



State of Iowa Hepatitis C Virus (HCV) End-of-Year 2019 Surveillance Report

Authorship – Bureau of HIV, STD, and Hepatitis

Protecting and Improving the Health of Iowans



Acknowledgements

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Hepatitis C Virus (HCV) End-of-Year Surveillance Report: 2019

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Executive Summary

Here are a few points drawn from the 2019 hepatitis C (HCV) data:

- **1,143 Persons Living in Iowa Diagnosed with Chronic HCV:** In 2019, Iowa experienced a 25% decrease in the number of people newly diagnosed with confirmed, chronic hepatitis C compared to 2018. The decrease was among people in the ‘baby boomer’ population as well as among those less than 40 years of age. The 1,143 diagnoses are well below the previous 5-year average of 1,515 diagnoses annually from 2014 to 2018.
- **Sex:** Approximately two-thirds (65%) of Iowans diagnosed with HCV in 2019 were males. However, among those under 40 years of age at diagnosis, only 59% were males.
- **Birth Cohort:** Forty-four (44) percent of people diagnosed with HCV in 2019 were considered to be ‘baby boomers,’ or those born between 1945 and 1965, while 31% were people born after 1979 (under 40 years of age).
- **Race and Ethnicity:** Unlike for HIV and other sexually transmitted infections, there are not significant racial and ethnic disparities among Iowans diagnosed with HCV. In 2019, 89% of people diagnosed were white and non-Hispanic, 3% of people were Hispanic/Latinx, 6% were African American/Black, 1% were Asian, and less than 1% were other races. This closely mirrors the distribution of race and ethnicity in Iowa’s population as a whole. Given the disparities seen in Iowa among other chronic diseases and infections, this lack of disparities could indicate that minority populations may not have the same access to testing as white Iowans. However, the lack of disparities may also reflect the increased association of HCV with use of methamphetamines in Iowa.
- **People Under 40 Years of Age Diagnosed with HCV:** Diagnoses among people under the age of 40 are significant because they represent people more recently infected, and therefore more likely to be using drugs and in situations in which they could transmit HCV to drug-use partners. Diagnoses among this population decreased by 15% from last year. There were 355 persons under 40 years of age diagnosed with chronic HCV in 2019, accounting for 31% of all diagnoses. In 2018, people under the age of 40 with chronic HCV accounted for 27% of all diagnoses. Although the number of people under 40 decreased from 2018 to 2019, they accounted for a higher proportion of people with HCV diagnoses in 2019, indicating that diagnoses among baby boomers decreased more than diagnoses among people under 40. Of the 355 persons under the age of 40 who were eligible for follow up, 74% reported injection drug use as a mode of exposure.
- **Iowans Diagnosed with HCV Since 2000:** There have been 29,895 Iowans ever reported to IDPH with current or past HCV. Of the 29,895 persons reported to IDPH with past or current HCV from 2000 through 2019, 20,154 had evidence of chronic HCV. Of the 9,741 Iowans reported to IDPH with only a positive hepatitis C antibody result, it is estimated that 15 to 25% cleared the virus spontaneously. The remaining 75 to 85% likely have or had chronic hepatitis C. Among Iowans ever diagnosed with chronic HCV, nearly half (45%) were baby boomers at time of diagnosis, and 21% were under 40 years of age at diagnosis. Nearly two-thirds (64%) were male, and 89% were white, non-Hispanic. It should be noted that race and ethnicity information were not reported for 38% of people diagnosed with HCV and reported to IDPH after 2000. However, the quality and completeness of reporting data has improved since 2015.
- **Iowans Diagnosed with HIV and HCV:** An analysis of co-infection of HIV and HCV revealed that 276 Iowans had been reported to IDPH as having both HIV and chronic HCV. Among them, 262 (76%) were alive at the end of 2019, indicating that 7% of people living with HIV have also been diagnosed with chronic HCV.

Organization of the Surveillance Report

This end-of-year report presents surveillance data on hepatitis C in Iowa. It describes hepatitis C for the state and of its population subgroups. There are four sections to the report: Section 1 describes **data sources**; Section 2 is a **narrative summary** with key highlights; Section 3 employs **charts, graphs, and tables** to illustrate trends; and Section 4 outlines the **reporting requirements** for hepatitis C in Iowa.

Definitions

Confirmed chronic HCV means the person has HCV RNA circulating in his or her blood, as confirmed by laboratory testing.

HCV antibody positive means that there is a presence of antibodies to HCV in a person's blood. This indicates that a person was exposed to HCV and developed an infection, but approximately 15 to 25% of people will spontaneously clear the virus without treatment. Therefore, 75 to 85% of people with positive antibody tests likely have chronic HCV. An HCV RNA test (i.e., PCR) is needed to confirm chronic infection.

Core HCV Surveillance Data

Iowa Disease Surveillance System (IDSS)

HCV data are collected in the Iowa Disease Surveillance System, which is a web-based system designed to facilitate reporting, investigation, and surveillance of communicable diseases in Iowa. HCV is a reportable disease as defined by Iowa Code chapter 139A. Reports of HCV infection are submitted by local public health, private providers, laboratories, and others. IDSS is not a static database, as information on cases can be updated daily. Some records have incomplete data, which may include information about treatment, cure, or spontaneous clearing of the virus.

Hepatitis C test results in IDSS were defined by the following criteria:

Screening tests: *(usually reported as positive or negative)*

- HCV Antibody by EIA antibody (See Interpretation of Signal to Cutoff ratio in lab report)
- Serology – HCV antibody (EIA) (positive, negative, equivocal, or not reactive)
- Serology – Anti-HCV antibody test (positive, negative, equivocal, or not reactive)
- Serology – HCV IgG antibody (EIA) (positive, negative, equivocal, not reactive, or See Interpretation & Numeric Result)
- Serology – HCV IgM antibody (EIA) (positive, negative, equivocal, not reactive, or See Interpretation & Numeric Result in lab report)

Confirmatory tests:

- Polymerase Chain Reaction (PCR) (detected, equivocal, indeterminate, not detected, not quantified, or not tested)
- Genotype (detected, not detected, or indeterminate)
- Serology – RNA Qualitative (QL) (positive, negative, equivocal, or not reactive)
- Serology – HCV RNA (positive, negative, or not done)
- Serology – HCV DNA QL Log (positive, negative, equivocal, or indeterminate)

Diagnosis Date and Completeness of Surveillance Data

Only people reported in Iowa and for whom last name, date of birth, sex, and date of diagnosis are known are included in this report. Evaluations of the surveillance system indicate that potentially significant numbers of Iowans with HCV may have never been reported to the IDPH. In addition, these data do not include information on people who have contracted the virus, but who have not been diagnosed. Nationally, CDC estimates that approximately half of people with HCV are undiagnosed.

Co-infection with HIV and HCV

Iowans living with both HIV and HCV were determined by a match between IDSS and the Iowa enhanced HIV/AIDS Reporting System (eHARS). All people living with HIV who were first diagnosed while living in Iowa, or who have lived in Iowa at some point in time while living with HIV, or who have accessed care at an Iowa facility and have been reported to the IDPH, are included in eHARS. All reports of HCV as of 12/31/2019 were matched to HIV reports in eHARS as of 12/31/2019. Matches were based on date of birth, last name, and Soundex of first name. People reported in both databases were considered to be living with both HIV and HCV.

