



**Washington State
Chronic Hepatitis B and Chronic Hepatitis C
Surveillance Report**

***Summary of Cases Reported
December 2000 through September 2008***

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http://www.doh.wa.gov/cfh/IDRH_Assessment/default.htm

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Technical Notes

The following report describes statewide probable and confirmed cases of chronic hepatitis B and chronic hepatitis C reported to the Washington State Department of Health since reporting began in December 2000 through September 30, 2008. The numbers in the report represent all unduplicated cases reported to the Washington State Department of Health and include cases diagnosed and reported prior to 2001. Individuals reported in more than one county were assigned to the county with the earliest diagnosis date. Cases diagnosed within Washington State correctional facilities are counted as ‘State Corrections’ cases, and are NOT counted in the county in which the facility is located.

IMPORTANT NOTE: This update replaces all earlier chronic hepatitis reports. The prior report of cases reported through December 2007 incorrectly summarized the number of chronic hepatitis B cases in Washington State, as it included some incorrectly classified and duplicate cases. This resulted in an overestimate of hepatitis B and hepatitis B and C co-infection.

For each reported case of chronic hepatitis, if a county or other reporting entity designated the report as ‘Confirmed’ or ‘Probable’, then the case was counted as such. If the county or other reporting entity did not classify the case as ‘Confirmed’ or ‘Probable’, then it was classified according to the classification criteria defined by the Centers for Disease Control and Prevention at the time the case was reported (see **Appendix** for current case definition). The diagnosis date for each case was determined to be the earliest diagnosis date reported. If a case report did not include a diagnosis date, then it was determined by laboratory data, or in the absence of laboratory data, by the date the case was entered.

Washington State deaths related to hepatitis B and C include all deaths with hepatitis B or hepatitis C ICD-9 or ICD-10 codes noted on the death certificate, whether hepatitis B or C was the underlying cause or one of multiple causes. See Appendix for list of codes associated with viral hepatitis.

Additional Resources

The Health of Washington State, 2007 Edition: <http://www.doh.wa.gov/hws/HWS2007.htm>
Centers for Disease Control and Prevention: <http://www.cdc.gov/ncidod/diseases/hepatitis/>

Acute hepatitis surveillance data are reported separately. Hepatitis B data: www.doh.wa.gov/notify/nc/hepb.htm Hepatitis C data: www.doh.wa.gov/notify/nc/hepc.htm

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Hepatitis B

Frequently Asked Questions

The Frequently Asked Questions below are adapted from those published by the Centers for Disease Control and Prevention.

What is hepatitis B?

Hepatitis B is a contagious liver disease that ranges in severity from a mild illness lasting a few weeks to a serious, lifelong illness. It results from infection with the hepatitis B virus. Hepatitis B can be either “acute” or “chronic.” Acute hepatitis B virus infection is a short-term illness that occurs within the first 6 months after someone is exposed to the hepatitis B virus. Acute infection can — but does not always — lead to chronic infection. Chronic hepatitis B virus infection is a long-term illness that occurs when the hepatitis B virus remains in a person’s body.

How many people have hepatitis B?

In 2006, there were an estimated 46,000 new hepatitis B virus infections in the United States. However, the official number of reported hepatitis B cases is much lower. Many people don’t know they are infected or may not have symptoms and therefore never seek the attention of medical or public health officials. In the United States, an estimated 800,000 to 1.4 million persons have chronic hepatitis B virus infection. Globally, chronic hepatitis B affects approximately 350 million people and contributes to an estimated 620,000 deaths worldwide each year. Rates of acute hepatitis B in the United States have declined by approximately 80% since 1991. At that time, routine hepatitis B vaccination of children was implemented and has dramatically decreased the rates of the disease in the United States, particularly among children.

What are the symptoms of acute hepatitis B?

Although a majority of adults develop symptoms from acute hepatitis B virus infection, many young children do not. Adults and children over the age of five years are more likely to have symptoms. Seventy percent of adults will develop symptoms from the infection. On average, symptoms appear three months after exposure, but they can appear any time between six weeks and six months after exposure. Symptoms usually last a few weeks, but some people can be ill for as long as 6 months. Symptoms of acute hepatitis B, if they appear, can include:

- Fever
- Fatigue
- Loss of appetite
- Nausea
- Vomiting
- Abdominal pain

- Dark urine
- Clay-colored bowel movements
- Joint pain
- Jaundice (yellow color in the skin or the eyes)

What long-term health problems are caused by hepatitis B?

Many people with chronic hepatitis B virus infection do not know they are infected since they do not feel or look sick. However, they still can spread the virus to others and are at risk of serious health problems themselves, including liver damage, liver failure, liver cancer, or even death. Approximately 2,000–4,000 people die every year from hepatitis B-related liver disease.

Does everyone infected with hepatitis B experience long-term effects?

The likelihood depends upon the age at which someone becomes infected. The younger a person is when infected with hepatitis B virus, the greater his or her chance of developing chronic hepatitis B. Approximately 90% of infected infants will develop chronic infection. The risk goes down as a child gets older. Approximately 25%–50% of children infected between the ages of 1 and 5 years will develop chronic hepatitis. The risk drops to 6%–10% when a person is infected over 5 years of age. Worldwide, most people with chronic hepatitis B were infected at birth or during early childhood.

Some people have ongoing symptoms similar to acute hepatitis B, but most individuals with chronic hepatitis B remain symptom free for as long as 20 or 30 years. About 15%–25% of people with chronic hepatitis B develop serious liver conditions, such as cirrhosis (scarring of the liver) or liver cancer. Even as the liver becomes diseased, some people still do not have symptoms, although certain blood tests for liver function might begin to show some abnormalities.

How is hepatitis B spread?

Hepatitis B is spread when blood, semen, or other body fluid infected with the hepatitis B virus enters the body of a person who is not infected. Among adults in the United States, hepatitis B is most commonly spread through sexual contact and accounts for nearly two-thirds of acute hepatitis B cases. People can become infected with the virus during activities such as:

- Birth (spread from an infected mother to her baby during birth)
- Sex with an infected partner
- Sharing needles, syringes, or other drug-injection equipment
- Sharing items such as razors or toothbrushes with an infected person
- Direct contact with the blood or open sores of an infected person
- Exposure to blood from needlesticks or other sharp instruments

Hepatitis B is not spread routinely through food or water. However, there have been instances in which hepatitis B has been spread to babies when they have received food pre-chewed by an infected person. Hepatitis B virus is not spread by sharing eating utensils, breastfeeding, hugging, kissing, holding hands, coughing, or sneezing.

