Viral Hepatitis Surveillance in Colorado

2019 Annual Report

January 2021

COLORADO
Department of Public
Health & Environment

Table of Contents

List of Tables and Figures

Acknowledgments

This report is published by the Colorado Department of Public Health and Environment (CDPHE), Denver, Colorado.

This report describes the epidemiology of hepatitis A, B and C in Colorado. CDPHE uses available data resources to report the burden and distribution of disease, as well as trends over time. A summary of each of the three types of viral hepatitis is followed by a more detailed description. Data are presented for all hepatitis A, B, and C cases reported to CDPHE by Aug. 10, 2020 for diagnoses through Dec. 31, 2019.

This publication is available on the web at www.colorado.gov/cdphe/hepatitis-data. This report is compliant with data release guidelines established by CDPHE's Division of Disease Control and Environmental Epidemiology to ensure the protection of sensitive health information.

CDPHE acknowledges that generations-long social, economic and environmental inequities result in adverse health outcomes. They affect communities differently and have a greater influence on health outcomes than either individual choices or one's ability to access health care. Reducing health disparities through policies and organizational systems can help improve opportunities for all Coloradans.

CDPHE aspires to present data humbly, recognizing statistics and numbers never tell the complete story. The goal is to work collaboratively with individuals and communities to learn and share their stories to build a collective understanding. Knowing that people have different lived experiences and have inequitable opportunities to achieve optimal health, we commit to pair data and stories to inform programs and systems change to improve health for all (Adapted from the Denver Public Health, Health Equity Data Commitment and Principles).

Acronyms

CCCR	Colorado Central Cancer Registry
CDC	Centers for Disease Control and Prevention
CDOC	Colorado Department of Corrections
CDPHE	Colorado Department of Public Health and Environment
CEDRS	Colorado Electronic Disease Reporting System
CSTE	The Council for State and Territorial Epidemiologists
DAAs	Direct-acting Antivirals
ELR	Electronic Laboratory Reporting
HAV	Hepatitis A Virus
HBIG	Hepatitis B immune globulin
HBsAg	HBV surface Antigen
HBV	Hepatitis B Virus
HCC	Hepatocellular Carcinoma
HCV	Hepatitis C Virus
IDU	Injection Drug Use
MSM	Men who have Sex with Men
NH	Non-Hispanic
NHANES	National Health and Nutrition Examination Survey
PEH	People Experiencing Homelessness
PWID	People Who Inject Drugs
PHBPP	Perinatal Hepatitis B Prevention Program
SVR	Sustained Virologic Response
TGA	Transitional Grant Areas

Executive Summary

Viral hepatitis is a significant public health challenge. Hepatitis A virus (HAV), hepatitis B virus (HBV), and hepatitis C virus (HCV) can be transmitted in different ways, but each virus causes damage to the liver and can lead to severe complications and premature death.

There were a total of 3,250 confirmed cases of hepatitis A, B, and C reported to CDPHE in 2019. From 2015 to 2019, there were a cumulative 17,343 reported cases, 95% of which were chronic conditions. Data for 2019 can be seen in Table X.1 below.

Hepatitis D and E are not covered in this report due to low incidence in Colorado.

Table X.1: Diagnoses and Rate per 100,000 of Hepatitis in Colorado, 2019

2019 Data Snapshot		
	Cases	Rate per 100,000
Hepatitis A	332	5.8
Hepatitis B, Acute	22	0.4
Hepatitis B, Chronic	201	3.5
Hepatitis C, Acute	53	0.9
Hepatitis C, Chronic	2,642	45.8

Hepatitis A

HAV is preventable as there is a safe and effective vaccine available. As a result of the vaccine, the number of HAV cases has decreased. However, outbreaks of HAV among unvaccinated people still happen and are increasing.[1]

In 2019, the United States experienced new or ongoing outbreaks of HAV in 33 states. As of September 18, 2020, the outbreak was ongoing and over 34,000 cases had been reported. The groups highest at risk for HAV are people who use drugs, people experiencing unstable housing or homelessness, men who have sex with men, and those that are or recently have been incarcerated.[2]

---

[1] CDC. Vaccine Information Statement - Hepatitis A. 2020. https://www.cdc.gov/vaccines/hcp/vis/vis-statements/hep-a.html

[2] CDC. Widespread person-to-person outbreaks of hepatitis A across the United States. 2020. https://www.cdc.gov/hepatitis/outbreaks/2017March-HepatitisA.htm

In Colorado, the HAV outbreak began in October of 2018. In 2019, there were 332 cases reported to CDPHE. Over half of the individuals diagnosed with HAV were experiencing homelessness and nearly half reported injection drug use as a risk factor. At the time of the publication of this report, the outbreak in Colorado was ongoing.

Hepatitis B

No cure exists for HBV but it is preventable through vaccination. However, vaccination coverage remains low. The CDC estimated that in 2017 only 25.8% of adults had been adequately vaccinated for HBV.[3]

In 2019, the rate of reported acute HBV cases in Colorado remained the same as the rate in 2018 at 0.4 diagnoses per 100,000 (n=22). The rate of chronic HBV cases decreased from 4.8 to 3.5 diagnoses per 100,000 (n=201).

There were zero perinatal hepatitis B cases in 2019 in Colorado. The national HBV birth dose vaccination rate was 73.8% in 2017.[4]

Hepatitis C

Currently, HCV does not have a vaccine. Fortunately, there are treatments that can cure most cases of HCV in eight to twelve weeks.[5]

National incidence of HCV has been steadily increasing since 2013. It is estimated that in 2018 nearly 2.4 million Americans were living with HCV[6], and an estimated 44,000 people are newly infected every year.[7] Although HCV is curable as stated above, only an estimated 56% of people living with HCV are aware of their infection[8] and only about 1 of every 14 cases are reported to public health.[9]

---

[3] CDC. Vaccination Coverage among Adults in the United States, National Health Interview Survey, 2017. 2018. https://www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/pubs-resources/NHIS-2017.html

[4] CDC. National Progress Report 2020 Goal: Increase the percentage of infants who receive hepatitis B vaccine within 3 days of birth to 85.0%. 2019. https://www.cdc.gov/hepatitis/policy/NationalProgressReport-HepB-IncreaseVacinations.htm

[5] CDC. Hepatitis C Questions and Answers for the Public. 2019. https://www.cdc.gov/hepatitis/hcv/cfaq.htm

[6] Hofmeister, MG, et al. Estimating Prevalence of Hepatitis C Virus Infection in the United States, 2013-2016. Hepatology. 2019 Mar;69(3):1020-1031.

[7] CDC. Surveillance for Viral Hepatitis - United States, 2017. https://www.cdc.gov/hepatitis/statistics/2017surveillance/index.htm

[8] Kim HS, Yank JD, El-Serag HB, Kanwal F. Awareness of chronic viral hepatitis in the United States: An update from National Health and Nutrition Examination Survey. J Viral Hepat. 2019;26:596–602.

[9] Klevens RM, Liu S, Roberts H, Jiles RB, Holmberg SD. Estimating acute viral hepatitis infections from nationally reported cases. Am J Public Health. 2014 Mar; 104(3):482-7.

The rate of reported acute HCV cases increased slightly from 2018 to 2019 in Colorado, from 0.8 diagnoses per 100,000 to 0.9 diagnoses per 100,000 (n=53). The rate of reported chronic HCV cases decreased from 2018 to 2019. The rate in 2019 was 45.8 diagnoses per 100,000 population.

The majority of both acute and chronic cases occurred in people aged 20-39. The rate of reported chronic HCV cases among 20-39 year olds surpassed the rate among 40-59 year olds for the first time in 2018. In 2019, the rate among 20-39 year olds has continued to follow this trend having the highest rate of diagnosis (69.6 per 100,000) of all age groups.

From 2015 to 2019, more diagnoses of chronic HCV occurred in federal or state prisons than any one county in Colorado. In 2018, the Colorado Department of Corrections (CDOC) committed 41 million dollars over two years to treat the incarcerated population living with chronic HCV.

Perinatal HCV became a reportable disease in 2018. There were two cases of perinatal HCV in 2018 and one case in 2019.

Data Sources and Methods

This report provides a summary of confirmed viral hepatitis cases reported to CDPHE by laboratories and health care providers in 2019. Data from 2010-2019 and 2015-2019 are also included to examine trends over time. Reported cases represent a combination of new cases and new diagnoses from previously acquired cases. Surveillance of reported cases helps to highlight trends in disease reporting but gives an underestimate of the true burden of disease. Cases were grouped into age groups and county types for increased statistical reliability and for ease of interpretation.

Colorado Electronic Disease Reporting System (CEDRS)

Colorado law requires both laboratories and health care providers to report cases of viral hepatitis to CDPHE. Reports of diagnosis for HBV, HCV, and other viral hepatitis cases must be submitted to CDPHE within four calendar days. HAV reports must be submitted to CDPHE within one working day. Viral hepatitis surveillance in Colorado is primarily based on laboratory reporting of serologic results.

The data that form the basis of this report are principally reports of hepatitis among people living in Colorado at the time of their diagnosis. Cases are reported via electronic lab reporting (ELR) and are entered into the Colorado Electronic Disease Reporting System (CEDRS). Hepatitis laboratory results come to CDPHE via ELR from 22 different feeds representing 46 different commercial laboratories and hospital laboratories. Per state reporting requirements, laboratories must report all tests indicative of hepatitis, such as antibody tests and hepatitis viral loads. Upon receipt of these reports, CDPHE uses established case definitions to assign the appropriate diagnosis for each patient. If a case is listed as "probable" in CEDRS and a new test confirms the case, the case is reassigned as "confirmed" but retains the original reporting year.

Exposure or behavioral risk factor data can be obtained through patient interviews, medical record reviews, and information provided by a physician, hospital, or other health care provider. Information is more complete for those who are interviewed. These risk behavior data are collected with options of "Yes", "No", and "Unknown" when indicated, or as checkboxes. The time period of inquiry is generally the six months prior to onset of symptoms for acute cases. Due to capacity and limited hepatitis funding, exposure and behavioral risk data is limited and should be interpreted with caution.

CDPHE attempts to interview all newly reported HAV, acute HBV, and acute HCV cases but does not have the capacity to interview chronic cases. Local public health agencies sometimes perform acute case interviews.

Additionally, CDPHE follows all women 14 to 45 years of age who are reported to be living with HBV to ensure that, if they become pregnant, they are enrolled in the Perinatal Hepatitis B Prevention Program (PHBPP) to help prevent perinatal transmission. Infants born to women living with HBV should receive hepatitis B immune globulin (HBIG) and the first dose of the three dose HBV vaccine series within 12 hours of birth to begin immediate protection. PHBPP ensures infants receive these crucial shots at birth in addition to completing the vaccine series and receiving post vaccination serology to determine immune protection.

Viral hepatitis surveillance is impacted by several factors, including the inability to routinely identify people who spontaneously clear infection or who are in treatment or cured. A Colorado Board of Health rule change in 2019 made negative confirmatory results for chronic HCV reportable, which will address this issue in future years. Additionally, most demographic and risk information remains missing for chronic events, since most events are reported by laboratories, and the resources do not exist to follow up with cases.

Data collection options that included transgender identities were not available until March 2017, and case counts are small. No data collection options currently exist to track viral hepatitis among gender non-binary/non-conforming individuals. Additionally, some of the data may represent the sex assigned at birth rather than the current gender identity of individuals, but this level of detail does not exist within the data.

Population Data

Population information from the Colorado Division of Local Affairs State Demography Office is used to compare the population to people reported with hepatitis by gender, age, race, ethnicity and county. If a person reported with hepatitis is incarcerated in a county jail, that event is assigned to the county of the jail location; however, if an event is identified in a state or federal prison, a county is not assigned. Instead, an institution type is selected in the event, and for the purposes of this report, the county is labeled "Prison".

Center for Health and Environmental Data (CHED)

CDPHE's Vital Statistics Branch provided cause of death data from 2010 to 2019. The Colorado Central Cancer Registry (CCCR) Branch of CDPHE provided data on liver cancer from 2010 to 2019.

Background

Hepatitis A

HAV is a viral infection that affects the liver and appears only as an acute (newly occurring) infection that does not become chronic. The virus is transmitted fecal-orally through contact with a person infected with HAV. This can include sexual activity, shared drug use, or through eating or drinking contaminated food or water. Other risk factors for HAV transmission include homelessness or unstable housing, international travel, and MSM. People with HAV can have a mild illness lasting a few weeks to a more severe illness requiring hospitalization but mortality is low. A safe and effective vaccine to prevent HAV was introduced in 1995 and has been a recommended routine vaccination of all children aged 12-23 months since 2006. If a person knows they have been exposed to HAV, post-exposure prophylaxis (either immune globulin or HAV vaccine) can be administered within two weeks of exposure to prevent illness.

Hepatitis B

HBV is a bloodborne illness that can occur as an acute or chronic infection. It can range in severity from a mild illness that clears on its own to a serious, lifelong illness that can result in death. The virus can replicate in the liver for years causing damage, often without symptoms. However, HBV is preventable and can be managed if treated appropriately.

Transmission of HBV occurs most often by three routes: perinatally (mother to child at birth), through direct contact with blood, or through direct contact with semen or vaginal fluids. The likelihood of perinatal transmission ranges from 30% to 90%, and 90% of infants who perinatally acquire HBV and 5% of adults will develop a chronic, incurable infection.[10]

There is no cure for chronic HBV. A safe and effective vaccine to prevent HBV has been a recommended routine vaccination of all infants since 1991.

Hepatitis C

HCV is a bloodborne illness that can be transmitted perinatally or through direct contact with blood. Acute HCV infection occurs an average of 14 (two to 26) weeks after exposure to the virus. Approximately 70 to 80% of people with acute HCV will not exhibit symptoms, and most remain unaware of the infection.[11] Abnormal liver function tests are one of the most characteristic features of HCV infection.

---

[10] CDC. Hepatitis B Questions and Answers for the Public. 2019. https://www.cdc.gov/hepatitis/hbv/bfaq.htm

[11] CDC. Hepatitis C Questions and Answers for the Public. 2019. https://www.cdc.gov/hepatitis/hcv/cfaq.htm

The screening test for probable chronic HCV infection is an antibody test that, if positive, indicates a past or present exposure to HCV. An estimated 15 to 25% of people exposed to the virus will clear it spontaneously, while the remainder will develop chronic infection.[12] Due to the unknown number of past cases that have either cleared the virus spontaneously or have been cured, only cases that have confirmatory lab results are included in this report. HCV is often asymptomatic until later stages of disease and can result in liver fibrosis, cirrhosis, cancer and/or death. Of people living with unresolved, chronic HCV, 10 to 20% will develop cirrhosis over a period of 20 to 30 years.[13]

Today, the most common exposure to HCV in the United States is through sharing needles, syringes, or other materials used to prepare and inject drugs.[14]

While there is no vaccine for HCV, it is curable. Current treatments often involve 8 to 12 weeks of oral medication. This treatment is effective in 90% of cases and causes few side effects. Those with HCV should be closely monitored by their health care provider, even if they have been cured, because of the risk of liver disease including cancer.[15]

---

[12] CDC. Hepatitis C Questions and Answers for the Public. 2019. https://www.cdc.gov/hepatitis/hcv/cfaq.htm

[13] CDC. Hepatitis C Questions and Answers for the Public. 2019. https://www.cdc.gov/hepatitis/hcv/cfaq.htm

[14] CDC. Hepatitis C Questions and Answers for the Public. 2019. https://www.cdc.gov/hepatitis/hcv/cfaq.htm

[15] CDC. Hepatitis C Questions and Answers for the Public. 2019. https://www.cdc.gov/hepatitis/hcv/cfaq.htm

Case Definitions

The Council for State and Territorial Epidemiologists (CSTE) develops and maintains *case definitions* for hepatitis A, B, and C to standardize reporting at the state and national level. Case definitions are modified or added when new technologies, methodologies, or clinical data become available.[16] Details of all case definitions can be found at

https://wwwn.cdc.gov/nndss/conditions/notifiable/2018/infectious-diseases/

Changes to case definitions have an impact on the number of cases reported and the status of cases. **Reported trends over time should be interpreted with caution if the case definition for that disease has changed.** In 2017, CDPHE conducted an analysis of the impact of the 2016 case definition change on chronic HCV case counts and found a possible artificial decrease in the number of confirmed cases due to a more restrictive case definition.[17]

This report focuses largely on five-and ten year trends in data. The following changes have occurred during these time periods:

- In 2016, **the case definition of chronic HCV infection changed** to require RNA or NAAT tests to confirm cases. Previously, the laboratory criteria for diagnosis included positive antibodies to HCV with a signal to cut-off ratio predictive of a true positive as determined for the particular assay as defined by CDC.

- In 2016, **the clinical description for acute HCV infection changed** from ALT level at >400IU/L to ALT level >200 IU/L. The time frame for seroconversion was changed from six months to 12 months. These changes **made criteria less restrictive when determining if a case met acute case definition**.

- In 2017, **the case definition of perinatal HBV infection was updated** to include additional labs that were added as options to diagnosis of a case. This may make it easier for case finding, however, it was also added that the HBsAg-positive acceptance is dependent on there being at least four weeks between the last dose of hepatitis B vaccine and testing to avoid false positivity. This in turn could make case finding more challenging if the child's vaccination status is unknown or cannot be located.

- In 2018, **a case definition of perinatal HCV infection was established** for the first time.
  - Prior to 2018, perinatal HCV cases were not considered to meet case definition and were not included in the case counts.

---

[16] CDC. Surveillance for Viral Hepatitis - United States. 2018.

[17] CDPHE. 2017 Surveillance Report: Viral Hepatitis in Colorado. 2017.

Some diseases have case definitions that are broken down into "Probable" and "Confirmed" cases statuses. **This report only includes data on viral hepatitis cases classified as "Confirmed".**

Hepatitis A

Summary

- In 2019, there were 332 reported cases of HAV in Colorado.

- Beginning in October 2018, Colorado has been experiencing a HAV outbreak primarily among people experiencing homelessness, those with substance use disorders, and people incarcerated in city or county jails.

- Since the beginning of the outbreak in October 2018, nearly 25,000 HAV vaccinations had been administered as of October 2020. As of the publication of this report in 2021, the outbreak is ongoing.

- Of the people diagnosed with HAV in 2019, 90.9% were reported in urban counties.

- The most common risk factor reported for 2019 diagnoses was injection drug use, accounting for 47.0% of diagnoses.

- 54.2% of cases in 2019 were reported as experiencing homelessness at the time of diagnosis.

- 8.4% of individuals diagnosed with HAV in 2019 were living with chronic hepatitis C. Of this group, 82.1% were homeless.

