

# Hepatitis B in Colorado 2012 Surveillance Report

## Cases of Acute and Chronic Hepatitis B in Colorado

**Note:** This report is published by the Viral Hepatitis Program (VHP), Disease Control and Environmental Epidemiology Division, Colorado Department of Public Health and Environment, Denver Colorado. Data are presented for acute and chronic hepatitis B cases newly reported to CDPHE in 2012. Technical notes and a public health surveillance summary follow the presentation of the data tables and figure.



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Colorado Department  
of Public Health  
and Environment

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Table 1: Reported Hepatitis B Cases by Case Status, Sex, Age, and Race: Colorado, 2012

	Acute HBV Cases		Chronic HBV Cases †		All HBV Cases	
	Number	Percent of Total	Number	Percent of Total	Total	Rate of Reported Cases/ 100,000 ‡
Total	26		458		484	9.3
<b>Case Status</b>						
Confirmed	25	96.2%	114	24.9%	139	2.7
Probable	0	0.0%	344	75.1%	344	6.6
Suspect	1	3.8%	0	0.0%	1	0.0
<b>Gender</b>						
Female	8	30.8%	193	42.1%	201	7.8
Male	18	69.2%	265	57.9%	283	10.9
Unknown	0	0.0%	0	0.0%	0	0.0
<b>Age (years)</b>						
0-4	0	0.0%	3	0.7%	3	0.9
5-9	0	0.0%	2	0.4%	2	0.6
10-19	0	0.0%	12	2.6%	12	1.8
20-29	5	19.2%	93	20.3%	98	13.1
30-39	8	30.8%	112	24.5%	120	16.6
40-49	9	34.6%	93	20.3%	102	14.3
50-59	4	15.4%	63	13.8%	67	9.3
60+	0	0.0%	80	17.5%	80	8.8
Unknown	0	0.0%	0	0.0%	0	0.0
<b>Race/Ethnicity</b>						
Hispanic	1	3.8%	13	2.8%	14	1.3
White non-Hispanic	14	53.8%	43	9.4%	57	1.6
Black non-Hispanic	2	7.7%	56	12.2%	58	29.1
American Indian	0	0.0%	3	0.7%	3	9.1
Asian/Pacific Islander	0	0.0%	165	36.0%	165	107.9
Multiple	1	3.8%	1	0.2%	2	1.39
Other/Missing/Unknown **	8	30.8%	177	38.6%	185	

†Chronic Cases may include 5-10% of acute cases reported for the same year

‡ Rates per 100,000 were calculated using the U.S. Census Bureau, Population Division, *Annual Estimates of the Resident Population by Sex, Age, Race, and Hispanic Origin for the United States and States: April 1, 2010 to July 1, 2012*, <http://www.census.gov/popest/data/index.html>. Rates calculated for counties with few cases and small populations should be interpreted with caution.

\*Rates per 100,000 were calculated using the 2012 Census Estimates from the Demography Section, Colorado Division of Local Government: [https://dola.colorado.gov/demog\\_webapps/pag\\_category.jsf](https://dola.colorado.gov/demog_webapps/pag_category.jsf)

\*\*Of the total other/missing/unknown cases, 36 cases had 'White' marked as race but no ethnicity; 11 cases had 'Black' marked as race but no ethnicity.

Table 1a: Total Number of Pregnant Women Reported N = 185

Newly Reported	Previous case/new pregnancy
99	86

Table 1b: Cases by birth date related to the 1997 School Immunization Requirement

	Born Before Jan.1, 1986	Born after Jan. 1, 1986
Acute	24	2
Chronic	391	67
Total	415	69
Rate per 100,000 *	12.6	3.7

Table 2: Reported Hepatitis B Cases by Risk Factor, and Percentage of Cases Reporting the Risk Factor: Colorado, 2012 †