Who is at risk for hepatitis B?

Although anyone can get hepatitis B, some people are at greater risk, such as those who:

- Have sex with an infected person
- Have multiple sex partners
- Have a sexually transmitted disease
- Are men who have sexual contact with other men
- Inject drugs or share needles, syringes, or other drug equipment
- Live with a person who has chronic hepatitis B
- Are infants born to infected mothers
- Are exposed to blood on the job
- Are hemodialysis patients
- Travel to countries with moderate to high rates of hepatitis B

Who should be tested for hepatitis B?

- Health care providers should routinely test the following people for hepatitis B infection:
- Persons born in regions of the world where hepatitis B is common
- U.S.-born persons not vaccinated as infants whose parents were born in regions of the world where hepatitis B is common
- Injection-drug users
- Men who have sex with men
- Persons needing immunosuppressive therapy, including chemotherapy, immunosuppression related to organ transplantation, and immunosuppression for rheumatologic or gastroenterologic disorders
- Persons with elevated liver enzymes of unknown reason
- Donors of blood, plasma, organs, tissues or semen
- Hemodialysis patients
- Pregnant women
- Infants born to mothers who have had a positive hepatitis B surface antigen test
- Household, needle-sharing, or sex contacts of persons known to have had a positive hepatitis B surface antigen test
- Persons who are the source of blood or body fluids resulting in an exposure (for example, a needlestick or sexual assault) that might require postexposure prophylaxis
- HIV-positive persons

How is hepatitis B treated?

There is no medication available to treat acute hepatitis B. During this short-term infection, doctors usually recommend rest, adequate nutrition, and fluids, although some people may

need to be hospitalized. People with chronic hepatitis B virus infection should seek the care or consultation of a doctor with experience treating hepatitis B. People with chronic hepatitis B should be monitored regularly for signs of liver disease and evaluated for possible treatment. Several medications have been approved for hepatitis B treatment, and new drugs are in development. However, not every person with chronic hepatitis B needs to be on medication, and the drugs may cause side effects in some patients.

What can a person with chronic hepatitis B do to take care of his or her liver?

People with chronic hepatitis B should be monitored regularly by a doctor experienced in caring for people with hepatitis B. They should avoid alcohol because it can cause additional liver damage. They also should check with a health professional before taking any prescription pills, supplements, or over-the-counter medications, as these can potentially damage the liver.

Is there a vaccine that prevents hepatitis B?

Yes. The best way to prevent hepatitis B is by getting the hepatitis B vaccine. The hepatitis B vaccine is safe and effective and is usually given as 3-4 shots over a 6-month period. The hepatitis B vaccine series is a sequence of shots that stimulate a person's natural immune system to protect against hepatitis B. After the vaccine is given, the body makes antibodies that protect a person against the virus. An antibody is a substance found in the blood that is produced in response to a virus invading the body. These antibodies are then stored in the body and will fight off the infection if a person is exposed to the hepatitis B virus in the future.

Who should get vaccinated against hepatitis B?

Hepatitis B vaccination is recommended for:

- All infants, starting with the first dose of hepatitis B vaccine at birth
- All children and adolescents younger than 19 years of age who have not been vaccinated
- People whose sex partners have hepatitis B
- Sexually active persons who are not in a long-term, mutually monogamous relationship.
- Persons seeking evaluation or treatment for a sexually transmitted disease
- Men who have sexual contact with other men
- People who share needles, syringes, or other drug-injection equipment
- People who have close household contact with someone infected with the hepatitis B virus
- Healthcare and public safety workers at risk for exposure to blood or blood-contaminated body fluids on the job
- People with end-stage renal disease, including predialysis, hemodialysis, peritoneal dialysis, and home dialysis patients
- Residents and staff of facilities for developmentally disabled persons
- Travelers to regions with moderate or high rates of hepatitis B

- People with chronic liver disease
- People with HIV infection
- Anyone who wishes to be protected from hepatitis B virus infection

In order to reach individuals at risk for hepatitis B, vaccination is also recommended for anyone in or seeking treatment from the following:

- Sexually transmitted disease treatment facilities
- HIV testing and treatment facilities
- Facilities providing drug-abuse treatment and prevention services
- Healthcare settings targeting services to injection drug users
- Healthcare settings targeting services to men who have sex with men
- Chronic hemodialysis facilities and end-stage renal disease programs
- Correctional facilities
- Institutions and nonresidential day care facilities for developmentally disabled persons

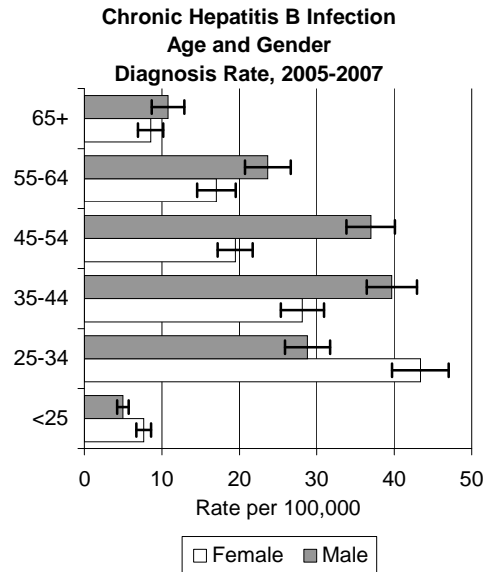
Washington State Surveillance Summary

There were 15,296 cases of chronic hepatitis B reported to the Washington State Department of Health from December 2000 through September 2008. Of these, approximately 68% were classified as ‘Probable’ and 32% as ‘Confirmed’. The tables and figures in this report describe the summary amount of cases reported (confirmed plus probable). See **Appendix** for case definitions. Approximately 55% were among males, 43% among females, and 2% were of unknown sex (Table 1). Chronic hepatitis B is diagnosed most often among people age 25-54 years old, with approximately 69% of cases diagnosed in this age range (Table 1). Males have higher rates of infection in most age categories, though females age 25-34 have a higher rate than males in that age category (Figure 1). Many case reports are missing race and risk information, so it is not possible to draw summary conclusions concerning race/ethnicity and risk (Tables 2 and 3). Statewide, there were approximately 1272 cases diagnosed annually from 2003 through 2007 (Table 4), and the annual rate of reported cases statewide was 20 per 100,000 for the years 2005 through 2007 (Figure 2). For the years 2003 through 2007, there were approximately 90 hepatitis B deaths annually among males and 36 deaths annually among females (Table 9).

