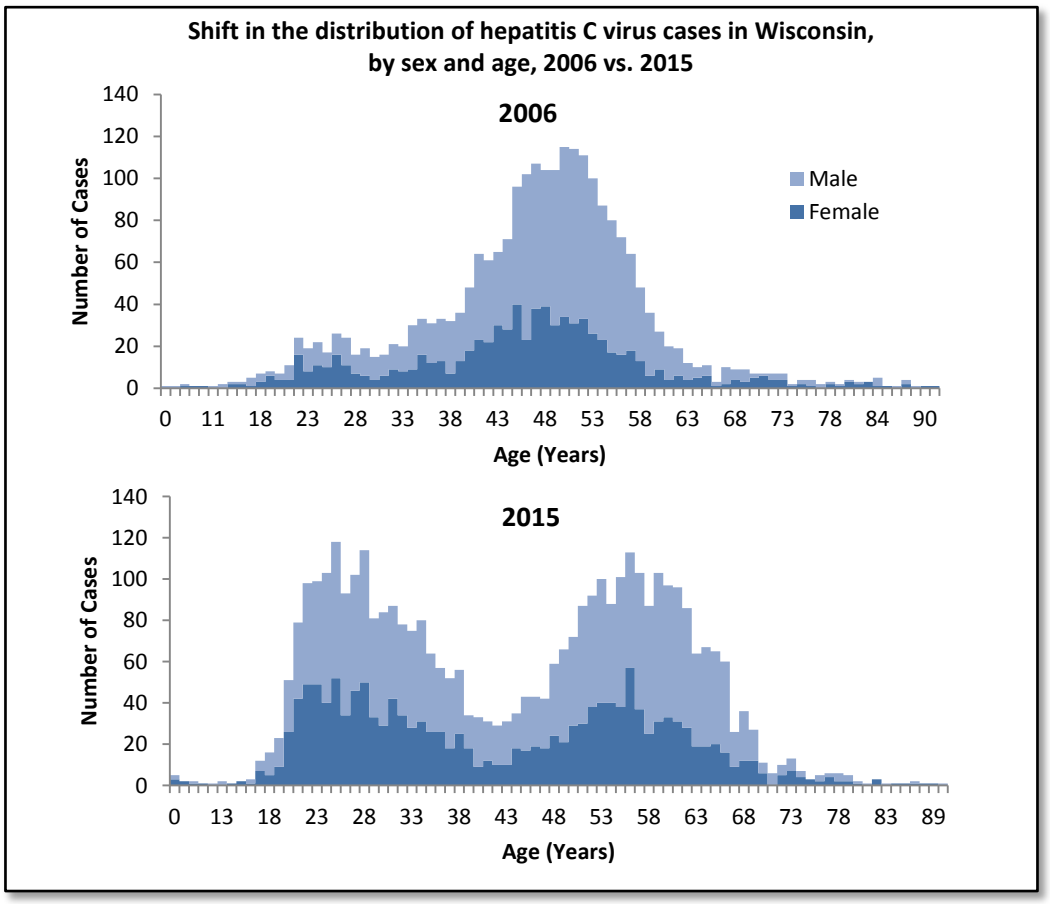
Wisconsin Hepatitis C Virus Surveillance

Annual Review, 2015

Newly Reported Cases, Prevalent Cases, and Trends



In the past 10 years, reports of HCV have shifted from a single peak of middle age adults in 2006, to a distribution with two peaks in 2015. This figure shows the increased number of cases reported from adolescents and young adults in 2015 compared to 2006.

WISCONSIN DEPARTMENT OF HEALTH SERVICES
Division of Public Health
AIDS/HIV Program
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Table of Contents

Hepatitis C Virus

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV). HCV is spread primarily by exposure to blood from an infected person. Acute HCV infection is a short-term illness that occurs within the first six months after exposure to the virus. For most people, acute infection leads to chronic infection. Chronic HCV infection is a long-term illness that occurs when HCV remains in a person's body. HCV infection can last a lifetime and lead to serious liver problems, including cirrhosis (scarring of the liver) or liver cancer. It is the most common blood-borne infection in the U.S. with approximately five million persons with chronic infection.[1] The majority of infected persons are not aware of their infection because they are not clinically ill, but they are a source of transmission to others and at risk for chronic liver disease. Today, most people become infected with HCV by sharing needles or other equipment used to inject drugs. Although less common, HCV can also be spread sexually, from an infected mother to her infant, or by invasive health care procedures.

Surveillance Summary for 2015

New Reports and Disease Status: During 2015, 3,745 past, present, or acute HCV diagnoses were reported in Wisconsin at a rate of 65.3 cases per 100,000 people. From 2014 to 2015, the rate of all HCV reports increased by 16%. There were 61 reports of acute HCV reported in Wisconsin in 2015 at a rate of 1.1 cases per 100,000. Reports of acute HCV infection increased 450% from 2011 to 2015 in Wisconsin. Wisconsin surveillance data indicate the majority of these infections resulted from injection drug use.

Prevalence: Recent estimates of HCV infection in the U.S. indicate five million people are living with chronic HCV infection. Based on national estimates of age, sex, and race-specific sero-prevalence, approximately 90,000 Wisconsin residents have evidence of HCV infection.

Geography: In 2015, new HCV cases were reported from all 72 counties. Milwaukee County accounted for 24%, Dane County for 8%, and Brown County for 4% of HCV reports in 2015. Of 72 counties, 49 (68%) reported more cases in 2015 than in the previous year.

Age: In 2015, there were 994 HCV infections reported among people aged 15-29 in Wisconsin. The rate of HCV in this age group increased 115% in the past five years, from 40.4 cases per 100,000 in 2011 to 86.9 cases per 100,000 in 2015. Infections in this age group are attributed to a rise in injection drug use. In 2015, there were 1,570 HCV infections reported among people aged 50-69 years. This age group includes the baby boomer generation who, in the U.S., are five times more likely than other adults to be chronically infected.

Sex: During 2015 there were 1,497 females and 2,248 males reported with HCV infection in Wisconsin. From 2014 to 2015, rates increased by 18% among females and 15% among males.

Race and Ethnicity: Non-Hispanic Whites comprise the largest number of HCV reports in Wisconsin. From 2014 to 2015, rates increased by 19% among non-Hispanic Whites. During 2015, rates of HCV remained disproportionally high for American Indian and non-Hispanic Blacks relative to other racial and ethnic groups. The reported rate of HCV among American Indians and non-Hispanic Blacks has been substantially higher than the rate in non-Hispanic Whites for the past five years.

Risk: The primary risk factor for acute HCV infection was injection drug use, reported by 41 (67%) of 61 persons with acute HCV. Among those who reported injection drug use, 63% reported sharing "works" or injection equipment.

Table 1. Hepatitis C virus reports in Wisconsin, 2015

Case definition	Number	Rate per 100,000
Hepatitis C, Past or Present†	3,684	64.1
Hepatitis C, Acute‡	61	1.1
Total	3,745	65.3

†Includes 2,865 confirmed and 880 probable.
‡All acute cases are classified as confirmed.