	Acute HBV Cases		Chronic HBV Cases †		All HBV Cases
	Number	Percent of Total	Number	Percent of Total	Total
Total	26		458		
<b>IVDU</b>					
Yes	1	3.8%	15	3.3%	16
No	17	65.4%	88	19.2%	105
Unknown	0	0.0%	166	36.2%	166
Missing	8	30.8%	189	41.3%	197
<b>Household Contact</b>					
Yes	0	0.0%	7	1.5%	7
No	10	38.5%	124	27.1%	134
Unknown	3	11.5%	39	8.5%	42
Missing	13	50.0%	288	62.9%	301
<b>Sex Contact</b>					
Yes	1	3.8%	2	0.4%	3
No	9	34.6%	129	28.2%	138
Unknown	3	11.5%	39	8.5%	42
Missing	13	50.0%	288	62.9%	301
<b>MSM</b>					
Yes	6	33.3%	12	4.5%	18
No	5	27.8%	23	8.7%	28
Unknown	0	0.0%	116	43.8%	116
Missing	7	38.9%	114	43.0%	121
<b>Born in Endemic Area</b>					
Yes	2	7.7%	186	40.6%	189
No	15	57.7%	29	6.3%	43
Unknown	2	7.7%	119	26.0%	121
Missing	7	26.9%	124	27.1%	131

†Risk factor categories are not mutually exclusive.

Table 3: Number and Percentage of Reported Acute and Chronic Hepatitis B Cases by County of Residence: Colorado, 2012

	Acute HBV Cases		Chronic HBV Cases †		All HBV Cases	
	Number	Percent of Total	Number	Percent of Total	Total	Rate of Reported Cases/ 100,000 ‡
Total	26		458		484	
<b>County of Residence</b>						
Adams	4	15.4%	50	10.9%	54	11.7
Alamosa	0	0.0%	1	0.2%	1	6.2
Arapahoe	1	3.8%	87	19.0%	88	14.8
Archuleta	0	0.0%	0	0.0%	0	0
Baca	0	0.0%	1	0.2%	1	26.7
Bent	0	0.0%	0	0.0%	0	0
Boulder	2	7.7%	15	3.3%	17	5.6
Broomfield	0	0.0%	5	1.1%	5	8.6
Chaffee	0	0.0%	0	0.0%	0	0
Cheyenne	0	0.0%	0	0.0%	0	0
Clear Creek	0	0.0%	0	0.0%	0	0
Conejos	0	0.0%	0	0.0%	0	0
Costilla	0	0.0%	0	0.0%	0	0
Crowley	0	0.0%	0	0.0%	0	0
Custer	0	0.0%	0	0.0%	0	0
Delta	0	0.0%	0	0.0%	0	0
Denver	4	15.4%	93	20.3%	97	15.3
Dolores	0	0.0%	0	0.0%	0	0
Douglas	0	0.0%	16	3.5%	16	5.4
Eagle	0	0.0%	0	0.0%	0	0
Elbert	0	0.0%	0	0.0%	0	0
El Paso	6	23.1%	52	11.4%	58	9.0
Fremont	0	0.0%	1	0.2%	1	2.1
Garfield	0	0.0%	3	0.7%	3	5.3
Gilpin	0	0.0%	0	0.0%	0	0
Grand	0	0.0%	0	0.0%	0	0
Gunnison	1	3.8%	1	0.2%	2	12.9
Hinsdale	0	0.0%	0	0.0%	0	0
Huerfano	0	0.0%	0	0.0%	0	0
Jackson	0	0.0%	0	0.0%	0	0
Jefferson	3	11.5%	26	5.7%	29	5.3
Kiowa	0	0.0%	0	0.0%	0	0