Population Data

The surveillance program has used the 2019 population estimates from the U.S. Census Bureau (<http://www.census.gov>) to calculate rates.

Section 2: NARRATIVE SUMMARY

Lowans Diagnosed with Hepatitis C in 2019

There were 1,143 lowans diagnosed with chronic hepatitis C (HCV) in 2019. This is a decrease of 385 people (25%) from 1,528 in 2018, and below the average of 1,515 for the previous five years (2014 through 2018). As seen in Figure 3.1, the annual number of people diagnosed with chronic HCV increased steadily from 2000 through 2015, and peaked at 1,561 diagnoses in 2015.

Case Status

There were 1,143 lowans reported with past or current (chronic) HCV in 2019. Ninety-eight percent had evidence of a confirmatory (PCR) test indicating chronic HCV, while 2% (22) of lowans had only antibody positive results reported to the IDPH. An antibody test for HCV is essentially a screening test. It is estimated that 75 to 85% of people with positive antibody results developed chronic HCV, while 15 to 25% will clear the virus on their own. In addition, there were 2,197 lowans reported to the IDPH with a positive antibody result and a negative PCR result. These patients may have spontaneously cleared the virus, or had a false antibody positive result. For patients who had a positive antibody result, but were not exposed to HCV, the result was likely false positive. Patients with a rapid antibody result who were exposed to HCV, primarily through injection drug use, likely spontaneously cleared the virus during or after the acute infection phase.

Sex

In 2019, 65% of lowans diagnosed with chronic HCV were males. An analysis of people diagnosed with HCV under the age of 40 reveals that the distribution is slightly different, with males representing only 59% of diagnosed lowans. The increased proportion of women diagnosed under the age of 40 is important to note, as HCV can be transmitted perinatally by women to their infants.

Birth Cohort

Forty-four (44) percent of people diagnosed with HCV in 2019 were considered to be ‘baby boomers,’ or those born between 1945 and 1965, while 31% were people born after 1979 (under 40 years of age at diagnosis). About 24% of people diagnosed in 2019 were born between 1966 and 1978 (between the ages of 40 and 53 years of age at diagnosis). A significantly smaller percentage (1%) of people reported with HCV in 2019 were born before 1945.

Ethnicity and Race

Unlike for HIV and other sexually transmitted infections, there are not significant racial and ethnic disparities among lowans diagnosed with HCV. In 2019, 89% of people diagnosed were non-Hispanic white, 3% of people were Hispanic/Latino, 6% were black/African American, 1% were Asian, and less than 1% were other races. This closely matches the racial and ethnic distribution of lowans overall. However, given the racial disparities among people diagnosed with HCV reported nationally, it is possible that African Americans and other minorities are not being tested at the same rate as white lowans. On the other hand, HCV in Iowa is associated with use of methamphetamine. People in Iowa who were admitted for treatment of methamphetamine use at Iowa’s publicly funded treatment sites are more likely to be white than people who are treated for cocaine or heroin.

lowans Under 40 Diagnosed with Hepatitis C in 2019

There were 355 lowans under the age of 40 who were diagnosed with chronic HCV in 2019, representing 31% of all lowans diagnosed. In 2018, people under the age of 40 with chronic HCV accounted for 27% of all diagnoses. Although the number of people under 40 decreased from 2018 to 2019, they accounted for a higher proportion of people with HCV diagnoses in 2019 indicating that diagnoses among baby boomers decreased more than diagnoses among people under 40. Among those under 40 years of age diagnosed in 2019, 3% were under 20 years of age, 8% were between the ages of 20 and 24, and 26% were between 25 and 29 years of age, 30% were between 30 and 34 years of age, and 34% were between 35 and 39 years of age. There was one report of diagnosed HCV among Iowa children under 13 years of age in 2019 that met the case definition for perinatal hepatitis C. An analysis of surveillance data indicated that, of the 355 persons under 40 who were eligible for follow up, 74% of people disclosed injection drug use to their health care providers. Race and ethnicity of lowans under 40 diagnosed with HCV was similar to the overall population. Ninety-three percent of lowans under 40 diagnosed with HCV in 2019 identified as white, 4% identified as Latino, 2% identified as Black/African American, and less than 1% identified as other races.

lowans Ever Diagnosed with HCV

There have been 29,895 lowans ever reported to the IDPH with current or past HCV. Of these, 20,154 had evidence of chronic HCV. This means that a positive HCV RNA result was reported for these lowans. Of the 9,741 lowans reported to IDPH with only a positive hepatitis C antibody (screening) test result, it is estimated that 15 to 25% cleared the virus. The remaining 75 to 85% likely developed chronic hepatitis C. Among lowans diagnosed with chronic HCV after 2000, nearly half (45%) were baby boomers at diagnosis while 21% were under 40 years of age at diagnosis. Nearly two-thirds (64%) were male, and 89% were white and non-Hispanic. It should be noted that race and ethnicity information were not reported for 38% of people diagnosed with HCV and reported to IDPH since 2000. Active surveillance of hepatitis C did not begin at IDPH until 2015, and this limited the completeness of data reporting.

Deaths of People with Hepatitis C

From 2000 to 2017, the number of lowans with hepatitis C who died increased annually. There was a slight decrease in 2018, when there were 323 lowans with hepatitis C who died. There were 3,015 lowans with hepatitis C who died between 2000 and 2019. The number of deaths among lowans diagnosed with hepatitis C decreased 7% from 2017 to 2018 and increased 15% from 2018 to 2019. The causes of deaths were not necessarily related to their hepatitis C diagnoses. Mortality related to HCV and among people living with HCV is likely to be underestimated, as death certificates often underreport HCV infection, and around half of people with HCV are undiagnosed.

HIV and HCV Co-infection

An analysis of lowans with HIV and HCV revealed that 276 lowans had been reported to the IDPH since 2000 as diagnosed with both HIV and chronic HCV. Among them, 209 (77%) were alive at the end of 2019, indicating that 7% of lowans living with HIV have also been diagnosed with chronic HCV. Ryan White Part C clinics have been making concerted efforts to treat lowans living with HIV for their HCV. HCV treatment is covered by the AIDS Drug Assistance Program (ADAP) for people who have HIV and meet the program's income guidelines. Most people who have been diagnosed with HIV and HCV, 77%, were males, and white, non-Hispanic, 63%. It is important to note that while only 6% of lowans diagnosed with HCV identify as Black or African American, 24% of lowans with both HIV and HCV are

Black or African American. This may provide further evidence that testing for HCV among Black/African American Iowans needs to be increased.

Estimation of Prevalence of HCV in Iowa

As of December 31, 2019, there have been 29,895 Iowans reported to the IDPH with past or current (chronic) hepatitis C infection. Among these Iowans, 20,145 had evidence of chronic infection, while 9,741 had only positive antibody (screening) results reported. The Centers for Disease Control and Prevention estimate that 15 to 25% of people with HCV clear the infection spontaneously, so it is likely that 75 to 85% of the 9,741 persons with only antibody results reported actually have chronic HCV infection. In addition, CDC estimates that about 50% of people with HCV have not yet been diagnosed.¹ That gives a prevalence estimate of 54,902 to 56,850 Iowans with chronic hepatitis C infection. However, this estimate includes those who may have been treated and cured of chronic hepatitis infection.

