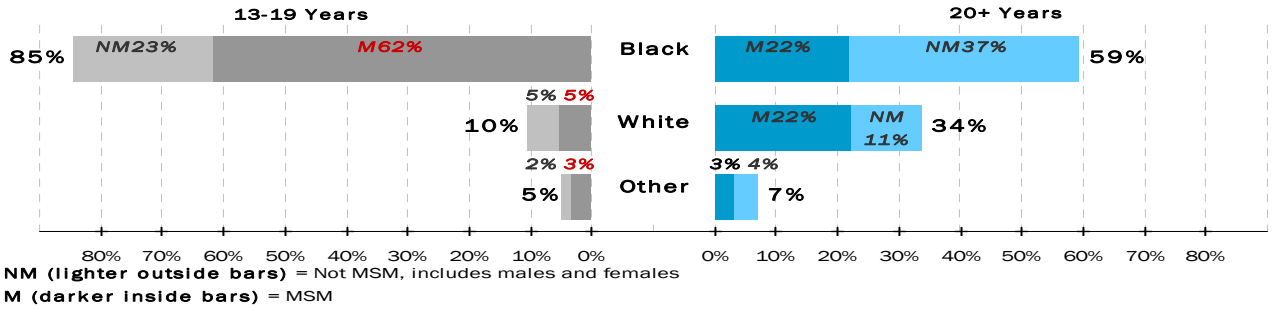
Trend Over Time

These new diagnoses include persons who learned of their HIV infection status after developing AIDS symptoms. Each year, there are more new diagnoses of HIV infection than deaths. Therefore, the reported number of persons living with HIV/AIDS in Michigan is increasing. The MDCH estimates that 18,000 residents are living with HIV infection in Michigan (including those with AIDS).



Of all teens diagnosed in the last five years, 85% are black compared to 59% of persons diagnosed at older ages. Furthermore, teens are much more likely to be black MSM compared to adults 20 years and older (62% vs. 22%). This continues to underscore a need for prevention campaigns tailored to young black MSM, as the differences we have been seeing over the last four years in this young group will likely widen the already large racial gap among persons living with HIV.

MSM vs. non-MSM risks by race/ethnicity and age at HIV diagnosis, 2003-2007



NM (lighter outside bars) = Not MSM, includes males and females

M (darker inside bars) = MSM

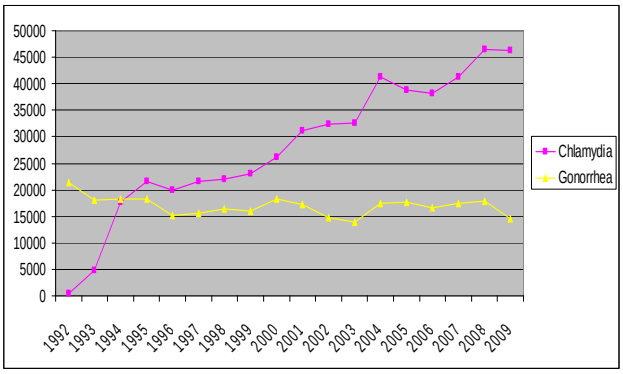
Sexually Transmitted Infections

Chlamydia and Gonorrhea are the most common reportable diseases in Michigan. In 2009, 46,338 cases of Chlamydia, and 14,600 cases of Gonorrhea were reported in the state. Both of these infections disproportionately impact young adults, females, and communities of color. In women, untreated Chlamydia infections can spread into the uterus or fallopian tubes and cause pelvic inflammatory disease (PID). PID can cause permanent damage to the fallopian tubes, uterus, and surrounding tissues. The damage can lead to chronic pelvic pain, infertility, and ectopic pregnancy. These complications are the reason screening resources are highly targeted for women, especially for Chlamydia.