Case Definitions and Classification for 2015:

Hepatitis C, Past or Present, Confirmed and Probable can be found at: National Notifiable Diseases Surveillance System, Hepatitis C, Past or Present

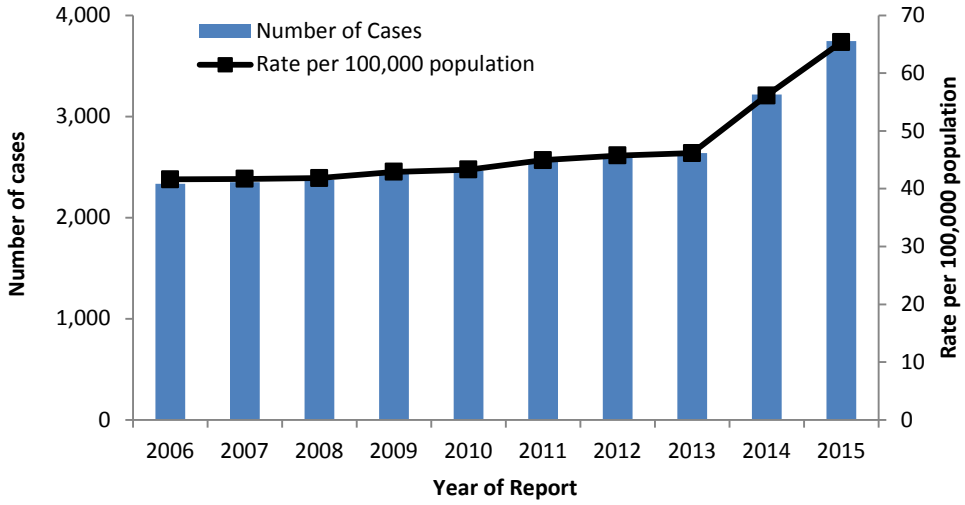
Hepatitis C, Acute, Confirmed and Probable can be found at: National Notifiable Diseases Surveillance System, Hepatitis C, Acute

Table 2. History of hepatitis C virus reports† in Wisconsin, 2006-2015

Year	Past or Present		Acute		Total	
	Number	Rate per 100,000‡	Number	Rate per 100,000‡	Number	Total Rate per 100,000‡
2006	2,334	41.6	1	--	2,335	41.6
2007	2,352	41.7	0	--	2,352	41.7
2008	2,371	41.8	2	--	2,373	41.8
2009	2,435	42.9	3	--	2,438	42.9
2010	2,453	43.1	10	0.2	2,463	43.3
2011	2,549	44.7	14	0.2	2,563	44.9
2012	2,589	45.3	26	0.5	2,615	45.8
2013	2,596	45.4	42	0.7	2,638	46.2
2014	3,168	55.3	49	0.9	3,217	56.1
2015	3,684	64.3	61	1.1	3,745	65.3

†Includes probable and confirmed cases.
‡Rates based on counts less than five have been suppressed. Rates based on counts <12 are statistically unreliable.

Figure 1. Number and rate of hepatitis C virus reports in Wisconsin by Year, 2006-2015



All Cases: Reports by County

Table 3. Number, rate, and percent of newly reported hepatitis C virus by county of residence

County of Residence	2011 Number	2012 Number	2013 Number	2014 Number	2015 Number	2015 Rate per 100,000†	Percent of Reports in 2015
Adams	12	14	6	11	22	106.6	1
Ashland	4	8	8	13	6	37.3	0
Barron	15	15	20	17	20	43.6	1
Bayfield	6	3	3	10	13	86.2	0
Brown	93	105	123	108	139	54.5	4
Buffalo	0	2	4	3	6	44.5	0
Burnett	4	9	5	11	22	142.5	1
Calumet	7	14	12	20	18	36.0	0
Chippewa	20	21	32	25	16	25.3	0
Clark	8	14	9	10	11	31.7	0
Columbia	15	25	20	28	42	73.9	1
Crawford	9	5	2	3	10	60.3	0
Dane	175	173	183	218	304	59.7	8
Dodge	19	25	23	20	42	47.1	1
Door	6	7	7	4	7	25.0	0
Douglas	32	28	42	50	40	90.7	1
Dunn	11	10	19	15	22	49.8	1
Eau Claire	53	26	52	58	65	64.4	2
Florence	4	6	9	1	3	--	0
Fond du Lac	34	33	43	39	65	63.5	2
Forest	2	17	9	7	7	75.9	0
Grant	7	8	6	13	10	19.0	0
Green	5	8	9	12	14	37.9	0
Green Lake	5	6	9	9	14	73.5	0
Iowa	5	4	2	6	10	42.0	0
Iron	6	2	2	4	6	101.4	0
Jackson	11	10	8	16	10	48.4	0
Jefferson	27	20	25	42	56	66.5	1
Juneau	6	18	15	19	18	67.2	0
Kenosha	108	93	83	122	121	72.2	3
Kewaunee	3	5	5	2	5	24.3	0
La Crosse	38	29	53	59	78	66.5	2
Lafayette	5	4	1	8	5	29.6	0
Langlade	8	9	13	26	24	121.7	1
Lincoln	13	5	14	16	15	52.2	0
Manitowoc	66	49	36	42	53	65.5	1
Marathon	48	61	60	53	48	35.5	1
Marinette	25	30	22	32	27	65.1	1
Marquette	3	11	4	9	6	39.2	0
Menominee	5	7	1	2	7	161.4	0
Milwaukee	665	652	591	797	901	94.6	24
Monroe	19	20	20	50	44	96.9	1
Oconto	9	19	16	9	11	29.1	0
Oneida	20	19	21	12	22	61.2	1
Outagamie	65	47	69	66	107	59.1	3
Ozaukee	14	17	18	16	18	20.6	0
Pepin	4	1	1	5	3	--	0
Pierce	8	9	9	8	25	60.8	1
Polk	13	13	12	17	14	31.8	0
Portage	10	16	16	15	31	43.8	1
Price	5	5	7	8	15	107.2	0
Racine	112	107	100	114	124	63.5	3
Richland	2	4	2	15	10	55.9	0
Rock	65	86	88	105	99	61.7	3
Rusk	9	6	5	5	5	34.2	0
St. Croix	13	14	18	17	34	39.4	1
Sauk	27	23	27	27	28	44.8	1

County of Residence	2011 Number	2012 Number	2013 Number	2014 Number	2015 Number	2015 Rate per 100,000*	Percent of Reports in 2015
Sawyer	12	12	12	15	16	96.3	0
Shawano	10	19	6	8	21	50.3	1
Sheboygan	29	36	43	41	57	49.4	2
Taylor	1	4	3	2	1	--	0
Trempealeau	8	6	6	13	14	47.8	0
Vernon	9	5	5	7	16	53.1	0
Vilas	16	16	16	8	15	69.8	0
Walworth	20	40	26	39	50	48.6	1
Washburn	6	8	7	10	9	56.8	0
Washington	25	32	25	29	37	27.8	1
Waukesha	75	70	91	97	126	32.0	3
Waupaca	15	18	15	49	59	112.8	2
Waushara	7	4	3	6	9	36.9	0
Winnebago	77	85	77	90	125	74.1	3
Wood	24	30	26	30	37	49.7	1
Unknown	24	1	1	2	2	--	0
Federal Corrections	0	0	0	8	0	--	0
State Corrections	222	232	257	314	253	--	7
Total	2563	2615	2638	3217	3745	65.3	100

†Rates based on counts less than five have been suppressed. Rates based on counts <12 are statistically unreliable. Rates are not available for Corrections populations.