Figure 1.1: Reported HAV Cases and Rate per 100,000, 2010-2019
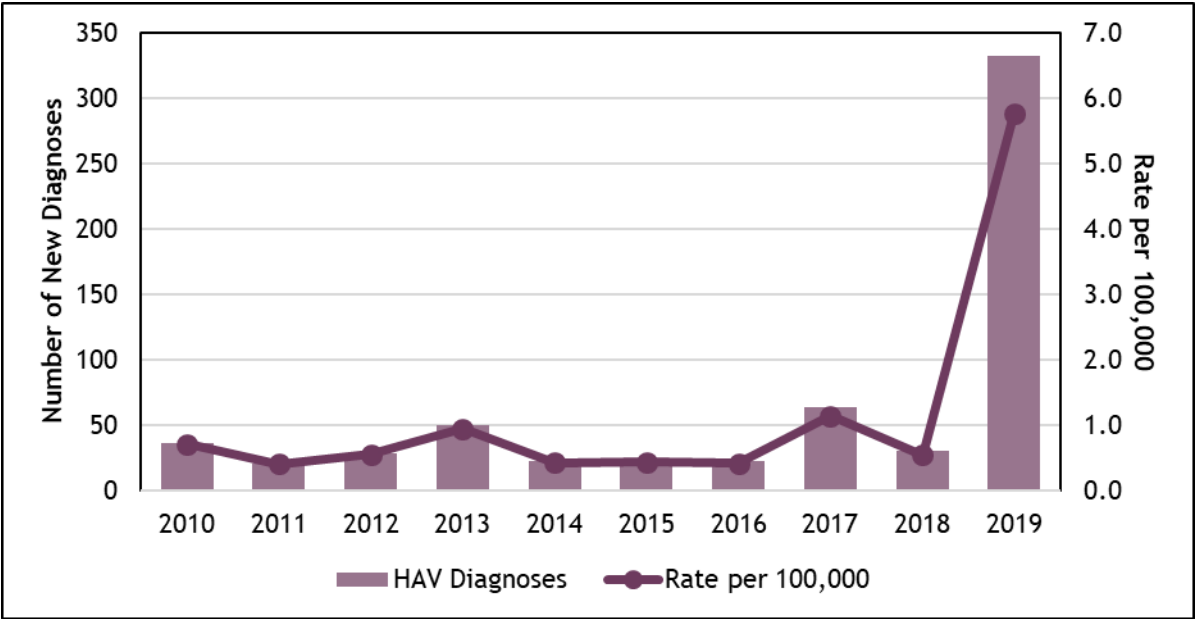
New HAV Diagnoses by Gender

In 2019, men accounted for over half (69.9%) of reported HAV cases. The rate among women has followed the same pattern as the rate among men, with both increasing in 2019. However, the rate among men has been consistently higher than women since 2016. An outbreak of HAV among MSM in 2017 accounted for 70.3% of cases that year being among men.

Figure 1.2: Rate per 100,000 of HAV Cases by Gender, 2015-2019
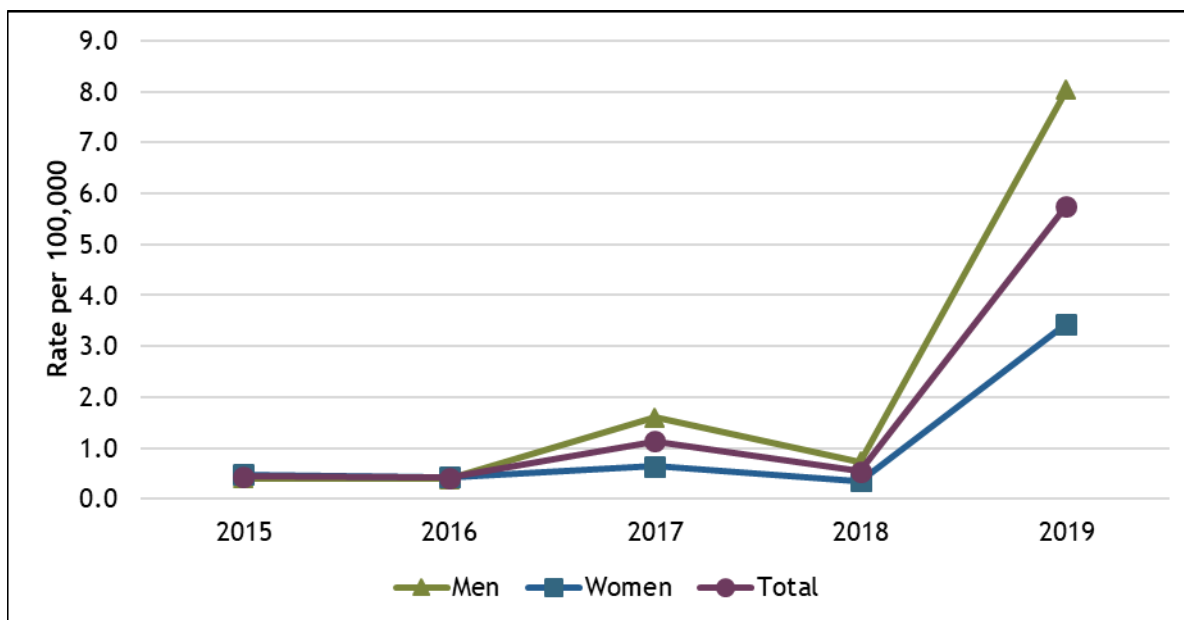
Other and unknown genders are not shown due to small counts and unreliable rates.

Gender identity is not known for all diagnoses. The gender displayed in this figure could be sex at birth or an individual's gender identity.

New HAV Diagnoses by Age

Rates of HAV diagnosis in 2019 were highest among 20-59 year olds. Those aged 20-39 years had a HAV diagnosis rate of 9.2 diagnoses per 100,000 population in 2019, which is nearly a 9-fold increase of the rate in 2018. The age group with the highest rate of HAV diagnosis in 2019 were aged 40-59, with a rate of 9.8 diagnoses per 100,000 population. This rate increased by nearly 20 times the rate in 2018. The average age of those diagnosed with HAV in 2019 was 42, with the median age being 40. More data on age of diagnoses can be found in Table 1.2 in the appendix.

Figure 1.3: Rate per 100,000 of HAV Cases by Age Group, 2015-2019
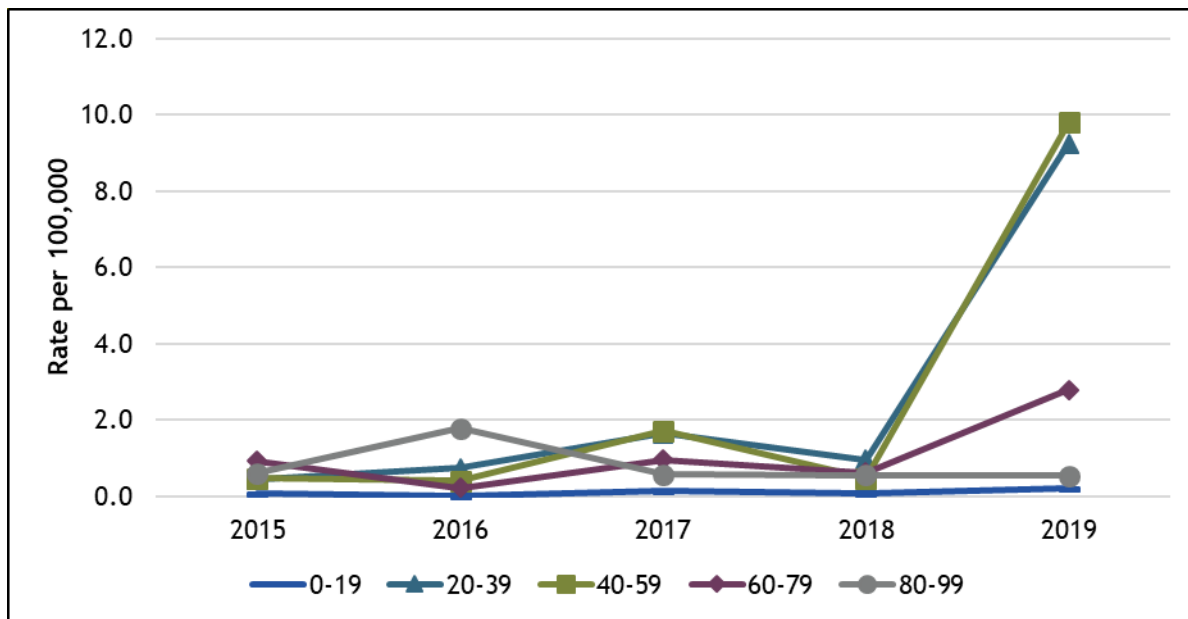
New HAV Diagnoses by Race/Ethnicity

Race/ethnicity data were available for 72.6% of HAV cases in 2019. Among cases, 53.0% were non-Hispanic White, 11.1% were Hispanic (all races), and 5.4% were non-Hispanic black. Additional data can be found in Table 1.2 in the appendix

Risk Factors and Mortality

Injection drug use (IDU) was identified as the primary reported risk factor for 47.0% of cases in 2019 and is associated with the ongoing HAV outbreak in Colorado. Over the past five years (2015-2019), 13.8% of HAV diagnoses had a reported risk factor of IDU. Also, from 2015-2019, 82.4% of risk factors were unknown. This decreased to only 50.9% of risk factors being unknown in 2019, indicating an improvement in data collection for risks associated with HAV diagnosis.

Over half (54.2%) of diagnoses in 2019 were reported as experiencing homelessness at the time of their diagnosis. In the Denver Transitional Grant Area (TGA), which includes Adams, Arapahoe, Broomfield, Denver, Douglas, and Jefferson, 25.0% of cases were reported as experiencing homelessness. In urban, non-TGA counties - El Paso, Larimer, Mesa, Pueblo, Weld, and Boulder - 25.6% of cases were reported as experiencing homelessness. The remaining 3.3% of persons reported as experiencing homelessness lived in rural counties.

Figure 1.4: Reported Risk Factors Among New HAV Diagnoses, 2019 Compared to 2015-2019
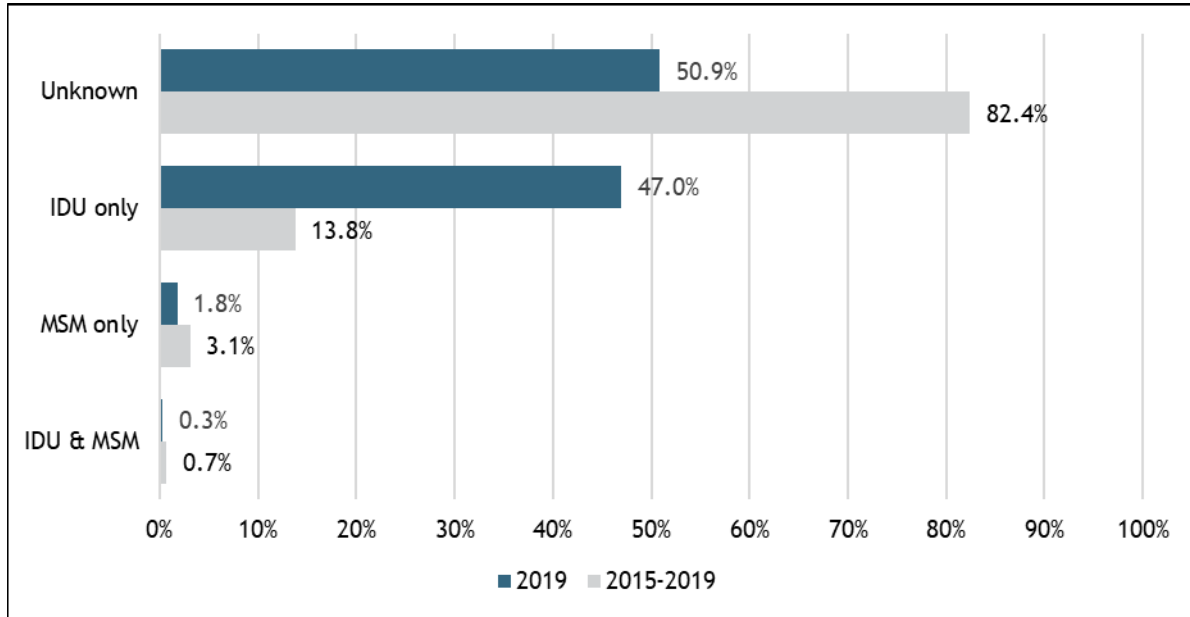
Of all reported HAV cases since 2015, 4.9% had died as of December 31, 2019 of any cause. Of total deaths among cases of HAV from 2015 to 2019, 86.9% occurred less than two years after their case was reported to CDPHE.

Geographic Distribution

Since 2017, nearly 50% of HAV diagnoses have occurred in the Denver TGA. In 2019, 45.5% of cases occurred in the Denver TGA, and another 45.5% of cases occurred in non-TGA urban counties. In the Denver TGA, 25.0% of cases were among those experiencing homelessness. In non-TGA urban counties, which include El Paso, Larimer, Mesa, Pueblo, Weld, and Boulder, 25.6% were experiencing homelessness. In total, people experiencing homelessness accounted for 53.9% of cases. El Paso County accounted for 38.3% of cases in 2019, followed by Denver County accounting for 27.7%.

Figure 1.5: New HAV Diagnosis Rate per 100,000 Population by County of Residence at the Time of Diagnosis – Colorado (2019)
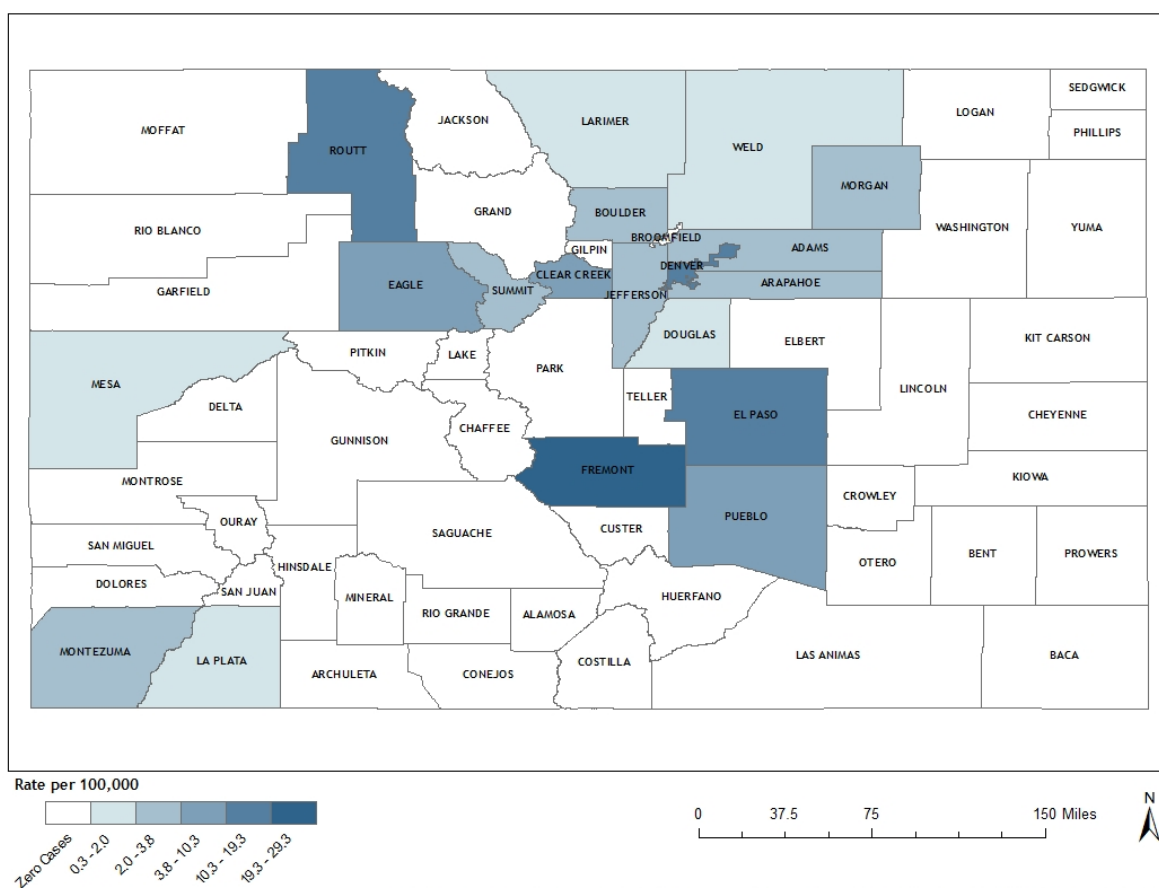
Data Source: Case data from CDPHE's VH Surveillance Program. Population data from the State Demography Office.

In 2019, rates of diagnosis were highest in Fremont, Routt, El Paso, and Denver counties. Due to smaller populations in Fremont and Routt counties, higher rates do not mean higher case counts. For all case counts and rates by county, refer to Table 1.3 in the appendix. An explanation of how rates are calculated can be found in the Definitions section.

Acute Hepatitis B

Summary

- In 2019, there were 22 reported cases of acute HBV.
- The overall rate of acute HBV in 2019 was 0.4 per 100,000 population.
- 90.9% of cases in 2019 occurred in urban counties, with 63.6% occurring in the Denver TGA.
- According to the CDC, acute HBV cases are underreported by a factor of 6.5.[18] Accounting for this underreporting, there would be an estimated 143 cases of acute HBV in 2019.
- In 2019, women had more diagnoses than men, which is different from the trends from 2014-2018, where men represented the majority of diagnoses.
- 40-59 year olds had the highest rate of acute HBV diagnosis at 0.7 diagnoses per 100,000 population.
- 36.4% of diagnoses in 2019 reported injection drug use as a risk factor.

Figure 2.1: Reported Acute HBV Cases and Rate per 100,000, 2010-2019

---
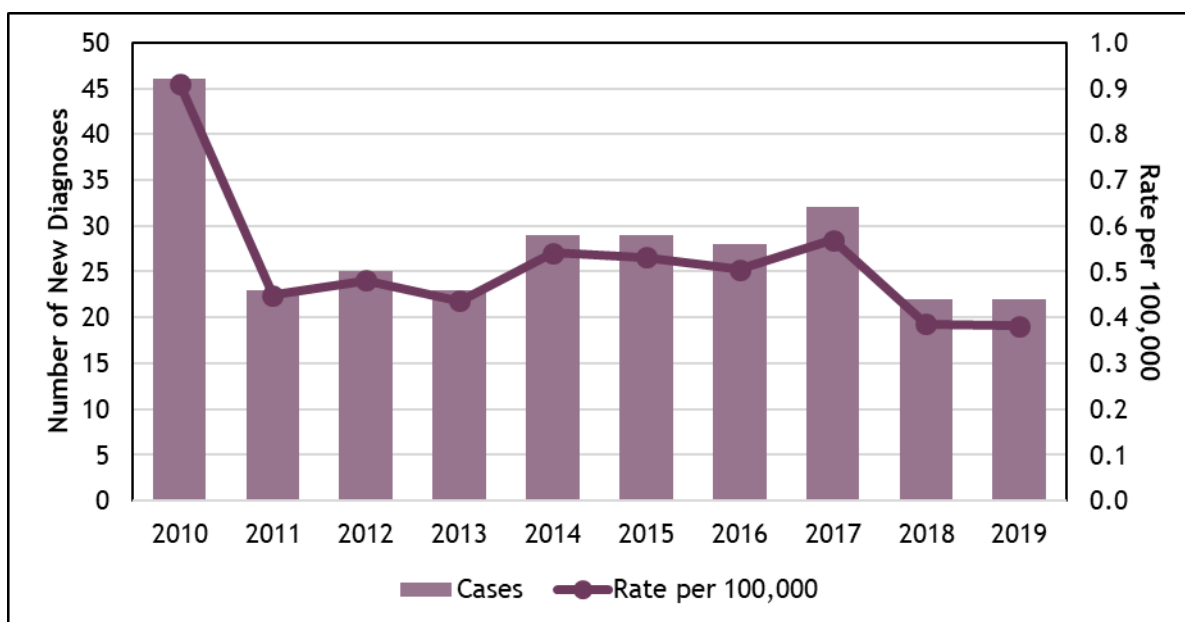
[18] CDC. Surveillance for Viral Hepatitis - United States. 2017.

