



September 2015

An Unforeseen Epidemic:

Hepatitis C and
Young People in
Macomb County,
Michigan



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Introduction

What is Hepatitis C (HCV)?

Hepatitis C is a blood-borne viral infection that effects the liver. The liver is a vital organ that aids in digestion and filters your blood. Currently, most people are becoming infected with HCV from sharing needles and other equipment associated with injecting drugs. In most people (70-85%) who become infected with HCV it becomes a long-term, chronic infection. Chronic hepatitis C is serious and can cause long-term health problems like cirrhosis and is the leading cause of liver cancer. The majority of people infected with HCV may not even know they are infected because they show no signs or symptoms. Since there is no vaccine for hepatitis C the best way to prevent infection is avoid behaviors that can spread the disease, specifically injecting drugs.

Figure 1. The Progression of Liver Damage when Hepatitis C Goes Untreated



When left untreated HCV causes inflammation of the liver that can lead to scar tissue. Overtime extensive scarring leads to cirrhosis. This means that blood flow through the liver is blocked and the liver cannot function normally. Hepatitis C is also the leading cause of liver cancer in the United States.

Is Hepatitis C Curable?

In the past, treatment for hepatitis C was complicated and time consuming, with only a 50-80% success rate. However, a number of new medications have recently been developed that are proving to be more successful with 95-100% of people being cured.

It is important to note that this new treatment is costly (\$84,000 - \$95,000 per person) and its success varies based on the type of hepatitis C virus a person is infected with and the severity of damage already done to the liver.

How Does the Health Department Know Who Has Hepatitis C?

Hepatitis C is a nationally reportable disease. This means that when a person tests positive for the virus, the positive lab results are reported to the person's local health department for follow-up. Cases are usually reported electronically through the Michigan Disease Surveillance System (MDSS). This system is a web based system that acts as a database of all the communicable diseases reported in Michigan. The disease data in MDSS is confidential and protected information that can only be accessed by certain individuals for reasons related to surveillance and data analysis. All of the data in this report was exported from MDSS.