Table 1. Sex and age at diagnosis of chronic hepatitis B cases reported through 9/30/08

Age at Diagnosis	Female		Male		Unknown		Total	
	N	%	N	%	N	%	N	%
<25 years	1409	21%	1263	15%	59	19%	2731	18%
25-34 years	2065	31%	1762	21%	62	20%	3889	25%
35-44 years	1392	21%	2326	28%	59	19%	3777	25%
45-54 years	917	14%	1878	22%	75	24%	2870	19%
55-64 years	505	8%	771	9%	39	13%	1315	9%
65+ years	333	5%	363	4%	18	6%	714	5%
Total	6621	100%	8363	100%	312	100%	15296	100%
Percent of Total Chronic B Cases		43%		55%		2%		

Figure 1. Chronic hepatitis B rate per 100,000 by sex and age at diagnosis, 2005 through 2007.



There are a large number of cases with unknown race/ethnicity. It cannot be assumed that their race/ethnicity distribution is the same for cases with known race/ethnicity (Table 2). Prevalence of antibodies to the hepatitis B virus is relatively low in most of North America and Europe (<2%) compared to other countries. Areas of the world with high prevalence of antibodies to the hepatitis B virus ($\geq 8\%$) include countries in southeast Asia and central and south Africa.

Table 2. Race/ethnicity of chronic hepatitis B cases reported through 9/30/08

Race/Ethnicity	N	%
Asian/Pacific Islander, non-Hispanic	5436	36%
Unknown or not reported	5061	33%
White, non-Hispanic	3030	20%
Black, non-Hispanic	1176	8%
Hispanic, all races	319	2%
Native American/Alaska Native, non-Hispanic	150	1%
Multi-race, non-Hispanic	124	1%
Total	15296	100%

There are a large number of cases with unknown risk factors. It cannot be assumed that their risk factor distribution is the same as for cases with reported risk factors (Table 3, next page).

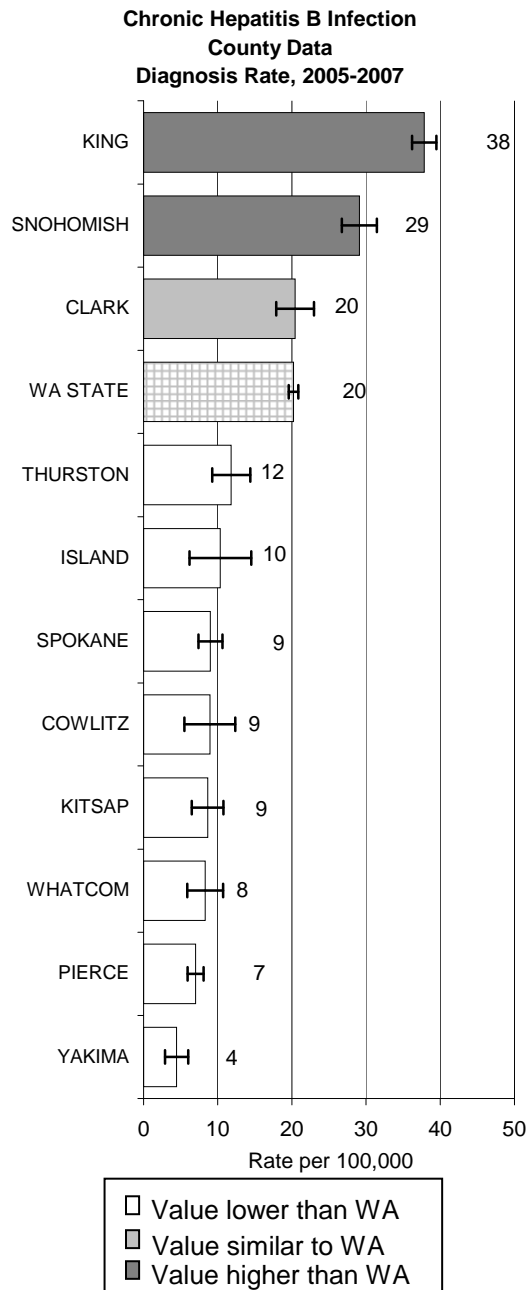
Table 3. Exposure risk factors of chronic hepatitis B cases reported through 9/30/08

Risk	N	%
Unknown or not reported	14400	94%
Injection drug use	475	3%
Multiple risks	247	2%
Blood products or solid organ transplant	65	0%
Maternal transmission	51	0%
Occupational needlestick	26	0%
Sexual	24	0%
Chronic hemodialysis	7	0%
Factor concentrates before 1987	1	0%
Total	15296	100%