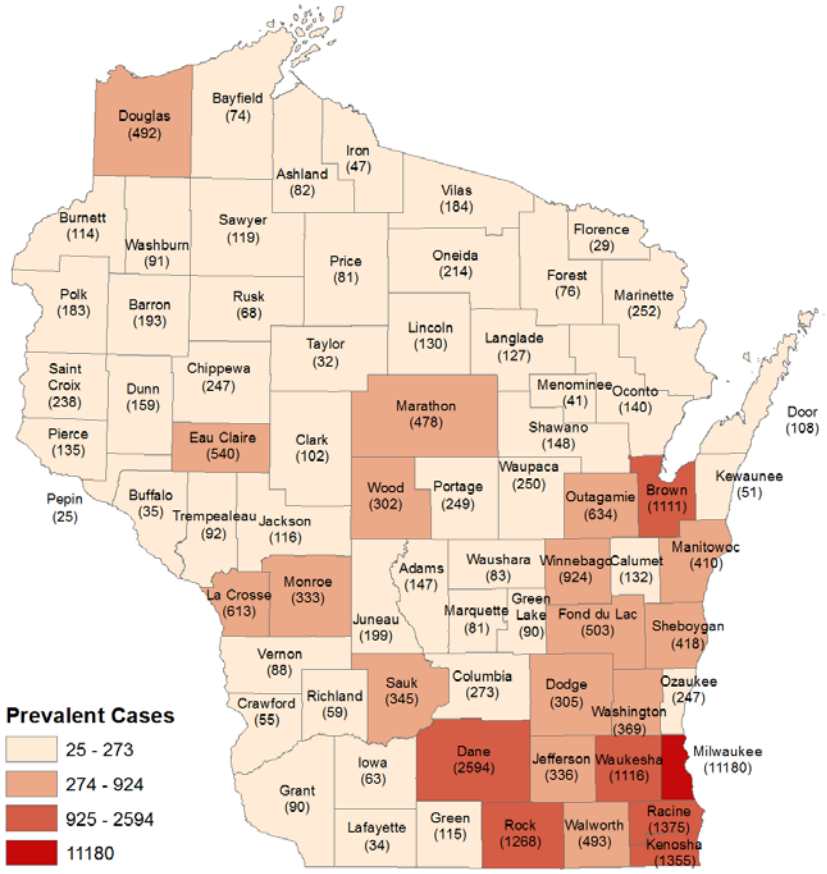
Table 4. Number, rate, and percent of newly reported hepatitis C virus by region of residence†

Region of Residence	2011 Number	2012 Number	2013 Number	2014 Number	2015 Number	2015 Rate per 100,000	Percent of Reports in 2015
Northern	179	213	218	220	259	53	7
Northeastern	459	495	491	536	730	58.9	21
Southern	361	402	389	492	630	56.2	18
Southeastern	1046	1031	959	1256	1433	67.7	41
Western	272	241	322	389	438	55.9	13
Unknown	24	1	1	2	2	--	0
Total	2317	2382	2383	2893	3490		100

†Excludes cases reported from Wisconsin Department of Corrections and the Federal Correctional Institution.

In 2015, new HCV cases were reported in all 72 counties. Milwaukee County accounted for 24%, Dane County for 8%, and Brown County for 4% of HCV reports in 2015. Table 3 includes the number of HCV reports in residents of each county for the past five years and the population-based rate for the current year. Of the 72 counties, 49 (68%) reported more cases in 2015 than in the previous year. In 2015, 41% of reports were from the Southeastern Region of the state. Changes in number and rates in a county or region may be due to an increase in new HCV infections, changes in provider HCV screening practices from year to year, or differences in the amount of resources each jurisdiction has dedicated to HCV surveillance.

Figure 2. Prevalent reported hepatitis C virus as of December 31, 2015, by county of residence†



†Cases originally reported from the Wisconsin Department of Corrections and the Federal Correctional Institution are not shown (n=4,198). County of residence is unknown for 1,621 reported cases.

Table 5. Prevalent reported hepatitis C virus as of December 31, 2015, by region of residence

Public Health Region†	Number‡	Percent
Northern	2,223	6
Northeastern	5,376	15
Southern	5,635	16
Southeastern	16,471	47
Western	3,776	11
Unknown	1,621	5
Total	35,102	100

†Region represents region of residence at time of report. ‡Excludes 1,621 cases where county of residence is unknown and 4,198 cases reported from the Wisconsin Department of Corrections and the Federal Correctional Institution.

Recent estimates of HCV infection in the U.S. indicate five million people are living with chronic HCV infection.[1] Infection is most common among those born between the years 1945 and 1965, the majority of whom were likely infected during the 1970s and 1980s when rates were highest. Since 2000, approximately 40,000 HCV infections have been reported to the Wisconsin Division of Public Health in individuals presumed to be alive as of 2014. The CDC estimates that 45%-85% of HCV infected persons have not been tested or identified so the true number of those with HCV in Wisconsin is unknown. Based on national estimates of age and race-specific prevalence of HCV antibody, approximately 90,000 Wisconsin residents have evidence of HCV infection.

All Cases: Reports by Age

In 2015, there were 994 HCV infections reported among people aged 15-29 in Wisconsin. The rate of HCV in this age group increased 11% during 2014 to 2015, from 78.3 to 86.9 cases per 100,000 population. Infections in this age group are attributed to a rise in heroin use in Wisconsin during the past several years.[2]

In 2015, there were 1,570 HCV infections reported among people aged 50-69 years. This age group includes the baby boomer generation who, in the U.S., are five times more likely than other adults to be chronically infected.

Figure 4. Trend in percent of reported hepatitis C virus, by age group, 2006-2015

