

# Hepatitis

## (Focus on Hepatitis C)

**Definition:** A viral infection of the liver ranging in severity from an infection without apparent symptoms, to mild to severe liver disease, to death. Hepatitis is classified as acute or chronic. Acute hepatitis is a short-term illness that occurs within six months of being exposed to hepatitis A, B or C virus. Acute illness may or may not lead to chronic illness. Chronic hepatitis is a long-term illness that occurs when hepatitis B or C virus remains in a person's body. Hepatitis A does not develop a chronic form. About 60% to 85% of individuals with acute hepatitis C infection develop chronic infection, and about 20% of individuals with chronic infection will progress to cirrhosis or liver cancer during the course of their lifetime. The Washington chronic hepatitis C data presented in this chapter reflect total unduplicated cases of infection reported by local health jurisdictions to the state surveillance system. They are presented by year of diagnosis and include cases classified according to the CDC's case definition as either "confirmed" or "probable."

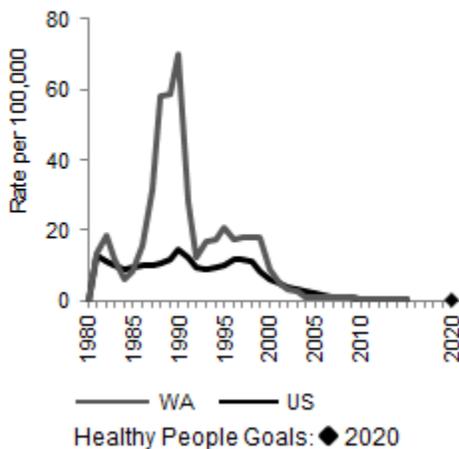
This is a data update of the *Health of Washington State* chapter on [Hepatitis \(Focus on Hepatitis C\)](#) published in 2012.

### Time Trends

Rates of acute hepatitis have gone down over the past 20 years. Hepatitis A and B (HAV and HBV) have dropped mostly because they can be prevented through vaccination. Washington will likely meet the *Healthy People 2020* goal for Hepatitis A, and continue to meet the goal for Hepatitis B.

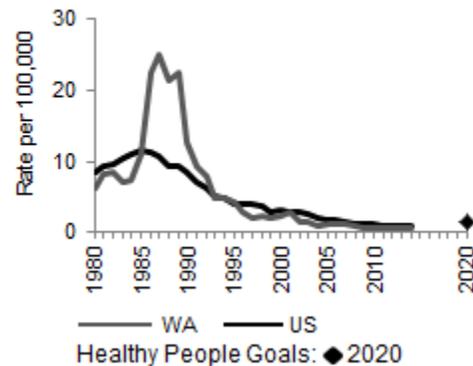
encourage healthy behavior change, including drug treatment. Rates of acute hepatitis C have been increasing since 2010 in Washington and nationally. Thus, Washington will not likely meet the *Healthy People 2020* goal for acute Hepatitis C.

**Acute Hepatitis A Incidence  
Washington State and US  
Hepatitis Surveillance, 1980–2014**

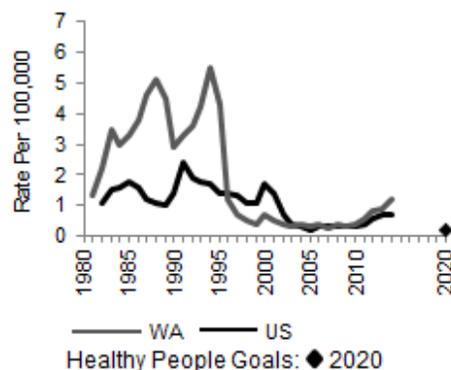


The initial drop in acute hepatitis C (HCV) infection was due to changes in blood donor screening practices to prevent HIV transmission and later to screening of the blood supply for HCV. Injection drug users gaining better access to clean syringes and other injection equipment through syringe exchange programs.<sup>1,2,3</sup> These programs also

**Acute Hepatitis B Incidence  
Washington State and US  
Hepatitis Surveillance, 1980–2014**

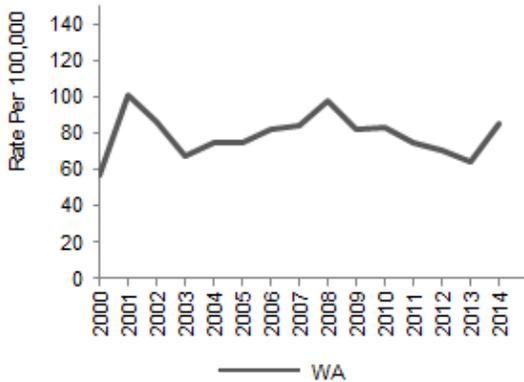


**Acute Hepatitis C Incidence  
Washington State and US  
Hepatitis Surveillance, 1981–2014**



The rate of reported cases of acute HCV infection increased nationally each year from 2010 to 2013, and then remained stable from 2013 to 2014.<sup>4</sup> During 2010–2014 combined, Washington’s rates of acute HAV, HBV and HCV were 0.46, 0.56 and 0.78 cases per 100,000, respectively.