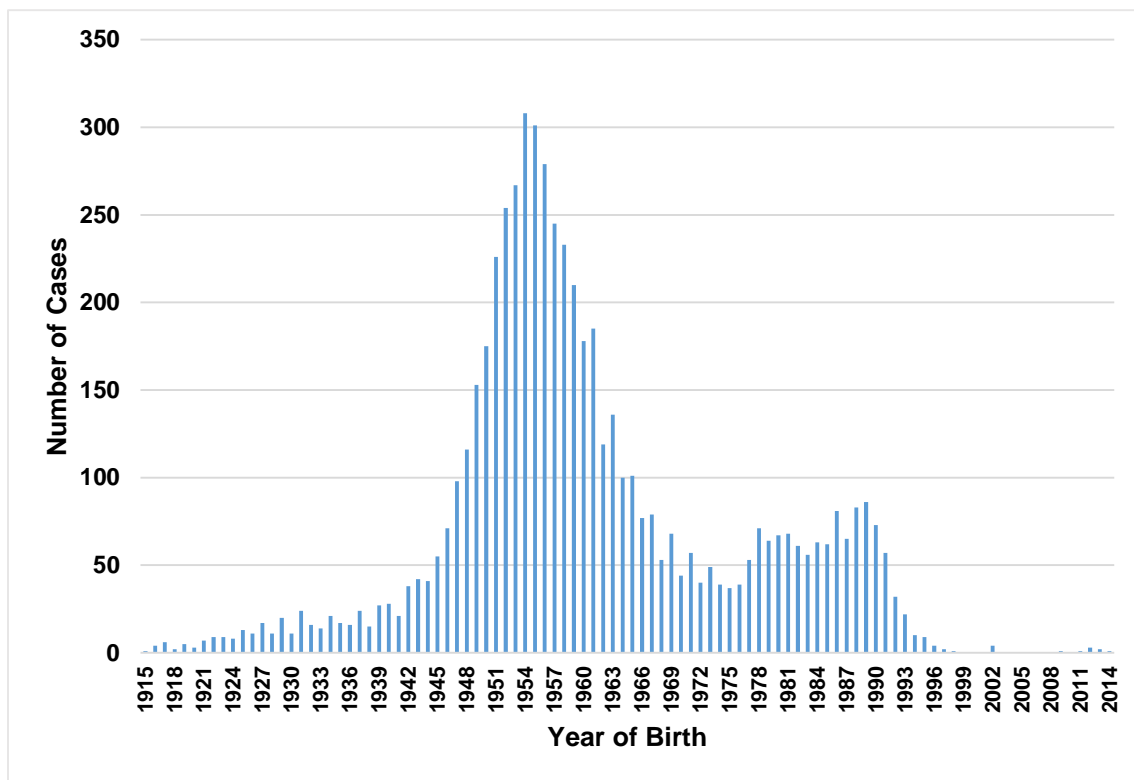


Introduction

Michigan Disease Surveillance System (MDSS) Data

Since 2002, 6140 acute and chronic hepatitis C (HCV) cases have been reported through the Michigan Disease Surveillance System (MDSS) for Macomb County residents. When graphed by year of birth these cases exhibit the same pattern as statewide data, a bimodal distribution. The majority of these cases have been reported in the “baby boomer” demographic. However, there is a newly emerging group of individuals being afflicted by this virus, young adults (18-29 years old). There is strong support that the source of these new infections is the opioid epidemic and injection drug use that is currently plaguing much of the United States.

Figure 2. Number of Chronic Hepatitis C Cases Reported through MDSS by Year of Birth for Macomb County, MI (2002-2014)



When graphed by year of birth the chronic hepatitis C cases in Macomb County exhibit the same bimodal distribution as statewide data. The large bell curve shape of cases on the left represent the “baby boomers”. The smaller curve on the right represents cases in 18-29 year old young adults (n = 813 cases).



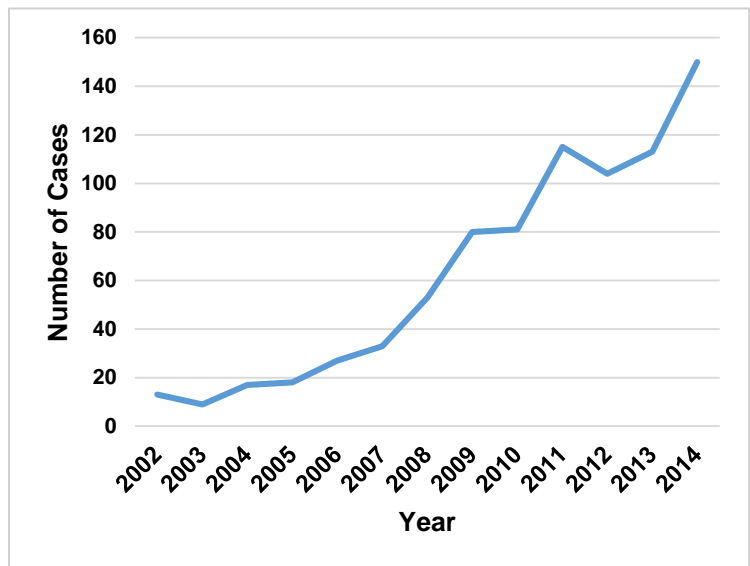
HCV & Young Adults

- The number of HCV cases in young adults have continued to rise in Macomb County since 2002.
- Macomb County makes up 8.79% of all the young adult chronic HCV cases in Michigan.

Table 1. Number of Reported Chronic Hepatitis C Cases in 18 – 29 Year Olds in Macomb County and Michigan by Year

18-29 Year Old Chronic HCV Cases		
Year	Macomb	Michigan
2002	13	182
2003	9	184
2004	17	246
2005	18	359
2006	27	482
2007	33	486
2008	53	649
2009	80	739
2010	81	882
2011	115	1182
2012	104	1244
2013	113	1180
2014	150	1437
	813	9252

Figure 3. Chronic Hepatitis C Cases in 18 – 29 Year Old Macomb County, MI Residents (2002 – 2014)



The number of chronic hepatitis C cases in Macomb County's young adults has continued to rise since 2002.