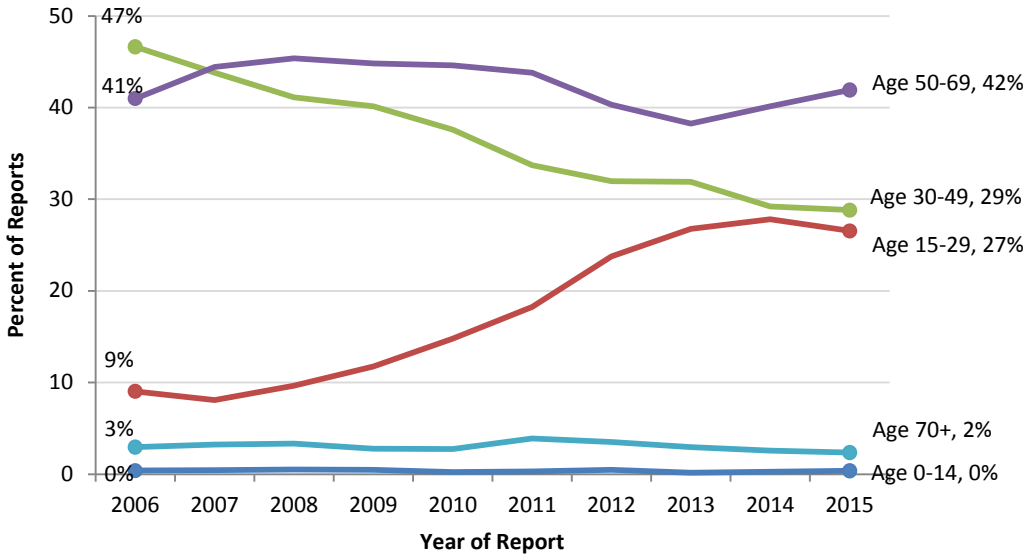


Table 6. Age at report of hepatitis C virus in Wisconsin, 2011-2015

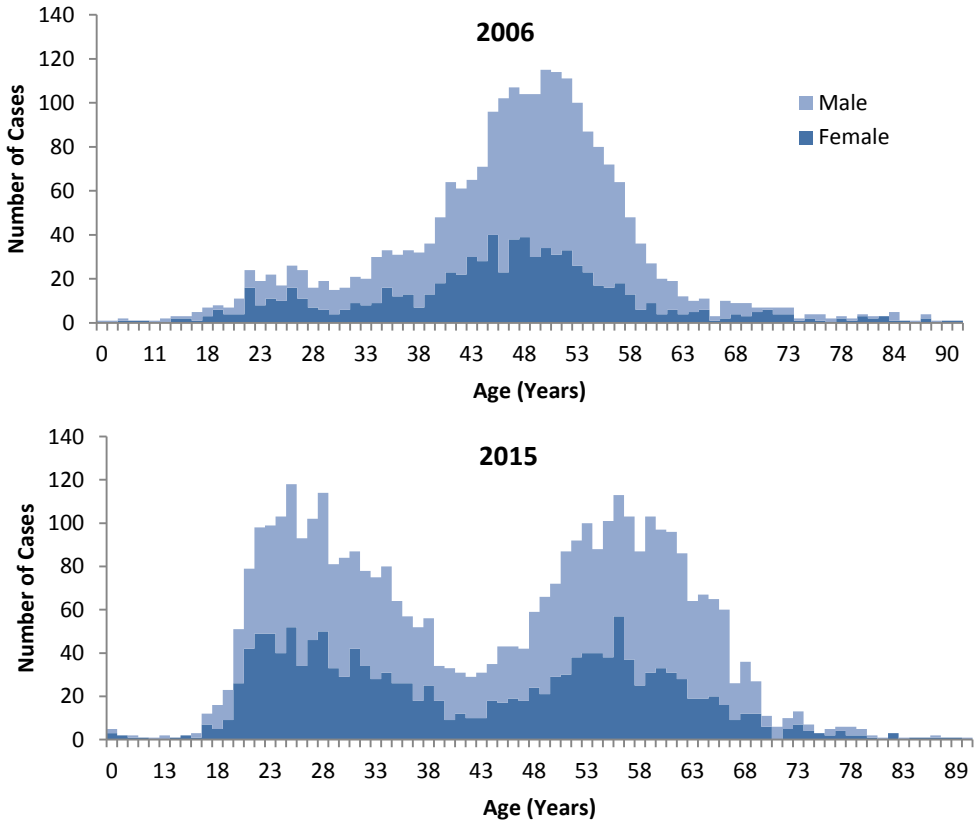
Age Group (Years)	2011		2012		2013		2014		2015	
	N	Rate†	N	Rate†	N	Rate†	N	Rate†	N	Rate†
0-14	8	0.7	12	1.1	4	--	8	0.7	14	1.3
15-29	467	40.4	621	54.2	706	61.8	895	78.3	994	86.9
30-39	328	47.4	393	56.4	430	60.9	520	72.9	667	93.5
40-49	534	67.0	443	57.2	411	54.7	420	57.6	412	56.5
50-59	852	101.6	763	90.2	681	79.9	873	102.3	946	110.9
60-69	269	47.3	291	48.9	328	53.1	418	65.1	624	97.2
70+	100	17.9	92	16.2	78	13.4	83	14.0	88	14.8
Total	2653	44.9	2615	45.8	2638	46.2	3217	56.1	3745	65.3

†Rates based on counts less than five have been suppressed. Rates based on counts <12 are statistically unreliable.

All Cases: Reports by Sex

In the past 10 years, the data have shifted from a single peak of reports from middle age adults in 2006, to a distribution with two peaks in 2015. Figure 6. shows the increased number of reports from adolescents and young adults in 2015 compared to 2006.

Figure 5. Shift in the distribution of hepatitis C virus cases in Wisconsin, by sex and age, 2006 vs. 2015



During 2015 there were 1,497 females and 2,248 males reported with HCV infection in Wisconsin. From 2014 to 2015, rates increased by 18% among females and 15% among males.

Table 6. Sex of reported hepatitis C virus in Wisconsin, 2011-2015

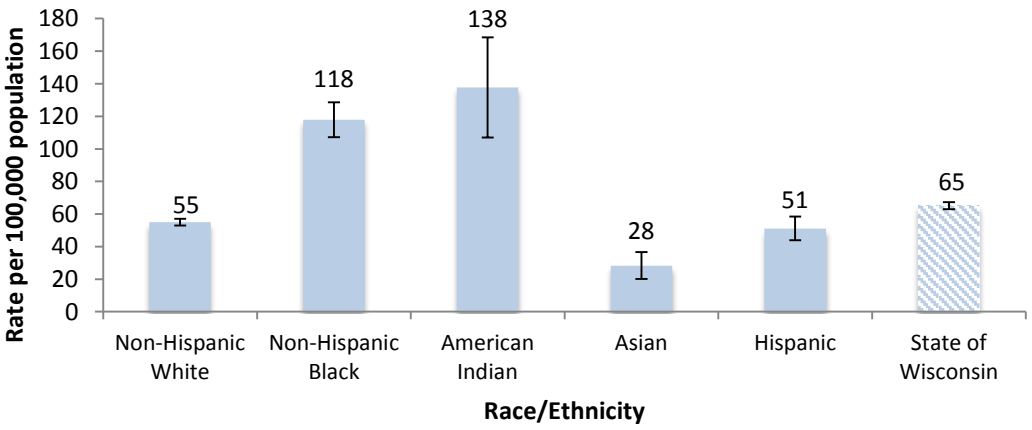
Sex†	2011		2012		2013		2014		2015	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Male	1603	56.6	1583	55.8	1515	53.2	1953	68.4	2248	78.7
Female	957	33.3	1032	35.9	1123	38.9	1263	43.7	1497	51.7
Total	2563	44.9	2615	45.8	2638	46.0	3217	56.0	3745	65.3

†Sex of report was unknown for three in 2011 and one in 2014.