Hepatitis C Surveillance Activities

Active public health surveillance of hepatitis C virus began in 2015 at the Iowa Department of Public Health in the Bureau of HIV, STD, and Hepatitis. At that time, the IDPH conducted surveillance follow up with healthcare providers of Iowans diagnosed with HCV who were 30 years of age or younger to collect information on injection drug use behavior. The cutoff age of 30 was chosen because other states were reporting increases in diagnoses in people 30 and under. However, analyses of Iowa's hepatitis C surveillance data indicate that Iowans aged 30 to 39 years were also experiencing increases in diagnoses, potentially associated with the expanding number of people who inject drugs related to the opioid epidemic. Therefore, the cutoff age for HCV surveillance follow up was increased to 39, effective January 1, 2017.

Starting January 1, 2018, the IDPH began surveillance follow up with healthcare providers for all Iowans reported to IDPH with hepatitis C positive test results who did not have evidence of a confirmatory test. The purpose of this follow up is to educate health care providers on testing recommendations and encourage them to provide the confirmatory testing to patients. If health care providers cannot reach a patient, the Hepatitis Data Coordinator at IDPH will attempt to contact the patient directly to discuss options for confirmatory testing.

¹ Yehia, BR, AJ Schranz, CA Umscheid, and V Lo Re, III. 2014. The treatment cascade for chronic hepatitis C virus infection in the United States: A systematic review and meta-analysis. PLoS One. 2014; 9(7): e101554. Published online 2014 Jul 2. doi: [10.1371/journal.pone.0101554](https://doi.org/10.1371/journal.pone.0101554)

Section 3: TABLES AND FIGURES

Table 3.1 Iowans Diagnosed and Reported with Chronic Hepatitis C in 2019

Characteristics	Iowans Diagnosed with Chronic HCV	
	Number	(%)
Sex at Birth		
Male	744	(65)
Female	399	(35)
Age at Diagnosis		
Under 20 years of age	9	(1)
20 – 29 years of age	121	(11)
30 – 39 years of age	225	(20)
40 – 49 years of age	169	(15)
50 – 59 years of age	322	(28)
60 – 69 years of age	258	(23)
70 years of age and older	39	(3)
Birth Cohort Year		
Under 40 years of age (0 – 39 years of age)	355	(31)
Baby Boomers (54 – 74 years of age)	501	(44)
Born before 1945 (75 years of age and older)	16	(1)
All other ages (40 – 53 years of age)	271	(24)
Ethnicity/Race		
Hispanic/Latino, All Races	30	(3)
Not Hispanic, White	1,020	(89)
Not Hispanic, Black/African American	68	(6)
Not Hispanic, Asian	13	(1)
Not Hispanic, Native Hawaiian/Pacific Islander	2	-
Not Hispanic, American Indian/Alaska Native	10	(1)
Not Hispanic, Multi-race	0	-
Case Status		
Confirmed HCV (positive confirmatory result)	1,143	-
Past or current HCV (positive screening test)	22	-
Totals	1,143	(100)

Table 3.2 Iowans under Age 40 Diagnosed and Reported with Chronic Hepatitis C in 2019

Characteristics	People reported with HCV Diagnosis	
	Number	(%)
Sex at Birth		
Male	209	(59)
Female	146	(41)
Age at Diagnosis		
Under 20	9	(3)
20 – 24	28	(8)
25 – 29	93	(26)
30 – 34	105	(30)
35 – 39	120	(34)
Reported Injection Drug Use		
Yes	261	(74)
No	58	(16)
Unknown	35	(10)
Not Assessed (patient under age 13)	1	(0)
Ethnicity/Race		
Hispanic/Latino, All Races	14	(4)
Not Hispanic, White	330	(93)
Not Hispanic, Black/African American	6	(2)
Not Hispanic, Asian	3	(1)
Not Hispanic, Native Hawaiian/Pacific Islander	0	(0)
Not Hispanic, American Indian/Alaska Native	2	(1)
Not Hispanic, Multi-race	0	(0)
Case Status		
Confirmed HCV (positive confirmatory result)	355	-
Past or current HCV (positive screening test)	8	-
TOTALS	355	(100)

Table 3.3 Iowans Diagnosed and Reported with Chronic HCV from 2000 through 2019

Characteristics	People reported with HCV Diagnosis	
	Number	(%)
Sex at Birth		
Male	12,890	(64)
Female	7,070	(35)
Unknown	190	(1)
Other	4	(<1)
Age at Diagnosis		
Under 40 years of age	4,287	(21)
Under 20 years of age	208	(1)
20 – 29 years of age	1,606	(8)
30 – 39 years of age	2,473	(12)
40 – 49 years of age	4,308	(21)
50 – 59 years of age	7,482	(37)
60 – 69 years of age	3,465	(17)
70 years of age and above	612	(3)
Birth Year		
Under 40 (0 – 39 years of age)	4,287	(21)
Baby Boomers (53 – 73 years of age)	9,057	(45)
Born before 1945 (74 years of age and older)	382	(2)
All other ages (40 – 52 years of age)	6,428	(32)
Ethnicity/ Race*		
Hispanic/Latino, All Races	337	(3)
Not Hispanic, White	11,232	(89)
Not Hispanic, Black/African American	739	(6)
Not Hispanic, Asian	133	(1)
Not Hispanic, Native Hawaiian/Pacific Islander	9	(<1)
Not Hispanic, American Indian/Alaska Native	95	(1)
Not Hispanic, Multi-race	17	(<1)
Diagnosed with HIV and Chronic HCV		
Diagnosed with HIV and HCV, Alive	209	(76)
Diagnosed with HIV and HCV, Deceased	67	(24)
Case Status		
Confirmed HCV (positive confirmatory result)	20,154	-
Past or current HCV (positive screening test)	9,741	-
TOTAL	20,154	(100)

*Race and ethnicity data were missing for 38% (n=7,592) of case reports from 2000 through 2019. The percentages for racial and ethnic groups were calculated using a denominator of 12,562.