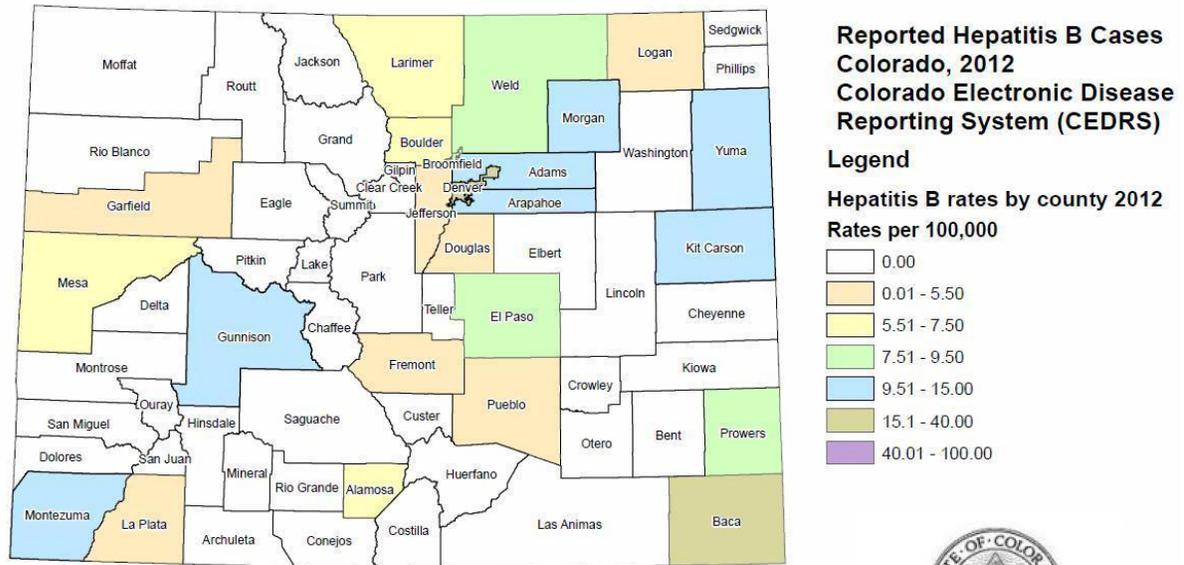
Kit Carson	0	0.0%	1	0.2%	1	12.4
Lake	0	0.0%	0	0.0%	0	0
La Plata	0	0.0%	1	0.2%	1	1.9
Larimer	2	7.7%	16	3.5%	18	5.8
Las Animas	0	0.0%	0	0.0%	0	0
Lincoln	0	0.0%	0	0.0%	0	0
Logan	0	0.0%	1	0.2%	1	4.4
Mesa	1	3.8%	9	2.0%	10	6.8
Mineral	0	0.0%	0	0.0%	0	0
Moffat	0	0.0%	0	0.0%	0	0
Montezuma	0	0.0%	3	0.7%	3	11.8
Montrose	0	0.0%	0	0.0%	0	0
Morgan	0	0.0%	3	0.7%	3	10.5
Otero	0	0.0%	0	0.0%	0	0
Ouray	0	0.0%	0	0.0%	0	0
Park	0	0.0%	0	0.0%	0	0
Phillips	0	0.0%	0	0.0%	0	0
Pitkin	0	0.0%	0	0.0%	0	0
Prowers	1	3.8%	0	0.0%	1	8.1
Pueblo	1	3.8%	4	0.9%	5	3.11
Rio Blanco	0	0.0%	0	0.0%	0	0
Rio Grande	0	0.0%	0	0.0%	0	0
Routt	0	0.0%	0	0.0%	0	0
Saguache	0	0.0%	0	0.0%	0	0
San Juan	0	0.0%	0	0.0%	0	0
San Miguel	0	0.0%	0	0.0%	0	0
Sedgwick	0	0.0%	0	0.0%	0	0
Summit	0	0.0%	0	0.0%	0	0
Teller	0	0.0%	0	0.0%	0	0
Washington	0	0.0%	0	0.0%	0	0
Weld	0	0.0%	23	5.0%	23	8.7
Yuma	0	0.0%	1	0.2%	1	9.9
Unspecified	0	0.0%	45	9.8%	45	

Total Unspecified	Acute and Chronic HBV Cases	
	Number	%
CDOC	15	33.3
FCI	2	4.4
Other	28	62.2

†Chronic Cases may include 5-10% of acute cases reported for the same year

‡ Rates per 100,000 were calculated using the U.S. Census Bureau, Population Division, *Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2012*, <http://www.census.gov/popest/data/index.html>. Rates calculated for counties with few cases and small populations should be interpreted with caution.

Figure 1.