Table 4. Year of diagnosis of chronic hepatitis B cases reported through 9/30/08

County	Pre-2003	2003	2004	2005	2006	2007	2008	N	%
ADAMS	1	2	3	1	0	2	0	9	0%
ASOTIN	3	1	2	0	1	4	1	12	0%
BENTON	28	6	4	1	0	2	1	42	0%
CHELAN	7	0	3	0	3	6	7	26	0%
CLALLAM	31	6	3	4	5	6	3	58	0%
CLARK	219	92	40	78	105	64	42	640	4%
COLUMBIA	0	1	0	0	0	1	0	2	0%
COWLITZ	23	12	6	14	9	3	4	71	0%
DOUGLAS	6	2	1	1	0	1	0	11	0%
FERRY	5	0	0	0	0	0	0	5	0%
FRANKLIN	7	3	4	0	1	1	1	17	0%
GARFIELD	0	0	0	0	0	1	0	1	0%
GRANT	18	4	5	6	5	1	2	41	0%
GRAYS HARBOR	8	12	5	3	5	5	2	40	0%
ISLAND	16	8	5	13	6	5	4	57	0%
JEFFERSON	4	1	11	3	6	4	2	31	0%
KING	6149	502	615	656	699	728	481	9830	64%
KITSAP	50	11	4	13	24	26	21	149	1%
KITTITAS	6	1	0	1	0	2	7	17	0%
KLICKITAT	4	3	0	2	2	1	0	12	0%
LEWIS	8	7	1	3	2	3	3	27	0%
LINCOLN	2	0	0	0	0	0	0	2	0%
MASON	9	3	4	5	8	3	4	36	0%
OKANOGAN	10	4	6	1	8	5	3	37	0%
PACIFIC	1	2	2	0	0	8	5	18	0%
PEND OREILLE	7	2	5	1	0	1	0	16	0%
PIERCE	594	103	125	103	60	0	51	1036	7%
SAN JUAN	2	2	1	0	0	0	2	7	0%
SKAGIT	12	8	4	5	6	5	6	46	0%
SKAMANIA	0	0	1	0	1	1	0	3	0%
SNOHOMISH	224	128	92	194	176	216	116	1146	7%
SPOKANE	145	58	49	6	46	68	42	414	3%
STEVENS	9	5	1	5	5	6	0	31	0%
THURSTON	48	9	10	13	11	58	28	177	1%
WAHIAKUM	0	0	0	0	0	0	0	0	0%
WALLA WALLA	16	5	5	0	1	2	0	29	0%
WHATCOM	30	11	8	9	23	14	16	111	1%
WHITMAN	9	3	3	2	3	4	1	25	0%
YAKIMA	103	24	29	16	9	6	3	190	1%
STATE CORRECTIONS	160	30	293	112	41	56	83	775	5%
UNKNOWN	21	70	6	2	0	0	0	99	1%
Total	7995	1141	1356	1273	1271	1319	941	15296	100%

Figure 2. Washington State chronic hepatitis B diagnosis rate per 100,000 by county, 2005 through 2007



Note: A county's rate for chronic hepatitis B can be influenced by the resources it devotes to chronic hepatitis surveillance, as well as the actual prevalence. Several counties reported too few cases to calculate a rate, including Adams, Asotin, Benton, Clallam, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Grays Harbor, Jefferson, Kittitas, Klickitat, Lewis, Lincoln, Mason, Okanogan, Pacific, Pend Oreille, San Juan, Skagit, Skamania, Stevens, Wahkiakum, Walla Walla and Whitman counties.

Hepatitis C

Frequently Asked Questions

The Frequently Asked Questions below are adapted from those published by the Centers for Disease Control and Prevention.

What is hepatitis C?

Hepatitis C is a contagious liver disease that ranges in severity from a mild illness lasting a few weeks to a serious, lifelong illness that attacks the liver. It results from infection with the hepatitis C virus (HCV), which is spread primarily through contact with the blood of an infected person. Hepatitis C can be either “acute” or “chronic.” Acute hepatitis C virus infection is a short-term illness that occurs within the first 6 months after someone is exposed to the hepatitis C virus. For most people, acute infection leads to chronic infection. Chronic hepatitis C virus infection is a long-term illness that occurs when the hepatitis C virus remains in a person’s body. Hepatitis C virus infection can last a lifetime and lead to serious liver problems, including cirrhosis (scarring of the liver) or liver cancer.

How many people have hepatitis C?

In 2006, there were an estimated 19,000 new hepatitis C virus infections in the United States. However, the official number of reported hepatitis C cases is much lower. Many people who are infected never have symptoms and therefore never come to the attention of medical or public health officials. An estimated 3.2 million persons in the United States have chronic hepatitis C virus infection. Most people do not know they are infected because they don’t look or feel sick. Approximately 75%–85% of people who become infected with hepatitis C virus develop chronic infection.

What are the symptoms of acute hepatitis C?

Approximately 70%–80% of people with acute hepatitis C do not have any symptoms. Some people, however, can have mild to severe symptoms soon after being infected, including

- Fever
- Fatigue
- Loss of appetite
- Nausea
- Vomiting
- Abdominal pain
- Dark urine
- Clay-colored bowel movements
- Joint pain
- Jaundice (yellow color in the skin or eyes)

If symptoms occur, the average time is 6–7 weeks after exposure, but this can range from 2 weeks to 6 months. However, many people infected with the hepatitis C virus do not develop symptoms. Even if a person with hepatitis C has no symptoms, he or she can still spread the virus to others. In many cases, there are no symptoms of the disease until liver problems have developed. In persons without symptoms, hepatitis C is often detected during routine blood tests to measure liver function and liver enzyme (protein produced by the liver) level.

What long-term health problems are caused by hepatitis C?

Chronic hepatitis C is a serious disease that can result in long-term health problems, including liver damage, liver failure, liver cancer, or even death. It is the leading cause of cirrhosis and liver cancer and the most common reason for liver transplantation in the United States. Approximately 8,000–10,000 people die every year from hepatitis C related liver disease.

Does everyone infected with hepatitis C experience long-term effects?

Of every 100 people infected with the hepatitis C virus, about

- 75–85 people will develop chronic hepatitis C virus infection; of those,
 - 60–70 people will go on to develop chronic liver disease
 - 5–20 people will go on to develop cirrhosis over a period of 20–30 years
 - 1–5 people will die from cirrhosis or liver cancer

Approximately 15%–25% of people who get hepatitis C will clear the virus from their bodies without treatment and will not develop chronic infection. Experts do not fully understand why this happens for some people.

How is hepatitis C spread?

Hepatitis C is spread when blood from a person infected with the hepatitis C virus enters the body of someone who is not infected. Today, most people become infected with the hepatitis C virus by sharing needles or other equipment to inject drugs. Before 1992, when widespread screening of the blood supply began in the United States, hepatitis C was also commonly spread through blood transfusions and organ transplants.

Hepatitis C can be spread within a household, but this does not occur very often. If hepatitis C virus is spread within a household, it is most likely a result of direct, through-the-skin exposure to the blood of an infected household member. Hepatitis C is rarely passed from a pregnant woman to her baby. About 4 of every 100 infants born to mothers with hepatitis C become infected with the virus. However, the risk becomes greater if the mother has both HIV infection and hepatitis C. Hepatitis C virus is not spread by sharing eating utensils, breastfeeding, hugging, kissing, holding hands, coughing, or sneezing. It is also not spread through food or water.

Who is at risk for hepatitis C?