**Chronic Hepatitis C Incidence  
Washington State  
Hepatitis Surveillance, 2000–2014**



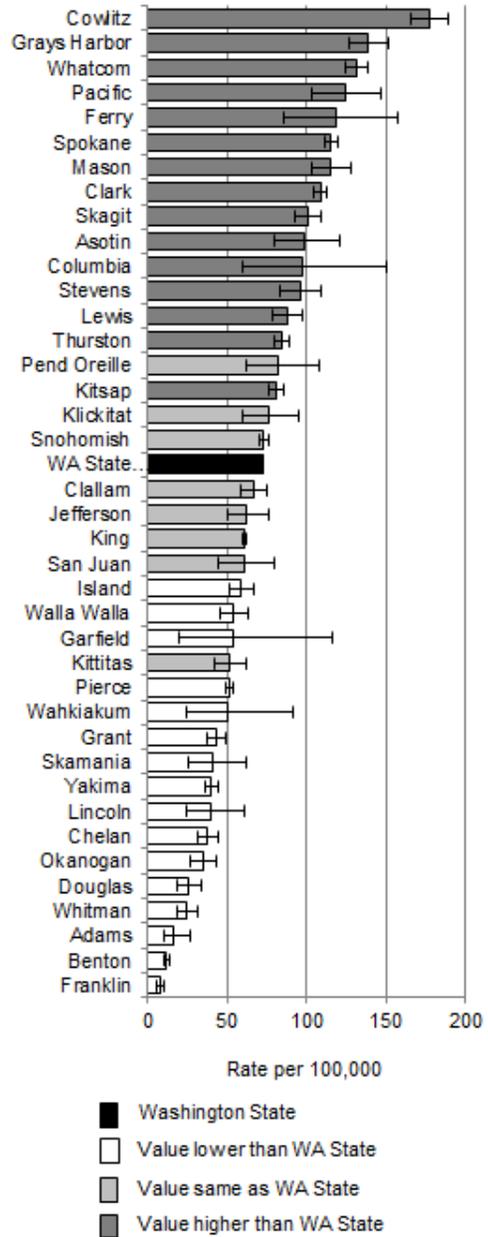
Chronic HCV infections have been notifiable in Washington since 2000. Chronic HCV rates are higher than acute HCV rates. The Washington State 2010-2014 five-year rate was 76 cases per 100,000 residents. Not all states report chronic HCV cases to the federal government, so national comparison data are not available.

**Geographic Variation**

In Washington, rates of newly diagnosed and reported chronic HCV vary by county. This variation could be caused by real differences in levels of chronic HCV, as well as by differences in detection and reporting. Some counties have more resources to support chronic HCV reporting than others.

Fifteen counties had rates that were higher than the state as a whole; 16 had rates that were lower than the state rate. During 2010–2014 combined, Cowlitz County had the highest rate of chronic HCV infection, with unadjusted rates of newly diagnosed chronic HCV cases ranging from 166 to 190 per 100,000 persons.

**Chronic HCV Infection  
Washington Counties  
Hepatitis Surveillance, 2010–2014**



**Age and Gender**

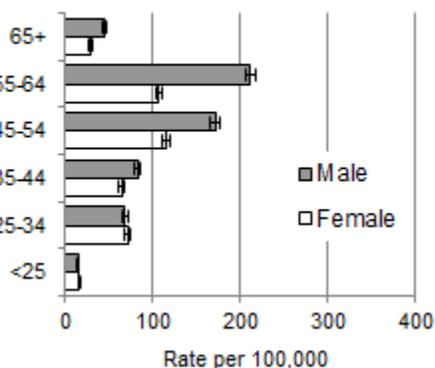
During 2010–2014, approximately 75% of newly diagnosed chronic HCV cases reported in Washington State were among people ages 35–64 years. In the United States, two-thirds of chronic HCV cases are among people born between 1945 and 1965.<sup>5,6</sup>

In Washington from 2010–2014, the rate for males was 82 new diagnoses per 100,000 compared to 58 per 100,000 for females. This is similar to national data that shows newly diagnosed chronic HCV is more common among males than females.<sup>6,7</sup> One national survey found that about 2% of men have an antibody to HCV compared to just 1% of women.<sup>8</sup>

In Washington, rates for newly diagnosed chronic HCV were higher for males than for females in age groups 35–44 years and older.