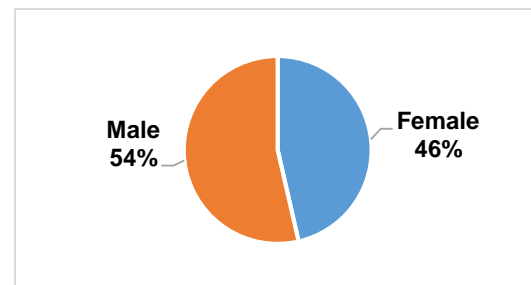
Demographics

- The average age of chronic HCV cases in Macomb County is 22 years old.
- More cases are male (54%) than female (46%).
- A majority of the cases (75%) are Caucasian.
- Only 1% of cases are Hispanic or Latino.

Table 2. Demographics of Young Adult (18-29 Years Old) Chronic HCV Cases in Macomb County

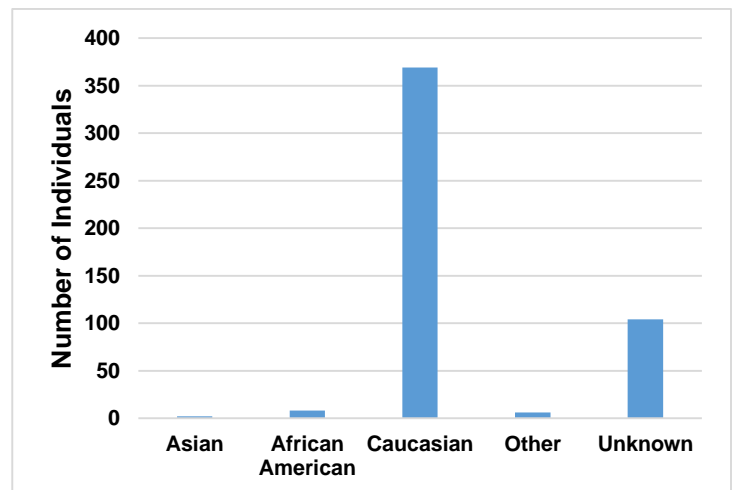
Age (n=489)		
Median	22 Years	
Mean	22.36	
Range	18-29	
Sex (n=489)		Rate Per 100,000
Female	227 (46%)	52.5
Male	262 (54%)	64.1
Race (n=489)		Rate Per 100,000
Caucasian	369 (75%)	50.5
African American	8 (2%)	10.9
Asian	2 (0%)	7.8
Other	6 (1%)	NA
Unknown	104 (21%)	NA
Hispanic Ethnicity (n=191)		Rate Per 100,000
Hispanic or Latino	2 (1%)	10.2
Not Hispanic or Latino	189 (99%)	27.1
Arab Ethnicity (n=111)		Rate Per 100,000
Arab	4	NA
Non-Arab	107	NA

Figure 4. Chronic HCV Cases Age 18-29 Years Old by Gender (n=489)



More young adult chronic HCV cases are male (54%) than female (46%) in Macomb County. At the state level 63% of cases are male.

Figure 5. Chronic HCV Cases Age 18-29 Years Old by Race (n=489)

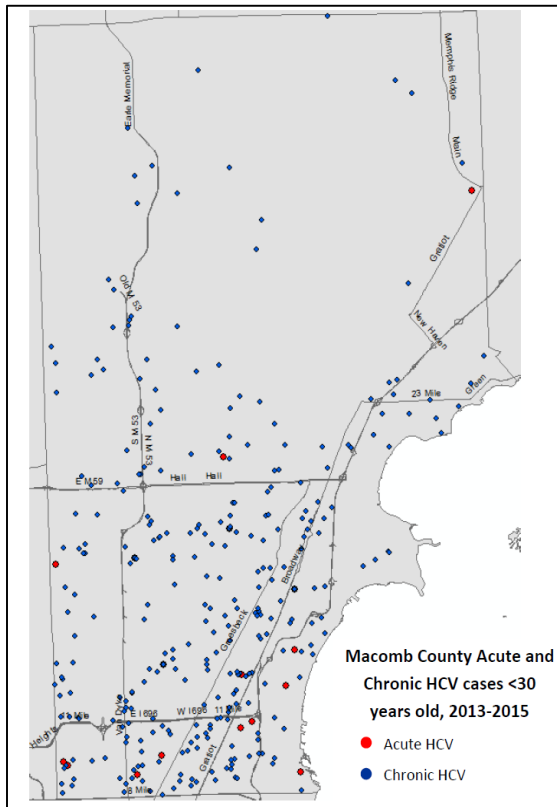


In Macomb County, 75% of the chronic HCV cases are Caucasian. However, this number is likely higher since race was not identified in 21% of cases. State wide 93% of cases are Caucasian.