New Acute HBV Diagnoses by Gender

The rate among women was 0.4 diagnoses per 100,000 compared to a rate of 0.3 per 100,000 among men in 2019.

Figure 2.2: Rate per 100,000 of Acute HBV Cases by Gender, 2015-2019
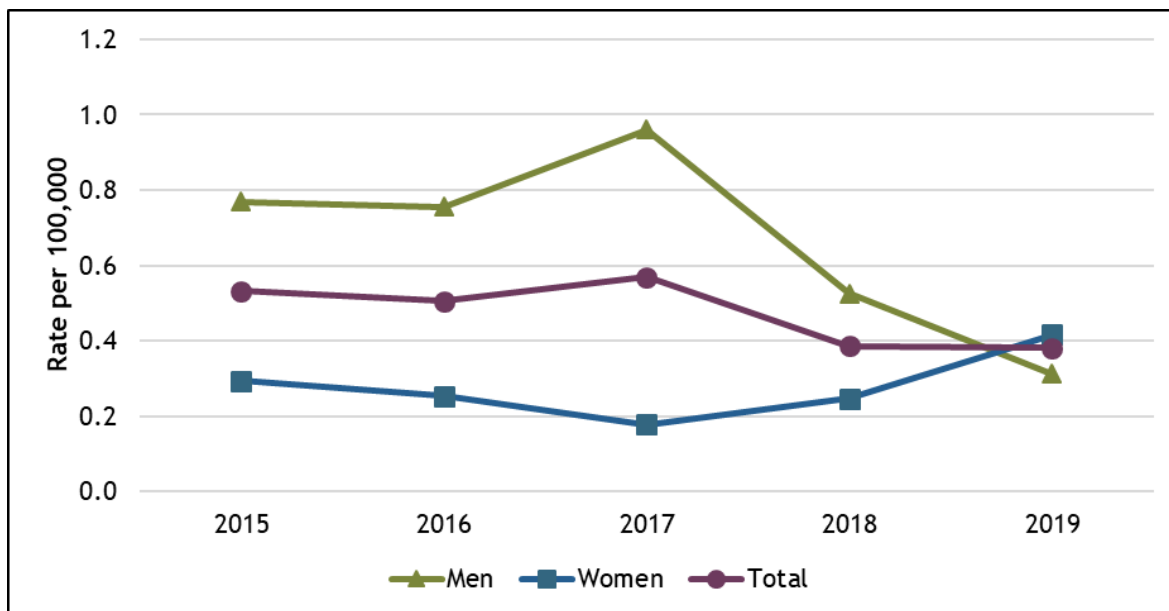
Other and unknown genders are not shown due to small counts and unreliable rates.

Gender identity is not known for all diagnoses. The gender displayed in this figure could be sex at birth or an individual's gender identity.

New Acute HBV Diagnoses by Age

People between the ages of 40-59 had the highest rate of diagnosis amongst cases in 2019 (0.7 per 100,000). Since 2015, there have been no reported acute cases in an individual less than 20 years old. People older than 19 years are less likely to be immunized for HBV based on a school-entry requirement that began in 1997. The relatively high numbers of acute cases among individuals aged 40-59 underscores the need for catch-up vaccination, particularly for individuals in priority populations.

Figure 2.3: Rate per 100,000 of Acute HBV Cases by Age Group, 2015-2019
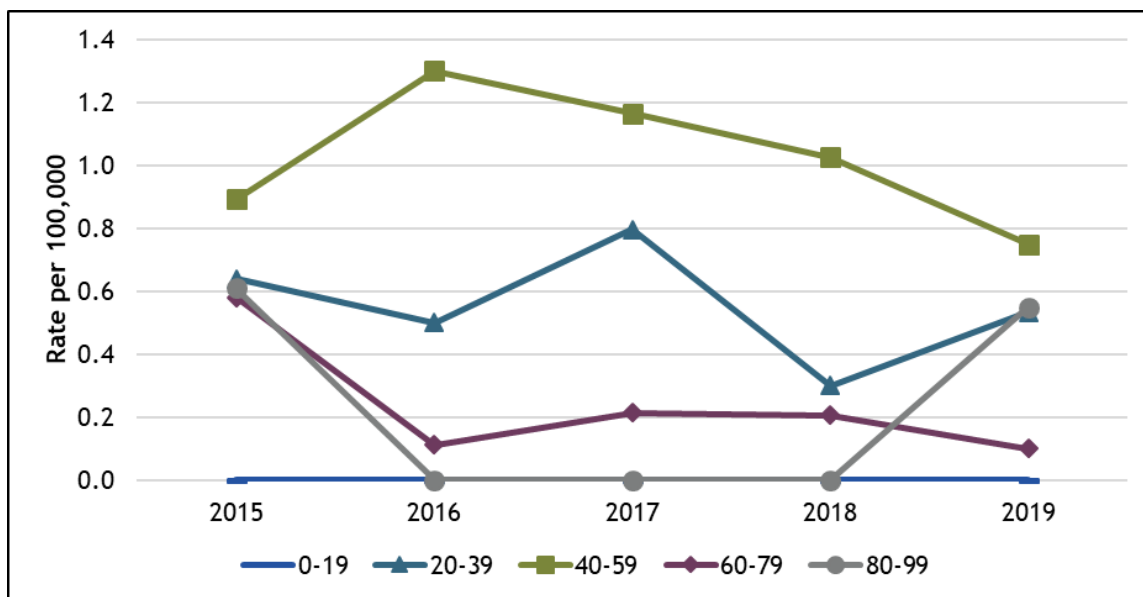
New Acute HBV Diagnoses by Race/Ethnicity

In 2019, non-Hispanic Whites accounted for 77.3% of acute HBV diagnoses. Hispanics of all races made up 18.2% of the diagnoses and non-Hispanic blacks made up 4.5%. More data on race and ethnicity can be found in Table 2.2 in the appendix.

Risk Factors and Mortality

Risk factors were unknown for 63.6% of reported acute HBV cases in 2019. The other 36.4% of cases in 2019 reported IDU as their primary risk factor. From 2015-2019, 24.8% of cases reported a risk factor of IDU, 9.3% reported MSM, and 2.6% reported injection drug use and MSM. However, during that five year time period, 60.6% of cases had unknown risk factors.

From 2015-2019, 14.2% of acute HBV cases were experiencing homelessness at the time of their diagnosis.

Figure 2.4: Reported Risk Factors Among New Acute HBV Diagnoses, 2019 Compared to 2015-2019
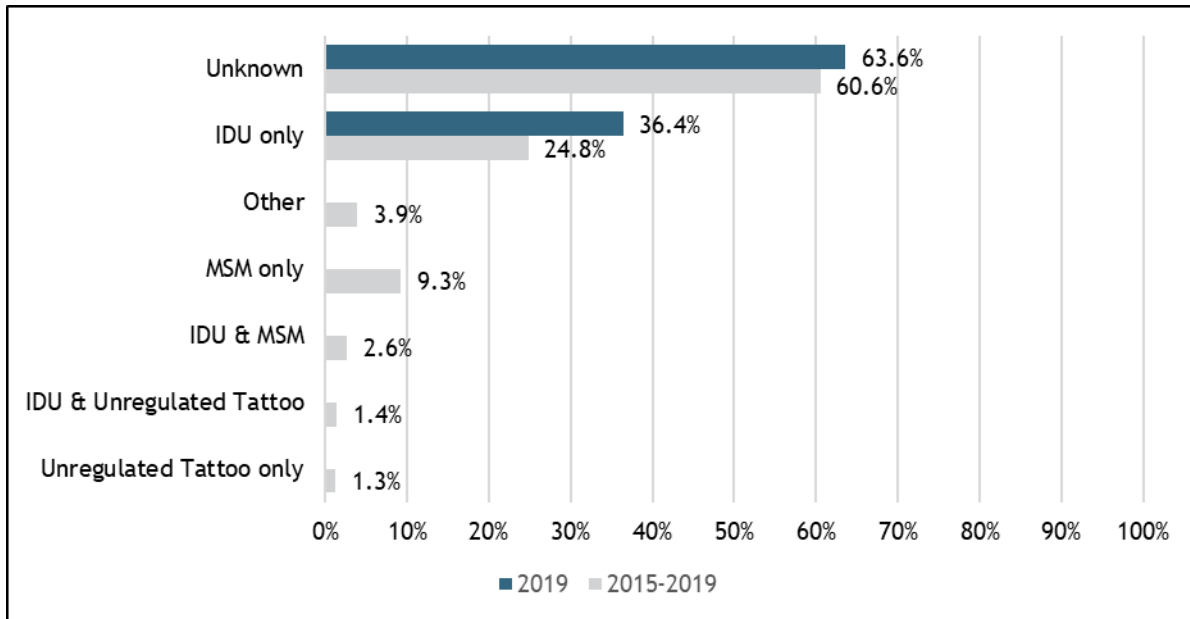
Of all reported acute HBV cases since 2015, 4.5% had died as of December 31, 2019 of any cause. Of these deaths among cases of acute HBV reported from 2015-2019, all of them occurred less than three years after their case was reported to CDPHE.

Geographic Distribution

The majority of acute HBV cases in 2019 were reported in urban counties, with the Denver TGA accounting for 63.6% of diagnoses. Denver County, with eight reported cases in 2019, represented the majority of cases (36.6%). Denver County was followed by Arapahoe and El Paso counties, both accounting for 13.6% of diagnoses in 2019 (n=3).

Figure 2.5: New Acute HBV Diagnosis Rate per 100,000 Population by County of Residence at the Time of Diagnosis – Colorado (2019)

Data Source: Case data from CDPHE's VH Surveillance Program. Population data from the State Demography Office.

Rates of diagnosis were highest in Garfield, Denver, Mesa, and Pueblo counties. Due to smaller populations in Mesa and Garfield counties, higher rates do not necessarily indicate high case counts. For all case counts by county as well as rates, refer to Table 2.3 in the appendix. An explanation of how rates are calculated can be found in the Definitions section.

Chronic Hepatitis B

Summary

- In 2019, there were 201 reported cases of chronic HBV.
- This represents a 26.1% decrease from the number of cases reported in 2018. This decrease is displayed in Figure 3.1 below.
- Over half of the cases reported in 2019 were among men.
- The majority of cases occurred in 20-39 year olds (39.8%); however, the rate of diagnosis was highest in 40-59 year olds at 5.4 diagnoses per 100,000.
- 52.7% of cases occurred in the Denver TGA.
- Non-Hispanic Asian/Hawaiian/Pacific Islanders made up approximately 15% of cases in 2019 while only accounting for an estimated 3.9% of Colorado's population in 2019.

Figure 3.1: Reported Chronic HBV Cases and Rate per 100,000, 2010-2019
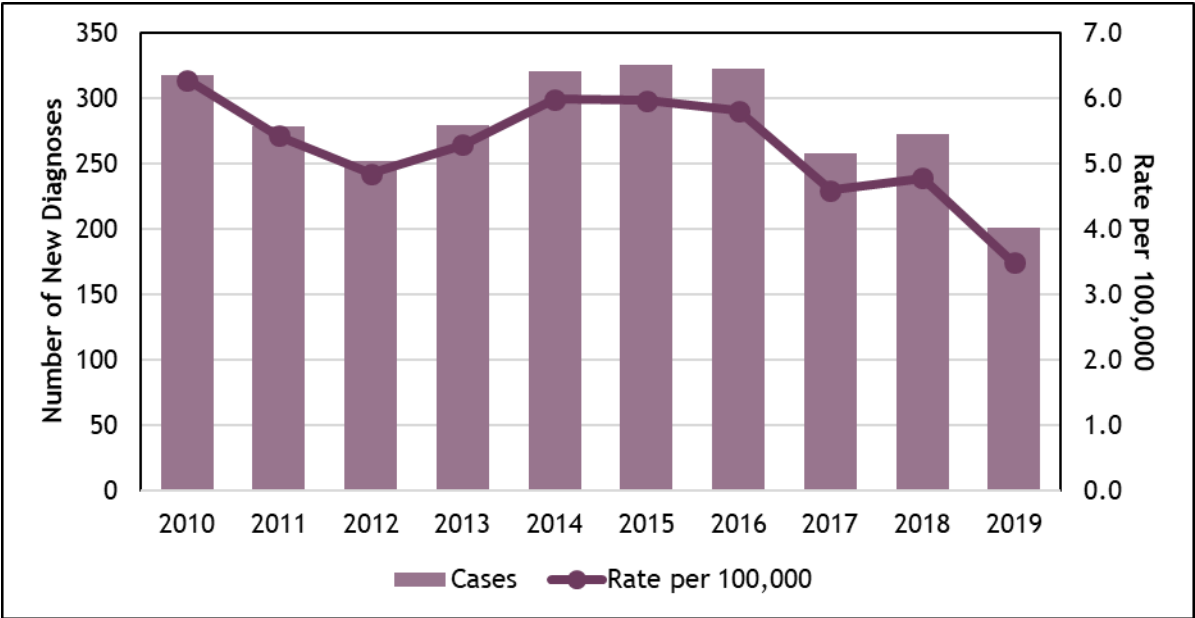
New Chronic HBV Diagnoses by Gender

Over the past ten years (2010-2019), men have consistently made up the majority of chronic HBV diagnoses. In 2019, 60.2% of cases were among men. The gap between men and women's rate of diagnosis has increased from 2017 to 2019. In 2019, men had a rate of diagnosis of 4.2 diagnoses per 100,000 compared to a rate of 2.7 diagnoses per 100,000 in women.
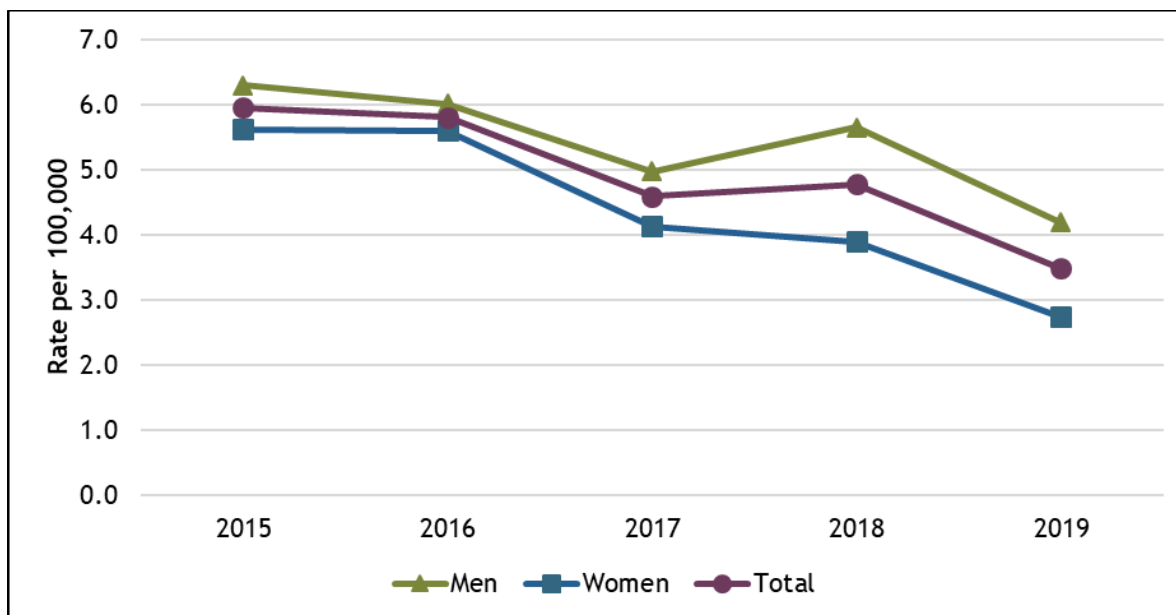
Other and unknown genders are not shown due to small counts and unreliable rates.

Gender identity is not known for all diagnoses. The gender displayed in this figure could be sex at birth or an individual's gender identity.

New Chronic HBV Diagnoses by Age

Rates of chronic HBV diagnosis amongst those aged 20-59 remain highest. People between the ages of 40-59 had the highest rate of cases (5.4 per 100,000).

There were 57 diagnoses in the 0-19 age group from 2015-2019. While the HBV vaccine has been a mandated childhood vaccination since 1997 in Colorado, 52.6% of the people in this age group from 2015-2019 were born outside of the United States. The number of cases among people under twenty highlights the importance of PHBPP to prevent possible perinatal transmission in families. Catch-up vaccination is important for those who were born before HBV vaccination became routine.

Figure 3.3: Rates per 100,000 of Chronic HBV by Age Group, 2015-2019
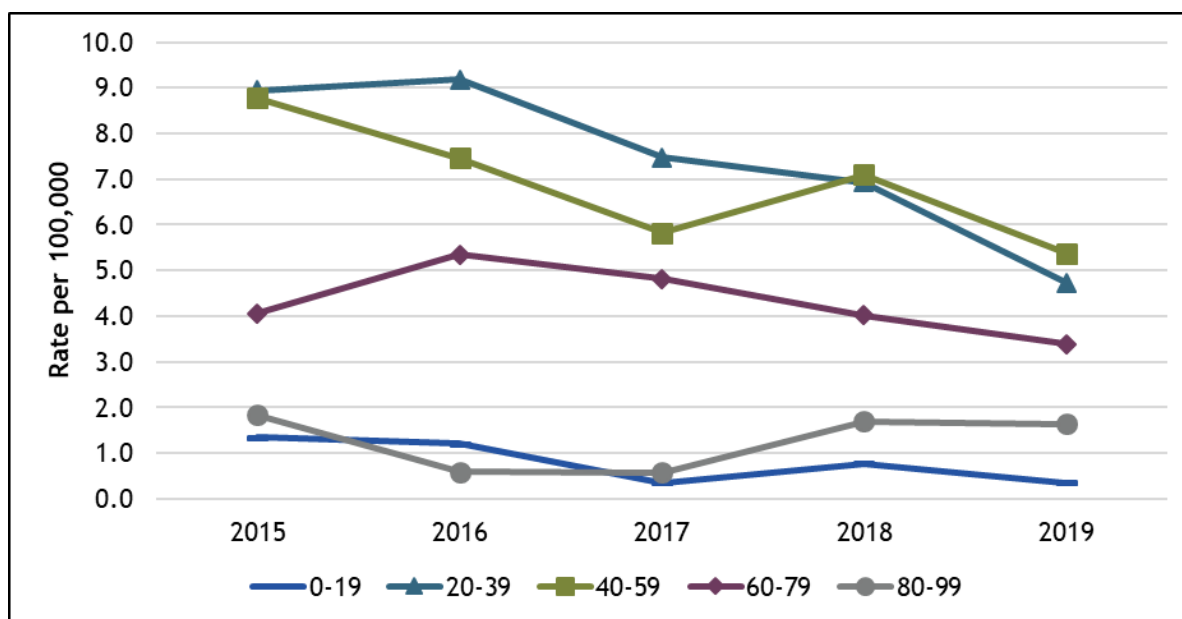
New Chronic HBV Diagnoses by Race/Ethnicity

Race/ethnicity data is not routinely reported for chronic HBV cases in Colorado, and 51.7% of reported cases 2019 were missing data. Non-Hispanic whites and non-Hispanic Asian/Hawaiian/Pacific Islanders each accounted for 14.9% of diagnoses, followed by non-Hispanic blacks accounting for 10.9% of cases.