Males ages 55–64 had the highest rate of diagnosis. Among individuals less than 35 years old, males and females had similar rates of diagnosis. Overall, males comprised 64% of newly diagnosed cases during 2010–2014. Higher rates of injection drug use among men compared to women likely accounts for some of the gender differences in HCV.<sup>9,10</sup>

**Chronic HCV Infection  
Age and Gender  
Hepatitis Surveillance, 2010–2014**



### Economic Factors and Education

Washington does not collect information about income or education among people with HCV. Nationally, people without a high school degree are more than twice as likely to have chronic HCV compared to people who graduated high school.

Being in poverty also increases a person’s risk for HCV. Among people with family incomes at least double the federal poverty threshold, less than 1% have HCV. Rates are about two times higher among people with family incomes between the federal poverty threshold and double the threshold, and about three times higher among people living below the poverty threshold.<sup>8</sup> Like gender, higher rates of injection drug use among people living at or below the federal poverty level compared with those above the poverty level accounts for some of this difference.<sup>9,10</sup>

The higher rates among men are not likely to be related to military service. Though there are higher rates of HCV infection among U.S. veterans who use the Department of Veteran Affairs,<sup>11</sup> nationally there is not a significant association between HCV risk and service in the U.S. armed forces. Among adult men with a history of military service, 2.8% have been exposed to HCV compared to 2.7% among who have not served.<sup>8</sup>

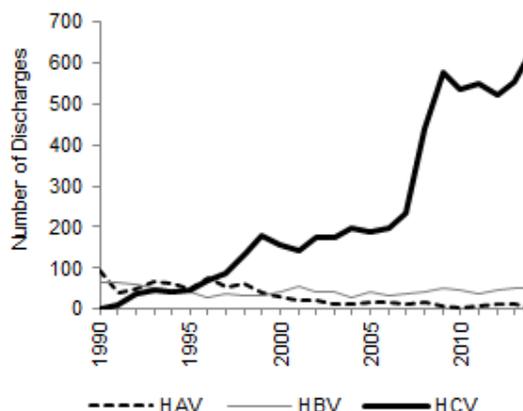
### Race and Hispanic Origin

Race and ethnicity were missing from 84% of newly reported cases of chronic HCV in Washington State for 2010–2014. As a result, reliable rates cannot be calculated for these groups in Washington. Nationally, of groups for which there are data, non-Hispanic blacks are disproportionately affected by chronic HCV. Their overall prevalence of antibody to HCV is 3.0% compared to 1.5% among non-Hispanic whites and 1.3% among Mexican-Americans.<sup>8</sup>

### Other Measures of Impact and Burden

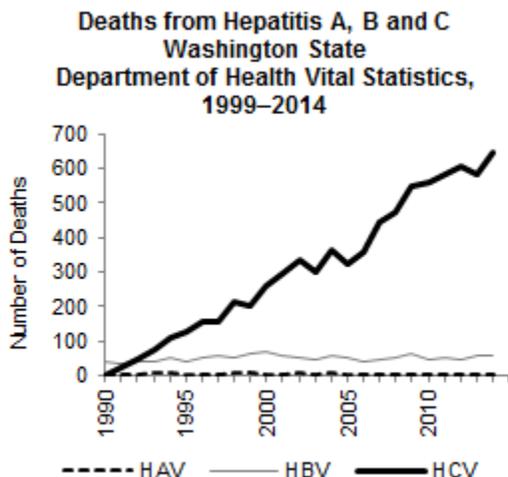
Hospitalization rate for HAV has decreased over the last 20 years in Washington, due to the decrease in the acute forms of these diseases. In contrast, the number of hospitalizations due to HCV infection has increased over the past 20 years, reflecting complications of chronic infection. The HCV-related hospitalization rates far exceed rates of hospitalizations for any diagnosis of HBV or HAV.

**Hepatitis A, B and C  
Hospital Discharges  
Washington State  
CHARS, 1990–2014**



Deaths in Washington from HCV also greatly exceed deaths from HAV or HBV. In 2014, 645 death certificates listed HCV as the underlying or contributing cause of death. The number of HCV-

related deaths more than doubled between 2000 and 2014. For the last 20 years, only about 63 death certificates a year listed HBV as the underlying or contributing cause, and only about four death certificates per year listed HAV.