Case Locations

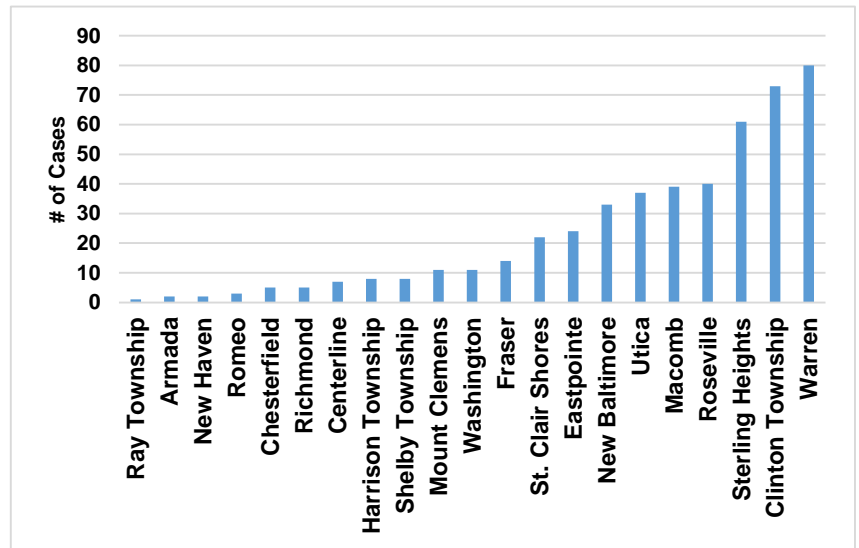
Figure 6. A Map of Acute and Chronic HCV Cases < 30 Years Old in Macomb County (2013 – 2015)



When mapped, it is apparent that the majority of young adult HCV cases are located in the southern half of Macomb County ($n = 301$). These are suburban neighborhoods with the remainder of the cases in the northern rural part of the county. Macomb County shares its southern border with Detroit (urban) and its northern border with St. Clair and Lapeer Counties (rural).

*Map provided by Michigan Department of Health and Human Services Viral Hepatitis Unit

Figure 7. Young Adult (18-29 Years Old) Chronic HCV Cases by City in Macomb County (2002-2014)



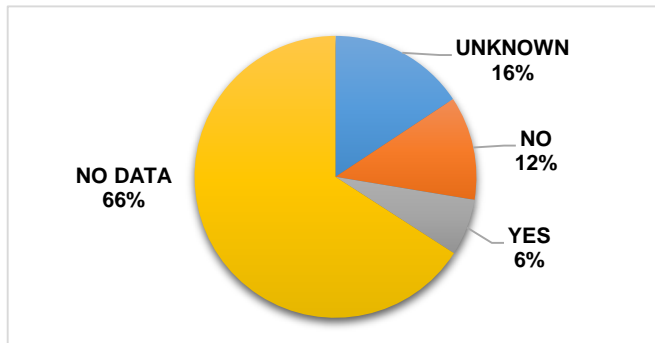
Although the chronic HCV cases in young adults are spread throughout the county, the greatest concentration of cases reside in the southern part of the county. The top four cities with the most cases are specifically located in the south-west and south-central area of Macomb County.



Patient History

- Only 6% of patients were aware of their HCV status prior to testing.
- Limited data shows most (16%) patients were tested for HCV after reporting risk factors.
- More data collection is needed in order to fully understand the dynamics of this epidemic in Macomb County.

