

Chronic Hepatitis C Prevalence in Muskegon County 2005-2015

Key Findings

- In 2015, there were 189 cases of Hepatitis C reported in Muskegon County at a rate of 109.8 HCV cases per 100,000 people. This is significantly higher than the Michigan average rate of 79.3 HCV cases per 100,000 population.
- The data trend from 2005 to 2015 shows that nearly one in three HCV cases was a current or past injection drug user, and one in four HCV cases was incarcerated at least once in their lifetime.
- The likelihood of testing positive for Hepatitis C is 5.4 times higher for African Americans compared to Caucasians.
- In 2005, there were only 5 known Chronic HCV cases among 18-29 year olds in Muskegon County. However, that number has grown to 36 in 2015.

Muskegon County is currently facing a higher burden of disease from Chronic Hepatitis C (HCV) compared to the majority of Michigan residents. In 2015, Muskegon county had a rate of 109.8 HCV cases per 100,000 people, significantly higher than the Michigan average of 79.3 HCV cases per 100,000 (Table 1). African Americans are disproportionately more likely to contract HCV than Caucasians, and individuals aged 50+ or the “Baby Boomer” generation are currently the highest at risk age group.^{4,6} However, there seems to be an alarming trend of an increasing infection rate among 18-29 year olds (Table 4). This trend is likely linked to an overall increase in the number of injection drug users within this population. Information on these patterns is essential to understanding and preventing the transmission of this disease. It is the goal of this publication to illuminate the characteristics and patterns of HCV cases within Muskegon County.

How does Muskegon County compare to the rest of Michigan?

There were a total of 1,834 cases of Chronic HCV reported in Muskegon County from 2005 to 2015. The rates of HCV infection have fluctuated over these years with a peak prevalence of 126.23 cases per 100,000 in 2008. Overall, the county rate was erratic but was generally significantly higher than the state average.

- In 2015, there were 189 Hepatitis C cases reported in Muskegon County yielding a rate of 109.8 cases per 100,000 population compared to the Michigan average rate of 79.3 per 100,000 population. The HCV rate in Muskegon County is 27.8% higher than the state average.

What are the major risk factors for developing Hepatitis C in Muskegon County?

The CDC lists the following major epidemiologic risk factors for developing Hepatitis C — current or past injection drug use, recipients



of donated blood, blood products, and organs before 1992, recipients of a blood product for clotting problems made before 1987, hemodialysis patients or persons who spent many years on dialysis for kidney failure, body piercing or tattoos done with non-sterile instruments, HIV infected persons, children born to mothers infected with the Hepatitis C virus, and people with known exposures to the Hepatitis C virus such as healthcare workers injured by needle sticks and recipients of blood or organs from a donor who tested positive for the Hepatitis C Virus.²

Within Muskegon County, the most prevalent risk factor is current or past injection drug use.

- Nearly one in three Hepatitis C cases was a current or past injection drug user in Muskegon County from the years 2005 to 2015.
- One in four Hepatitis C cases was incarcerated at least once in their lifetime.

These two areas represent the major risk factors among these Hepatitis C cases. Less frequent but an equally important risk factor is a past infection of sexually transmitted disease (STD).

14.3% of the individuals who were diagnosed with HCV from 2005-2015 had been treated for at least one STD in their lifetime.

Table 1: Reported Chronic Hepatitis C Cases and Rates, Muskegon County and Michigan, 2005-2015

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Muskegon Cases	118	181	164	215	189	135	154	155	145	189	189
Michigan Prevalence*	73.92	81.67	70.41	85.16	77.80	72.99	81.00	80.61	67.98	83.30	79.25
Muskegon Prevalence*	69.33	106.34	96.35	126.32	111.04	78.40	89.44	90.02	84.21	109.76	109.76

*Rate per 100,000 population

SOURCE: Michigan Disease Surveillance System (MDSS) and MDHHS 2015 Surveillance Report on Hepatitis C¹

Table 2: Risk factors Among Reported Chronic Hepatitis C Cases, Muskegon County, 2005-2015

Risk Behavior	# of Cases	Percentage*
Total Number of Cases of HCV	1834	100.0%
Received a Blood Transfusion Prior to 1992	77	5.0%
Received an Organ Transplant Prior to 1992	3	0.2%
Received Clotting Factor Concentrates Prior to 1992	4	0.3%
Received or Currently Receiving Hemodialysis	13	0.9%
Past or Present Injection Drug User	495	32.6%
Ever Incarcerated	377	24.6%
Treated for a Sexually Transmitted Disease in Lifetime	215	14.3%
Ever Had Contact With a Person with Hepatitis C	216	14.2%
Were Ever Employed in the Medical Field	47	2.6%

SOURCE: Michigan Disease Surveillance System (MDSS)

*Only a fraction of the risk behaviors are completed, reports were considered completed if the question was marked 'Yes', 'No', or 'Unknown', around 80% of questionnaires were completed. Percentages calculated excludes missing data.