Rates per 100,000 were calculated using the 2012 estimates from the U.S. Census Bureau, Population Division, Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2012, <http://www.census.gov/popest/data/index.html>. Rates calculated for counties with few cases and small populations should be interpreted with caution.



### Technical Notes Hepatitis B Surveillance

Viral hepatitis surveillance in Colorado is primarily based on laboratory reporting. The Colorado Board of Health requires physicians and other health care providers to report suspected cases of hepatitis B within 7 days, and it requires laboratories to report HBV serologic tests that are indicative of infection within 7 days. Upon receipt of these reports, either electronically, by fax, or via another reporting system, the Viral Hepatitis Program (VHP) uses established case definitions to assign a diagnosis and case status for each patient. Data is entered into the Colorado Electronic Disease Reporting System where it is available to local or state public health personnel for further investigation of cases.

If a variable is reported as missing, the information was not located by the disease investigators. If the variable is reported as unknown, then the investigator asked the question or located the information in a report and it was marked unknown. For example, a case investigator reviewed a medical record for a case and found a question related to race that was not marked. In that case, the variable was “missing”. If a person did not know whether or not their household contacts had hepatitis C, they would respond “don’t know” or “unknown”.

Hepatitis B vaccination became a school entry requirement in 1997. At that time, the Colorado Board of Health required all day care students age fifteen months through four years of age, kindergarten and seventh grade students to have had three doses of hepatitis B vaccine to attend school. A 12-year old student entering seventh grade in 1997 would have been born in 1985 and be 27 years of age in 2012.

### **Acute Hepatitis B**

Acute hepatitis B is a short-term illness that occurs within the first six months of infection with HBV. Symptoms are usually mild to moderate, and include fatigue, nausea, vomiting, abdominal pain, jaundice and abnormal liver function tests. Older children and adults are more likely to develop symptoms than younger children. The hepatitis B IgM can be detected in sera and used as a marker of acute infection. CDPHE used case definitions published by the National Notifiable Diseases Surveillance System (NNDSS) to define an acute case. These can be found at:

<http://wwwn.cdc.gov/NNDSS/script/conditionssummary.aspx?CondID=80>

### **Chronic Hepatitis B**

Chronic hepatitis B results when HBV remains in the body after the acute phase of illness. People with a chronic infection do not develop protective antibodies to the hepatitis B surface antigen. Among those infected, 30-50% of younger children (aged 1-4 years), and up to 90% of infants will develop chronic hepatitis B.<sup>1</sup> Over time, chronic hepatitis B can result in liver disease, cirrhosis, or cancer. Each year approximately 3,000 people die from causes related to hepatitis B in the U.S.<sup>2</sup> The surveillance case definition for chronic hepatitis B infection can be found at:

<http://wwwn.cdc.gov/NNDSS/script/conditionssummary.aspx?CondID=81>

### **Perinatal Hepatitis B Infection**

Perinatal hepatitis B Infection is defined as HBsAg positivity in any infant aged >1-24 months who was born in the United States or in U.S. territories to an HBsAg-positive mother. The Viral Hepatitis Program at CDPHE follows all women 14-45 years of age to determine whether or not they are pregnant. If the woman is pregnant, she is enrolled in the Perinatal Hepatitis B Prevention Case Management Program.

### **Public Health Surveillance Summary for Hepatitis B**

In 2012, a total of 26 cases of acute hepatitis B and 458 cases of chronic hepatitis B were reported in Colorado. Table 1 describes the distribution of reported cases by gender, age, race/ethnicity, and county of residence. Rates include acute and chronic case reports even though up to 10% of acute cases may also be included in the chronic cases. This occurs when an individual retests positive six months following the initial acute diagnosis, and the person is reported as a chronic case following the second test. Rates per 100,000 were calculated using the 2012 estimates from the U.S. Census Bureau, Population Division.<sup>3</sup>

#### **Gender**

Among the acute cases, 18 (69.2%) were reported in men and 8 (31.8%) in women. For chronic infections, over half of the total 458 reported cases were among men (n=265; 57.9%), while 193 (42.1%) were reported in women. Surveillance cannot determine the number of men and women tested in Colorado. However, Colorado birth certificate data for 2012 reported that 95.6% (65,643) of women were screened for hepatitis B during pregnancy as recommended by the Advisory Committee on Immunization practices of the U.S. Centers for Disease Control and Prevention and the U.S. Preventive Services Taskforce. There is no recommendation to routinely test men.