All Cases: Reports by Race and Ethnicity

Non-Hispanic Whites comprise the largest number of HCV reports in Wisconsin. From 2014 to 2015, rates of reported cases increased by 19% among non-Hispanic Whites. Rates for other racial and ethnic groups were not statistically different from reports in the previous year. During 2015, rates of HCV remained disproportionally high for American Indian and non-Hispanic Blacks relative to other racial and ethnic groups: the rate among American Indians was 2.5 times higher than the rate among non-Hispanic Whites and the rate among non-Hispanic Blacks was 2 times higher than the rate among non-Hispanic Whites. The rate of HCV among American Indians and non-Hispanic Blacks has been substantially higher than the rate in non-Hispanic Whites for the past five years. The disparity of higher rates of acute HCV among American Indian/Alaska Native race is reported at the national level.[3]

Figure 7. Rate of reported hepatitis C virus in Wisconsin, by race and ethnicity, 2015†



†Numbers shown above each bar are the rate, per 100,000 population. The error bars show 95% confidence intervals for the rate. If error bars overlap, categories are not significantly different from each other. Rates were not calculated for Multiple race (n=12) or Other race (n=30) due to unknown population denominator. Race was unknown in 300 reports (8%).

Table 7. Race and ethnicity of reported hepatitis C virus in Wisconsin, 2011-2015

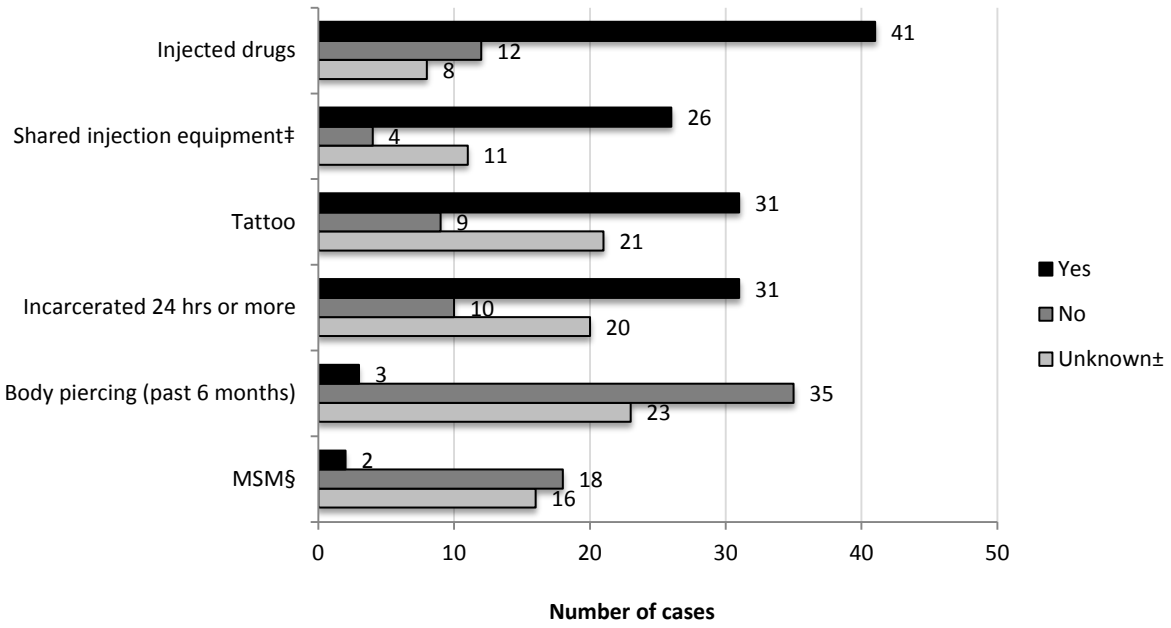
Race/Ethnicity	2011		2012		2013		2014		2015	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Hispanic	119	34.2	140	39.5	140	38.6	158	42.5	190	51.2
American Indian	50	98.5	62	112.7	77	138.8	75	134.2	77	137.7
Asian	31	23.1	39	26.6	28	18.5	21	13.2	45	28.4
Non-Hispanic Black	379	106.8	345	90.0	321	83.0	385	98.7	460	117.9
Non-Hispanic White	1525	32.1	1646	34.5	1787	37.4	2213	46.4	2628	55.1
Other†	16	--	31	--	20	--	36	--	45	--
Unknown	443	--	352	--	265	--	329	--	300	
Total	2563	44.9	2615	45.8	2638	46.0	3217	56.0	3745	65.3

†Rates were not calculated for the category Other race due to unknown population denominator.

All Cases: Reports by Risk

Case follow-up and investigation of risk factors for HCV was completed for 87% of acute HCV infections in 2015. The primary risk factor for acute HCV infection was injection drug use, reported by 41 (67%) of 61 persons with acute HCV. Among those who reported injection drug use, 63% reported sharing "works" or injection equipment. Syringes and cookers were the most common reported items shared. Of 36 men with acute HCV infection, two reported sexual activity with a male.

Figure 8. Reported acute hepatitis C virus, by risk behavior, 2015†



†A total of 61 case reports of acute hepatitis C were received in 2015. More than one risk behavior may be indicated on each case report.

‡Shared injection equipment was evaluated as a risk factor among 41 case reports with injection drug use indicated.

±Risk behavior not reported.

§MSM: Men who have sex with men. MSM was evaluated as a risk factor among 36 men reported with acute HCV.

Hepatitis C Virus Reports Among Persons Aged 15-29

Due to asymptomatic infection, acute HCV infection is difficult to detect and surveillance for acute infection may underestimate transmission in a jurisdiction. Both local public health investigations and national surveillance data suggest that the majority of infections in young people during 2006 – 2012 were associated with injection drug use.[4,5] Newly reported acute or chronic HCV infection in people aged 15-29 can be used as a surveillance indicator for recently acquired HCV infection. In 2015 alone, there were 994 new HCV infections reported among people aged 15-29 in Wisconsin. The rate of HCV in this age group increased 155% during 2011—2015, from 40.4 to 86.9 cases per 100,000 population. In 2015, 45% of HCV reports in this cohort were female, 82% were white, and 18% of all reports were residents of Milwaukee County. HCV prevention among persons who inject drugs includes harm reduction programs (e.g., access to sterile syringes and drug preparation equipment), opportunities for drug treatment programs, and access to comprehensive health services that include HCV testing and linkage to care.

Table 1. History of hepatitis C virus reports among persons aged 15-29 in Wisconsin, 2006-2015

Year	Past or Present		Acute		Total	
	Number	Rate per 100,000	Number	Rate per 100,000†	Number	Total Rate per 100,000
2006	210	17.8	1	--	211	17.9
2007	190	16.2	0	--	190	16.2
2008	227	19.2	1	--	228	19.3
2009	284	23.6	2	--	286	23.8
2010	355	30.7	9	0.8	364	31.4
2011	458	39.67	9	0.8	467	40.4
2012	599	52.3	22	1.9	621	54.2
2013	677	59.3	29	2.5	706	61.8
2014	860	75.2	35	3.1	895	78.3
2015	958	83.8	36	3.1	994	86.9

†Rates based on counts less than five have been suppressed. Rates based on counts <12 are statistically unreliable.