What differences exist among gender and race/ethnicity in HCV Cases?

Males represent a majority of Hepatitis C cases in Muskegon County with 62.5% of all cases from the years 2005-2015 (Table 3). African Americans are disproportionately more likely to contract Hepatitis C compared to other ethnic and racial groups.

- African Americans represent 31% of Chronic Hepatitis reported C cases from 2005 to 2015.
- The likelihood of testing positive for Hepatitis C were 5.4 times higher for African Americans compared to Caucasians from 2005 to 2015.

This variance is consistent with the findings from Michigan Department of Health and Human Services, which indicates major racial disparities in Hepatitis C infections and health outcomes.³ Compared to other groups across the state, African Americans have a 2.4 times higher HCV infection rate, a 2.2 times higher liver cancer rate, and a 2.1 times higher liver cancer mortality rate. Additionally, African Americans are on average 11.9 years older at diagnosis of HCV and have a significantly lower proportion of HCV confirmatory testing.³

These racial disparities represent an avenue of potential improvement for Muskegon County and the overall state. Earlier diagnosis, improved HCV testing, and increased access to treatment and care can greatly improve health outcomes for HCV and reduce these large racial disparities.³

Table 3: Demographic Characteristics of Reported Hepatitis C Cases in Muskegon County 2005-2015.

Variable	Chronic Hepatitis C	% Chronic Hepatitis C
n	1,834	100.0%
Sex		
Male	1,147	62.5%
Female	663	36.2%
Race and Ethnicity		
Caucasian	1,102	60.1%
Black or African American	575	31.4%
Hispanic	61	3.3%
Asian	3	0.2%
American Indian or Alaskan Native	22	1.2%
Other	10	0.6%
Unknown	122	6.7%
Age (years)		
Mean	48.48	
Median	51	
Range	0-89	
0-19	28	1.5%
20-29	159	8.7%
30-39	197	10.7%
40-49	415	22.6%
50-59	775	42.3%
60+	260	14.2%

Figure 1: Percentage of Reported HCV Cases by Sex in Muskegon County 2005-2015.

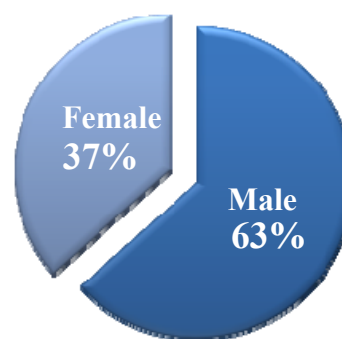
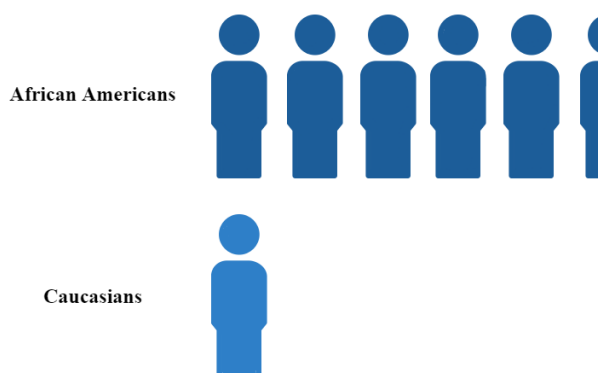


Figure 2: Disproportionate impact on African Americans
African Americans are 5.4x more likely to test positive with HCV than Caucasians in Muskegon County



What age group is most at risk in Muskegon County?

- The age group of individuals 50 or older represents more than half (56.44%) of the cases.
- The mean age of all hepatitis C cases is 48.48 years and the median is 51.