Some people are at increased risk for hepatitis C, including

- Current injection drug users
- Past injection drug users, including those who injected only one time or many years ago
- Recipients of donated blood, blood products, and organs (once a common means of transmission but now rare in the United States since blood screening became available in 1992)
- People who received a blood product for clotting problems made before 1987
- Hemodialysis patients or persons who spent many years on dialysis for kidney failure
- People who received body piercing or tattoos done with non-sterile instruments
- People with known exposures to the hepatitis C virus, such as
 - Healthcare workers injured by needlesticks
 - Recipients of blood or organs from a donor who tested positive for the hepatitis C virus
- HIV-infected persons
- Children born to mothers infected with the hepatitis C virus

Who should be tested for hepatitis C?

Talk to your doctor about being tested for hepatitis C if any of the following are true:

- You are a current or former injection drug user, even if you injected only one time or many years ago.
- You were treated for a blood clotting problem before 1987.
- You received a blood transfusion or organ transplant before July 1992.
- You are on long-term hemodialysis treatment.
- You have abnormal liver tests or liver disease.
- You work in healthcare or public safety and were exposed to blood through a needlestick or other sharp object injury.
- You are infected with HIV.

How is hepatitis C treated?

There is no medication available to treat acute hepatitis C infection. Doctors usually recommend rest, adequate nutrition, and fluids. Each person should discuss treatment options with a doctor who specializes in treating hepatitis. This can include some internists, family practitioners, infectious disease doctors, or hepatologists (liver specialists). People with chronic hepatitis C should be monitored regularly for signs of liver disease and evaluated for treatment. The treatment most often used for hepatitis C is a combination of two medicines, interferon and ribavirin. However, not every person with chronic hepatitis C needs or will benefit from treatment. In addition, the drugs may cause serious side effects in some patients.

What can a person with chronic hepatitis C do to take care of his or her liver?

People with chronic hepatitis C should be monitored regularly by an experienced doctor. They should avoid alcohol because it can cause additional liver damage. They also should check with a health professional before taking any prescription pills, supplements, or over-the-counter medications, as these can potentially damage the liver. If liver damage is present, a person should check with his or her doctor about getting vaccinated against hepatitis A and hepatitis B.

Washington State Surveillance Summary

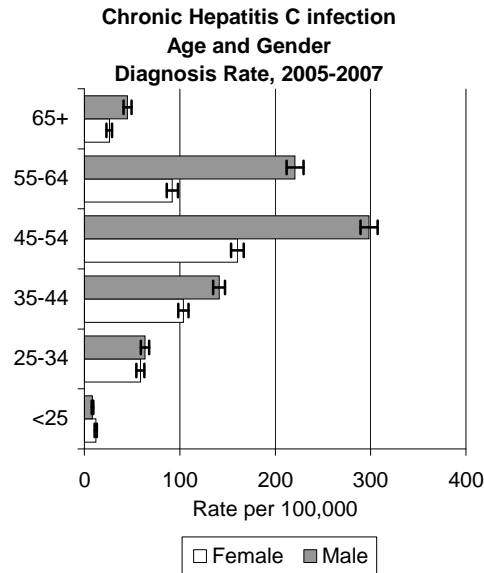
There were 51,255 cases of chronic hepatitis C reported to the Washington State Department of Health from December 2000 through September 2008. Of these, 63% were among males, 35% among females, and 2% were of unknown sex. Chronic hepatitis C is diagnosed most often among people age 45-54 years old (Table 5). Males have higher rates of infection among almost all age categories, and the rate of infection is highest among males and females age 45-54 years (Figure 3). Many case reports are missing race and risk information, so it is not possible to draw summary conclusions concerning race/ethnicity and risk (Tables 6 and 7). Statewide, there were approximately 5300 cases diagnosed annually from 2003 through 2007 (Table 8), and the annual rate of reported cases statewide was 88 per 100,000 for the years 2005 through 2007 (Figure 4). For the years 2003 through 2007, there were approximately 590 hepatitis C deaths annually among males and 306 deaths annually among females (Table 9).

There were 51,225 cases of chronic hepatitis C reported to the Washington State Department of Health from December 2000 through September 2008. Of these, approximately 40% were classified as ‘Probable’ and 60% as ‘Confirmed’. The tables and figures use just the summary amount of cases reported (confirmed plus probable). See **Appendix** for case definitions.

Table 5. Sex and age at diagnosis of chronic hepatitis C cases reported through 9/30/08

Age at First Diagnosis	Females		Males		Unknown		Total	
	N	%	N	%	N	%	N	%
< 25 years	1098	6%	1121	3%	114	13%	2333	5%
25-34 years	2446	13%	3339	10%	63	7%	5848	11%
35-44 years	5294	29%	8752	27%	159	18%	14205	28%
45-54 years	6273	35%	13001	40%	324	37%	19598	38%
55-64 years	2188	12%	4759	15%	173	20%	7120	14%
65+ years	882	5%	1189	4%	50	6%	2121	4%
Total	18181	100%	32161	100%	883	100%	51225	100%
Percent of Total Chronic C Cases		35%		63%		2%		

Figure 3. Chronic hepatitis C diagnosis rate per 100,000 by sex and age at diagnosis, 2005 through 2007



There are a large number of cases with unknown race/ethnicity. It cannot be assumed that their race/ethnicity distribution is the same as for cases with known race/ethnicity (Table 6).

Table 6. Race/ethnicity of chronic hepatitis C cases reported through 9/30/08

Race/Ethnicity	N	%
Unknown or not reported	25929	51%
White, non-Hispanic	18498	36%
Black, non-Hispanic	3170	6%
Hispanic, all races	1643	3%
Native American/Alaska Native, non-Hispanic	1109	2%
Asian/Pacific Islander, non-Hispanic	775	2%
Multi-race, non-Hispanic	101	0%
Total	51225	100%

There are a large number of cases with unknown risk factors. It cannot be assumed that their risk factor distribution is the same as for cases with reported risk factors (Table 7).