Table 3.4 Iowans Diagnosed & Reported with HIV and Chronic HCV, 2000 – 2019

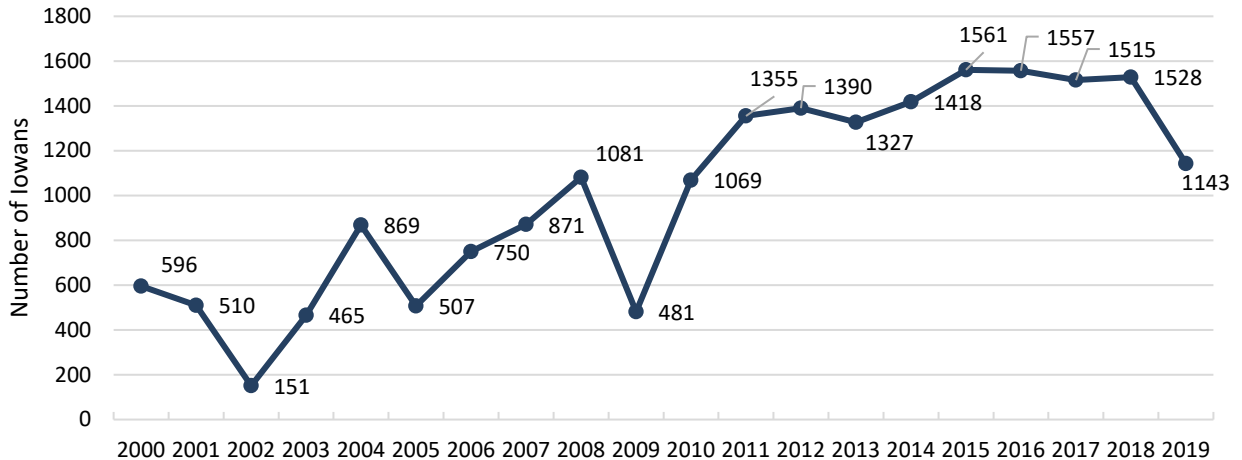
Characteristics	People Co-Infected	
	Number	(%)
Sex at Birth		
Male	213	(77)
Female	63	(23)
Birth Cohort Year		
Born after 1985	10	(4)
Born between 1966 and 1985	100	(36)
Born between 1945 and 1965 (Baby Boomers)	163	(59)
Born before 1945	3	(1)
Ethnicity/ Race		
Hispanic/Latino, All Races	21	(8)
Not Hispanic, White	173	(63)
Not Hispanic, Black/African American	65	(24)
Not Hispanic, Asian	5	(2)
Not Hispanic, Native Hawaiian/Pacific Islander	0	-
Not Hispanic, American Indian/Alaska Native	0	-
Not Hispanic, Multi-race	12	(4)
Vital Status (as of Dec. 31, 2019)		
Alive	209	(76)
Deceased	67	(24)
TOTALS	276	(100)

Trends in Iowans Diagnosed with Hepatitis C

Number of Iowans Diagnosed with Chronic HCV

Diagnoses of chronic hepatitis C infection peaked in 2015 at 1,561 cases. The number of Iowans diagnosed with chronic, confirmed hepatitis C in 2019 (1,143) is well below the 5-year average of 1,515 (2014 through 2018), and a 25% decrease since 2018. The decrease experienced in 2019 was among all age cohorts.

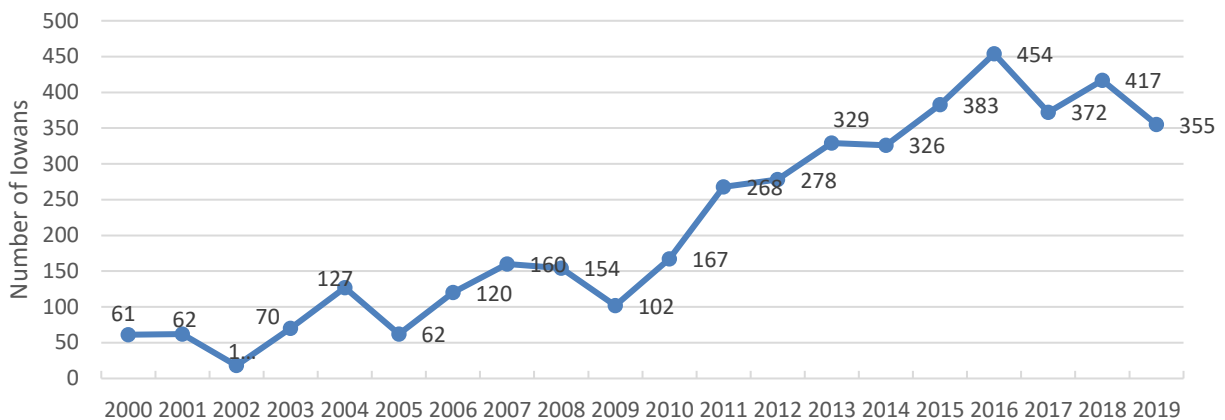
Figure 3.1 Number of Iowans Diagnosed with Chronic HCV: 2000 - 2019



Number of Iowans Under 40 Diagnosed with Chronic HCV

There were 355 Iowans under 40 years of age diagnosed with chronic HCV in 2019, representing 31% of all Iowans diagnosed. The number of diagnoses represents a 15% decrease compared to 2018, and it remains below the peak of 454 reached in 2016.

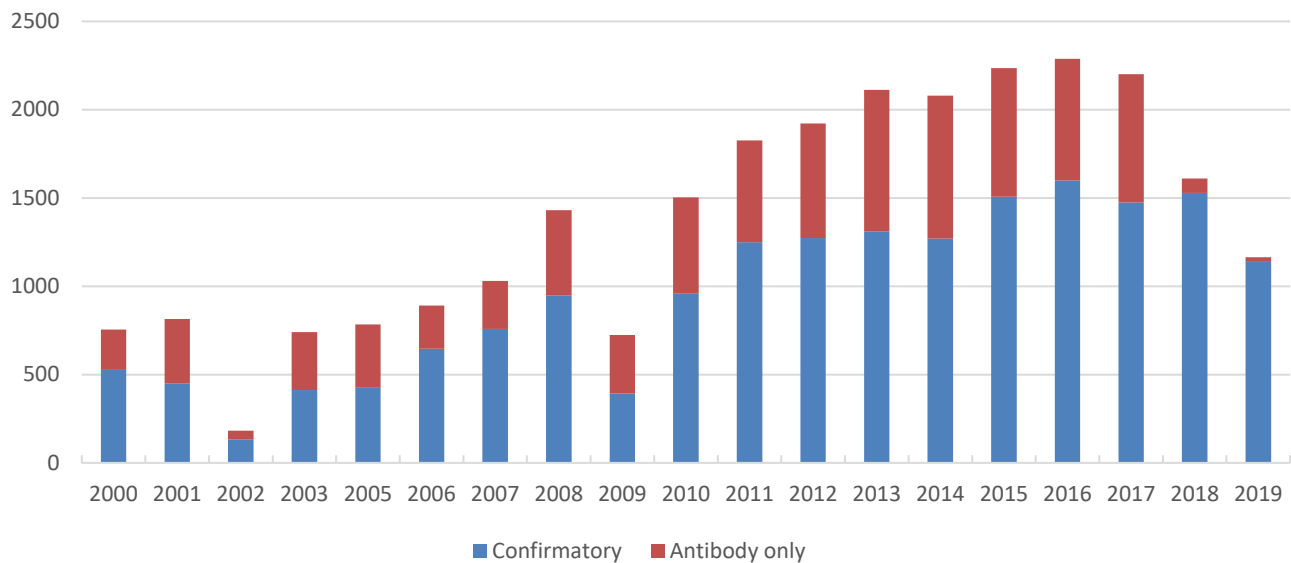
Figure 3.2 Number of Iowans Under 40 Years of Age Diagnosed with Chronic HCV: 2000 - 2019



Proportion of lowans Reported with Confirmed or Unconfirmed (Antibody) HCV

To determine whether a person has chronic HCV, a confirmatory (i.e., RNA PCR) test must be administered. In 2019, 98% of the 1,143 lowans reported to the IDPH with HCV had evidence of a positive confirmatory test, while 2% of lowans had only screening (antibody) results reported. Beginning in January 2018, the IDPH Hepatitis Data Coordinator began following up with medical providers who report patients with a hepatitis C antibody positive result without evidence of a confirmatory result. The purpose of this follow up is to inform providers of the testing algorithm for hepatitis C to ensure all lowans with a hepatitis C positive screening result receive confirmatory testing.