Figure 3: Number of Chronic Hepatitis C Cases in Muskegon County by year of Birth, 2005-2015

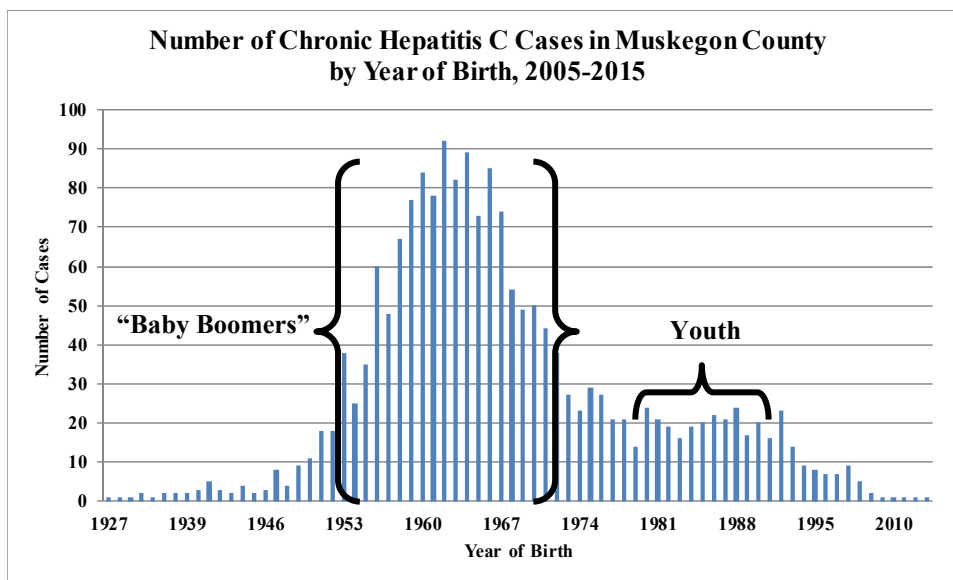


Figure 3 depicts the number of Chronic HCV cases based on year of birth, and the greatest cluster is centered on those born between the 1950s and the 1960s, also known as the “Baby Boomer” generation. This population represents the greatest at risk group for HCV in the United States.⁴ Overall, in the United States, $\geq 65\%$ of the cases are among the “Baby Boomer” generation, those currently aged 51-67.⁴

SOURCE: Michigan Disease Surveillance System (MDSS)

The reasons for the high prevalence among this age group are not fully understood. It is believed that most “Baby Boomers” came in contact with the virus from the 1960s to the 1980s when the transmission of HCV was the highest.⁵ HCV was not fully isolated until 1989 and it was not until 1992 that the USDA approved a method to detect the antibodies within an infected person.⁵ It is believed that many “Baby Boomers” could have become infected through medical equipment or procedures before universal precautions and infection control measures were implemented. Blood and other blood products were not widely screened for HCV until 1992. Sharing needles or other injection drug equipment could have also been a source of exposure to the virus.

- The CDC is currently recommending that all adults born from 1945 to 1965 should be tested once for Hepatitis C.⁶

What are the HCV trends among young adults in Muskegon County?

The concerning trend is an apparent increase in number of cases among young adults in age group 18-29. In 2005 there were only 5 known Chronic HCV cases in Muskegon County. However, that number has grown to 36

Table 4: Number and Percentage of Chronic Reported Hepatitis C Cases in Muskegon County, ages 18-29, 2005-2015.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Muskegon Cases	118	181	164	215	189	135	154	155	145	189	189
Number of Cases 18-29	5	10	5	10	15	10	16	22	23	35	36
Percentage of Cases	4.2%	5.5%	3.0%	4.7%	7.9%	7.4%	10.4%	14.2%	15.9%	18.5%	19.0%

SOURCE: Michigan Disease Surveillance System (MDSS)

Table 5: The Number of Cases of HCV among Injection Drug Users in Muskegon County, Ages 18-29, 2005-2015

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Muskegon Cases	118	181	164	215	189	135	154	155	145	189	189
Number of Cases 18-29	5	10	5	10	15	10	16	22	23	35	36
Injection Drug Use among HCV Cases 18-29	4	5	1	2	8	2	8	9	10	24	15
Percentage of Cases 18-29 with Injection Drug Use	80.0%	50.0%	20.0%	20.0%	53.3%	20.0%	50.0%	40.9%	43.5%	68.6%	41.7%

SOURCE: Michigan Disease Surveillance System (MDSS)

in 2015. While these numbers reflect only a small proportion of the total number of HCV cases in Muskegon County, the growth in the age group is alarming. These trends are also seen across the state of Michigan.

What is a likely reason for HCV increases among young adults?

HCV cases among 18-29 year olds in Muskegon County reflect a high percentage of cases linked to injection drug use.

- 54% of those aged 18-29 were past or current injection drug users.

Sharing needles and other injection drug equipment is a major source of exposure to HCV, and injection drug use among this age group is increasing across Michigan. These increases in injection drug use are likely due to the current opiate and heroin epidemics facing Michigan and the United States.