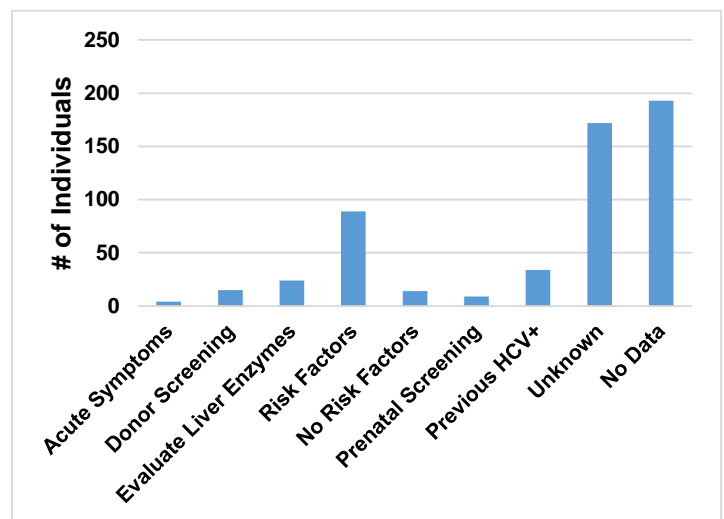
Figure 8. Percent of Young Adult (18-29 Years Old) Chronic HCV Cases in Macomb County Who Were Aware They Had HCV Prior to Testing



Only 6% of confirmed chronic HCV cases in young adults (18-29 years old) were aware of their HCV status prior to testing. This is opposed to 12% who were not aware they had HCV prior to testing.

Unknown = An attempt was made to obtain the data for this question but was unsuccessful
No Data = No attempt has been made to obtain the data for this question

Figure 9. Reasons Young Adults (18-29 Years Old) in Macomb County Were Tested for HCV



Cases have been tested for a variety of reasons. The greatest reason is the patient reporting risk factors (16%). Additional reasons include: evaluation of liver enzymes (4%), blood/plasma donor screening (3%), no risk factors (3%), and prenatal screenings (2%). See Table 3 for risk factor data.

Unknown = An attempt was made to obtain the data for this question but was unsuccessful
No Data = No attempt has been made to obtain the data for this question



Risk Factors

- The risk factors reported among young adults in Macomb County included:
 - Injecting drugs (21%)
 - Incarceration (4%)
 - Treatment for STDs (3%)
 - Contact with known hepatitis cases (2%)
- Only 1 of 554 young adults with chronic HCV has received treatment
- More data needs to be collected to draw any definitive conclusions about this epidemic

Table 3. Responses to Standard Epidemiologic Questions Asked in Case Investigation of Young Adult (18-29 Years Old) Chronic HCV Cases in Macomb County (2002-2014)

Epidemiologic Information	Yes	No	Unknown*	No Data**
Did the patient receive a blood transfusion prior to 1992?	1	58	289	141
Did the patient receive an organ transplant prior to 1992?	0	61	286	142
Did the patient receive clotting factor concentrates produced prior to 1987?	0	101	246	142
Was the patient ever on long-term hemodialysis?	1	47	300	141
Has the patient ever injected drugs not prescribed by a doctor even if only once or a few times?	115	15	252	172
Was the patient ever incarcerated?	21	14	346	173
Was the patient ever treated for a STD?	19	17	304	149
Was the patient ever a contact of a person who had hepatitis?	13	7	327	142
Was the patient Employed in a medical or dental field involving direct contact with human blood?	0	31	314	144
Has the patient received medication for the type of hepatitis being reported?	1	38	139	311

*Unknown = An attempt was made to obtain the data for this question but was unsuccessful

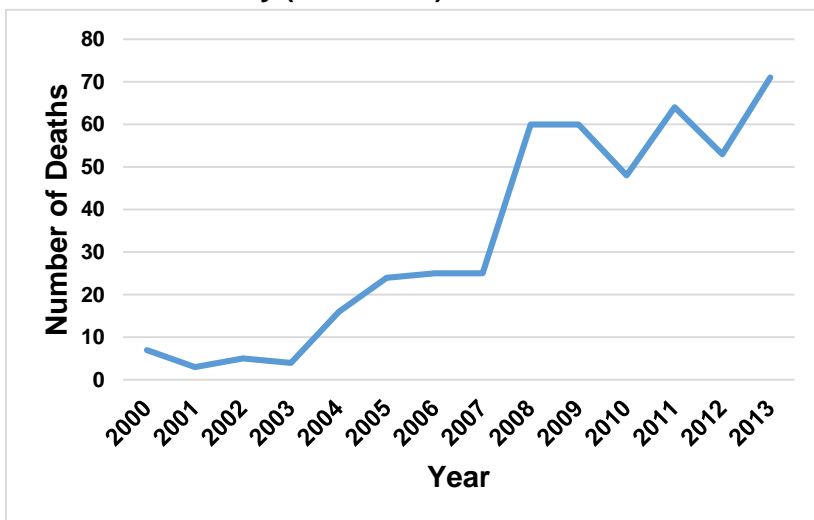
**No Data = No attempt has been made to obtain the data for this question



Heroin in Macomb County

- It has been hypothesized that the growing number of Hepatitis C cases in young adults can be attributed to the increasing trends of heroin and opioid abuse occurring nationwide.