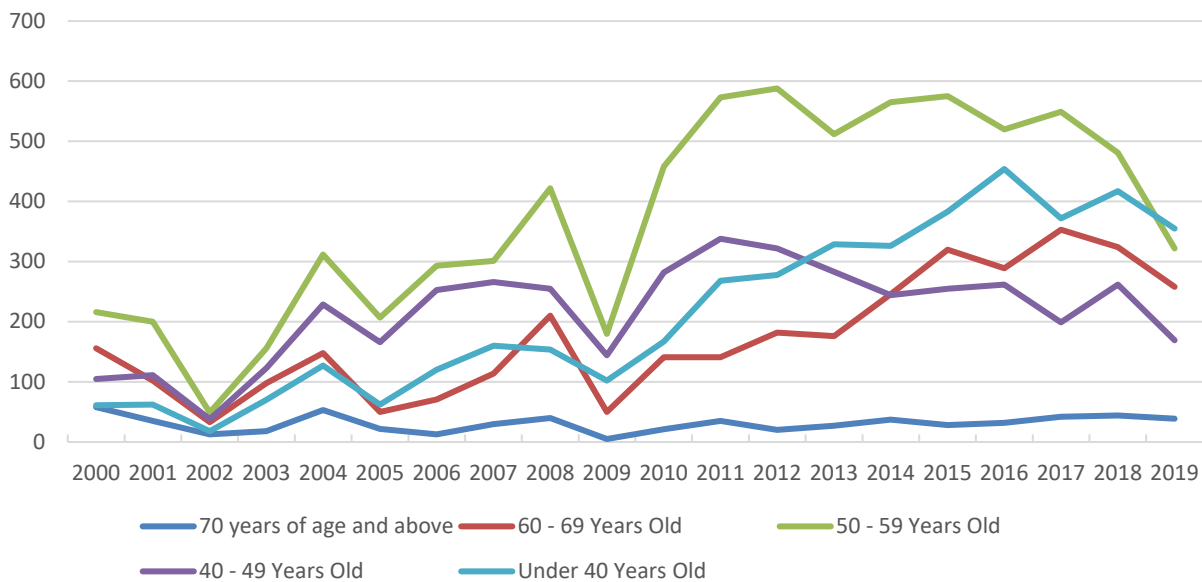
Figure 3.3 Number of lowans Reported with Antibody-only or Confirmatory HCV Test Results



Number of Iowans Reported with Chronic HCV by Age Group

The largest single group of people who are diagnosed with hepatitis C had been those aged 50 to 59 years. However, this age group has seen a fairly continuous decrease in diagnoses since the peak in 2012. As of 2019, Iowans under the age of 40 have become the group with the most diagnoses. There were 355 Iowans under 40 diagnosed with chronic HCV in 2019, which was a 15% decrease compared to 2018, but still was the most of any age group represented below. There were 169 Iowans ages 40 to 49 diagnosed with chronic HCV in 2019, representing a 35% decrease from 2018. Iowans between 50 and 59 years of age experienced 345 diagnoses in 2019, representing a 28% decrease from 2018. Iowans 60 to 69 older experienced a 20% decrease in diagnoses in 2019, with 258 diagnoses. Iowans 70 years of age and above also experienced a decrease in diagnoses in 2019, with 39 diagnoses, down 11% from 2018.

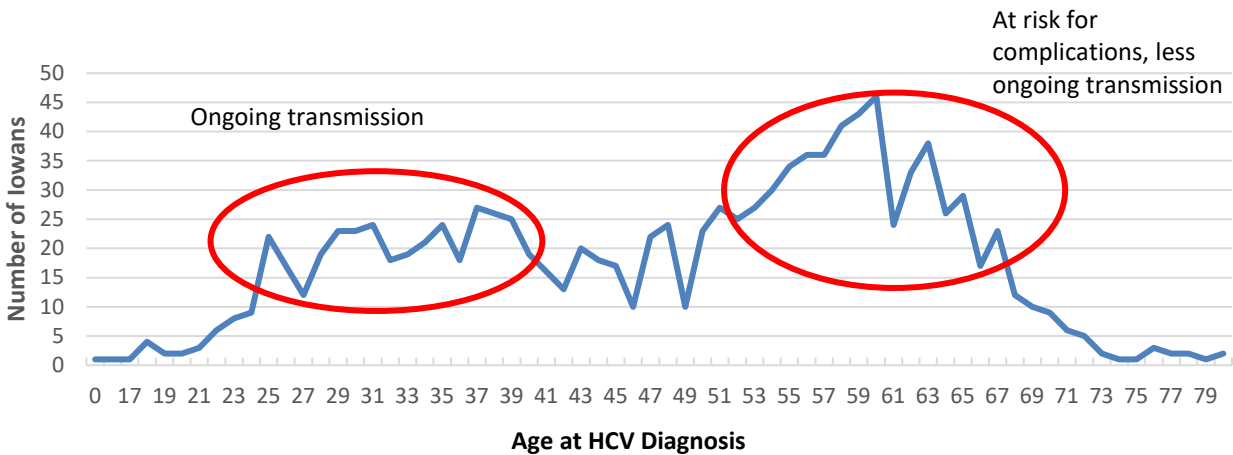
Figure 3.4 Diagnosis of HCV by Age Group in Iowans: 2000 through 2019



Age at Diagnosis of HCV in 2019

A distribution of lowans diagnosed with HCV in 2019 by age reveals the two groups of lowans on which we have focused in this report. lowans under 40 years of age at diagnosis with HCV represent those who likely contracted the virus from current or recent injection drug use and who are likely at risk for transmitting to others, although they are less likely to have yet experienced health complications related to HCV. lowans older than 50 years of age diagnosed with HCV are more likely to have acquired the virus decades ago and are at higher risk for immediate health complications. Many of these “baby boomers” may have ceased injecting drugs years previously.