Nationally, researchers estimate that annual medical costs of chronic HCV and associated complications of liver disease, liver cancer and death will more than double over the next 10 years. This does not take into account the unquantified societal costs due to premature loss of life and productivity in individuals younger than 65 years.<sup>5</sup>

#### Data Sources

National Notifiable Diseases Surveillance System  
Washington State Department of Health. 2014 Communicable Disease Report  
Washington State Department of Health chronic hepatitis disease surveillance database

#### For More Information

Centers for Disease Control and Prevention, Division of Viral Hepatitis. <http://www.cdc.gov/hepatitis/index.htm>  
National Institutes of Health, National Digestive Diseases Information Clearinghouse. <http://digestive.niddk.nih.gov/index.htm>  
Division of Alcohol and Substance Abuse, Washington State Department of Social and Health Services. <http://www1.dshs.wa.gov/dasa/>  
Hepatitis and Liver Cancer: A National Strategy for Prevention and Control of Hepatitis B and C. <http://www.iom.edu/Reports/2010/Hepatitis-and-Liver-Cancer-A-National-Strategy-for-Prevention-and-Control-of-Hepatitis-B-and-C.aspx>

Combating the Silent Epidemic of Viral Hepatitis, Action Plan for the Prevention, Care & Treatment of Viral Hepatitis. [http://www.hhs.gov/ash/initiatives/hepatitis/actionplan\\_viralhepatitis2011.pdf](http://www.hhs.gov/ash/initiatives/hepatitis/actionplan_viralhepatitis2011.pdf)

Washington State Department of Health, Infectious Disease Assessment Unit, (360) 236-3455

#### Technical Notes

According to the Centers for Disease Control and Prevention's (CDC's) 2005 case definition of chronic hepatitis C, a "probable" case is one that is anti-HCV enzyme immunoassay (EIA)-positive but is not verified by a more specific test. A "confirmed" case is verified by an additional assay, such as: 1) positive recombinant immunoblot assay for HCV; or 2) positive nucleic acid test for HCV; 3) HCV genotype; or 4) a screening test with a high signal-to-cutoff ratio for the specific test (e.g. > 3.8 for EIAs). The national and state surveillance data for hepatitis A and acute and chronic hepatitis B and C underestimate actual disease prevalence because all of the conditions are under diagnosed and underreported. (ICD-9 CM codes 070.41, 070.44, 070.51, 070.54, 070.70, 070.71; ICD-10 codes B17.1 and B18.2)

#### Acknowledgments

Authors:  
Luke Syphard, MPH  
Alison Puckett, MPH  
Weiyi Li, MPH  
Washington State Department of Health

#### Endnotes

- Chen SL, Morgan TR. The natural history of hepatitis C virus (HCV) infection. *Int J Med Sci.* 2006;3(2):47-55.
- Williams IT, Bell BP, Kuhnert W, Alter MJ. Incidence and transmission patterns of acute hepatitis C in the United States, 1982-2006. *Arch Intern Med.* 2011;171(3):242-248.
- Burt RD, Hagan H, Garfein RS, Sabin K, Weinbaum C, Thiede H. Trends in hepatitis B virus, hepatitis C virus, and human immunodeficiency virus prevalence, risk behaviors, and preventive measures among Seattle injection drug users aged 18-30 years, 1994-2004. *J Urban Health.* 2007;84(3):436-454.
- Centers for Disease Control and Prevention. *Surveillance for Viral Hepatitis – United States, 2014.* Atlanta, GA: Centers for Disease Control and Prevention; updated 2016. <http://www.cdc.gov/hepatitis/statistics/2014surveillance/index.htm>
- Milliman Study for Vertex Pharmaceuticals Incorporated. *Consequences of Hepatitis C Virus (HCV): Costs of a Baby Boomer Epidemic of Liver Disease.* New York, NY: Milliman, Inc.; 2009. <http://www.vrtx.com/assets/pdfs/MillimanReport.pdf>. Accessed April 27, 2012.
- Wong JB, McQuillan GM, McHutchinson JG, Poynard T. Estimating future hepatitis C morbidity, mortality and costs in the United States. *Am J Public Health.* 2000;90(10):1562-1569.

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<sup>7</sup> Centers for Disease Control and Prevention, Division of Viral Hepatitis. *Viral Hepatitis*. Atlanta, GA: Centers for Disease Control and Prevention; 2011. <http://www.cdc.gov/hepatitis/index.htm>. Accessed December 12, 2011.

<sup>8</sup> Chak E, Talal AH, Sherman KE, Schiff ER, Saab S. Hepatitis C virus infection in USA: an estimate of true prevalence. *Liver Int*. 2011;31(8):1090-1101.

<sup>9</sup> Centers for Disease Control and Prevention. HIV infection and HIV-associated behaviors among injection drug users – 20 cities, United States, 2009. *MMWR Morb Mortal Wkly Rep*. 2012;61:133-138.

<sup>10</sup> Burt RD, Thiede H. Evaluating consistency in repeat surveys of injection drug users recruited by respondent-driven sampling in the Seattle area: results from the NHBS-IDU 1 and NHBS-IDU 2 surveys. *Ann Epidemiol*. 2012;22(5):354-363.

<sup>11</sup> Institute of Medicine. *Hepatitis and liver cancer: a national strategy for prevention and control of hepatitis B and C*. Washington, DC: The National Academies Press; 2010.