Figure 4: Reported HCV Cases of Youth Aged 18-29, Linked to Injection Drug Use, 2005-2015

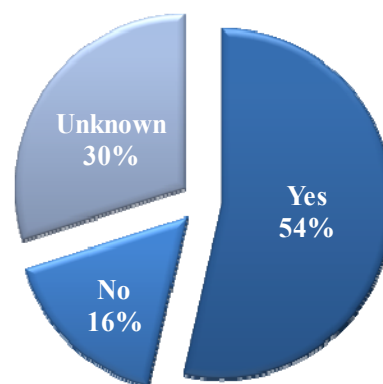
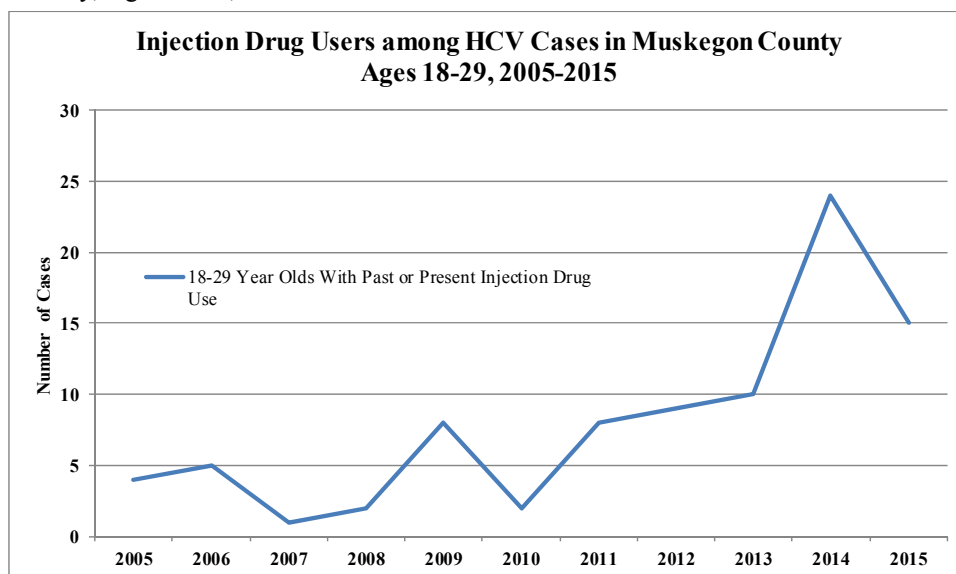


Figure 5: The Number of Cases of HCV among Injection Drug Users in Muskegon County, Ages 18-29, 2005-2015



What are the Michigan Trends in Heroin use?

Within Michigan the number of heroin substance abuse admissions and deaths have rapidly increased since 2000.

- Heroin overdose deaths have increased from 85 in the year 2000 to 520 deaths in 2014.¹
- There has been a parallel trend in heroin substance abuse treatments with 9,023 in the year 2000 and 19,728 in 2015.¹
- From 2005-2015, the number of cases of chronic hepatitis c among persons aged 18-29 years has increased over 302%.¹

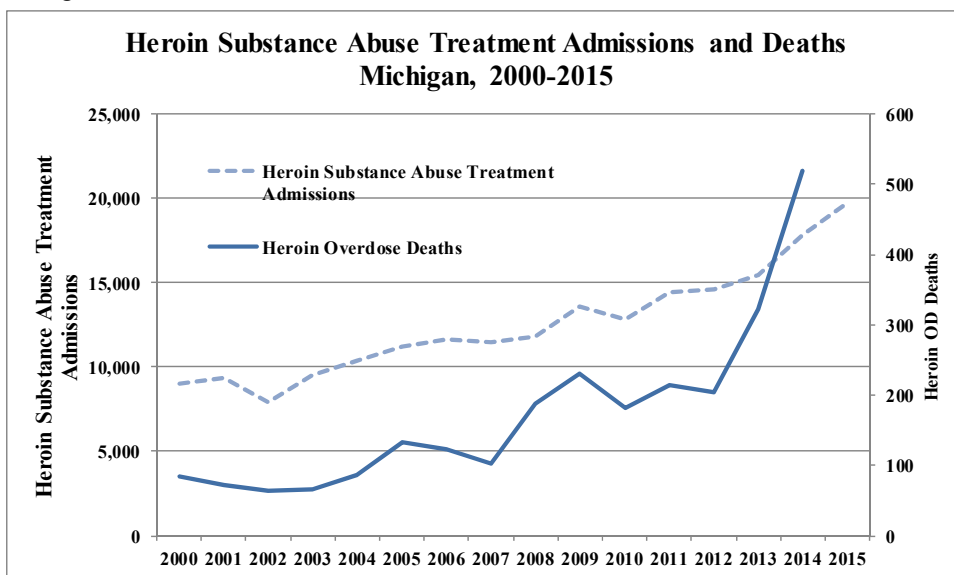
These massive increases in overdose deaths is a serious public health concern. The United States is currently in the midst of a massive opioid epidemic and Michigan is not exempt from the trends occurring nationwide.