Figure 1. Percent of hepatitis C virus reports that are female among persons aged 15-29, by year, 2006-2015

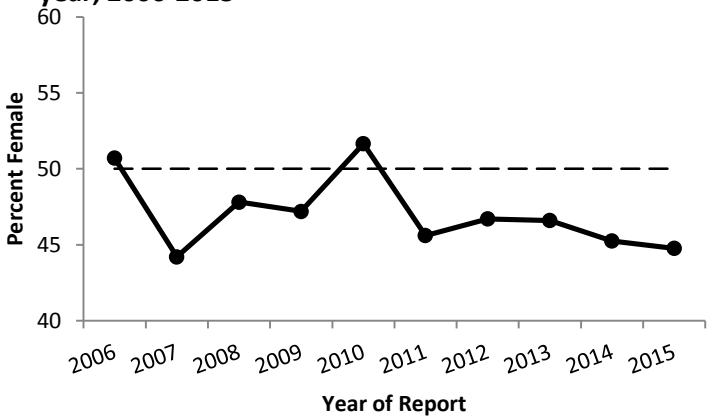


Figure 2. Percent of hepatitis C virus reports among persons aged 15-29, by race/ethnicity, 2015

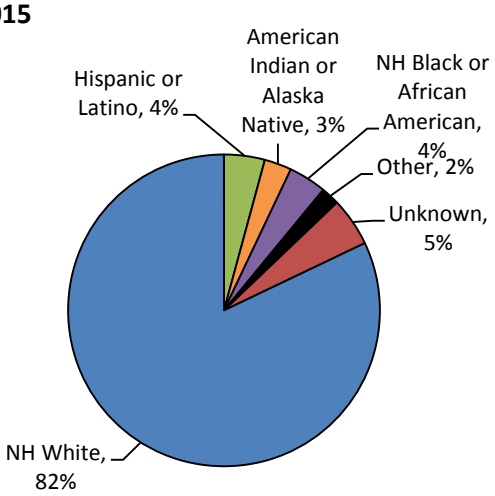


Table 2. Number, rate and percent of newly reported HCV among persons aged 15-29, by county of residence, 2015

County of Residence	2011 Number	2012 Number	2013 Number	2014 Number	2015 Number	2015 Rate per 100,000†	Percent of Reports in 2015
Adams	2	2	1	0	7	262.0	1
Ashland	0	1	2	3	0	--	0
Barron	3	4	2	1	1	--	0
Bayfield	0	0	1	4	1	--	0
Brown	14	22	35	31	29	54.9	3
Buffalo	0	0	0	0	2	--	0
Burnett	0	1	1	0	3	--	0
Calumet	2	7	6	6	7	83.3	1
Chippewa	2	2	12	8	8	72.9	1
Clark	1	5	0	3	2	--	0
Columbia	6	8	6	6	6	63.7	1
Crawford	2	1	0	0	1	--	0
Dane	35	44	40	51	84	69.7	8
Dodge	1	7	8	5	17	110.5	2
Door	0	0	1	0	0	.	0
Douglas	9	6	10	16	15	171.8	2
Dunn	1	4	5	3	5	40.1	1
Eau Claire	6	6	25	30	22	79.6	2
Florence	3	2	5	0	1	--	0
Fond du Lac	7	7	15	17	22	114.8	2
Forest	0	4	2	1	3	--	0
Grant	2	0	1	2	3	--	0
Green	1	1	2	2	3	--	0
Green Lake	1	3	3	2	7	241.8	1
Iowa	3	1	0	3	4	--	0
Iron	1	0	1	1	3	--	0
Jackson	4	1	3	7	3	--	0
Jefferson	3	2	7	12	17	99.7	2
Juneau	2	9	4	6	3	--	0
Kenosha	23	14	14	32	18	50.2	2
Kewaunee	2	0	1	1	1	--	0
La Crosse	9	12	19	21	24	81.2	2
Lafayette	1	2	0	0	0	--	0
Langlade	1	2	5	9	5	164.0	1
Lincoln	5	3	5	4	3	--	0
Manitowoc	24	12	12	18	23	169.7	2
Marathon	6	21	24	19	13	53.5	1
Marinette	8	10	10	9	5	74.9	1
Marquette	0	3	1	1	5	235.8	1
Menominee	1	1	1	0	1	--	0
Milwaukee	96	128	111	161	181	82.1	18
Monroe	4	9	10	19	9	115.6	1
Oconto	3	14	3	5	4	--	0
Oneida	6	6	3	6	9	178.1	1
Outagamie	10	13	22	22	28	80.0	3
Ozaukee	4	4	3	2	2	--	0
Pepin	1	0	1	0	2	--	0
Pierce	0	1	1	0	5	46.9	1
Polk	1	0	2	2	5	71.9	1
Portage	2	2	9	2	8	43.1	1
Price	2	0	3	5	12	678.3	1
Racine	8	16	12	27	10	27.5	1
Richland	1	1	0	4	6	209.1	1
Rock	6	9	9	22	21	67.3	2
Rusk	1	1	1	0	0	--	0
St. Croix	0	1	2	1	4	--	0

County of Residence	2011 Number	2012 Number	2013 Number	2014 Number	2015 Number	2015 Rate per 100,000†	Percent of Reports in 2015
Sauk	6	8	6	9	7	63.8	1
Sawyer	0	0	1	3	1	--	0
Shawano	3	5	0	0	2	--	0
Sheboygan	6	14	15	15	14	68.2	1
Taylor	0	1	1	1	1	--	0
Trempealeau	3	1	0	6	7	144.8	1
Vernon	2	2	0	4	3	--	0
Vilas	5	2	3	3	6	228.7	1
Walworth	1	12	4	7	8	36.9	1
Washburn	1	1	1	1	1	--	0
Washington	4	8	9	13	17	77.1	2
Waukesha	10	26	29	37	47	69.3	5
Waupaca	3	2	4	16	21	258.9	2
Waushara	1	0	1	0	5	138.8	1
Winnebago	13	21	27	28	39	105.8	4
Wood	8	6	6	10	14	110.4	1
Federal Corrections	0	0	0	2	0	--	0
State Corrections	64	77	117	128	118	--	12
Unknown	1	0	0	0	0	--	0
Total	**467**	**621**	**706**	**895**	**994**	**86.9**	**100**

†Rates based on counts less than five have been suppressed. Rates based on counts <12 are statistically unreliable. Rates are not available for Corrections populations.

Hepatitis C Virus Reports Among Adults Born During 1945-1965

National prevalence data show that people born during 1945–1965 are five times more likely than other adults to have hepatitis C.[6] In addition to testing adults of all ages at risk for HCV infection, the CDC recommends all adults born during 1945–1965 should receive one-time testing for HCV, regardless of history of risk. All persons identified with HCV infection should be referred to appropriate care and treatment services for HCV infection and related conditions. In 2015 alone, there were 1,624 HCV infections newly reported in Wisconsin among adults born during 1945-1965. The rate of HCV in this age group increased 11% during 2011–2015, from 97.9 to 108.6 cases per 100,000 population. The increase likely reflects HCV screening among this cohort, consistent with recommendations issued by CDC in 2012 for identifying chronic HCV infection. In 2015, 36% of reports in this cohort were female, 61% were white, and 29% of all reports were residents of Milwaukee County.