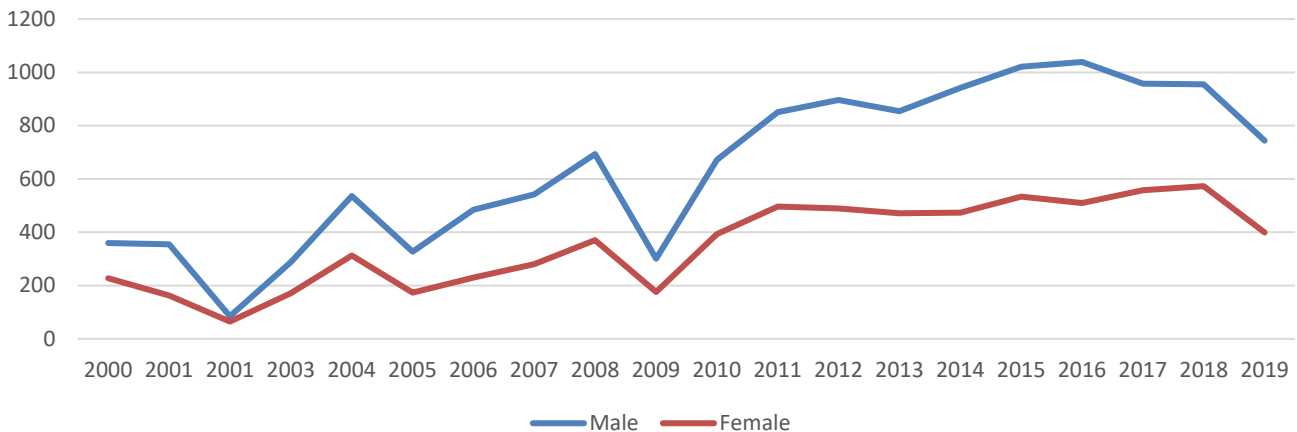
Figure 3.5 lowans Diagnosed with HCV in 2019, by Age



Number of lowans Diagnosed with Chronic HCV in 2019, by Sex

Hepatitis C virus disproportionately impacts males in Iowa. From 2000 through 2019, there were about 1.9 males diagnosed for every female diagnosed. This gap has narrowed since 2016. It’s important to note that this ratio varies by age, as well. For people aged 40 years and or younger, there were only 1.4 males diagnosed to every female diagnosed.

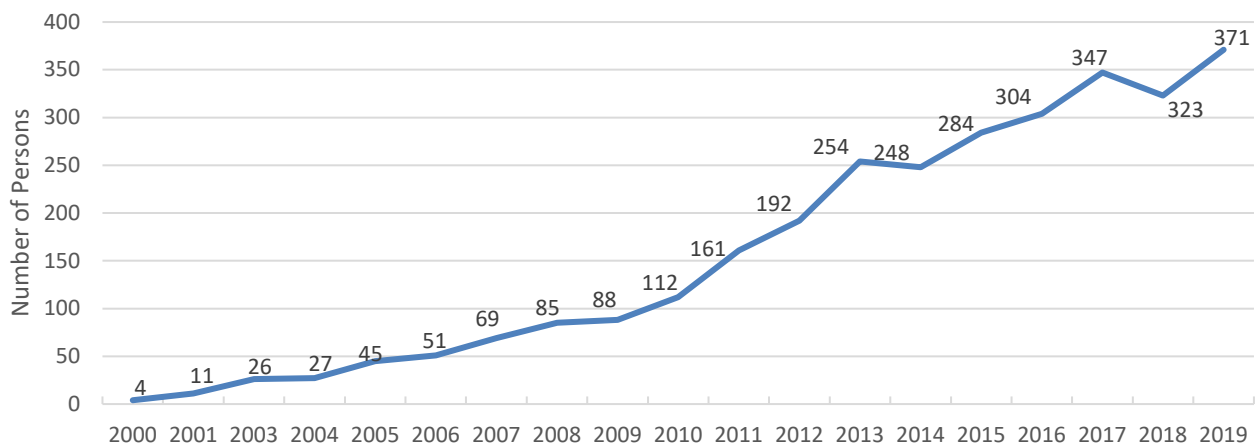
Figure 3.6 lowans Diagnosed with HCV by Sex: 2000 through 2019



Deaths of lowans with Hepatitis C

The number of lowans with hepatitis C who died has increased fairly steadily since 2000. There was a slight decrease in 2018, when there were 323 lowans with hepatitis C who died. Deaths are discovered by matching the HCV surveillance data with Vital Records at IDPH and with the National Death Index at CDC. An analysis of death certificate data indicated that between 2000 and 2019, there were 3,015 lowans who died from hepatitis C-related causes, meaning that hepatitis C was listed on the death certificate. Mortality from hepatitis C is likely underestimated, as death certificates often underreport HCV infection, and approximately half of all people with hepatitis C are undiagnosed.

Figure 3.7 Deaths of HCV-positive lowans: 2000 through 2019



lowans Diagnosed with HIV and Chronic HCV

In the United States, it is estimated that 25% of people with HIV also have hepatitis C². Co-infection with HIV and HCV is particularly common among people who inject drugs. Iowa is a low-prevalence state for HIV disease. At the end of 2019, there were 2,839 people diagnosed and living with HIV in Iowa. People who inject drugs represented 5% of people diagnosed with HIV in 2017, 6% in 2018, and 7% in 2019.

To ascertain co-infections of HIV and HCV among lowans, the HIV surveillance system was matched with the HCV surveillance system for lowans diagnosed through 2019. A total of 276 persons were ever reported to IDPH as having both HIV and chronic HCV. Of those people, 209 were alive at the end of 2019 and living in Iowa, indicating that 7% of lowans with HIV have also been diagnosed with chronic HCV. This is likely an underestimate, as previous analyses have indicated that up to half of people co-infected have not been reported to IDPH as being diagnosed with HCV. The majority of people who have both HIV and HCV, 77%, were males, and white non-Hispanic, 63%. However, 24%