Table 6: Michigan Trends in Heroin OD's, Treatment Admissions and HCV Cases among Young Adults

Year	Heroin Overdose Deaths	Heroin Treatment Admissions	Number of Hepatitis C Cases 18-29 Year Olds
2000	85	9,023	59
2001	72	9,367	78
2002	64	7,921	182
2003	66	9,558	184
2004	87	10,331	246
2005	133	11,182	359
2006	123	11,642	482
2007	103	11,481	486
2008	188	11,843	649
2009	230	13,548	739
2010	182	12,836	882
2011	214	14,413	1,182
2012	205	14,596	1,244
2013	321	15,419	1,180
2014	520	17,800	1,437
2015	-	19,728	1,444

SOURCE: MDHHS 2015 Surveillance Report on Hepatitis C¹

Figure 6: Number of Heroin Substance Abuse Treatment Admissions and Deaths in Michigan, 2000-2015



Summary of Findings

HCV is an infection of the liver that results from coming in contact with the Hepatitis C virus. The virus is transmitted through direct blood to blood contact with an infected person. Chronic infection of HCV is a long-term illness that oftentimes remains undiagnosed and can lead to liver cancer and cirrhosis.

From years 2005 to 2015, Muskegon County has had a higher rate of HCV prevalence compared to the Michigan average. In 2015, Muskegon County had the incident rate of 109.76 HCV cases per 100,000 people, significantly higher than the Michigan average rate of 79.25 HCV cases per 100,000.

The greatest risk factors for becoming infected with HCV in Muskegon County are past or current injection drug use and incarceration. Nearly one in three HCV cases in the last 11 years is a current or past injection drug user. Additionally, one in four HCV cases was incarcerated at least once in their lifetime. The likelihood of testing positive for HCV are 5.4 times higher for African Americans than Caucasians.

Individuals born in the 1950s and the 1960s represent the greatest at risk age group for contracting HCV. The CDC recommends that everyone born between 1945 to 1965 should get screened for HCV at least once in their lifetime.⁶

There is a concerning trend of apparent increase in number of cases among young adults in age 18-29. In 2005, there were only 5 known Chronic HCV cases in Muskegon County. However, that number has grown to 36 in 2015. This increase is likely linked to the higher rates of injection drug use among this group and the growing heroin and opiate epidemic in the United States.

In conclusion, from our findings there are a few key population groups within Muskegon County that would gain enormous benefit to be the focus of Hepatitis C prevention efforts: “Baby Boomers”, African Americans, and injection drug users (particularly young adults).

Definitions

Acute Hepatitis C: It is the stage of disease occurring immediately after initial exposure to HCV. Typically, the acute phase of disease lasts 2 weeks to 6 months. Symptoms of acute HCV include fever, fatigue, loss of appetite, nausea, abdominal pain, dark urine, grey-colored stool, and jaundice, though only about 15% of cases are symptomatic. For surveillance purposes, an Acute HCV case is one that has a discrete onset of symptoms and jaundice or a high liver function test (Alanine transaminase greater than 400) with a positive lab result for HCV. Because of the asymptomatic nature of acute HCV infection, most acute infections are never detected or diagnosed.

Chronic Hepatitis C: Approximately 80% of persons exposed to HCV go on to develop chronic HCV infection. Chronic HCV is generally asymptomatic, but long-term carriage of HCV can lead to damage of the liver, such as cirrhosis, fibrosis, hepatocellular carcinoma, and in some instances death. For surveillance purposes, anyone with a positive HCV lab result that is not an acute case, is considered to be chronically infected. Chronic HCV infection can last a lifetime, but there are highly effective antiviral treatment available that can now cure HCV infection. Again, because of the asymptomatic nature of chronic HCV, CDC estimates that between 50-75% of persons with chronic HCV infection are undiagnosed.

Data Source and Methods

The Michigan cases and statistics were pulled from the 2015 Annual Hepatitis B and C Annual Surveillance report. HCV data were from the Michigan Disease Surveillance System (MDSS), and the confirmed, probable and suspected cases were included in this report. When determining rates for years prior to 2010, the year 2000 Michigan census data was used. Census data from 2010 was used to calculate all the rates from 2010-2015.

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