Table 1. History of hepatitis C virus reports among persons born 1945-1965, 2006-2015

Year	Past or Present		Acute		Total	
	Number	Rate per 100,000	Number	Rate per 100,000†	Number	Total Rate per 100,000
2006	1661	137.4	0	--	1661	137.4
2007	1665	133.1	0	--	1665	133.1
2008	1634	126.2	1	--	1635	126.3
2009	1552	117.3	0	--	1552	117.3
2010	1522	111.7	0	--	1522	111.7
2011	1377	97.8	1	--	1378	97.9
2012	1221	84.7	3	--	1224	84.9
2013	1120	76.2	1	--	1121	76.3
2014	1378	92.2	0	--	1378	92.2
2015	1622	108.5	2	--	1624	108.6

†Rates based on counts less than 5 have been suppressed. Rates based on counts <12 are statistically unreliable. Rates are not available for Corrections populations.

Figure 1. Percent of hepatitis C virus reports that are female among persons born 1945-1965, by year, 2006-2015

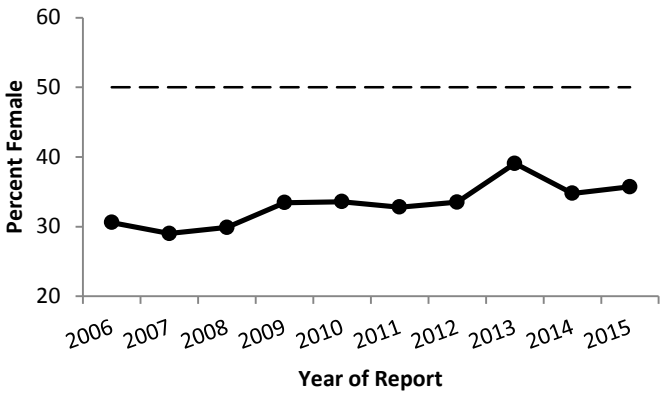


Figure 2. Percent of hepatitis C virus reports among persons born 1945-1965, by race/ethnicity, 2011-2015

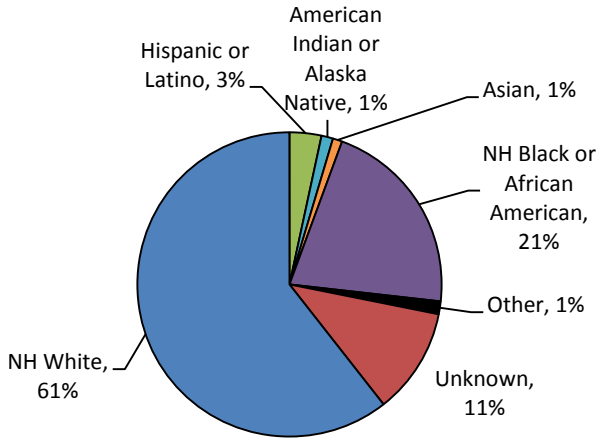


Table 2. Number, rate and percent of newly reported hepatitis C virus among persons born 1945-1965, by county of residence

County of Residence	2011 Number	2012 Number	2013 Number	2014 Number	2015 Number	2015 Rate per 100,000†	Percent of Reports in 2015
Adams	8	11	3	7	9	115.4	1
Ashland	4	5	5	7	3	--	0
Barron	10	9	11	12	14	103.5	1
Bayfield	6	2	2	3	9	152.8	1
Brown	43	51	54	44	67	108.2	4
Buffalo	0	0	2	1	1	--	0
Burnett	1	6	4	9	17	308.7	1
Calumet	2	6	3	11	6	46.7	0
Chippewa	14	13	11	9	5	29.1	0
Clark	6	5	8	6	4	--	0
Columbia	8	10	7	13	20	125.3	1
Crawford	4	1	1	2	5	94.5	0
Dane	90	84	89	113	129	109.9	8
Dodge	12	8	8	6	15	62.3	1
Door	4	6	2	4	6	59.5	0
Douglas	17	8	11	18	14	114.7	1
Dunn	6	6	8	8	10	93.2	1
Eau Claire	33	11	13	12	23	98.3	1
Florence	0	2	1	1	1	--	0
Fond du Lac	18	12	18	17	25	90.3	2
Forest	1	8	2	2	1	--	0
Grant	3	6	5	7	5	38.7	0
Green	2	6	4	4	10	95.7	1
Green Lake	2	2	3	4	2	--	0
Iowa	2	2	2	3	3	--	0
Iron	5	0	1	0	1	--	0
Jackson	4	3	3	2	4	--	0
Jefferson	17	12	13	17	24	110.3	1
Juneau	4	4	6	6	5	60.5	0
Kenosha	54	52	45	51	58	143.2	4
Kewaunee	1	3	4	1	2	--	0
La Crosse	23	11	19	19	33	116.4	2
Lafayette	4	2	1	7	2	--	0
Langlade	6	6	3	3	5	79.3	0
Lincoln	5	1	6	6	7	77.3	0
Manitowoc	21	24	16	17	16	67.4	1
Marathon	24	19	16	13	14	39.7	1
Marinette	11	12	6	13	11	83.6	1
Marquette	1	4	0	6	1	--	0
Menominee	3	4	0	2	5	488.3	0
Milwaukee	377	338	290	402	464	221.9	29
Monroe	10	6	5	17	15	121.7	1
Oconto	4	4	6	4	3	--	0
Oneida	7	6	9	4	8	65.0	0
Outagamie	31	23	19	24	52	115.1	3
Ozaukee	7	9	11	7	11	43.0	1
Pepin	3	1	0	2	0	--	0
Pierce	7	5	6	5	17	166.5	1
Polk	12	8	6	15	8	61.4	0
Price	1	2	1	3	1	--	0
Portage	5	10	2	7	18	101.8	1
Racine	74	71	65	59	81	156.1	5
Richland	1	1	2	6	3	--	0
Rock	43	49	53	60	41	102.9	3
Rusk	8	2	3	4	3	--	0
St. Croix	10	12	13	12	21	100.2	1
Sauk	13	7	14	8	12	71.2	1
Sawyer	11	9	9	12	8	139.3	0

County of Residence	2011 Number	2012 Number	2013 Number	2014 Number	2015 Number	2015 Rate per 100,000*	Percent of Reports in 2015
Shawano	5	8	5	4	17	141.0	1
Sheboygan	14	13	12	12	20	63.7	1
Taylor	1	1	2	1	0	--	0
Trempealeau	5	5	3	6	4	--	0
Vernon	7	2	3	2	9	105.6	1
Vilas	6	8	5	3	3	--	0
Walworth	14	21	16	18	27	98.5	2
Washburn	4	7	5	8	5	90.4	0
Washington	15	15	12	12	13	35.0	1
Waukesha	45	27	35	38	45	39.8	3
Waupaca	9	8	7	22	26	170.4	2
Waushara	4	3	2	3	4	--	0
Winnebago	46	39	25	33	49	115.4	3
Wood	8	16	8	14	12	56.6	1
Unknown	21	1	0	2	0	--	0
Federal Corrections	0	0	0	2	0	--	0
State Corrections	71	50	51	61	32	--	2
Total	1378	1224	1121	1378	1624		100

†Rates based on counts less than five have been suppressed. Rates based on counts <12 are statistically unreliable. Rates are not available for Corrections populations.