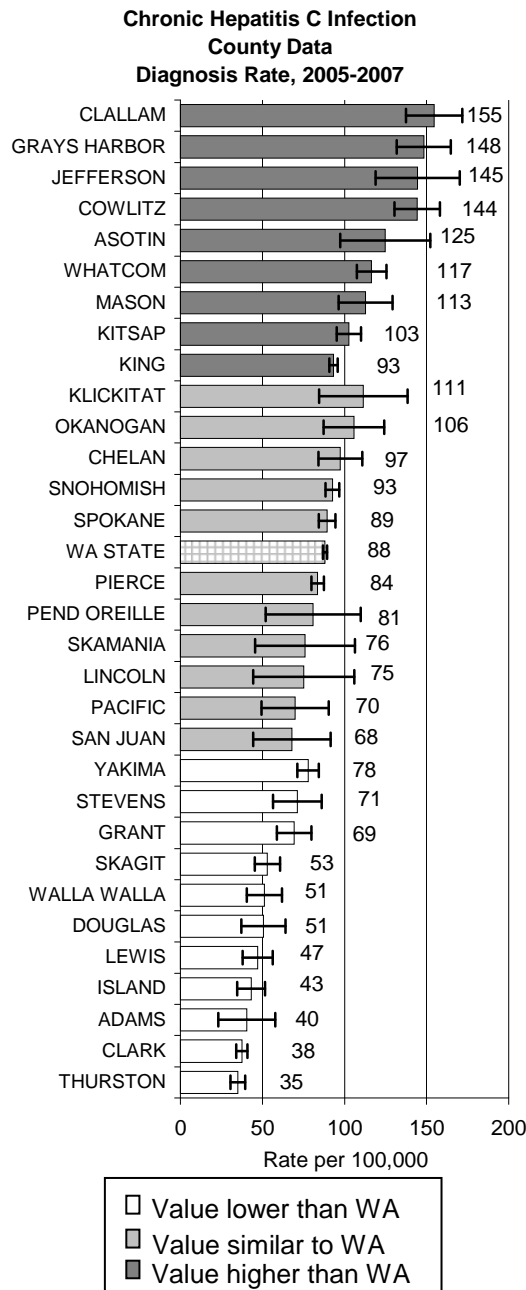
Table 7. Exposure risk factors of chronic hepatitis C cases reported through 9/30/08

Risk	N	%
Unknown or not reported	44451	87%
Injection drug use	4695	9%
Multiple risks	1118	2%
Blood products or solid organ transplant	594	1%
Sexual	164	0%
Occupational needlestick	119	0%
Chronic hemodialysis	40	0%
Maternal transmission	27	0%
Factor concentrates before 1987	17	0%
Total	51225	100%

Table 8. Year of diagnosis of chronic hepatitis C cases reported through 9/30/08

County	Pre-2003	2003	2004	2005	2006	2007	2008	N	%
ADAMS	6	6	24	5	3	13	1	58	0%
ASOTIN	53	33	24	26	28	25	13	202	0%
BENTON	65	39	39	18	14	8	10	193	0%
CHELAN	88	28	46	27	58	120	68	435	1%
CLALLAM	221	47	37	55	128	131	55	674	1%
CLARK	266	160	79	118	207	129	284	1243	2%
COLUMBIA	2	3	3	4	1	2	0	15	0%
COWLITZ	255	170	90	110	148	161	124	1058	2%
DOUGLAS	16	10	14	13	19	22	27	121	0%
FERRY	21	7	8	2	5	2	0	45	0%
FRANKLIN	31	20	15	4	3	5	3	81	0%
GARFIELD	0	1	0	2	0	3	0	6	0%
GRANT	88	36	43	52	48	68	56	391	1%
GRAYS HARBOR	49	27	52	78	126	109	60	501	1%
ISLAND	65	28	30	67	10	23	25	248	0%
JEFFERSON	23	15	36	33	51	38	20	216	0%
KING	9409	1081	1616	1706	1738	1691	888	18129	35%
KITSAP	392	147	110	230	273	245	183	1580	3%
KITTITAS	29	9	9	9	9	3	27	95	0%
KLICKITAT	29	10	12	18	27	21	26	143	0%
LEWIS	42	26	6	12	16	75	96	273	1%
LINCOLN	14	10	8	11	7	5	1	56	0%
MASON	66	29	53	56	69	55	35	363	1%
OKANOGAN	50	15	28	23	63	40	28	247	0%
PACIFIC	23	8	6	9	14	22	35	117	0%
PEND OREILLE	32	24	20	12	8	10	1	107	0%
PIERCE	4756	895	912	894	987	59	375	8878	17%
SAN JUAN	15	5	3	4	8	20	6	61	0%
SKAGIT	91	32	38	40	61	79	78	419	1%
SKAMANIA	15	3	4	8	11	5	7	53	0%
SNOHOMISH	799	506	494	659	625	581	342	4006	8%
SPOKANE	2002	407	359	425	299	465	237	4194	8%
STEVENS	60	33	24	26	28	36	8	215	0%
THURSTON	109	33	71	29	37	177	60	516	1%
WAHKIAKUM	1	1	0	2	1	2	1	8	0%
WALLA WALLA	82	43	42	35	23	31	17	273	1%
WHATCOM	126	60	71	85	276	284	245	1147	2%
WHITMAN	13	5	4	1	4	2	2	31	0%
YAKIMA	600	233	222	214	164	163	64	1660	3%
STATE CORRECTIONS	717	138	613	378	595	213	378	3032	6%
UNKNOWN	13	92	21	6	2	1	0	135	0%
Total	20734	4475	5286	5506	6194	5144	3886	51225	100%

Figure 4. Washington State chronic hepatitis C diagnosis rate per 100,000 by county, 2005 through 2007



Note: A county's rate for chronic hepatitis C can be influenced by the resources it devotes to chronic hepatitis surveillance, as well as the actual prevalence. Several counties reported too few cases to calculate a rate, including Columbia, Ferry, Franklin, Garfield, Wahkiakum and Whitman counties.

Hepatitis B and C Co-infection

Washington State Surveillance Summary

There were 643 cases of chronic hepatitis C reported to the Washington State Department of Health from December 2000 through September 2008. For the years 2003 through 2007, there were approximately 50 cases of co-infection diagnosed per year. Among all co-infected cases, 76% were among males and 24% among females (Table 9). Co-infection is most often diagnosed among individuals 35-44 years old. Like chronic hepatitis B and chronic hepatitis C, the majority of cases are diagnosed among individuals 25-54 years old (Table 10). Co-infection is not reported in as many counties as mono-infected hepatitis B or hepatitis C, with 30 counties reporting fewer than five cases (Table 11). Also similar to mono-infected chronic hepatitis B and chronic hepatitis C cases, many co-infected cases are missing race and risk information (Tables 12 and 13).