### Age

Table 1 represents the age distribution of acute and chronic hepatitis B cases. Most reported acute infections occurred among persons >27 years of age. Persons >27 years of age are less likely to be immunized for hepatitis B based on a school-entry requirement that began in 1997. The higher incidence of acute infections in people over 27 suggests that individuals in these age groups continue to engage in high risk behavior and could benefit from vaccine. Persons aged 30-39 years represent the greatest proportion of chronic cases (n=112; 24.5%). Chronic infections are more likely to be diagnosed later in the course of infection when symptoms commonly appear or among women screened during pregnancy.

### Race/ethnicity

The majority of acute cases of hepatitis B were reported among White non-Hispanics (n=14; 53.8%). The highest number of chronic HBV infections were reported among Asian/Pacific Islanders (n=165; 36.0%). Rates per 100,000 were calculated using the 2012 estimates from the U.S. Census Bureau, Population Division. Data from Colorado's Perinatal Hepatitis B Unit indicate that foreign-born pregnant women are significantly more likely to be reported with hepatitis B infection than pregnant women born in the U.S. National data also describes significant disparities in chronic hepatitis B infections by race.<sup>4</sup>

### Risk Factors

A subset of risk factor data was included in the 2012 statistics. These data include: injection drug use (IDU), household contact of known or suspected case, sex contact of known or expected case, men who have sex with men (MSM), and born in an endemic country. Other risk factors are collected, but only those reported in the yearly progress report for CDC are included in Table 1. These data were obtained through patient interviews, medical record reviews, or from information provided by a physician, hospital, or other healthcare provider. The VHP collected risk factor information on 19 (73.1%) acute HBV cases and 335 (73.1%) chronic HBV cases.

### Perinatal Cases

There were no hepatitis B perinatal cases reported in Colorado in 2012. The VHP enrolled 99 women in case management who had never before been enrolled in the Perinatal Hepatitis B Prevention Case Management Program.

### County Distribution

Acute HBV cases were reported in 11 of the 64 Colorado counties. Chronic hepatitis B cases were reported in 23 of the 64 Colorado counties. Counties without reported cases were more likely to be frontier counties (rural areas sparsely populated that are isolated from population centers and services). Incarcerated HBV chronic cases are counted in the "Unspecified" section under Colorado Department of Corrections (CDOC) and Federal Correctional Institute (FCI). Figure 1 is a map describing the rate distribution of hepatitis B per 100,000 county populations in Colorado. The rate is calculated using the estimated 2012 census figures from the U.S. Census Bureau, Population division.<sup>5</sup>

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<sup>1</sup> World Health Organization. (July 2012). *Hepatitis B: Fact Sheet No. 204*. Retrieved from <http://www.who.int/mediacentre/factsheets/fs204/en/>

<sup>4</sup>Centers for Disease Control and Prevention. (2010). *Disease Burden from Viral Hepatitis A, B, and C in the United States*. Retrieved from [http://www.cdc.gov/hepatitis/pdfs/disease\\_burden.pdf](http://www.cdc.gov/hepatitis/pdfs/disease_burden.pdf)

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<sup>3</sup>US Census Bureau, Population Division. (June 2013). *Annual Estimates of the Resident Population by Sex, Age, Race, and Hispanic Origin for the United States and States: April 1, 2010 to July 1, 2012*. Retrieved from <http://www.census.gov/popest/data/index.html>.

<sup>4</sup> McQuillan, G.M, Kruszon-Moran, D, Denniston, M.M, & Hirsch, R. (March 2010). Viral Hepatitis. *NCHS Data Brief 27*. Retrieved from <http://www.cdc.gov/nchs/data/databriefs/db27.htm>.

<sup>5</sup> US Census Bureau, Population Division. (December 2012). *Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2012*. Retrieved from <http://www.census.gov/popest/data/index.html>.