While non-Hispanic Asian/Hawaiian/Pacific Islanders and non-Hispanic blacks represent over a quarter (25%) of diagnoses in 2019, they were estimated to only represent 3.9% and 4.2% of Colorado's population in 2019, respectively. Non-Hispanic Asian/Hawaiian/Pacific Islanders had a rate of diagnosis of 13.2 diagnoses per 100,000 and non-Hispanic blacks had a rate of 9.0 diagnoses per 100,000. Comparatively, the rate amongst non-Hispanic whites was 0.8 diagnoses per 100,000.

These trends are seen nationwide. Nationally, from 2015 to 2018, prevalence of HBV was highest among non-Hispanic Asians (20.5%) and non-Hispanic Blacks (10.8%).[19]

---

[19] CDC. Prevalence and Trends in Hepatitis B Virus Infection in the United States, 2015-2018. 2020. https://www.cdc.gov/nchs/products/databriefs/db361.htm#:~:text=The%20prevalence%20of%20any%20past%20or%20present%20 HBV%20infection%20during,Hispanic%20black%20adults%20(10.8%25).

Risk Factors and Mortality

Risk factor data is not routinely collected for chronic cases, but individuals born in countries where HBV is endemic are considered to be at greater risk than individuals born in the United States.[20]

Of those diagnosed with chronic HBV from 2015-2019, 47 were also diagnosed with chronic HCV during the same period. Nearly 75% of these individuals (n=35) were diagnosed with both chronic HBV and chronic HCV in the same year.

Of those diagnosed with chronic HBV from 2015-2019, 20 were living with HIV. In this group, 90% were male, and 65% were 40-59 years old at the time of their HBV diagnosis.

Of all reported chronic HBV cases since 2015, 4.1% had died as of December 31, 2019 of any cause. Of total deaths among cases of chronic HBV reported from 2015 to 2019, 71.4% occurred fewer than 2 years after their case was reported to CDPHE.

---

[20] Roberts H, Kruszon-Moran D, Ly KN, Hughes E, Iqbal K, Jiles RB, et al. Prevalence of chronic hepatitis B virus (HBV) infection in U.S. households: National Health and Nutrition Examination Survey (NHANES), 1988-2012. Hepatology. 2015 Aug 6;63(2):388–97.

Geographic Distribution

Chronic HBV diagnoses over the past five years (2015-2019) have been concentrated in Arapahoe (20.4%), Denver (17.2%), and El Paso (12.4%) counties. This trend was consistent in 2019. In 2019, nearly 20% of cases occurred in Arapahoe County. Arapahoe County was followed by El Paso (15.9%) and Denver (11.4%) counties.

Incarcerated individuals made up 8.5% of reported cases in 2019 and do not appear in Figure 3.4.

Figure 3.4: New Chronic HBV Diagnosis Rate per 100,000 Population by County of Residence at the Time of Diagnosis – Colorado (2019)

Data Source: Case data from CDPHE's VH Surveillance Program. Population data from the State Demography Office.

In 2019, rates were highest in Custer, Rio Blanco, and Alamosa counties. Due to smaller populations in these counties, higher rates do not necessarily indicate high case counts. Full case counts by county as well as rates can be found in Table 3.3 in the Appendix. An explanation of how rates are calculated can be found in the Definitions section of this report.

Acute Hepatitis C

Summary

- In 2019, there were 53 cases of acute HCV.
- This represents a 32.5% increase from 2015.
- The CDC estimates that acute HCV cases are underreported by a factor of 13.9. With this estimation, there were likely closer to 737 incident cases in 2019.[21]
- 52.8% of cases in 2019 occurred in the Denver TGA.
- The majority of cases in 2019 were among people that were 20-39 years old (62.3%).
- Non-Hispanic whites accounted for 54.7% of cases in 2019, followed by Hispanics of all races accounting for 24.5% of cases.
- From 2015-2019, the primary risk factor reported amongst acute HCV cases was injection drug use.

Figure 4.1: Reported Acute HCV Cases and Rate per 100,000, 2010-2019
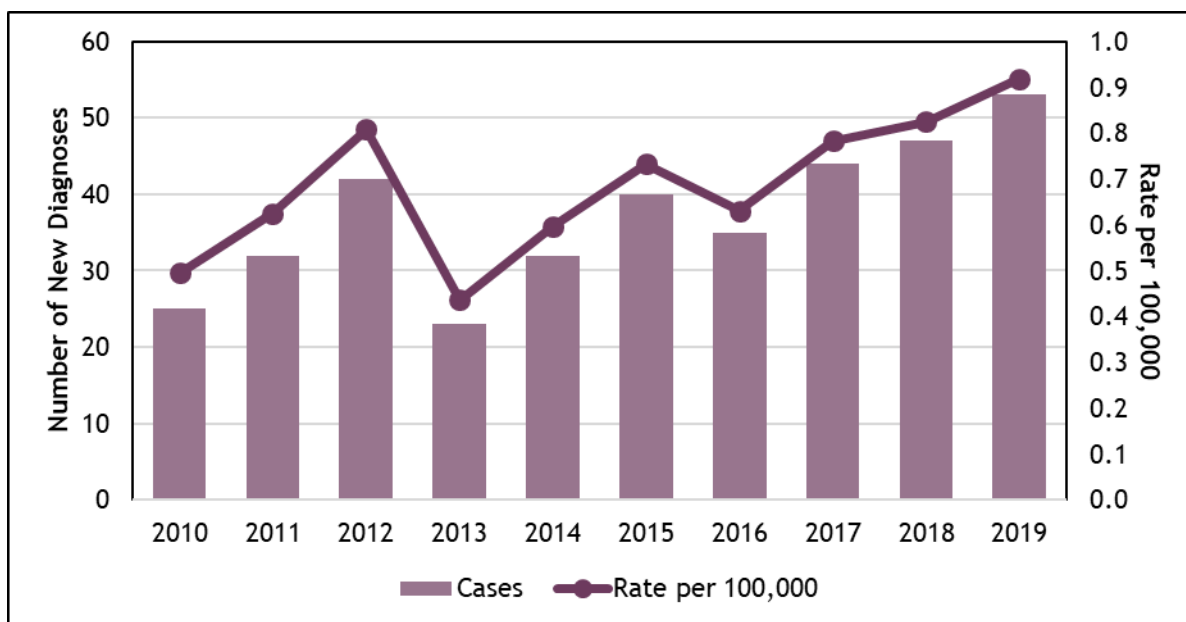
New Acute HCV Diagnoses by Gender

Beginning in 2015, rates of diagnosis in men have remained higher than rates in women. In 2015, rates among men were approximately 50% higher than women. In 2019, the rate among men was 132% higher than women. Rates among men have been steadily increasing since 2016.

---

[21] CDC. Surveillance for Viral Hepatitis - United States. 2017.

**Figure 4.2: Rate per 100,000 of Acute HCV Cases by Gender, 2015-2019**
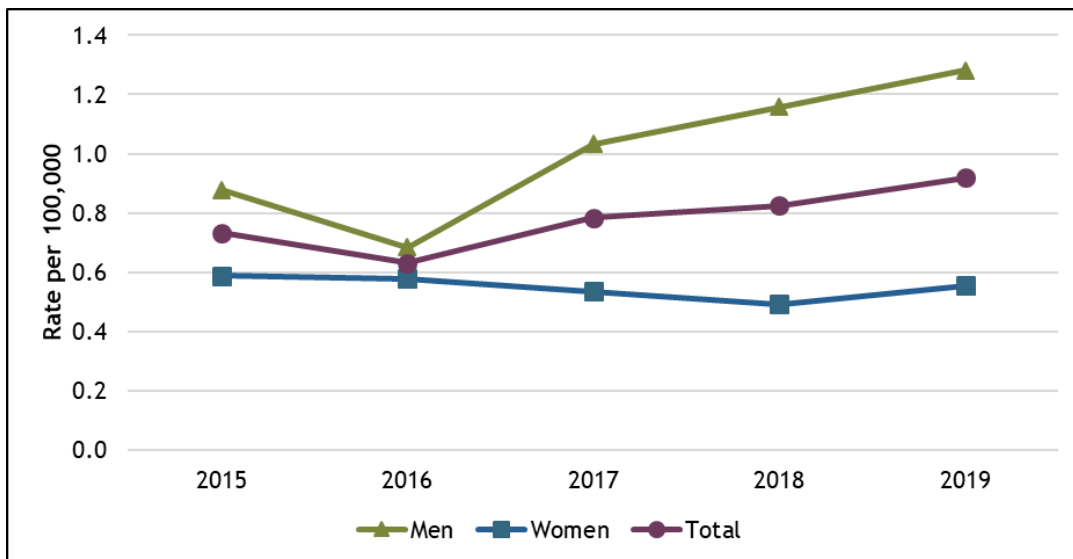
Other and unknown genders are not shown due to small counts and unreliable rates.

Gender identity is not known for all diagnoses. The gender displayed in this figure could be sex at birth or an individual's gender identity.

New Acute HCV Diagnoses by Age

People between the ages of 20-39 have made up over 50% of acute HCV diagnoses since 2010. An increase of diagnosis within those aged 40-59 years old occurred in 2019, doubling their rate of diagnosis from 2018 to 2019. This increase in rate amongst this age group can be seen in **Figure 4.3**.

Figure 4.3: Rates per 100,000 of Acute HCV by Age Group, 2015-2019
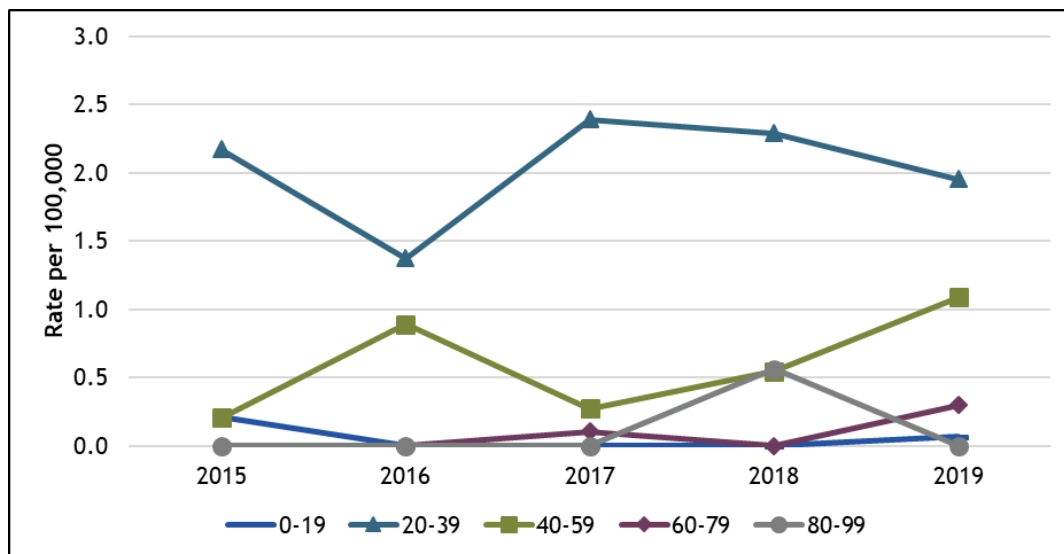
New Acute HCV Diagnoses by Race/Ethnicity

Race and ethnicity data were available for 88.7% of cases in 2019. The majority of diagnoses were non-Hispanic whites (54.7%). From 2015-2019, non-Hispanic whites have accounted for approximately 50% of cases each year. Hispanics of all races represented nearly a quarter of all cases in 2019.

Risk Factors and Mortality

Injection drug use was identified as a risk factor for 41.5% of cases in 2019. Nationally, the opioid epidemic is driving an increase in acute HCV incidence[22], and injection drug use was the most commonly reported risk factor in 2019. Nearly a quarter of acute HCV diagnoses in 2019 were among people experiencing homelessness.

Figure 4.4: Reported Risk Factors Among New Acute HCV Diagnoses, 2019 Compared to 2015-2019
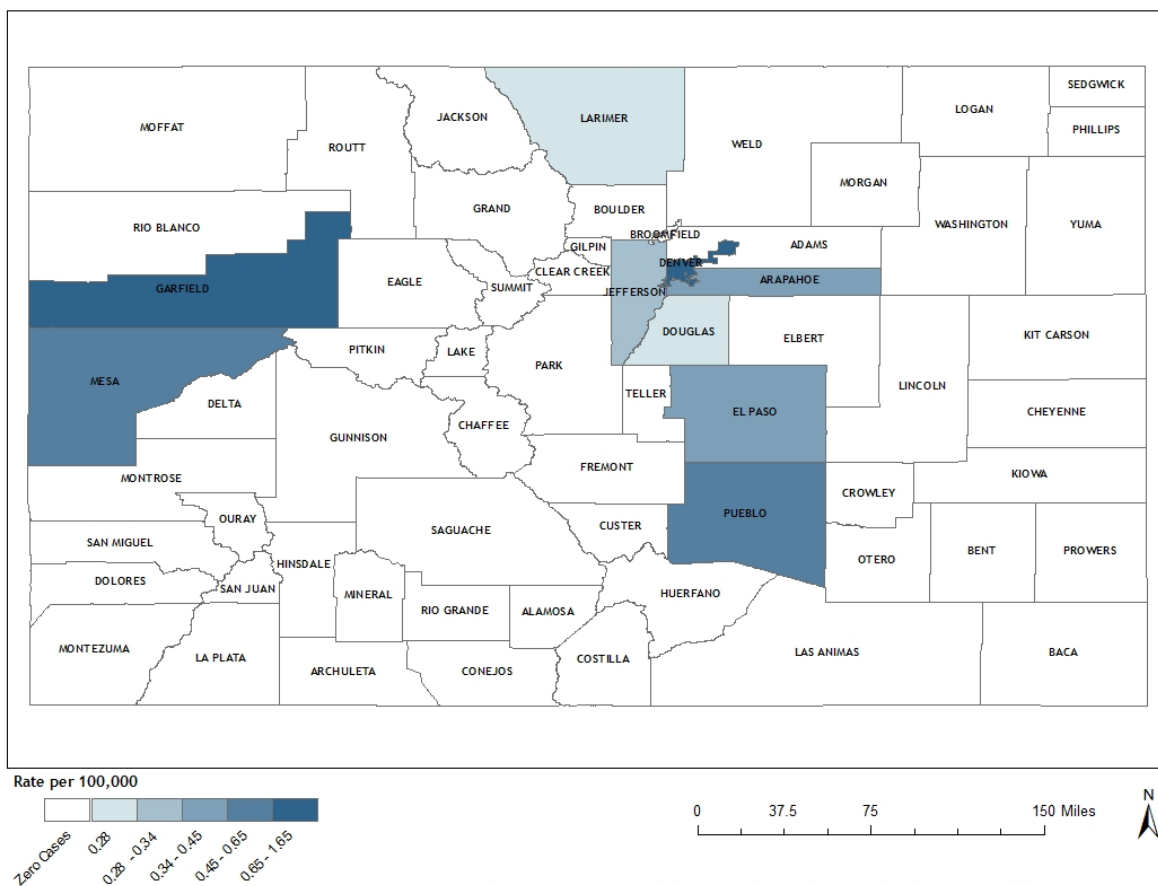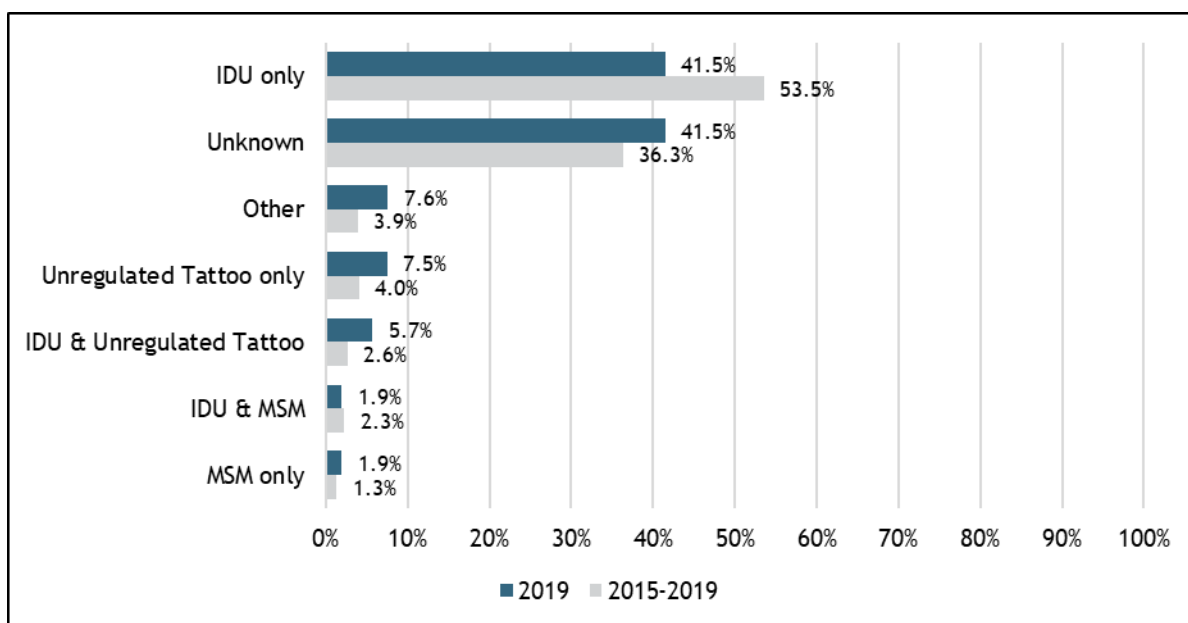

Of all reported acute HCV cases since 2015, 5.9% had died as of December 31, 2019 of any cause. Of total deaths among cases of acute HCV reported from 2015-2019, 84.6% occurred fewer than 2 years after their case was reported to CDPHE.

---

[22] CDC. Surveillance for Viral Hepatitis - United States. 2018.

Geographic Distribution

The majority of acute HCV diagnoses over the past five years (2015-2019) have occurred in Denver (26.9%), El Paso (11.4%), and Pueblo (7.3%) counties. During the same time period, 7.8% of cases were diagnosed in federal or state prisons.