Table 9. Sex and age at diagnosis of chronic hepatitis B and chronic hepatitis C co-infected cases reported through 9/30/08

Hepatitis B and C Co-infection								
Age at First Diagnosis	Female		Male		Unknown		Total	
	N	%	N	%	N	%	N	%
<25 years	13	8%	16	3%	1	33%	30	5%
25-34 years	39	25%	88	18%	0	0%	127	20%
35-44 years	44	29%	183	38%	0	0%	227	35%
45-54 years	31	20%	156	32%	2	67%	189	29%
55-64 years	24	16%	38	8%	0	0%	62	10%
65+ years	3	2%	5	1%	0	0%	8	1%
Total	154	100%	486	100%	3	100%	643	100%
Percent of Total Co-infected Cases		24%		76%		0%		

Table 10. Comparison of age at diagnosis for chronic hepatitis B and chronic hepatitis C co-infected cases, and mono-infected chronic hepatitis B and chronic hepatitis C cases reported through 9/30/2008

Age at First Diagnosis	Hepatitis B and C Co-infection		Hepatitis B		Hepatitis C	
	N	%	N	%	N	%
<25 years	30	5%	2731	18%	2333	5%
25-34 years	127	20%	3889	25%	5848	11%
35-44 years	227	35%	3777	25%	14205	28%
45-54 years	189	29%	2870	19%	19598	38%
55-64 years	62	10%	1315	9%	7120	14%
65+ years	8	1%	714	5%	2121	4%
Total	643	100%	15296	100%	51225	100%

Table 11. Comparison of county of residence at diagnosis for chronic hepatitis B and chronic hepatitis C co-infected cases, and mono-infected chronic hepatitis B and chronic hepatitis C cases reported through 9/30/2008

County	Hepatitis B and C Co-infection		Hepatitis B		Hepatitis C	
	N	%	N	%	N	%
ADAMS	0	0%	9	0%	58	0%
ASOTIN	1	0%	12	0%	202	0%
BENTON	0	0%	42	0%	193	0%
CHELAN	2	0%	26	0%	435	1%
CLALLAM	4	1%	58	0%	674	1%
CLARK	7	1%	640	4%	1243	2%
COLUMBIA	0	0%	2	0%	15	0%
COWLITZ	4	1%	71	0%	1058	2%
DOUGLAS	0	0%	11	0%	121	0%
FERRY	0	0%	5	0%	45	0%
FRANKLIN	0	0%	17	0%	81	0%
GARFIELD	1	0%	1	0%	6	0%
GRANT	2	0%	41	0%	391	1%
GRAYS HARBOR	2	0%	40	0%	501	1%
ISLAND	2	0%	57	0%	248	0%
JEFFERSON	1	0%	31	0%	216	0%
KING	333	52%	9830	64%	18129	35%
KITSAP	4	1%	149	1%	1580	3%
KITTITAS	1	0%	17	0%	95	0%
KLICKITAT	0	0%	12	0%	143	0%
LEWIS	1	0%	27	0%	273	1%
LINCOLN	0	0%	2	0%	56	0%
MASON	2	0%	36	0%	363	1%
OKANOGAN	1	0%	37	0%	247	0%
PACIFIC	7	1%	18	0%	117	0%
PEND OREILLE	0	0%	16	0%	107	0%
PIERCE	114	18%	1036	7%	8878	17%
SAN JUAN	0	0%	7	0%	61	0%
SKAGIT	1	0%	46	0%	419	1%
SKAMANIA	0	0%	3	0%	53	0%
SNOHOMISH	14	2%	1146	7%	4006	8%
SPOKANE	79	12%	414	3%	4194	8%
STEVENS	0	0%	31	0%	215	0%
THURSTON	3	0%	177	1%	516	1%
WAHIAKUM	0	0%	0	0%	8	0%
WALLA WALLA	1	0%	29	0%	273	1%
WHATCOM	6	1%	111	1%	1147	2%
WHITMAN	0	0%	25	0%	31	0%
YAKIMA	6	1%	190	1%	1660	3%
STATE CORRECTIONS	41	6%	775	5%	3032	6%
UNKNOWN	3	0%	99	1%	135	0%
Total	643	100%	15296	100%	51225	100%

Table 12. Comparison of race/ethnicity for chronic hepatitis B and chronic hepatitis C co-infected cases, and mono-infected chronic hepatitis B and chronic hepatitis C cases reported through 9/30/2008

Race/Ethnicity	Hepatitis B and C Co-infection		Hepatitis B		Hepatitis C	
	N	%	N	%	N	%
White, non-Hispanic	306	48%	3030	20%	18498	36%
Unknown or not reported	187	29%	5061	33%	25929	51%
Black, non-Hispanic	70	11%	1176	8%	3170	6%
Asian/Pacific Islander, non-Hispanic	51	8%	5436	36%	775	2%
Hispanic, all races	18	3%	319	2%	1643	3%
Native American/Alaska Native, non-Hispanic	11	2%	150	1%	1109	2%
Multi-race, non-Hispanic	0	0%	124	1%	101	0%
Total	643	100%	15296	100%	51225	100%

Table 13. Comparison of risk factors chronic hepatitis B and chronic hepatitis C co-infected cases, and mono-infected chronic hepatitis B and chronic hepatitis C cases reported through 9/30/2008

Risk	Hepatitis B and C Co-infection		Hepatitis B		Hepatitis C	
	N	%	N	%	N	%
Unknown or not reported	522	81%	14400	94%	44451	87%
Injection drug use	85	13%	475	3%	4695	9%
Multiple risks	26	4%	247	2%	1118	2%
Sexual	4	1%	24	0%	164	0%
Blood products or solid organ transplant	2	0%	65	0%	594	1%
Occupational needlestick	2	0%	26	0%	119	0%
Maternal transmission	1	0%	51	0%	27	0%
Factor concentrates before 1987	1	0%	1	0%	17	0%
Chronic hemodialysis	0	0%	7	0%	40	0%
Total	643	100%	15296	100%	51225	100%

Hepatitis B and Hepatitis C Deaths

There is a significant amount of premature mortality among persons with hepatitis, particularly hepatitis C (Figure 5, Table 14). Among all female deaths in Washington State for the years 2002 through 2007, only 20% of females died before age 65, while 63% of females with hepatitis B-related deaths died before age 65, and 70% of females with hepatitis C-related deaths died before age 65. For males, 33% of all deaths were among males of age less than 65 years, while 79% of males with hepatitis B-related deaths died before age 65, and 87% of males with hepatitis C-related deaths died before age 65. This may reflect both effects of the disease and risk factors contributing to the disease, such as injection drug use, that also affect mortality. The figure and table below include all hepatitis B and hepatitis C deaths, including acute and chronic.