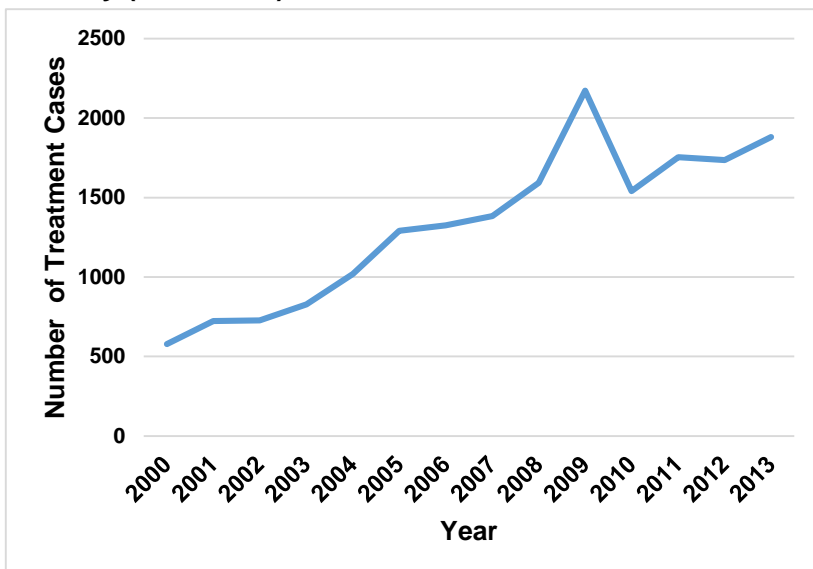
Figure 10. The Number of Heroin Overdose Deaths in Macomb County (2000-2013)



The number of heroin overdose deaths has continued to rise in Macomb County since 2003.

*Data provided by Michigan Department of Health and Human Services Viral Hepatitis Unit

Figure 11. Heroin as the Primary, Secondary, or Tertiary Drug of Choice as Self-reported for Macomb County (2000-2013)



Self-reporting of heroin as a primary, secondary, or tertiary drug of choice continues to increase among substance abusers in Macomb County since 2000.

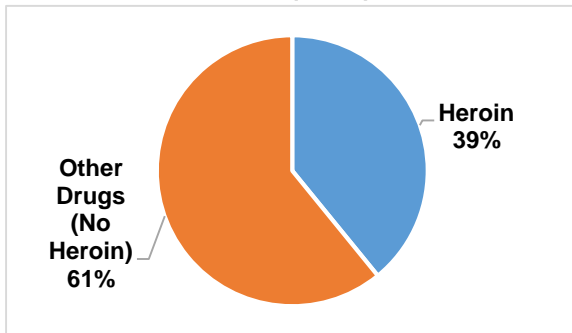
*Data provided by Michigan Department of Health and Human Services Viral Hepatitis Unit



Medical Examiner Data

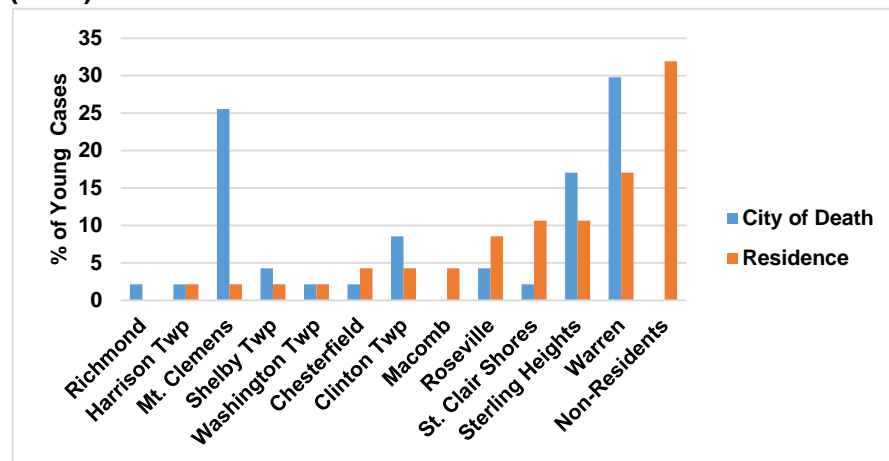
- According to data from the Macomb County Medical Examiner’s Office for 2014:
 - 39% of all drug deaths involved heroin
 - 22% of all heroin related drug deaths were age 18-29 years old
 - 72% of all young adult heroin related deaths were male
- There appears to be a correlation between the city of residence for HCV cases and city of residence and city of death for drug overdose deaths