In 2019, 52.8% of diagnoses occurred in the Denver TGA. El Paso county accounted for 17.0% of cases followed by Pueblo county accounting for 5.7% of cases. Diagnoses that occurred in federal or state prisons made up 13.2% of cases.

Figure 4.5: New Acute HCV Diagnosis Rate per 100,000 Population by County of Residence at the Time of Diagnosis – Colorado (2019)

Data Source: Case data from CDPHE's VH Surveillance Program. Population data from the State Demography Office.
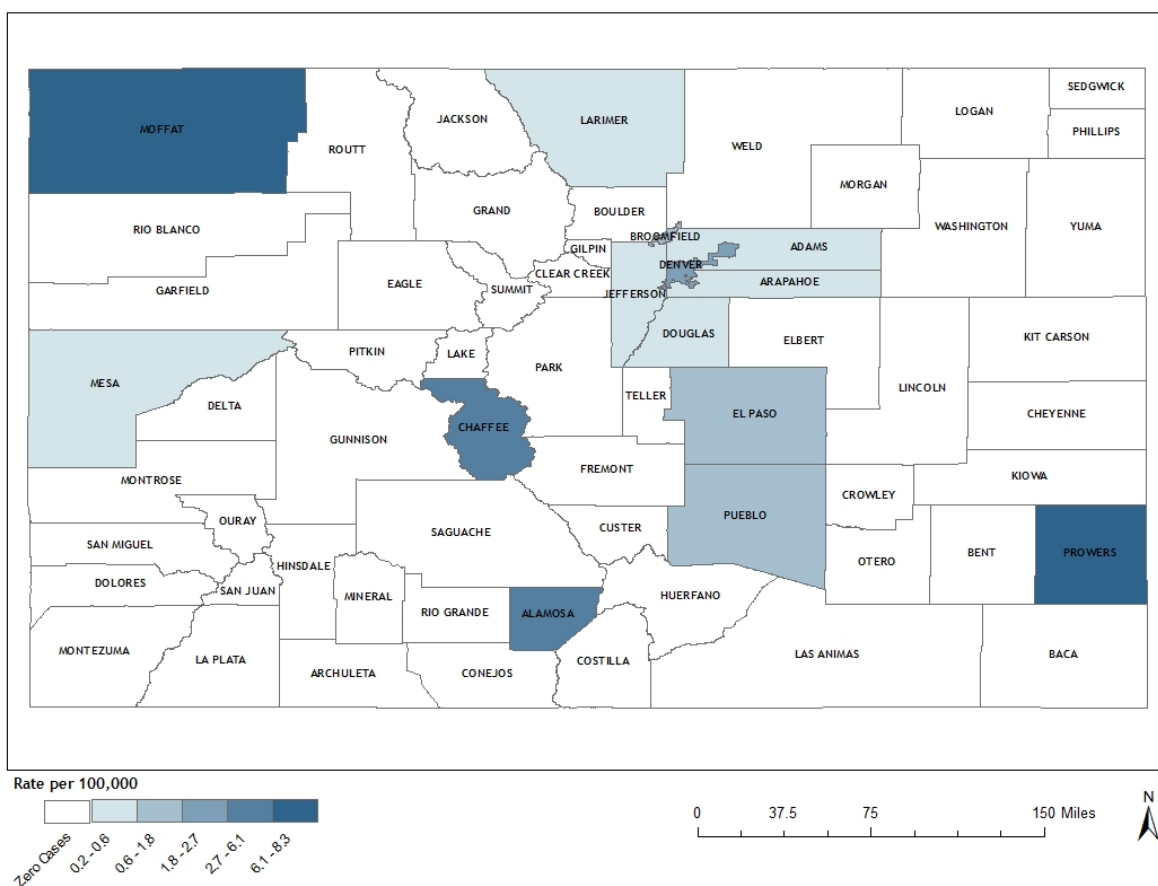
Rates were highest in Prowers and Moffat counties in 2019. However, due to small populations in these counties rates should be interpreted with caution. Total case counts and rates by county can be found in Table 4.3 in the Appendix. An explanation of how rates are calculated can be found in the Definitions section.

Chronic Hepatitis C

Summary

- In 2019, there were 2,642 cases of chronic HCV.

- 70.8% of diagnoses in 2019 were among men and 33.5% of cases occurred in the Denver TGA.

- For the first time in 2018, 20-39 year olds surpassed the "Baby Boomer" generation in diagnoses and rate of diagnosis of chronic HCV. In 2019, 20-39 year olds made up 44.5% of diagnoses.

- Due to large increases of incident cases among 15 to 44 year olds, the prevalence of chronic HCV is projected to rise in this age group, indicating a shift in the demographics of people living with HCV in Colorado.[23]

- Diagnoses in federal or state prisons from 2015-2019 accounted for more diagnoses than any single county (18.0%).

- In 2018, a settlement was reached between the CDOC and the ACLU committing the CDOC to spend 41 million dollars spread over two fiscal years towards the treatment of incarcerated individuals living with chronic HCV. In the 2019 fiscal year (July 2018 - June 2019), 648 had finished treatment and had a sustained virologic response.

- The case definition change, described in the Background Section, may have played a role in the drop in reported cases after 2015.

Figure 5.1: Reported Chronic HCV Cases and Rate per 100,000, 2010-2019

---
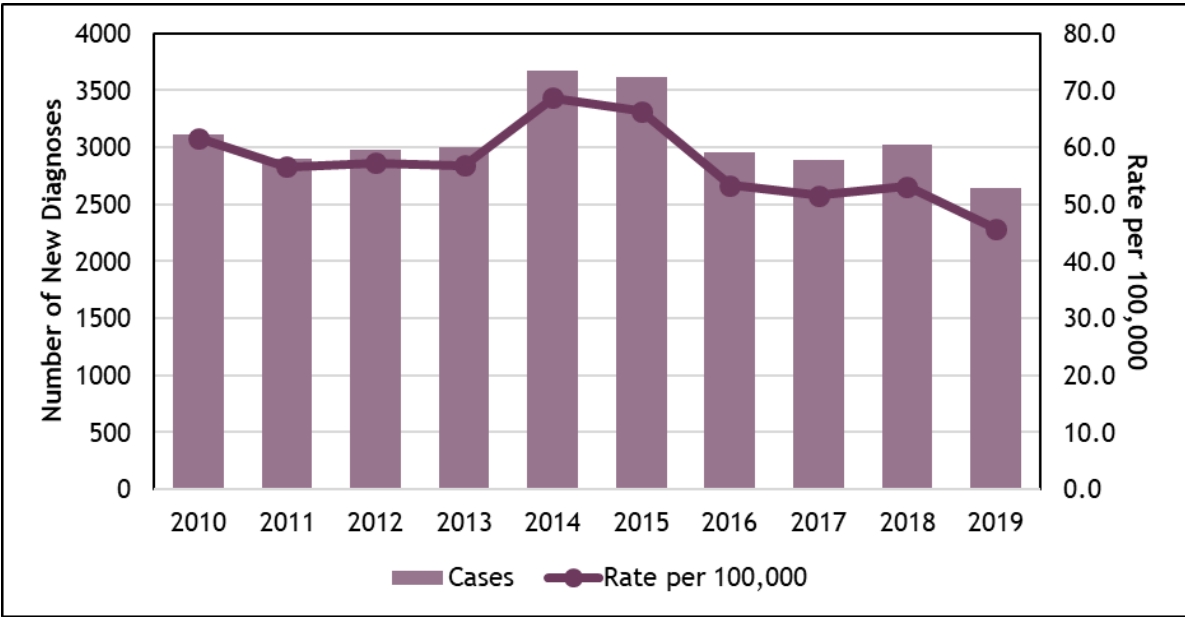
[23] CDPHE. Colorado Prevalence and Incidence of Hepatitis C Virus Infection: A Modeling Study (2018 update). Denver, CO; 2018.

New Chronic HCV Diagnoses by Gender

The rate of cases among men in 2019 was 64.7 per 100,000 and 26.6 per 100,000 among women. The gender gap has been consistent over the past ten years, with men accounting for at least 60% of cases annually. As explained in the Priority Populations section of this report, IDU is more associated with men than women.[24] Therefore, it is likely that this trend will continue into future years.

Figure 5.2: Rate per 100,000 of Chronic HCV Cases by Gender, 2015-2019
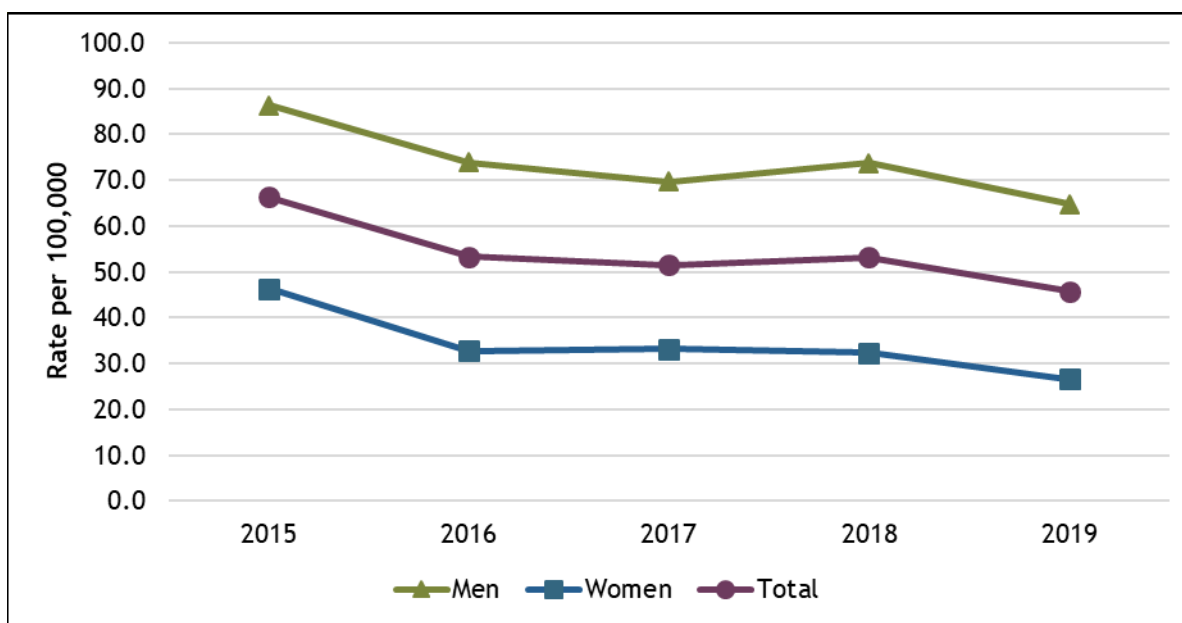
Other and unknown genders are not shown due to small counts and unreliable rates.

Gender identity is not known for all diagnoses. The gender displayed in this figure could be sex at birth or an individual's gender identity.

New Chronic HCV Diagnoses by Age

People between the ages of 20-39 had the highest rate of cases (80.3 per 100,000) for the first time in 2018, and this trend continued into 2019. In 2019, those aged 20-39 years old had the highest rate of diagnosis amongst age groups, with a rate of 69.6 per 100,000. In comparison, 40-59 year olds had a rate of 62.2 per 100,000 and 60-79 year olds had a rate of 52.8 per 100,000.

This shift of the primary age group affected by chronic HCV is significant because people in the 20-39 age group have been most affected by the opioid crisis nationally.[25]

---

[24] NIH. Sex and Gender Differences in Substance Use. 2020. https://www.drugabuse.gov/publications/research-reports/substance-use-in-women/sex-gender-differences-in-substance-use

[25] CDC. Surveillance for Viral Hepatitis - United States. 2018.

Figure 5.3: Rates per 100,000 of Chronic HCV by Age Group, 2015-2019
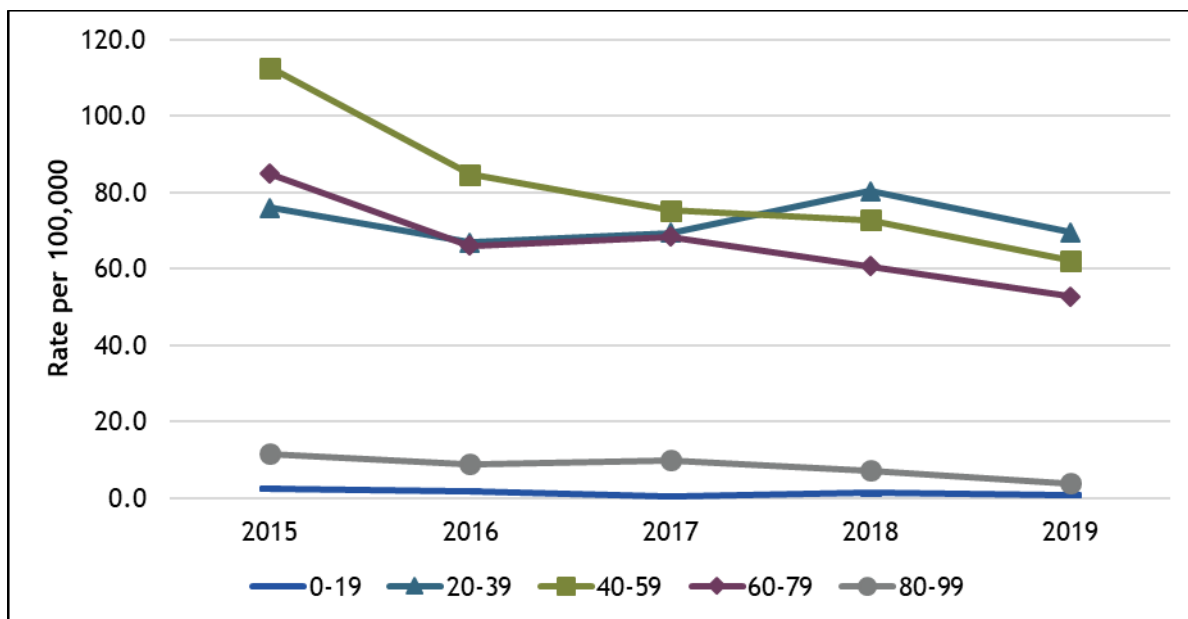
New Chronic HCV Diagnoses by Race/Ethnicity

Race/ethnicity data is not routinely reported for chronic HCV cases in Colorado, and 70.2% of reported cases 2019 were missing data. Due to high proportions of missing data, race/ethnicity data for chronic HCV are not included in this report.

Risk Factors and Mortality

Risk factor data is not routinely collected for chronic cases, but the rising rate of cases among 20-39 year olds in Colorado and nationally mirrors national trends related to the opioid crisis.[26]

People experiencing homelessness at the time of reporting made up 7.8% (n = 207) of cases in 2019.

From 2015-2019, 125 of those diagnosed with chronic HCV were also living with/diagnosed with HIV. Of this group, 39.2% (n=49) were diagnosed with HIV and chronic HCV in the same year. Those diagnosed with HIV and chronic HCV were primarily 20-39 years old (65.3%) and the primary reported risk factors for their HIV diagnosis were being a man who has sex with men (36.7%) and injection drug use (28.5%).

Of all reported cases of chronic HCV cases since 2015, 6.5% had died as of December 31, 2019 of any cause. Of total deaths among cases of chronic HCV reported from 2015 to 2019, 66.8% occurred fewer than 2 years after their case was reported to CDPHE.

---

[26] CDC. Surveillance for Viral Hepatitis - United States. 2018.

Geographic Distribution

Cases among incarcerated individuals represented 18.0% of all reported cases from 2015-2019, which was higher than the proportion of any individual county. In 2019, approximately a quarter of diagnoses occurred among incarcerated individuals. This percentage was followed by Denver County, which made up 15.1% of diagnoses in 2019.

Rates of diagnosis for chronic HCV are highest in rural counties. Bent, San Juan, Huerfano, Costilla, and Las Animas counties all had a rate of diagnosis over 100 diagnoses per 100,000 population in 2019. For comparison, the rate of diagnosis in Denver in 2019 was 54.6 diagnoses per 100,000. Case counts by county, as well as rates, can be found in Table 5.3 in the Appendix.

Figure 5.5: New Chronic HCV Diagnosis Rate per 100,000 Population by County of Residence at the Time of Diagnosis – Colorado (2019)

Data Source: Case data from CDPHE's VH Surveillance Program. Population data from the State Demography Office.
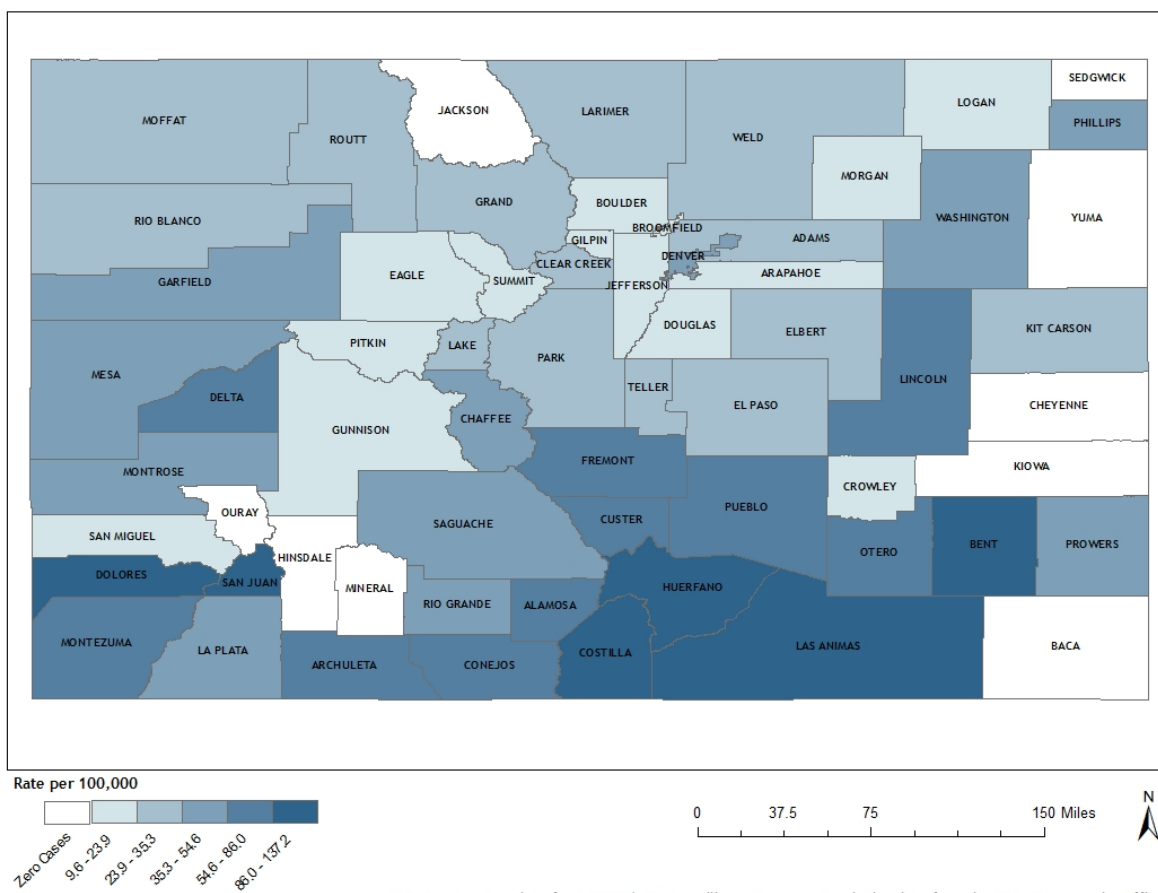
While rates were high in Bent, San Juan, Huerfano, Costilla, and Las Animas counties in 2019, due to small populations in these counties rates should be interpreted with caution. An explanation of how rates are calculated can be found in the Definitions section.