Primary and Secondary (P&S) Syphilis cases have decreased significantly in Michigan since cases peaked in 2002, driven by an outbreak in Detroit. In 2002, Michigan reported 486 P&S Syphilis cases and in 2009 reported 224 cases, a 54% decrease. In 2009, Michigan also saw a successful outcome to interventions in Genesee County with a decrease in Syphilis cases in Genesee County after a 2008 outbreak (82 cases in 2008 to 18 in 2009, a 78% decrease). 2009, however, did see a significant increase in several Michigan counties, due to an increase in Syphilis among men who have sex with men, especially young, African American MSM in southeast Michigan, many of whom are HIV co-infected (68% of MSM cases); this is a national trend. Despite the increase in MSM cases, Syphilis rates in Michigan remain lower than the national average.

Gonorrhea and Chlamydia Trends Over Time

Michigan's Chlamydia rate has increased over time due to increases in screening and testing technology, while Gonorrhea rates have remained level.



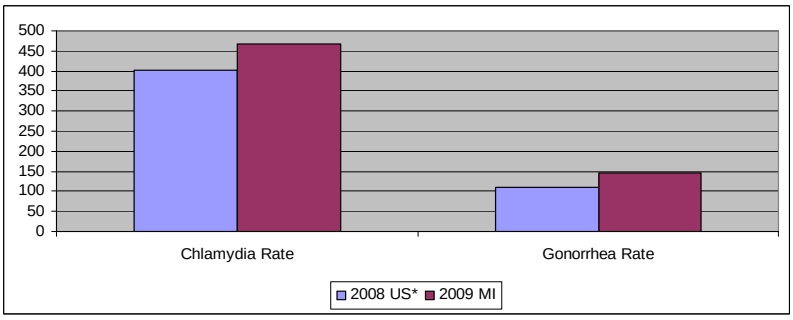
Disparities, 2009 Rate per 100,000

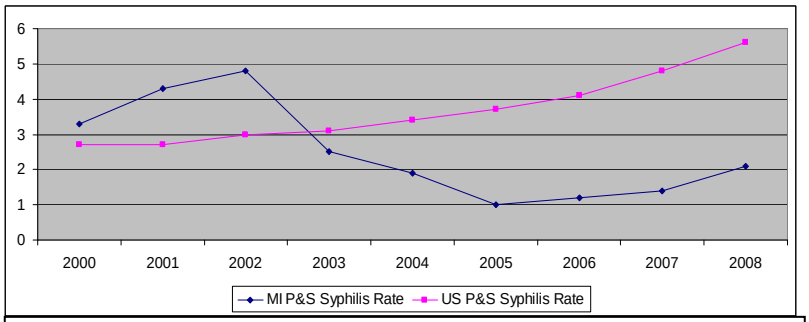
Breakouts	GC	CT	P&S Syphilis
Total	**147**	**466**	**2**
Age			
15-19	712	2773	3
20-24	733	2508	7
25-29	316	911	7
30-34	169	336	4
35-39	85	157	4
40-44	47	73	3
45-49	35	40	3
Race & Ethnicity			
White (non-Hispanic)	20	120	1
Black (non-Hispanic)	541	1231	11
Hispanic	64	323	1
Male	124	251	4
Female	171	696	1

Source for Data in Section: Current Population Survey, U.S. Census

MI to U.S. Comparison

Michigan has higher rates of STIs compared to the U.S. average. The rate is significantly higher among African Americans. The Gonorrhea rate in 2009 was 147 per 100,000, significantly above the Healthy People 2010 target of 19 per 100,000.





Chlamydia Screening Site Positivity

In 2009, Michigan screened at-risk individuals for Chlamydia and Gonorrhea in various venues around the state. The overall positivity for Chlamydia was 10.1% and for Gonorrhea was 3.3%. In other words, 1 in 10 individuals were infected with Chlamydia and 1 in 30 individuals were infected with Gonorrhea. Positivity was highest at teen health clinics, school-based clinics, and adult correctional and juvenile detention facilities.

Links to Other Sources of Information

Annual Report on STDs and Fact Sheets on Disease: www.cdc.gov/std/stats/-CDC

Sexually Transmitted Diseases then STD statistics for annual Michigan STD statistics by age, sex, and county: www.michigan.gov/hivstd

Links to Related Public Health Programs:

MDCH: HIV/STD/Hepatitis in Michigan: http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_2982---,00.html

CDC: STD Prevention: http://www.cdc.gov/std/