Figure 12. Macomb County Medical Examiner Investigated Drug Deaths by Heroin Involvement (2014)



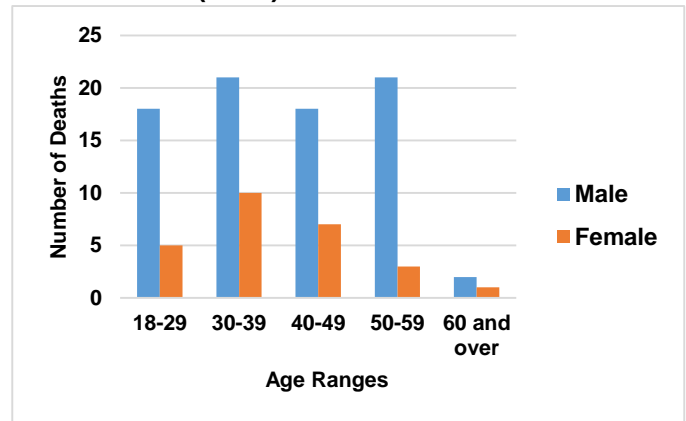
Of the 271 drug deaths investigated by the Macomb County Medical Examiner’s Office in 2014, 39% of the cases involved Heroin as a cause of death.

Figure 14. Macomb County Medical Examiner Investigated Drug Deaths in Young Adults (18-29 Years Old) by City of Residence and City of Death (2014)



The graph to the left illustrates how the city that substance abusers live in may not always be the one they overdose and die in. Only 47% of young adult drug deaths occurred in the individual’s city of residence. The city of Warren yields the most residents (17%) and deaths (30%) among young adults from the 2014 Medical Examiner drug death data. More deaths occurred in Warren, Sterling Heights, and Mount Clemens than the actual number of cases that resided in those cities.

Figure 13. Macomb County Medical Examiner Investigated Heroin Overdose Deaths by Age and Gender (2014)



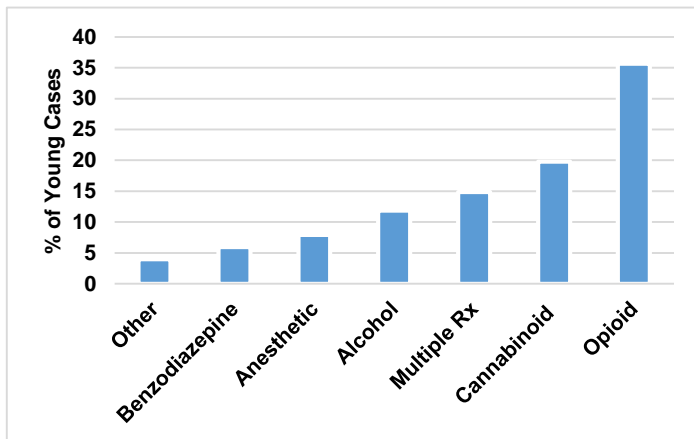
Based on deaths, heroin use appears to be used by a wide range of ages. Young adults (18-29 years old) accounted for 22% of drug deaths and 72% of those young adult drug deaths were male.