Hepatitis C Virus Reports from Wisconsin Department of Corrections

Rates of HCV in correctional institutions are much higher than the general U.S. population. One reason for this is that populations who are affected by incarceration, such as people who inject drugs, are also more likely to have HCV infection. The Wisconsin Department of Corrections (DOC) offers HCV testing to people who enter prison with a risk factor for HCV and those who were born during 1945–1965. Typically, reports from DOC account for 7% to 10% of all HCV reports in Wisconsin, annually. In 2015 alone, DOC reported 253 HCV cases. The median age of HCV cases was 30 years; 22% were female and 85% were non-Hispanic White.

Table 1. History of hepatitis C virus reports from the Wisconsin Department of Corrections, 2006-2015

Year	Number Past, Present or Acute†	Percent of Statewide Reports
2006	222	10
2007	195	8
2008	178	8
2009	171	7
2010	173	7
2011	222	9
2012	232	9
2013	257	10
2014	314	10
2015	253	7

†One acute case reported in 2010 and one acute case reported in 2014.

Figure 1. Median age of hepatitis C virus reports from Wisconsin Department of Corrections, by sex, 2016-2015

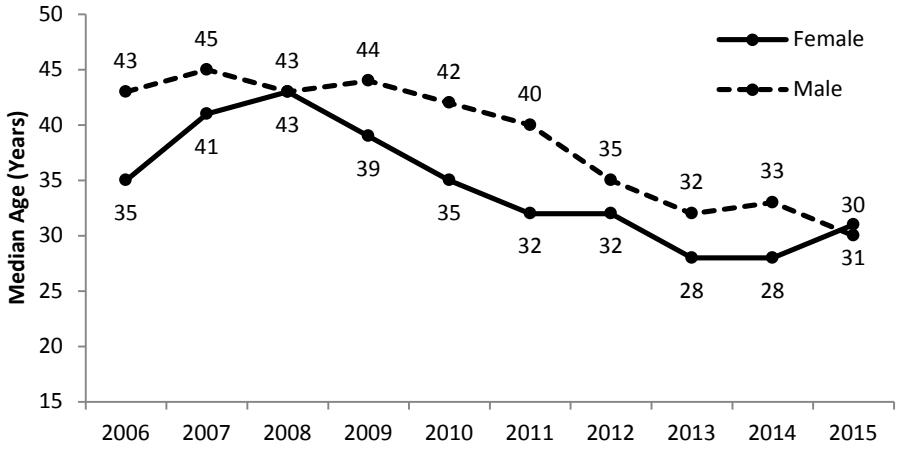


Figure 2. Percent of hepatitis C virus reports that are female among reports from the Wisconsin Department of Corrections, by year, 2006-2015

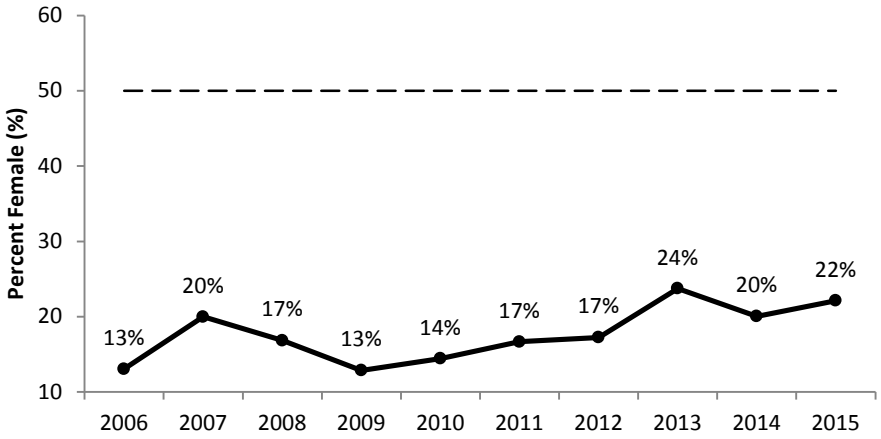
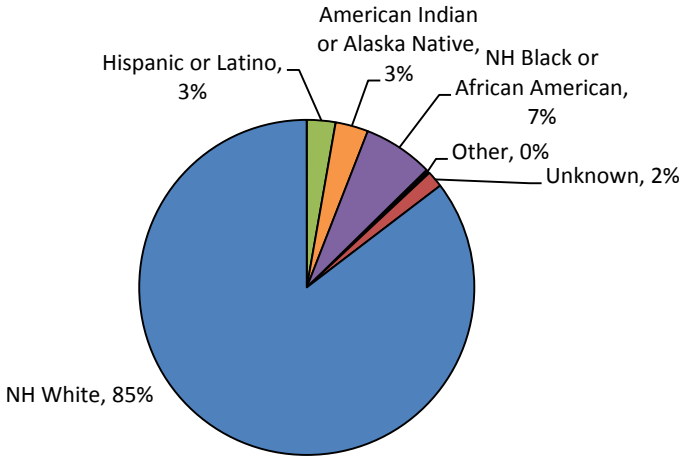


Figure 3. Percent of hepatitis C virus reports Wisconsin Department of Corrections by race/Ethnicity, 2015



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Technical notes:

1. This report was compiled by the Wisconsin Viral Hepatitis Program and is based on reports of hepatitis C virus (HCV) infection submitted by laboratories and local health departments (LHDs). HCV infection is a reportable communicable disease by Wis. Admin. Code ch. DHS 145. When cases are reported, LHDs contact persons with HCV infection to provide health education, risk reduction counseling, hepatitis A and B vaccine, and medical referral as needed.
2. Many cases of HCV infection are reported by laboratories. Since laboratories do not generally report demographic data such as region, race, or age, surveillance summary data by demographic characteristics are often incomplete.
3. Most reported cases of HCV infection represent chronic disease in persons who were infected years ago. Persons with acute infection are often unaware of their infection because it presents with few if any symptoms.
4. This report is based on HCV surveillance data from the Wisconsin Electronic Disease Surveillance System (WEDSS) as of 4/17/2015. HCV case numbers used in other reports or individual county reports may vary depending on the date data is accessed, as WEDSS is not a static database and cases can be updated daily.
5. Rates are expressed as the number per 100,000 population in Wisconsin in 2014. Rates are described as significantly different if calculated 95% confidence intervals around the rates do not overlap.
6. Reports of HCV in persons deceased as of 2014 were identified by a match of WEDSS to the Wisconsin Vital Records registry of deaths of Wisconsin residents through 2014. The number of people with HCV who have moved out of Wisconsin or have a resolved or cured infection is unknown and has not been subtracted from all reported cases.

For more information:

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Questions regarding the Wisconsin Viral Hepatitis Prevention Program may be directed to: Sheila Guilfoyle, Viral Hepatitis Program Coordinator, sheila.guilfoyle@wi.gov, 608-266-5819.

Additional resources:

Wisconsin Department of Health Services: https://www.dhs.wisconsin.gov/viral-hepatitis/hcv-program.htm
Centers for Disease Control and Prevention: http://www.cdc.gov/hepatitis/HCV/index.htm
National Notifiable Diseases Surveillance System: http://wwwn.cdc.gov/NNDSS/script/casedefDefault.aspx