Perinatal Hepatitis B and C

There were zero perinatal HBV cases reported in Colorado in 2019. Over the past ten years (2010-2019), there were four cases of perinatal HBV.

CDPHE had 134 pregnant people enrolled in the PHBPP with an estimated due date (EDD) in 2019. This number is not inclusive of all pregnant people that were enrolled in the PHBPP in 2019. Of the 134 people enrolled in PHBPP, 63 pregnant people had never been enrolled in the program, and 71 had previously been enrolled in the program but had a new pregnancy with an EDD in 2019. CDC, Advisory Committee on Immunizations Practices (ACIP), and the U.S. Preventive Services Taskforce recommend that all people are screened for HBV during pregnancy.

Colorado birth certificate data for 2019 shows that of 63,525 total births, 61,074 pregnant people had known screening status (96.1%). This is down from 96.8% in 2018. Colorado had a hepatitis B birth dose vaccination rate of 84% in 2019, which is up from 82% in 2018.

Perinatal HCV became reportable in 2018. In Colorado, there were two perinatal HCV cases reported in 2018 and one reported in 2019, and all had confirmatory test results.

Coinfections and Liver Cancer

In 2019, 14 cases were reported to have more than one type of viral hepatitis.

There were 47 cases of individuals diagnosed with both HBV and HCV from 2015 to 2019. Living with HBV and HCV is associated with faster progression of disease as well as higher rates of hepatocellular carcinoma (HCC) development. Managing patients who are living with both hepatitis B and C presents unique challenges. In some cases, treatment with direct-acting antivirals (DAAs) for HCV may result in reactivation of previously suppressed HBV infection.[27]

From 2010 to 2019, there were 1,543 cases of liver cancer diagnosed in Colorado among previously reported HCV cases, and 113 among previously reported HBV cases. The average time from disease reporting to liver cancer diagnosis was 9.6 years among reported HCV cases, and 9.5 years among reported HBV cases, illustrating the need to connect more people to treatment in the course of their illness.

---

[27] Mavilia MG, Wu GY. HBV-HCV Coinfection: Viral Interactions, Management, and Viral Reactivation. J Clin Transl Hepatol. 2018/07/06. 2018 Sep 28;6(3):296–305.

Priority Populations

People Experiencing Homelessness

PEH are disproportionately affected by hepatitis A and C and make up high proportions of reported cases for these diseases in Colorado. In 2019, PEH made up over half of the 332 cases of HAV (53.9%). The primary risk factor among these cases was injection drug use (47.0%).

In the past five years, PEH made up 13.6% (n = 29) of acute HCV cases, and 6.6% (n = 999) of chronic HCV cases in Colorado. The majority of these cases were among young people aged 20-39 years old.

According to the 2019 Annual Homeless Assessment Report to Congress, there were an estimated 9,619 PEH in Colorado, 2,106 of whom were chronically homeless.[28] Prevalence estimates of HCV RNA, indicative of a current case of HCV, among PEH range from 10.8% to 31.2%.[29] Using these estimates of the homeless population and HCV prevalence, there were an estimated 1,038 to 3,001 PEH in Colorado living with chronic hepatitis C in 2019. However, depending on the proportion of PEH who inject drugs, the estimated HCV prevalence could well be higher. The estimates of the number of PEH may also be an underestimate.

Whether or not a person is experiencing homelessness at the time of reporting is based on address reporting, case notes, and/or case interviews. This methodology likely results in underestimates, especially for reported chronic HCV cases, since routine follow-up of chronic HCV cases is not conducted. No address was reported for 11% (n = 1,672) of reported chronic HCV cases from 2015-2019. PEH may report the permanent address of a friend or family member in medical records.

Outreach organizations, homeless shelters, and existing syringe services programs work to connect PEH and other marginalized populations to testing and care. The effectiveness of the efforts of these organizations to test individuals for viral hepatitis may contribute to the high numbers of reported cases among PEH. However, the data also mirror national trends in the increasing burden of disease among this population compared to other groups such as people born between 1945 and 1965 (often referred to as "Baby Boomers").[30]

---

[28] HUD. The 2019 Annual Homeless Assessment Report to Congress. Washington, D.C.; 2019.

[29] Hofmeister MG, Rosenthal EM, Barker LK, Rosenberg ES, Barranco MA, Hall EW, et al. Estimating Prevalence of Hepatitis C Virus Infection in the United States, 2013-2016. Hepatology. 2019 Mar 1;69(3):1020–31.

[30] CDC. Surveillance for Viral Hepatitis - United States. 2018.

People who are Incarcerated

The CDOC offers HCV testing to inmates upon intake into a prison. The CDOC planned to treat at least 2,200 inmates currently in prisons and began to scale up treatment in 2018. Since 2015, there have been 2,730 chronic HCV cases reported to CDPHE from prisons. The National Health and Nutrition Examination Survey (NHANES) study cites an HCV RNA prevalence of 10.7% among incarcerated individuals from 2013 to 2016. [31]

In 2018, a settlement was finalized between the American Civil Liberties Union (ACLU) and CDOC where CDOC agreed to spend $41 million over two years to treat prisoners living with HCV. [32] In the 2019 fiscal year (July 2018 - June 2019), 648 offenders had completed treatment and had a sustained virologic response. For the 2020 fiscal year, the Colorado Department of Corrections has a goal of treating approximately 1,000 offenders.

People who Inject Drugs

In the 2019 Colorado Behavioral Risk Factor Surveillance System (BRFSS), 1.7% of those interviewed indicated that they had used a needle to inject a drug not prescribed by a doctor at least once. [33] Of that group, 5.8% had injected drugs recently, within the past 30 days of when the interview was conducted. [34] Explanation of the BRFSS can be found in the Definitions section of this report. Applying these percentages to Colorado's adult population in 2019, an estimated 75,231 Coloradans over 18 years old had ever injected drugs not prescribed by a doctor and 4,363 had done so recently.

IDU was reported as a risk factor for 47.0% of HAV diagnoses, 36.4% of acute HBV diagnoses, and 41.5% of acute HCV diagnoses in 2019. In the past five years, approximately 14% of HAV diagnoses, 25% of acute HBV diagnoses, and 54% of acute HCV diagnoses were attributed to IDU.

The increasing diagnoses of chronic HCV in young people mirrors the trends of the opioid epidemic in Colorado. In 2019, 25 to 34 year olds made up 25.3% of all fatal drug overdoses. The average drug

[31] Hofmeister MG, Rosenthal EM, Barker LK, Rosenberg ES, Barranco MA, Hall EW, et al. Estimating Prevalence of Hepatitis C Virus Infection in the United States, 2013-2016. Hepatology. 2019 Mar 1;69(3):1020-31.

[32] ACLU of Colorado. ACLU and Colorado Department of Corrections Reach Historic Settlement to Treat All Colorado Prisoners with Hepatitis C. 2018. https://aclu-co.org/aclu-and-colorado-department-of-corrections-reach-historic-settlement-to-treat-all-colorado-prisoners-with-hepatitis-c/

[33] 2019 Colorado Behavioral Risk Factor Surveillance System (BRFSS), Colorado Department of Public Health and Environment. https://drive.google.com/file/d/1uimVB49TVrtS1n1eldupJCHBlwTj4Wo9/view

[34] 2019 Colorado Behavioral Risk Factor Surveillance System (BRFSS), Colorado Department of Public Health and Environment. https://drive.google.com/file/d/1uimVB49TVrtS1n1eldupJCHBlwTj4Wo9/view

overdose rate in this age group in 2019 was 30.6 drug overdose deaths per 100,000. For comparison, the average drug overdose rate for all age groups was 18.4 per 100,000.[35]

Differences in gender for chronic HCV diagnosis and the opioid epidemic are also similar. For the past ten years, men have accounted for at least 60% of chronic HCV diagnoses annually. In 2019, the rate of cases among men was 64.7 per 100,000 and 26.6 per 100,000 among women. These trends may be able to be explained by patterns in drug use. Men, on average, are more likely than women to use drugs.[36] Additionally, men are more likely than women to inject drugs like heroin.[37] In 2019, men made up 62.6% of drug overdose deaths in Colorado.

Those that are currently injecting drugs are at risk for hepatitis. Prevention and treatment targeted at people who inject drugs (PWID) can help prevent the transmission of viral hepatitis and link more people at risk to screening and care.

Strategies to Reduce the Disease Burden of Viral Hepatitis

Both public health and clinical strategies are needed to stop the spread of viral hepatitis and limit the impact on people who are living with viral hepatitis. Public health must work with communities and health care providers to identify new cases and stop transmission. Hepatitis A and B have safe and effective vaccines while screening, education, and treatment are the primary tools available to prevent new HCV diagnoses and treat current chronic cases.

Syringe services programs provide numerous benefits to priority populations, which include access to unused, sterile injection equipment, engagement with public health workers, and wound care. Harm reduction strategies, if implemented according to the needs of the local community, can help prevent the transmission of viral hepatitis and link more people to screening and care.

People living with chronic HBV and/or chronic HCV can benefit from additional medical management and evaluation for treatment. These patients also need counseling and education related to their diagnosis. The U.S. Action Plan for Prevention, Care, and Treatment of Viral Hepatitis calls for

---

[35] Opioid Overdose Prevention Program, Colorado Department of Public Health and Environment. Drug Overdose Dashboard. Accessed 11/2020. https://cohealthviz.dphe.state.co.us/t/PSDVIP-MHPPUBLIC/views/DrugOverdoseDashboard/LandingPage?:showAppBanner=false&:display_count=n&:showVizHome=n&:origin=viz_share_link

[36] NIH. Sex and Gender Differences in Substance Use. 2020. https://www.drugabuse.gov/publications/research-reports/substance-use-in-women/sex-gender-differences-in-substance-use

[37] NIH. Sex and Gender Differences in Substance Use. 2020. https://www.drugabuse.gov/publications/research-reports/substance-use-in-women/sex-gender-differences-in-substance-use

improving linkage to care. Providing treatment for viral hepatitis can prevent complications of the disease including fibrosis, cirrhosis and HCC. While there are effective treatments now available to cure HCV, current treatment can only suppress HBV. However, viral suppression among people living with HBV can decrease the likelihood of transmission.

The treatment landscape for HCV has changed dramatically in recent years. More than 10 different DAAs have become available since their initial release in 2014. Before 2014, treatment for HCV was interferon-based, administered through weekly injections. The efficacy was low; interferon treatments alone had a sustained virologic response (SVR) rate of 20%. While combining interferon treatments with ribavirin, an antiviral used to treat many diseases since the 1970s, increased SVR rates to 54-63%, side effects were so severe that 20% of patients were forced to discontinue treatment. Now, the SVR rate of the ten DAAs on the market is over 90%, side effects are mild, and treatments are all oral. Four of the treatments are pan-genotypic, meaning they are effective in treating HCV genotypes 1 through 6.

A 2015 U.S. Senate report concluded that HCV drug spending in 2014 exceeded $12 billion, or more than a third of the amount spent that year on new pharmaceutical treatments for all diseases. Due to high treatment costs and the number of people living with HCV, insurers have historically placed restrictions on eligibility criteria for treatment. Following a lawsuit in Colorado, Medicaid providers have eliminated fibrosis restrictions for treatment of HCV, granting access to treatment for individuals before they reach advanced disease stages. This change was implemented January 1, 2018.

To effectively reduce morbidity and mortality related to viral hepatitis in Colorado, the state needs cross-cutting strategies, including expanding harm reduction policies, public education, increasing screening and confirmatory testing (specifically for HCV), expanding professional education (including HCV treatment in primary care settings), and providing HCV treatment to more Coloradans. Screening for HBV among pregnant people and people born in endemic countries should be increased. Finally, HAV and/or HBV vaccines should be offered to all populations and should be part of routine care.

Data Tables

Table 1.1: Reported hepatitis A cases and rate per 100,000, 2010-2019

Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cases	36	21	29	50	23	24	23	64	31	332
Rate	0.7	0.4	0.6	0.9	0.4	0.4	0.4	1.1	0.5	5.8

2010-2019 population estimates from the Colorado State Demography Office

Table 1.2: Demographics of new hepatitis A cases, 2015-2019

	2015		2016		2017		2018		2019	
	N	%	N	%	N	%	N	%	N	%
Total	24	100.0%	23	100.0%	64	100.0%	31	100.0%	332	100.0%
Gender*										
Men	11	45.8%	11	47.8%	45	70.3%	21	67.7%	232	69.9%
Women	13	54.2%	12	52.2%	18	28.1%	10	32.3%	99	29.8%
Transgender Women	0	0.0%	0	0.0%	1	1.6%	0	0.0%	0	0.0%
Transgender Men	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.3%
Age Group										
0-19	1	4.2%	0	0.0%	2	3.1%	1	3.2%	3	0.9%
20-39	7	29.2%	12	52.2%	27	42.2%	16	51.6%	156	47.0%
40-59	7	29.2%	6	26.1%	25	39.1%	7	22.6%	144	43.4%
60-79	8	33.3%	2	8.7%	9	14.1%	6	19.4%	28	8.4%
80-99	1	4.2%	3	13.0%	1	1.6%	1	3.2%	1	0.3%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Race/Ethnicity										
White, Non-Hispanic	16	66.7%	17	73.9%	38	59.4%	17	54.8%	176	53.0%
Black, Non-Hispanic	0	0.0%	0	0.0%	1	1.6%	0	0.0%	18	5.4%

Hispanic, all races	4	16.7%	3	13.0%	8	12.5%	4	12.9%	37	11.1%
Asian/Hawaiian/Pacific Islander, Non-Hispanic	2	8.3%	1	4.3%	1	1.6%	0	0.0%	4	1.2%
Native American/Alaska Native, Non-Hispanic	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.6%
Multi Race, Non-Hispanic	2	8.3%	0	0.0%	1	1.6%	0	0.0%	4	1.2%
Unknown	0	0.0%	2	8.7%	15	23.4%	10	32.3%	91	27.4%
County Class**										
TGA	9	37.5%	6	26.1%	31	48.4%	14	45.2%	151	45.5%
Homeless	0	0.0%	0	0.0%	0	0.0%	1	3.2%	83	25.0%
Urban, non-TGA	8	33.3%	11	47.8%	28	43.8%	16	51.6%	151	45.5%
Homeless	0	0.0%	0	0.0%	0	0.0%	5	16.1%	85	25.6%
Rural	7	29.2%	6	26.1%	4	6.3%	1	3.2%	27	8.1%
Homeless	0	0.0%	0	0.0%	1	1.6%	0	0.0%	11	3.3%
Prison	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	0.9%
Unknown	0	0.0%	0	0.0%	1	1.6%	0	0.0%	0	0.0%

*Gender identity is not known for all diagnoses. The gender displayed in this table could be sex at birth or an individual's gender identity.
** Percentages for county class will not add to 100% as homeless cases are counted in overall county class cases.
TGA counties include: Adams, Arapahoe, Broomfield, Denver, Douglas, and Jefferson.
Urban, non-TGA counties include: El Paso, Larimer, Mesa, Pueblo, Weld, and Boulder.

Table 1.3: New hepatitis A cases and rate per 100,000 by county, 2015-2019

	2015		2016		2017		2018		2019		2015-2019		
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	%
Total	24	0.4	23	0.4	64	1.1	31	0.5	332	5.8	474	1.7	100.0%
Adams	1	0.2	2	0.4	9	1.8	3	0.6	16	3.1	31	1.2	6.5%
Alamosa	1	6.3	0	0.0	0	0.0	0	0.0	0	0.0	1	1.2	0.2%
Arapahoe	1	0.2	1	0.2	5	0.8	4	0.6	19	2.9	30	0.9	6.3%
Archuleta	1	8.1	0	0.0	0	0.0	0	0.0	0	0.0	1	1.5	0.2%
Baca	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%

Bent	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Boulder	1	0.3	2	0.6	4	1.2	2	0.6	11	3.3	20	1.2	4.2%
Broomfield	1	1.5	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3	0.2%
Chaffee	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Cheyenne	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Clear Creek	0	0.0	0	0.0	0	0.0	0	0.0	1	10.3	1	2.1	0.2%
Conejos	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Costilla	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Crowley	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Custer	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Delta	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Denver	2	0.3	0	0.0	12	1.7	5	0.7	92	12.6	111	3.1	23.4%
Dolores	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Douglas	2	0.6	2	0.6	3	0.9	0	0.0	7	2.0	14	0.8	3.0%
Eagle	1	1.9	1	1.8	1	1.8	1	1.8	3	5.4	7	2.6	1.5%
El Paso	2	0.3	2	0.3	12	1.7	10	1.4	127	17.5	153	4.4	32.3%
Elbert	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Fremont	0	0.0	0	0.0	0	0.0	0	0.0	14	29.3	14	5.9	3.0%
Garfield	0	0.0	0	0.0	1	1.7	0	0.0	0	0.0	1	0.3	0.2%
Gilpin	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Grand	0	0.0	1	6.6	0	0.0	0	0.0	0	0.0	1	1.3	0.2%
Gunnison	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Hinsdale	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Huerfano	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Jackson	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Jefferson	2	0.4	1	0.2	2	0.3	2	0.3	17	2.9	24	0.8	5.1%
Kiowa	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%

Kit Carson	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
La Plata	1	1.8	0	0.0	0	0.0	0	0.0	1	1.7	2	0.7	0.4%
Lake	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Larimer	3	0.9	0	0.0	3	0.9	1	0.3	1	0.3	8	0.5	1.7%
Las Animas	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Lincoln	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Logan	0	0.0	1	4.6	0	0.0	0	0.0	0	0.0	1	0.9	0.2%
Mesa	0	0.0	2	1.3	1	0.7	0	0.0	1	0.6	4	0.5	0.8%
Mineral	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Moffat	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Montezuma	0	0.0	0	0.0	0	0.0	0	0.0	1	3.8	1	0.8	0.2%
Montrose	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Morgan	0	0.0	0	0.0	0	0.0	0	0.0	1	3.5	1	0.7	0.2%
Otero	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Ouray	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Park	0	0.0	1	5.8	0	0.0	0	0.0	0	0.0	1	1.1	0.2%
Phillips	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Pitkin	1	5.6	0	0.0	0	0.0	0	0.0	0	0.0	1	1.1	0.2%
Prowers	1	8.4	0	0.0	0	0.0	0	0.0	0	0.0	1	1.7	0.2%
Pueblo	0	0.0	2	1.2	7	4.2	3	1.8	9	5.4	21	2.5	4.4%
Rio Blanco	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Rio Grande	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Routt	0	0.0	0	0.0	0	0.0	0	0.0	5	19.3	5	4.0	1.1%
Saguache	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
San Juan	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
San Miguel	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Sedgwick	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Summit	1	3.3	2	6.5	1	3.2	0	0.0	1	3.2	5	3.2	1.1%