Medical Examiner Data

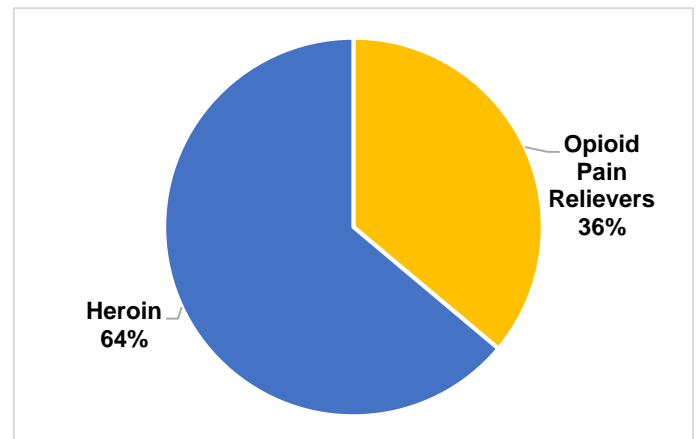
- According to data from the Macomb County Medical Examiner’s Office for 2014:
 - 17% of all drug deaths involved were age 18-29 years old
 - 47% of young adult drug deaths occurred in their city of residence
- Opioid pain relievers have been hypothesized to be the gateway for most to heroin. The rising cost of opioid pain relievers may result in people turning to heroin as it is much cheaper and readily available.
- Of the Macomb County Medical Examiner investigated drug deaths in young adults:
 - 36% of deaths involved some type of opioid drug
 - Further examination of those opioid deaths reveals:
 - 36% of opioid deaths involved opioid pain relievers
 - 64% of opioid deaths involved heroin

Figure 15. Macomb County Medical Examiner Investigated Drug Deaths in Young Adults (18-29 Years Old) by Major Drug Groups Identified (2014)



Of the most commonly identified drug groups in young adult drug deaths, opioids ranked highest (36%). This is followed by marijuana (20%), multiple prescriptions (15%), alcohol (12%), anesthetics (8%), benzodiazepines (6%), and others (4%).

Figure 16. Macomb County Medical Examiner Investigated Drug Deaths in Young Adults (18-29 Years Old) by Most Commonly Abused Substances (2014)



Looking further into the young adult opioid related deaths, heroin accounts for 64% of all opiates identified in young adults. The remainder (36%) of these opioid deaths involved a variety of opioid pain relievers (e.g. Hydrocodone, Fentanyl, etc.).



Summary

Statewide Data for Michigan:

- There are an increasing number of HCV cases in young adults, with a majority of cases residing in southeastern Michigan.
- **Age:** 18-29 years old (Avg = 23 Years)
- **Gender:** Males (63%)
- **Race:** Caucasian (93%)
- **Ethnicity:** Non-Hispanic (94%)
- **Education:** High School or greater (74%)
- **Employment:** Unemployment (50%)

- 97% report using street drugs
- 94% report using IV drugs

Macomb County Data:

- There are an increasing number of HCV cases in young adults in Macomb County, with a majority residing in the more densely populated south-west and south-central part of the county.
- **Age:** 18-29 (Avg = 22 Years)
- **Gender:** Males (54%)
- **Race:** Caucasian (75%)
- **Ethnicity:** Non-Hispanic (99%)
- **Education:** Unknown*
- **Employment:** Unknown*

- 21% report IV drug use*

*More data is needed

Overall Summary

- So far, the trends in Macomb County are similar to that of the State and national trends
- Data is severely lacking for HCV cases in both Macomb County and statewide
- There appears to be some correlation between residence of HCV cases and cities of drug deaths and residence.
- Cities to focus efforts:
 - Warren
 - Sterling Heights
- Most patients are unaware of their HCV status
- Needle sharing among individuals is likely leading to the spread of HCV in young adults
- Given the recent HCV/HIV outbreak in southern Indiana, caution should be taken and this epidemic addressed immediately

CDC Recommendations

- Contact tracing for all new diagnoses and testing of all contacts for HCV
- Ensure that persons injecting drugs or at high risk of drug injection have access to prevention services and specifically:
 - Regular testing for HCV and HIV
 - If diagnosed with HCV or HIV rapidly link patient to care and treatment
 - If actively injecting drugs:
 - Have access to medication assisted therapy and substance abuse services
 - Are counseled not to share needles, syringes, or other equipment needed for injecting drugs
 - Have access to sterile injection equipment

Additional Recommendations

- Improve education and awareness of the HCV epidemic
- Improve surveillance and data collection