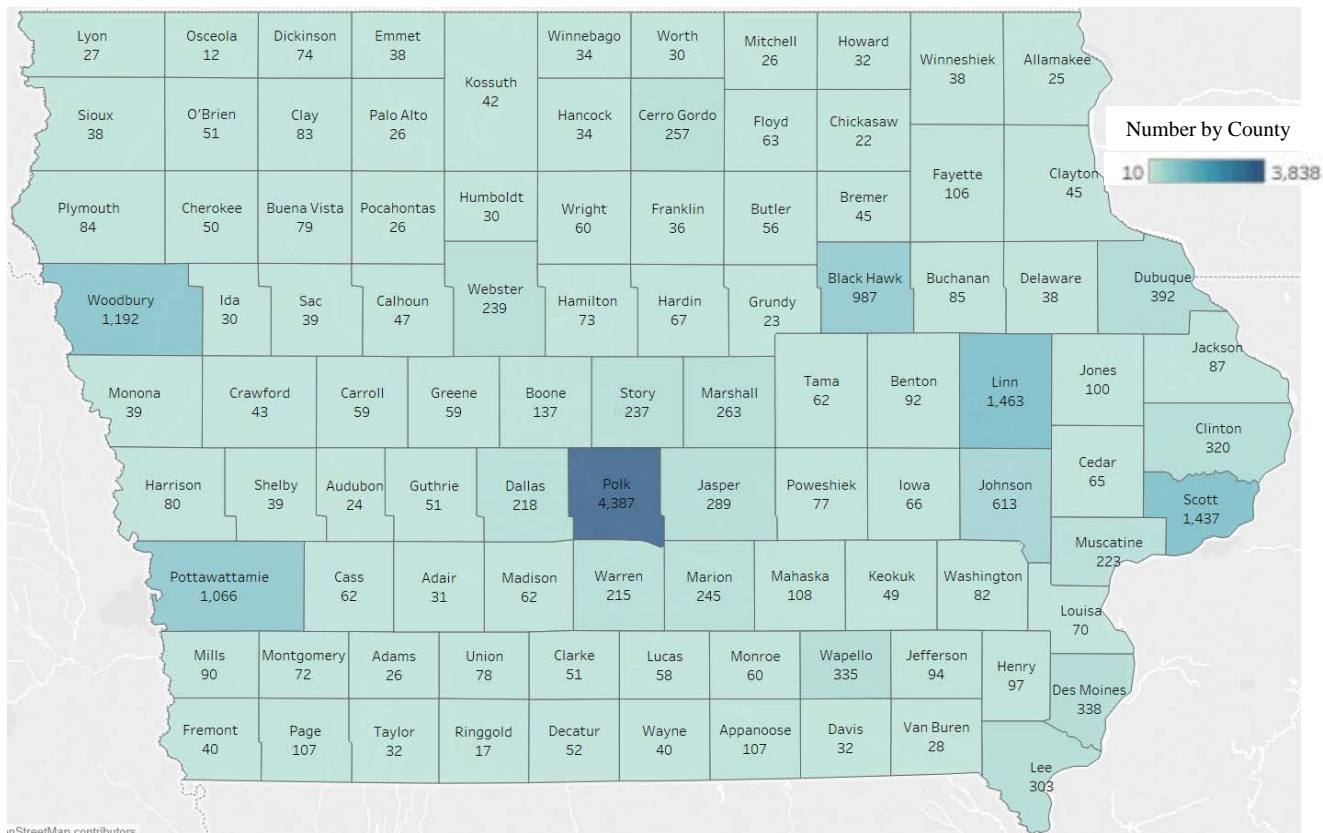
² Centers for Disease Control and Prevention. (2015) *HIV/AIDS and Viral Hepatitis*. Retrieved from www.cdc.gov.

of people who were co-infected with HIV and HCV were Black or African American. This relatively high proportion may indicate that HCV infections among Black/African American lowans without HIV are being missed. This may be the case if Black and African American lowans are not being tested for HCV at the same rate as white lowans.

Distribution of lowans Diagnosed with Chronic HCV

The map below shows the county of residence for lowans reported with chronic HCV from January 1, 2000, through December 31, 2019. It indicates the counties where people were living at the time of diagnosis. There were 796 lowans reported without residence information, so this map reflects 19,358 out of the 20,154 lowans who have been reported with hepatitis C. The ten most populous counties are home to 59% of lowans who have been reported with HCV. This compares to 52% of lowans who live in those ten counties (Black Hawk, Dallas, Dubuque, Johnson, Linn, Polk, Pottawattamie, Scott, Story, and Woodbury).

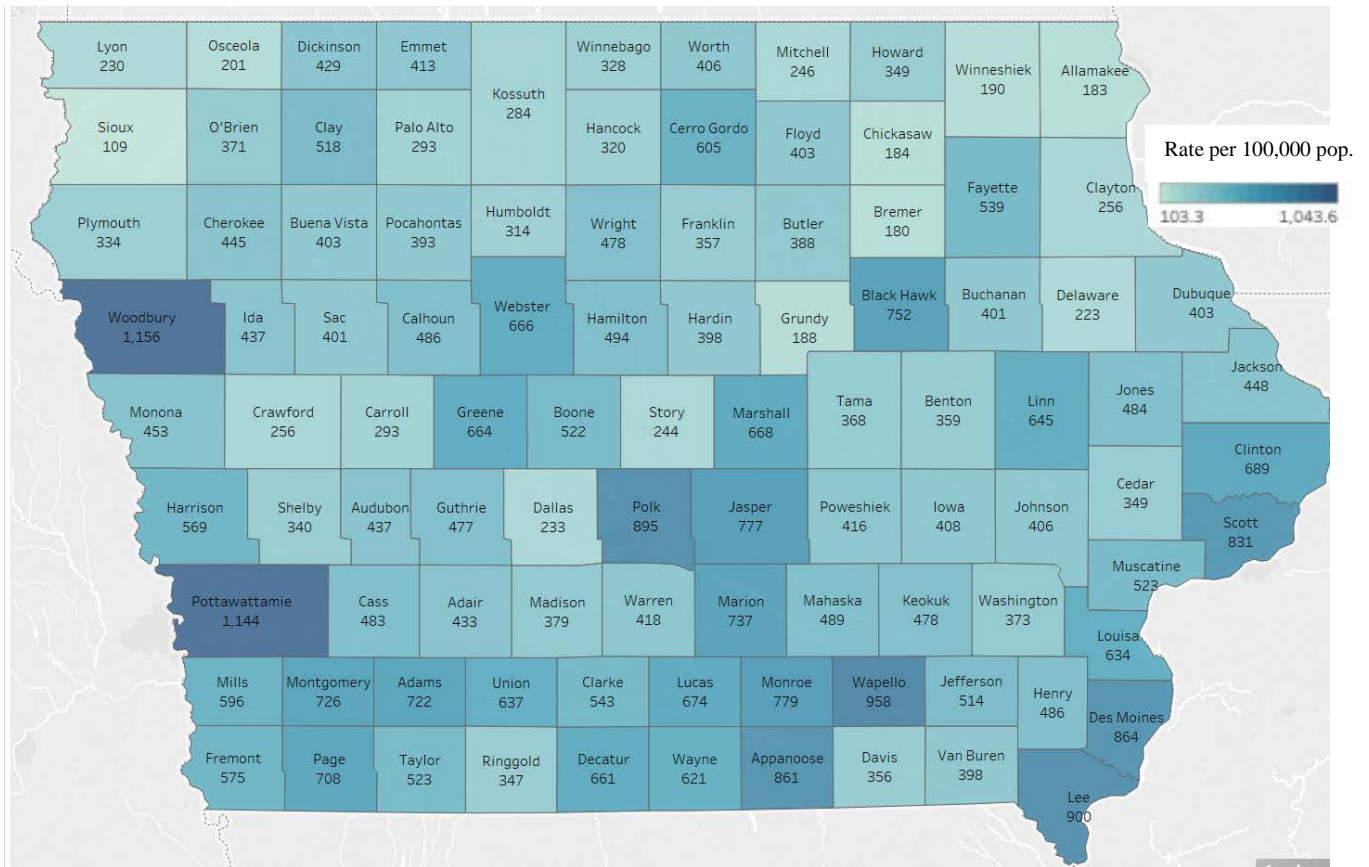
Figure 3.8 Number of lowans Diagnosed with HCV from 2000 through 2019, by County of Residence at Diagnosis



Prevalence of HCV in Iowa

Figure 3.9 shows the prevalence of HCV per 100,000 population by county for people diagnosed from January 1, 2000, through December 31, 2019. Rates were calculated based on counties where persons were living at the time of diagnosis. Woodbury County (Sioux City) in northwest Iowa and Pottawattamie County (Council Bluffs) in southwest Iowa have the highest rates at 1,156 and 1,149 cases of HCV per 100,000 population, respectively. These are followed by Wapello County (Ottumwa) and Lee County (Keokuk) in far southeast Iowa. The state's overall prevalence is 638 cases per 100,000 population.