Teller	0	0.0	0	0.0	1	4.1	0	0.0	0	0.0	1	0.8	0.2%
Washington	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Weld	2	0.7	3	1.0	1	0.3	0	0.0	2	0.6	8	0.5	1.7%
Yuma	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Prison	0	--	0	--	0	--	0	--	3	--	3	--	0.6%
Unknown	0	--	0	--	1	--	0	--	0	--	1	--	0.2%

Table 2.1: Reported acute hepatitis B cases and rate per 100,000, 2010-2019

Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cases	46	23	25	23	29	29	28	32	22	22
Rate	0.9	0.4	0.5	0.4	0.5	0.5	0.5	0.6	0.4	0.4

2010-2019 population estimates from the Colorado State Demography Office

Table 2.2: Demographics of new acute hepatitis B cases, 2015-2019

	2015		2016		2017		2018		2019	
	N	%	N	%	N	%	N	%	N	%
Total	29	100.0%	28	100.0%	32	100.0%	22	100.0%	22	100.0%
Gender*										
Men	21	72.4%	21	75.0%	27	84.4%	15	68.2%	9	40.9%
Women	8	27.6%	7	25.0%	5	15.6%	7	31.8%	12	54.5%
Transgender Women	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	4.5%
Transgender Men	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Age Group										
0-19	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
20-39	10	34.5%	8	28.6%	13	40.6%	5	22.7%	9	40.9%
40-59	13	44.8%	19	67.9%	17	53.1%	15	68.2%	11	50.0%
60-79	5	17.2%	1	3.6%	2	6.3%	2	9.1%	1	4.5%

80-99	1	3.4%	0	0.0%	0	0.0%	0	0.0%	1	4.5%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Race/Ethnicity										
White, Non-Hispanic	21	72.4%	19	67.9%	18	56.3%	15	68.2%	17	77.3%
Black, Non-Hispanic	3	10.3%	4	14.3%	3	9.4%	2	9.1%	1	4.5%
Hispanic, all races	1	3.4%	2	7.1%	6	18.8%	5	22.7%	4	18.2%
Asian/Hawaiian/Pacific Islander, Non-Hispanic	1	3.4%	2	7.1%	1	3.1%	0	0.0%	0	0.0%
Native American/Alaska Native, Non-Hispanic	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Multi Race, Non-Hispanic	2	6.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Unknown	1	3.4%	1	3.6%	4	12.5%	0	0.0%	0	0.0%
County Class**										
TGA	13	44.8%	20	71.4%	21	65.6%	11	50.0%	14	63.6%
Homeless	0	0.0%	6	21.4%	3	9.4%	3	13.6%	4	18.2%
Urban, non-TGA	15	51.7%	6	21.4%	7	21.9%	8	36.4%	6	27.3%
Homeless	1	3.4%	1	3.6%	1	3.1%	0	0.0%	0	0.0%
Rural	0	0.0%	1	3.6%	3	9.4%	3	13.6%	1	4.5%
Homeless	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Prison	1	3.4%	1	3.6%	1	3.1%	0	0.0%	1	4.5%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

*Gender identity is not known for all diagnoses. The gender displayed in this table could be sex at birth or an indivdual's gender identity.
**Percentages for county class will not add to 100% as homeless cases are counted in overall county class cases.
TGA counties include: Adams, Arapahoe, Broomfield, Denver, Douglas, and Jefferson.
Urban, non-TGA counties include: El Paso, Larimer, Mesa, Pueblo, Weld, and Boulder.

Table 2.3: New acute hepatitis B cases and rate per 100,000 by county, 2015-2019

	2015		2016		2017		2018		2019		2015-2019		
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	%
Total	29	0.5	28	0.5	32	0.6	22	0.4	22	0.4	133	0.5	100.0%
Adams	0	0.0	0	0.0	2	0.4	0	0.0	0	0.0	2	0.1	1.5%
Alamosa	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Arapahoe	2	0.3	4	0.6	5	0.8	2	0.3	3	0.5	16	0.5	12.0%
Archuleta	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Baca	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Bent	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Boulder	2	0.6	0	0.0	1	0.3	1	0.3	0	0.0	4	0.2	3.0%
Broomfield	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Chaffee	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Cheyenne	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Clear Creek	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Conejos	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Costilla	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Crowley	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Custer	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Delta	0	0.0	0	0.0	1	3.3	0	0.0	0	0.0	1	0.7	0.8%
Denver	7	1.0	13	1.9	12	1.7	7	1.0	8	1.1	47	1.3	35.3%
Dolores	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Douglas	0	0.0	1	0.3	0	0.0	0	0.0	1	0.3	2	0.1	1.5%
Eagle	0	0.0	0	0.0	1	1.8	1	1.8	0	0.0	2	0.7	1.5%
El Paso	6	0.9	3	0.4	1	0.1	4	0.6	3	0.4	17	0.5	12.8%
Elbert	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Fremont	0	0.0	0	0.0	0	0.0	1	2.1	0	0.0	1	0.4	0.8%

Garfield	0	0.0	0	0.0	0	0.0	0	0.0	1	1.6	1	0.3	0.8%
Gilpin	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Grand	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Gunnison	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Hinsdale	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Huerfano	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Jackson	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Jefferson	4	0.7	2	0.3	2	0.3	2	0.3	2	0.3	12	0.4	9.0%
Kiowa	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Kit Carson	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
La Plata	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Lake	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Larimer	3	0.9	1	0.3	0	0.0	1	0.3	1	0.3	6	0.3	4.5%
Las Animas	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Lincoln	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Logan	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Mesa	2	1.3	0	0.0	3	2.0	1	0.7	1	0.6	7	0.9	5.3%
Mineral	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Moffat	0	0.0	0	0.0	0	0.0	1	7.6	0	0.0	1	1.5	0.8%
Montezuma	0	0.0	0	0.0	1	3.8	0	0.0	0	0.0	1	0.8	0.8%
Montrose	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Morgan	0	0.0	1	3.6	0	0.0	0	0.0	0	0.0	1	0.7	0.8%
Otero	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Ouray	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Park	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Phillips	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Pitkin	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Prowers	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%

Pueblo	0	0.0	1	0.6	1	0.6	0	0.0	1	0.6	3	0.4	2.3%
Rio Blanco	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Rio Grande	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Routt	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Saguache	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
San Juan	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
San Miguel	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Sedgwick	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Summit	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Teller	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Washington	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Weld	2	0.7	1	0.3	1	0.3	1	0.3	0	0.0	5	0.3	3.8%
Yuma	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Prison	1	--	1	--	1	--	0	--	1	--	4	--	3.0%
Unknown	0	--	0	--	0	--	0	--	0	--	0	--	0.0%

Table 3.1: Reported chronic hepatitis B cases and rate per 100,000, 2010-2019

Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cases	317	278	252	279	320	325	322	258	272	201
Rate	6.3	5.4	4.8	5.3	6.0	6.0	5.8	4.6	4.8	3.5

2010-2019 population estimates from the Colorado State Demography Office

Table 3.2: Demographics of new chronic hepatitis B cases, 2015-2019

	2015		2016		2017		2018		2019	
	N	%	N	%	N	%	N	%	N	%
Total	325	100.0%	322	100.0%	258	100.0%	272	100.0%	201	100.0%
Gender*										
Men	172	52.9%	167	51.9%	140	54.3%	161	59.2%	121	60.2%
Women	153	47.1%	155	48.1%	116	45.0%	111	40.8%	79	39.3%
Transgender Women	0	0.0%	0	0.0%	2	0.8%	0	0.0%	1	0.5%
Transgender Men	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Age Group										
0-19	19	5.8%	17	5.3%	5	1.9%	11	4.0%	5	2.5%
20-39	140	43.1%	147	45.7%	122	47.3%	115	42.3%	80	39.8%
40-59	128	39.4%	109	33.9%	85	32.9%	104	38.2%	79	39.3%
60-79	35	10.8%	48	14.9%	45	17.4%	39	14.3%	34	16.9%
80-99	3	0.9%	1	0.3%	1	0.4%	3	1.1%	3	1.5%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Race/Ethnicity										
White, Non-Hispanic	24	7.4%	26	8.1%	33	12.8%	39	14.3%	30	14.9%
Black, Non-Hispanic	27	8.3%	33	10.2%	25	9.7%	32	11.8%	22	10.9%
Hispanic, all races	4	1.2%	5	1.6%	11	4.3%	15	5.5%	12	6.0%
Asian/Hawaiian/Pacific Islander, Non-Hispanic	105	32.3%	64	19.9%	61	23.6%	66	24.3%	30	14.9%
Native American/Alaska Native, Non-Hispanic	1	0.3%	0	0.0%	1	0.4%	1	0.4%	2	1.0%
Multi Race, Non-Hispanic	0	0.0%	1	0.3%	0	0.0%	1	0.4%	1	0.5%

Unknown	164	50.5%	193	59.9%	127	49.2%	118	43.4%	104	51.7%
County Class**										
TGA	199	61.2%	216	67.1%	153	59.3%	161	59.2%	106	52.7%
Homeless	1	0.3%	2	0.6%	1	0.4%	3	1.1%	3	1.5%
Urban, non-TGA	96	29.5%	80	24.8%	76	29.5%	78	28.7%	64	31.8%
Homeless	1	0.3%	2	0.6%	0	0.0%	0	0.0%	1	0.5%
Rural	17	5.2%	19	5.9%	20	7.8%	17	6.3%	12	6.0%
Homeless	0	0.0%	1	0.3%	0	0.0%	2	0.7%	0	0.0%
Prison	3	0.9%	5	1.6%	4	1.6%	16	5.9%	17	8.5%
Unknown	10	3.1%	2	0.6%	5	1.9%	0	0.0%	2	1.0%

*Gender identity is not known for all diagnoses. The gender displayed in this table could be sex at birth or an individual's gender identity.

** Percentages for county class will not add to 100% as homeless cases are counted in overall county class cases.

TGA counties include: Adams, Arapahoe, Broomfield, Denver, Douglas, and Jefferson.

Urban, non-TGA counties include: El Paso, Larimer, Mesa, Pueblo, Weld, and Boulder.

Table 3.3: New chronic hepatitis B cases and rate per 100,000 by county, 2015-2019

	2015		2016		2017		2018		2019		2015-2019		
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	%
Total	325	6.0	322	5.8	258	4.6	272	4.8	201	3.5	1,378	4.9	100.0%
Adams	35	7.1	34	6.8	26	5.2	24	4.7	14	2.7	133	5.3	9.7%
Alamosa	0	0.0	0	0.0	0	0.0	2	12.4	2	12.2	4	5.0	0.3%
Arapahoe	57	9.0	69	10.8	57	8.8	59	9.1	39	5.9	281	8.7	20.4%
Archuleta	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Baca	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Bent	0	0.0	0	0.0	1	17.1	0	0.0	0	0.0	1	3.4	0.1%
Boulder	10	3.1	18	5.6	11	3.4	18	5.5	5	1.5	62	3.8	4.5%
Broomfield	6	9.3	1	1.5	1	1.5	3	4.3	4	5.6	15	4.4	1.1%
Chaffee	0	0.0	0	0.0	1	5.1	1	5.0	0	0.0	2	2.0	0.1%
Cheyenne	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%

County													
Clear Creek	0	0.0	0	0.0	0	0.0	1	10.3	0	0.0	1	2.1	0.1%
Conejos	1	12.4	0	0.0	2	24.6	0	0.0	0	0.0	3	7.4	0.2%
Costilla	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Crowley	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Custer	0	0.0	1	21.9	0	0.0	0	0.0	1	20.2	2	8.4	0.1%
Delta	1	3.3	0	0.0	0	0.0	0	0.0	1	3.2	2	1.3	0.1%
Denver	57	8.3	67	9.6	45	6.4	45	6.3	23	3.2	237	6.7	17.2%
Dolores	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Douglas	17	5.3	14	4.3	10	3.0	14	4.1	12	3.4	67	4.0	4.9%
Eagle	1	1.9	2	3.7	3	5.5	0	0.0	1	1.8	7	2.6	0.5%
El Paso	44	6.5	28	4.1	36	5.1	31	4.3	32	4.4	171	4.9	12.4%
Elbert	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Fremont	2	4.3	4	8.5	1	2.1	0	0.0	0	0.0	7	3.0	0.5%
Garfield	1	1.7	1	1.7	2	3.4	1	1.7	2	3.3	7	2.4	0.5%
Gilpin	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Grand	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Gunnison	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Hinsdale	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Huerfano	2	31.3	0	0.0	0	0.0	0	0.0	0	0.0	2	6.0	0.1%
Jackson	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Jefferson	27	4.8	31	5.4	14	2.4	16	2.8	14	2.4	102	3.5	7.4%
Kiowa	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Kit Carson	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
La Plata	2	3.7	3	5.4	1	1.8	2	3.5	0	0.0	8	2.9	0.6%
Lake	1	13.5	0	0.0	0	0.0	0	0.0	0	0.0	1	2.6	0.1%
Larimer	15	4.5	9	2.7	9	2.6	13	3.7	7	2.0	53	3.1	3.8%
Las Animas	0	0.0	0	0.0	0	0.0	1	6.9	0	0.0	1	1.4	0.1%
Lincoln	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%

County													
Logan	0	0.0	0	0.0	1	4.6	0	0.0	0	0.0	1	0.9	0.1%
Mesa	7	4.7	1	0.7	7	4.6	3	2.0	2	1.3	20	2.6	1.5%
Mineral	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Moffat	0	0.0	0	0.0	0	0.0	1	7.6	0	0.0	1	1.5	0.1%
Montezuma	1	3.9	0	0.0	0	0.0	0	0.0	0	0.0	1	0.8	0.1%
Montrose	0	0.0	0	0.0	0	0.0	1	2.4	0	0.0	1	0.5	0.1%
Morgan	2	7.1	3	10.7	6	21.3	2	7.0	0	0.0	13	9.2	0.9%
Otero	0	0.0	0	0.0	0	0.0	0	0.0	1	5.5	1	1.1	0.1%
Ouray	1	21.8	0	0.0	0	0.0	0	0.0	0	0.0	1	4.2	0.1%
Park	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Phillips	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Pitkin	0	0.0	0	0.0	0	0.0	1	5.6	0	0.0	1	1.1	0.1%
Prowers	1	8.4	0	0.0	0	0.0	0	0.0	1	8.3	2	3.3	0.1%
Pueblo	3	1.8	5	3.0	3	1.8	3	1.8	8	4.8	22	2.7	1.6%
Rio Blanco	0	0.0	0	0.0	0	0.0	0	0.0	1	15.8	1	3.1	0.1%
Rio Grande	0	0.0	0	0.0	1	8.9	2	17.8	0	0.0	3	5.3	0.2%
Routt	0	0.0	1	4.0	1	3.9	2	7.8	1	3.9	5	4.0	0.4%
Saguache	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
San Juan	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
San Miguel	0	0.0	1	12.5	0	0.0	0	0.0	0	0.0	1	2.5	0.1%
Sedgwick	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Summit	1	3.3	2	6.5	0	0.0	0	0.0	0	0.0	3	1.9	0.2%
Teller	0	0.0	1	4.2	0	0.0	0	0.0	1	3.9	2	1.6	0.1%
Washington	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Weld	17	6.0	19	6.4	10	3.3	10	3.2	10	3.1	66	4.3	4.8%
Yuma	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Prison	3	--	5	--	4	--	16	--	17	--	45	--	3.3%
Unknown	10	--	2	--	5	--	0	--	2	--	19	--	1.4%

Table 4.1: Reported acute hepatitis C cases and rate per 100,000, 2010-2019

Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cases	25	32	42	23	32	40	35	44	47	53
Rate	0.5	0.6	0.8	0.4	0.6	0.7	0.6	0.8	0.8	0.9

2010-2019 population estimates from the Colorado State Demography Office

Table 4.2: Demographics of new acute hepatitis C cases, 2015-2019

	2015		2016		2017		2018		2019	
	N	%	N	%	N	%	N	%	N	%
Total	40	100.0%	35	100.0%	44	100.0%	47	100.0%	53	100.0%
Gender*										
Men	24	60.0%	19	54.3%	29	65.9%	33	70.2%	37	69.8%
Women	16	40.0%	16	45.7%	15	34.1%	14	29.8%	16	30.2%
Transgender Women	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Transgender Men	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Age Group										
0-19	3	7.5%	0	0.0%	0	0.0%	0	0.0%	1	1.9%
20-39	34	85.0%	22	62.9%	39	88.6%	38	80.9%	33	62.3%
40-59	3	7.5%	13	37.1%	4	9.1%	8	17.0%	16	30.2%
60-79	0	0.0%	0	0.0%	1	2.3%	0	0.0%	3	5.7%
80-99	0	0.0%	0	0.0%	0	0.0%	1	2.1%	0	0.0%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Race/Ethnicity										
White, Non-Hispanic	19	47.5%	21	60.0%	34	77.3%	28	59.6%	29	54.7%
Black, Non-Hispanic	0	0.0%	0	0.0%	1	2.3%	0	0.0%	3	5.7%
Hispanic, all races	9	22.5%	7	20.0%	8	18.2%	13	27.7%	13	24.5%

Asian/Hawaiian/Pacific Islander, Non-Hispanic	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	1.9%
Native American/Alaska Native, Non-Hispanic	0	0.0%	1	2.9%	0	0.0%	1	2.1%	1	1.9%
Multi Race, Non-Hispanic	1	2.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Unknown	11	27.5%	6	17.1%	1	2.3%	5	10.6%	6	11.3%
County Class										
TGA	14	35.0%	13	37.1%	29	65.9%	22	46.8%	28	52.8%
Homeless	0	0.0%	4	11.4%	6	13.6%	3	6.4%	10	18.9%
Urban, non-TGA	15	37.5%	13	37.1%	8	18.2%	16	34.0%	14	26.4%
Homeless	0	0.0%	0	0.0%	0	0.0%	2	4.3%	3	5.7%
Rural	9	22.5%	7	20.0%	5	11.4%	5	10.6%	4	7.5%
Homeless	0	0.0%	0	0.0%	1	2.3%	0	0.0%	0	0.0%
Prison	2	5.0%	2	5.7%	2	4.5%	4	8.5%	7	13.2%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

*Gender identity is not known for all diagnoses. The gender displayed in this table could be sex at birth or an individual's gender identity.
**Percentages for county class will not add to 100% as homeless cases are counted in overall county class cases.
TGA counties include: Adams, Arapahoe, Broomfield, Denver, Douglas, and Jefferson.
Urban, non-TGA counties include: El Paso, Larimer, Mesa, Pueblo, Weld, and Boulder.

Table 4.3: New acute hepatitis C cases and rate per 100,000 by county, 2015-2019

	2015		2016		2017		2018		2019		2015-2019		
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	%
Total	40	0.7	35	0.6	44	0.8	47	0.8	53	0.9	219	0.8	100.0%
Adams	1	0.2	2	0.4	3	0.6	7	1.4	1	0.2	14	0.6	6.4%
Alamosa	1	6.3	1	6.2	0	0.0	0	0.0	1	6.1	3	3.7	1.4%
Arapahoe	4	0.6	1	0.2	5	0.8	2	0.3	3	0.5	15	0.5	6.8%
Archuleta	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Baca	0	0.0	0	0.0	1	28.3	0	0.0	0	0.0	1	5.7	0.5%
Bent	0	0.0	1	17.8	0	0.0	0	0.0	0	0.0	1	3.4	0.5%

Boulder	3	0.9	0	0.0	1	0.3	3	0.9	0	0.0	7	0.4	3.2%
Broomfield	0	0.0	0	0.0	1	1.5	0	0.0	1	1.4	2	0.6	0.9%
Chaffee	0	0.0	0	0.0	0	0.0	0	0.0	1	4.9	1	1.0	0.5%
Cheyenne	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Clear Creek	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Conejos	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Costilla	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Crowley	0	0.0	1	19.1	0	0.0	0	0.0	0	0.0	1	3.5	0.5%
Custer	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Delta	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Denver	5	0.7	8	1.1	17	2.4	9	1.3	20	2.7	59	1.7	26.9%
Dolores	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Douglas	1	0.3	1	0.3	1	0.3	2	0.6	2	0.6	7	0.4	3.2%
Eagle	0	0.0	0	0.0	1	1.8	0	0.0	0	0.0	1	0.4	0.5%
El Paso	5	0.7	2	0.3	4	0.6	5	0.7	9	1.2	25	0.7	11.4%
Elbert	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Fremont	1	2.2	0	0.0	0	0.0	1	2.1	0	0.0	2	0.8	0.9%
Garfield	1	1.7	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3	0.5%
Gilpin	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Grand	0	0.0	0	0.0	1	6.5	0	0.0	0	0.0	1	1.3	0.5%
Gunnison	0	0.0	1	6.1	0	0.0	0	0.0	0	0.0	1	1.2	0.5%
Hinsdale	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Huerfano	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Jackson	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Jefferson	3	0.5	1	0.2	2	0.3	2	0.3	1	0.2	9	0.3	4.1%
Kiowa	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Kit Carson	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
La Plata	1	1.8	0	0.0	0	0.0	2	3.5	0	0.0	3	1.1	1.4%

County													
Lake	1	13.5	0	0.0	0	0.0	0	0.0	0	0.0	1	2.6	0.5%
Larimer	0	0.0	4	1.2	0	0.0	3	0.9	1	0.3	8	0.5	3.7%
Las Animas	0	0.0	0	0.0	0	0.0	1	6.9	0	0.0	1	1.4	0.5%
Lincoln	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Logan	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Mesa	1	0.7	0	0.0	2	1.3	3	2.0	1	0.6	7	0.9	3.2%
Mineral	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Moffat	3	23.1	0	0.0	0	0.0	0	0.0	1	7.6	4	6.1	1.8%
Montezuma	0	0.0	0	0.0	0	0.0	1	3.8	0	0.0	1	0.8	0.5%
Montrose	0	0.0	1	2.4	0	0.0	0	0.0	0	0.0	1	0.5	0.5%
Morgan	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Otero	0	0.0	0	0.0	1	5.4	0	0.0	0	0.0	1	1.1	0.5%
Ouray	0	0.0	1	20.9	0	0.0	0	0.0	0	0.0	1	4.2	0.5%
Park	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Phillips	0	0.0	1	23.3	0	0.0	0	0.0	0	0.0	1	4.7	0.5%
Pitkin	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Prowers	0	0.0	0	0.0	0	0.0	0	0.0	1	8.3	1	1.7	0.5%
Pueblo	5	3.1	6	3.6	1	0.6	1	0.6	3	1.8	16	1.9	7.3%
Rio Blanco	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Rio Grande	0	0.0	0	0.0	1	8.9	0	0.0	0	0.0	1	1.8	0.5%
Routt	1	4.1	0	0.0	0	0.0	0	0.0	0	0.0	1	0.8	0.5%
Saguache	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
San Juan	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
San Miguel	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Sedgwick	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Summit	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Teller	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Washington	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%

Weld	1	0.4	1	0.3	0	0.0	1	0.3	0	0.0	3	0.2	1.4%
Yuma	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Prison	2	--	2	--	2	--	4	--	7	--	17	--	7.8%
Unknown	10	--	2	--	5	--	0	--	2	--	19	--	8.7%

Table 5.1: Reported chronic hepatitis C cases and rate per 100,000, 2010-2019

Measure	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cases	3,114	2,903	2,976	2,998	3,678	3,621	2,956	2,895	3,025	2,642
Rate	61.7	56.7	57.3	56.9	68.7	66.4	53.3	51.5	53.1	45.8

2010-2019 population estimates from the Colorado State Demography Office

Table 5.2: Demographics of new chronic hepatitis C cases, 2015-2019

	2015		2016		2017		2018		2019	
	N	%	N	%	N	%	N	%	N	%
Total	3621	100.0%	2956	100.0%	2895	100.0%	3025	100.0%	2642	100.0%
Gender*										
Men	2360	65.2%	2050	69.4%	1960	67.7%	2101	69.5%	1870	70.8%
Women	1261	34.8%	906	30.6%	932	32.2%	919	30.4%	768	29.1%
Transgender Women	0	0.0%	0	0.0%	3	0.1%	4	0.1%	1	0.0%
Transgender Men	0	0.0%	0	0.0%	0	0.0%	1	0.0%	0	0.0%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	0.1%
Age Group										
0-19	36	1.0%	28	0.9%	7	0.2%	19	0.6%	13	0.5%
20-39	1188	32.8%	1070	36.2%	1132	39.1%	1333	44.1%	1176	44.5%
40-59	1641	45.3%	1239	41.9%	1099	38.0%	1066	35.2%	914	34.6%
60-79	731	20.2%	594	20.1%	638	22.0%	588	19.4%	530	20.1%

80-99	19	0.5%	15	0.5%	17	0.6%	13	0.4%	7	0.3%
Unknown	6	0.2%	10	0.3%	2	0.1%	6	0.2%	2	0.1%
County Class**									
TGA	1300	35.9%	1070	36.2%	1051	36.3%	1048	34.6%	885	33.5%
Homeless	161	4.4%	153	5.2%	114	3.9%	157	5.2%	155	5.9%
Urban, non-TGA	1001	27.6%	859	29.1%	848	29.3%	825	27.3%	705	26.7%
Homeless	39	1.1%	49	1.7%	41	1.4%	45	1.5%	45	1.7%
Rural	466	12.9%	387	13.1%	361	12.5%	346	11.4%	340	12.9%
Homeless	10	0.3%	8	0.3%	2	0.1%	11	0.4%	7	0.3%
Prison	368	10.2%	467	15.8%	504	17.4%	739	24.4%	652	24.7%
Unknown	486	13.4%	173	5.9%	131	4.5%	67	2.2%	60	2.3%

*Gender identity is not known for all diagnoses. The gender displayed in this table could be sex at birth or an individual's gender identity.
**Percentages for county class will not add to 100% as homeless cases are counted in overall county class cases.
Data on race and ethnicity are excluded for chronic hepatitis C cases due to large proportions of missing/unknown data.
TGA counties include: Adams, Arapahoe, Broomfield, Denver, Douglas, and Jefferson.
Urban, non-TGA counties include: El Paso, Larimer, Mesa, Pueblo, Weld, and Boulder.

Table 5.3: New chronic hepatitis C cases and rate per 100,000 by county, 2015-2019

	2015		2016		2017		2018		2019		2015-2019		
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	%
Total	3,621	66.4	2,956	53.3	2,895	51.5	3,025	53.1	2,642	45.8	15,139	53.9	100.0%
Adams	192	39.1	172	34.5	159	31.5	150	29.3	160	30.8	833	33.0	5.5%
Alamosa	28	176.5	16	99.9	16	99.6	21	129.8	12	73.5	93	115.6	0.6%
Arapahoe	242	38.4	210	32.9	199	30.9	186	28.6	155	23.6	992	30.8	6.6%
Archuleta	10	80.6	8	62.3	7	52.5	10	72.8	9	64.5	44	66.4	0.3%
Baca	2	56.4	3	85.2	3	84.8	2	56.4	0	0.0	10	56.5	0.1%
Bent	13	221.5	11	195.3	7	119.9	13	223.4	8	137.2	52	179.4	0.3%
Boulder	107	33.5	81	25.1	95	29.4	83	25.5	66	20.1	432	26.7	2.9%
Broomfield	16	24.7	8	12.0	17	25.0	15	21.6	15	21.1	71	20.9	0.5%

Chaffee	9	48.4	10	52.4	4	20.4	17	84.9	11	54.4	51	52.3	0.3%
Cheyenne	0	0.0	0	0.0	1	54.0	0	0.0	0	0.0	1	10.8	0.0%
Clear Creek	10	107.6	5	53.2	8	83.1	4	41.4	3	30.9	30	62.9	0.2%
Conejos	12	149.2	2	24.9	1	12.3	3	36.9	7	86.0	25	61.8	0.2%
Costilla	2	55.8	7	189.0	6	159.4	3	78.8	5	130.9	23	123.1	0.2%
Crowley	1	17.9	3	57.4	5	86.5	0	0.0	1	17.0	10	35.3	0.1%
Custer	9	203.3	6	131.2	3	61.7	1	20.3	3	60.7	22	92.7	0.1%
Delta	21	70.1	17	55.9	25	81.7	20	64.6	18	58.0	101	66.1	0.7%
Denver	536	78.2	466	66.8	448	63.4	452	63.0	398	54.6	2,300	65.0	15.2%
Dolores	4	202.1	2	97.3	1	49.1	1	48.7	2	98.2	10	98.4	0.1%
Douglas	63	19.6	38	11.6	57	17.0	56	16.3	49	14.1	263	15.7	1.7%
Eagle	10	18.6	15	27.5	14	25.5	8	14.6	13	23.4	60	21.9	0.4%
El Paso	372	55.1	319	46.3	301	42.9	332	46.5	256	35.3	1,580	45.0	10.4%
Elbert	4	16.3	2	8.0	7	27.2	2	7.6	8	29.3	23	17.8	0.2%
Fremont	39	84.2	31	65.9	21	44.1	20	41.7	31	64.8	142	60.0	0.9%
Garfield	36	62.3	28	47.5	33	55.8	35	58.5	26	42.8	158	53.3	1.0%
Gilpin	1	17.2	6	101.6	1	16.7	1	16.4	1	16.4	10	33.4	0.1%
Grand	4	27.2	2	13.2	3	19.5	4	25.8	4	25.6	17	22.3	0.1%
Gunnison	7	43.4	9	54.7	6	35.5	6	34.9	4	23.1	32	38.1	0.2%
Hinsdale	0	0.0	1	127.7	0	0.0	1	124.4	0	0.0	2	50.6	0.0%
Huerfano	6	94.0	3	45.7	0	0.0	4	58.4	9	132.1	22	66.2	0.1%
Jackson	0	0.0	0	0.0	1	72.8	0	0.0	0	0.0	1	14.6	0.0%
Jefferson	251	44.4	176	30.8	171	29.7	189	32.6	108	18.5	895	31.1	5.9%
Kiowa	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0%
Kit Carson	2	24.4	2	26.2	0	0.0	1	14.0	2	27.9	7	18.7	0.0%
La Plata	39	71.2	29	52.3	27	48.5	16	28.4	28	48.7	139	49.7	0.9%
Lake	3	40.6	5	66.4	3	39.0	2	25.8	2	25.5	15	39.3	0.1%
Larimer	143	42.9	125	36.9	106	30.8	127	36.2	104	29.3	605	35.1	4.0%

Las Animas	23	163.7	12	85.2	5	35.2	7	48.3	16	110.9	63	88.4	0.4%
Lincoln	6	108.2	1	18.0	2	36.3	2	35.8	4	70.9	15	53.9	0.1%
Logan	10	45.4	3	13.7	5	22.8	9	41.2	3	13.6	30	27.3	0.2%
Mesa	99	66.6	86	57.2	105	69.1	81	52.7	67	43.2	438	57.7	2.9%
Mineral	0	0.0	1	132.3	0	0.0	0	0.0	0	0.0	1	26.2	0.0%
Moffat	11	84.9	18	136.7	8	61.0	6	45.5	4	30.4	47	71.7	0.3%
Montezuma	24	93.4	18	69.3	13	49.8	20	76.5	16	60.6	91	69.8	0.6%
Montrose	16	39.4	19	46.1	27	64.6	21	49.7	21	49.1	104	49.9	0.7%
Morgan	4	14.2	5	17.8	13	46.2	8	28.1	6	20.9	36	25.4	0.2%
Otero	14	77.0	14	76.9	20	108.9	14	76.2	11	60.0	73	79.8	0.5%
Ouray	2	43.5	3	62.8	0	0.0	0	0.0	0	0.0	5	21.0	0.0%
Park	11	65.8	9	51.8	4	22.3	9	48.5	6	31.9	39	43.7	0.3%
Phillips	2	46.2	2	46.7	1	23.3	2	46.9	2	46.9	9	42.0	0.1%
Pitkin	4	22.3	3	16.7	7	39.0	2	11.2	4	22.4	20	22.3	0.1%
Prowers	7	58.6	5	41.8	1	8.3	3	24.8	5	41.5	21	35.0	0.1%
Pueblo	165	101.4	146	88.8	147	88.6	116	69.4	120	71.3	694	83.8	4.6%
Rio Blanco	6	92.6	1	15.6	0	0.0	0	0.0	2	31.7	9	28.2	0.1%
Rio Grande	10	88.2	11	97.1	11	97.5	15	133.6	6	53.7	53	94.0	0.4%
Routt	10	41.0	8	32.3	8	31.6	10	38.9	9	34.7	45	35.7	0.3%
Saguache	3	47.9	2	31.2	2	30.1	2	29.3	3	43.7	12	36.3	0.1%
San Juan	0	0.0	1	145.6	1	142.2	0	0.0	1	132.3	3	83.4	0.0%
San Miguel	3	38.3	3	37.4	1	12.4	2	24.5	2	23.9	11	27.2	0.1%
Sedgwick	1	42.2	0	0.0	4	172.6	2	87.9	0	0.0	7	60.2	0.0%
Summit	7	23.2	9	29.3	7	22.6	7	22.6	3	9.6	33	21.4	0.2%
Teller	18	77.1	13	54.2	15	60.9	9	35.9	7	27.6	62	50.7	0.4%
Washington	0	0.0	1	21.4	2	42.0	0	0.0	2	42.3	5	21.3	0.0%
Weld	115	40.3	102	34.6	94	30.8	86	27.4	92	28.4	489	32.1	3.2%
Yuma	2	19.8	2	19.8	1	10.0	1	10.0	0	0.0	6	11.9	0.0%

Prison	368	--	467	--	504	--	739	--	652	--	2,730	--	18.0%
Unknown	486	--	173	--	131	--	67	--	60	--	917	--	6.1%

Table 6.1: Coinfections with Hepatitis Diagnoses from 2015-2019*

Coinfections	Number of Cases, 2015-2019
HAV and Chronic HCV	24
HAV and Chronic HBV	4
HAV and HIV	3
Chronic HBV and Chronic HCV	47
Chronic HBV and HIV	20
Chronic HCV and HIV	125

*HIV diagnosis before 12/31/2019. An HIV diagnosis may have occurred prior to January 1, 2015. All hepatitis diagnoses represented occurred 2015-2019.

Definitions

BRFSS is the Behavioral Risk Factor Surveillance System. The Behavioral Risk Factor Surveillance System is a federally funded random telephone survey of Colorado residents aged 18 and older. Information is gathered on a variety of health-related behaviors, conditions, and preventive health practices.

CDPHE is the Colorado Department of Public Health and Environment. The Colorado Department of Public Health and Environment is the principal department of the Colorado state government responsible for public health and environmental regulation.

CEDRS refers to the Colorado Electronic Disease Reporting System. This database is used to capture reportable conditions across Colorado.

Cirrhosis is a chronic disease of the liver marked by degeneration of cells, inflammation, and fibrous thickening of tissue.

Cisgender refers to persons whose gender identity aligns with the sex they were assigned at birth.

ELR refers to electronic lab reports that are sent by certain hospitals and labs directly to CDPHE.

Front Range refers to the following counties in Colorado: Larimer, Weld, Boulder, Denver, Arapahoe, Adams, Jefferson, Douglas, Broomfield, Elbert, Park, Clear Creek, Gilpin, El Paso, Teller, Fremont, and Pueblo.

Gender non-binary/non-conforming is an umbrella term for individuals who do not identify as strictly a woman or a man.

HBsAg is the hepatitis B surface antigen. HBsAg is a marker of infectivity. Its presence indicates either acute or chronic HBV.

HCV antibody testing, also referred to as anti-HCV, indicates past or present infection with HCV. If a person has spontaneously cleared the virus or has been cured, they will still test positive for HCV antibodies.

Incidence represents the number of new cases of a disease or condition that occur in a population during a specified time, usually a year. This report only covers diagnoses reported to CDPHE. Incidence is likely underestimated.

Prevalence refers to the total number of people with a specific disease or condition at a given time. This report only covers diagnoses reported to CDPHE. Prevalence is likely underestimated.

Rates per 100,000 persons are calculated by dividing the number of cases by the population for a given time period and multiplying by 100,000.

RNA (ribonucleic acid) refers to the level of virus existing in a person. As opposed to a positive test for HCV antibodies, which may indicate past or present HCV infection, HCV RNA signifies current infection with HCV. HCV RNA is measured through a nucleic acid amplification test (NAAT).

Rural counties in Colorado, according to the Office of Rural Health Policy, are Alamosa, Archuleta, Baca, Bent, Chaffee, Cheyenne, Clear Creek, Conejos, Costilla, Crowley, Custer, Delta, Dolores, Eagle, Elbert, Fremont, Garfield, Gilpin, Grand, Gunnison, Hinsdale, Huerfano, Jackson, Kiowa, Kit Carson, La Plata, Lake, Las Animas, Lincoln, Logan, Mineral, Moffat, Montezuma, Montrose, Morgan, Otero, Ouray, Park, Phillips, Pitkin, Prowers, Rio Grande, Rio Blanco, Routt, Saguache, San Juan, Sedgwick, San Miguel, Summit, Teller, Washington, and Yuma counties.

Sex assigned at birth is the assignment of people as male, female, intersex, or another sex assigned at birth often based on physical anatomy at birth.

Signal-to-cutoff ratio is a calculation that can be done for specific HCV antibody tests that is predictive of a true antibody-positive result.

Sustained virologic response is defined as aviremia 24 weeks after completion of antiviral therapy for chronic HCV.

The Denver transitional grant area (TGA) includes counties that are most severely impacted by the HIV epidemic. The Denver TGA covers 3,756 square miles and consists of six counties as follows: Adams, Arapahoe, Broomfield, Denver, Douglas, and Jefferson and became eligible for federal funding in March of 1994 when it reported 2,000 cumulative AIDS cases. Since there is no corresponding distinction for viral hepatitis, this definition of TGA was used to provide a distinction between counties surrounding Denver and counties further from Denver.

Urban non-TGA counties are El Paso, Larimer, Mesa, Pueblo, Weld, and Boulder.