Figure 3.9 Prevalence of HCV per 100,000 Population by County of Residence at Diagnosis



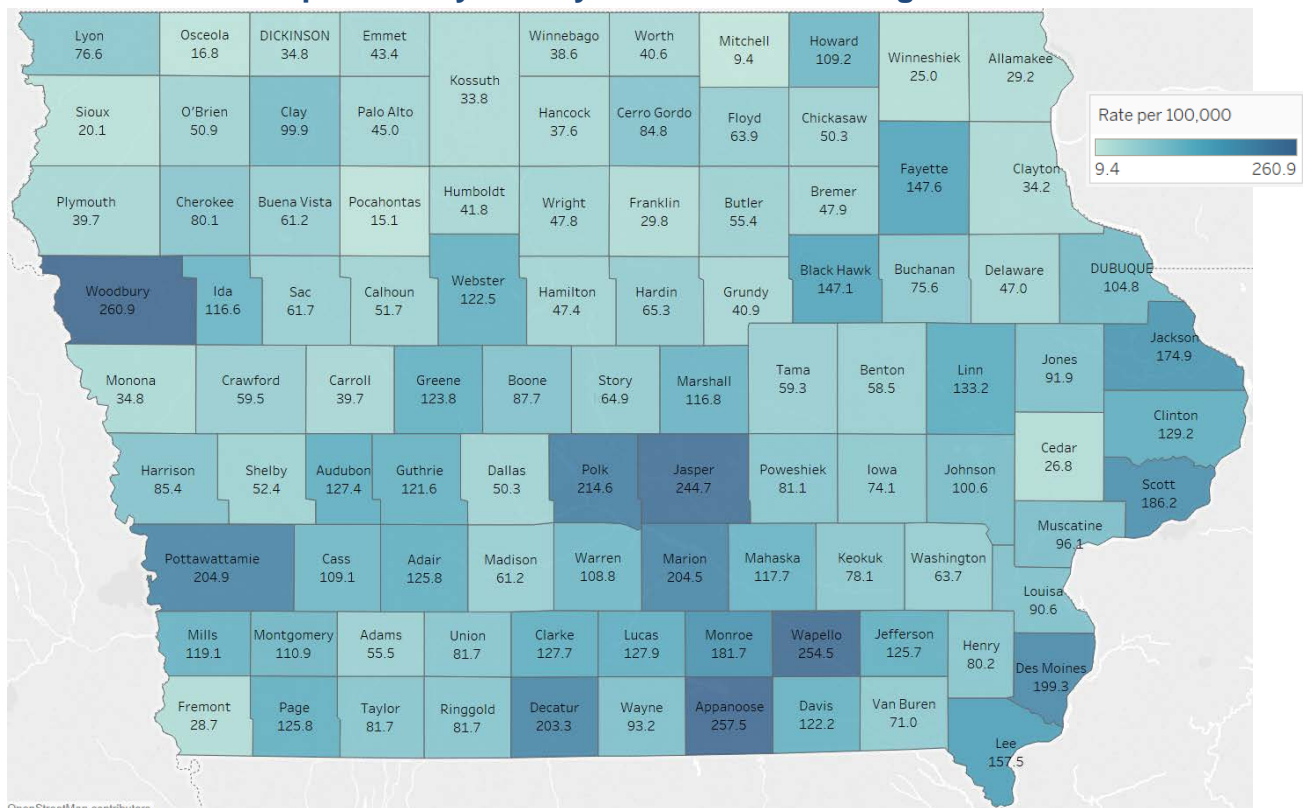
State of Iowa Chronic HCV Rate: 638 per 100,000 population

County populations are based on the 2019 U.S. Census estimates

Prevalence of HCV in lowans Under 40 Years of Age

Figure 3.10 shows the prevalence of chronic HCV diagnoses per 100,000 population for lowans between 15 and 39 years of age who were diagnosed from January 1, 2000, through December 31, 2019. It indicates counties where persons were living at the time of diagnosis. While Woodbury County continues to have the highest prevalence of people with HCV (261 per 100,000 pop), a slightly different pattern of counties emerges when only people under the age of 40 at time of diagnosis are considered. Appanoose County (Centerville) in southcentral Iowa has the second highest prevalence at 258 per 100,000 population, followed by Wapello (Ottumwa) and Jasper (Newton) at 255 and 248 cases per 100,000 population, respectively.

Figure 3.10 Prevalence of Chronic HCV in lowans Under 40 Years of Age per 100,000 Population by County of Residence at Diagnosis



Many of these counties with higher prevalence of HCV among people under the age of 40 are at higher risk of rapid dissemination of HIV and HCV. This could lead to an outbreak of HIV and HCV similar to what was observed in Scott County, Indiana, beginning in 2014. IDPH has conducted an assessment of counties that are most vulnerable to outbreaks of HIV and HCV. The study also looks at counties most vulnerable to opioid overdoses among their residents. The report, [Iowa County-level Vulnerability Assessments for Risk of Opioid Overdoses and Rapid Dissemination of HIV and Hepatitis C](#), ranks Iowa's 99 counties on their risks of outbreaks of HIV or HCV and on their risks to opioid overdoses among their residents. The study developed an index of risk using 17 indicators found to be associated with HCV diagnoses. Wapello, Appanoose, Des Moines, Lee, and Pottawattamie were the five counties found to be most at risk of HIV and HCV outbreaks.

Section 4: Reporting patients with HCV in Iowa

All forms of viral hepatitis are reportable to the Iowa Department of Public Health (IDPH), pursuant to [Iowa Code section 139A.3](#). Below are detailed the reportable events related to hepatitis C.

What laboratory results should be reported?

1. Screening tests: Anti-HCV: Positive or reactive only
 - a. HCV Antibody by EIA antibody
 - b. Serology – HCV antibody (EIA)
 - c. Serology – Anti-HCV antibody test
 - d. Serology – HCV IgG antibody (EIA)
 - e. Serology – HCV IgM antibody (EIA)
2. Confirmatory Testing: HCV RNA, NAT, PCR, and Genotyping: All results
 - a. Polymerase Chain Reaction (PCR) (detected, equivocal, indeterminate, not detected, not quantified, or not tested)
 - b. Genotype (detected, not detected, or indeterminate)
 - c. Serology – RNA Qualitative (QL) (positive, negative, equivocal, or not reactive)
 - d. Serology – HCV RNA (positive, negative, or not done)
 - e. Serology – HCV DNA QL Log (positive, negative, equivocal, or indeterminate)

Medical providers who diagnose people with HCV (acute or chronic) and laboratories who find positive results for viral are required to report. Many laboratories now have automated processes (e.g., Electronic Laboratory Reporting) to report their results. The technology for automated reporting from medical providers is not fully developed at this time.

The most common method of reporting by medical providers is by completing the form titled, “[Iowa Disease Reporting Card](#)” located at [this link](#). The form may be faxed in to the number located at the top of the form. For questions, please contact Shane Scharer at (515) 281-5027.

See <http://idph.iowa.gov/hivstdhep/hep> for this report.