Figure 5. Washington State deaths related to hepatitis B and hepatitis C, 1992 through 2007

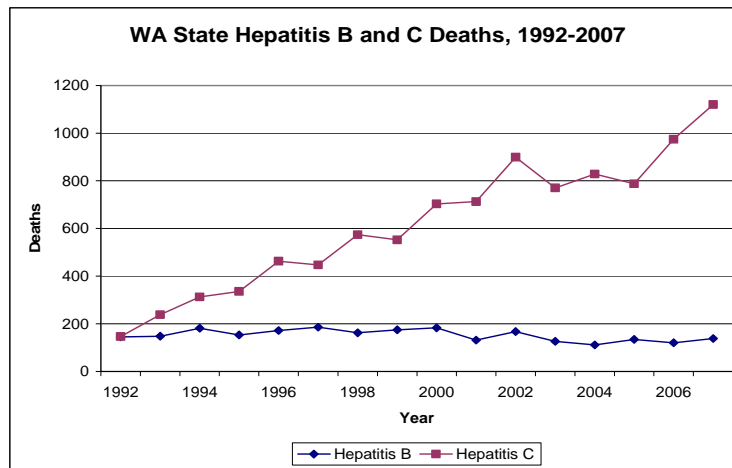


Table 14. All Washington State deaths, and deaths related to hepatitis B and hepatitis C, 2002 through 2007

Female Deaths, 2003-2007						
Age	WA State Total		Hepatitis B		Hepatitis C	
	N	%	N	%	N	%
<45 years	6109	5%	21	12%	106	7%
45-54 years	6671	6%	51	28%	596	39%
55-64 years	10786	9%	41	23%	436	29%
65-74 years	16249	14%	35	19%	185	12%
75-84 years	32985	28%	28	15%	149	10%
85+ years	45308	38%	5	3%	57	4%
Total	118108	100%	181	100%	1529	100%

Male Deaths, 2003-2007						
Age	WA State Total		Hepatitis B		Hepatitis C	
	N	%	N	%	N	%
<45 years	11478	10%	65	15%	233	8%
45-54 years	10775	9%	175	39%	1301	44%
55-64 years	15900	14%	112	25%	1042	35%
65-74 years	20791	18%	50	11%	221	7%
75-84 years	32185	27%	44	10%	122	4%
85+ years	26295	22%	2	0%	32	1%
Total	117424	100%	448	100%	2951	100%

Appendix

Case Definitions for Chronic Hepatitis

Centers for Disease Control and Prevention 2007 Case Definition for Chronic Hepatitis B Virus:

Clinical description

Persons with chronic hepatitis B infection may have no evidence of liver disease or may have a spectrum of disease ranging from chronic hepatitis to cirrhosis or liver cancer. Persons with chronic infection may be asymptomatic.

Laboratory criteria for diagnosis

IgM antibodies to hepatitis B core antigen (anti-HBc) negative AND a positive result on one of the following tests: hepatitis B surface antigen (HBsAg), hepatitis B e antigen (HBeAg), or hepatitis B virus DNA

OR

HBsAg positive or hepatitis B virus DNA positive or HBeAg positive two times at least 6 months apart (Any combination of these tests performed 6 months apart is acceptable.)

Case classification

Confirmed: a case that meets either laboratory criteria for diagnosis

Probable: a case with a single HBsAg positive or hepatitis B virus DNA positive or HBeAg positive lab result when no IgM anti-HBc results are available

Comment

Multiple laboratory tests indicative of chronic hepatitis B infection may be performed simultaneously on the same patient specimen as part of a “hepatitis panel”. Testing performed in this manner may lead to seemingly discordant results, e.g., HBsAg-negative AND hepatitis B virus DNA-positive. For the purposes of this case definition, any positive result among the three laboratory tests mentioned above is acceptable, regardless of other testing results.

Negative HBeAg results and hepatitis B virus DNA levels below positive cutoff level do not confirm the absence of hepatitis B infection.

Centers for Disease Control and Prevention 2005 Case Definition for Hepatitis C Virus Infection, Past or Present:

Clinical description

Most persons infected with hepatitis C are asymptomatic. However, many have chronic liver disease, which can range from mild to severe including cirrhosis and liver cancer.

Laboratory criteria for diagnosis

Anti-hepatitis C virus positive (repeat reactive) by EIA, verified by an additional more specific assay (e.g. RIBA for anti-hepatitis C virus or nucleic acid testing for hepatitis C virus RNA),

OR

Hepatitis C virus RIBA positive,

OR

Nucleic acid test for hepatitis C virus RNA positive,

OR

Report of hepatitis C virus genotype

OR

Anti-hepatitis C virus screening-test-positive with a signal to cut-off ratio predictive of a true positive as determined for the particular assay (e.g., ≥ 3.8 for the enzyme immunoassays) as determined and posted by Centers for Disease Control and Prevention.

Case classification

Probable: a case that is anti-hepatitis C virus positive (repeat reactive) by EIA and has alanine aminotransferase (ALT or SGPT) values above the upper limit of normal, but the anti-hepatitis C virus EIA result has not been verified by an additional more specific assay or the signal to cutoff ratio is unknown.

Confirmed: a case that is laboratory confirmed and that does not meet the case definition for acute hepatitis C.

International Classification of Disease (ICD) Codes for Viral Hepatitis

ICD-9 codes

070 Viral hepatitis

070.0 Viral hepatitis A with hepatic coma

070.1 Viral hepatitis A without mention of hepatic coma

070.2 Viral hepatitis B with hepatic coma

070.3 Viral hepatitis B without mention of hepatic coma

070.4 Other specified viral hepatitis with hepatic coma

070.41 Acute hepatitis C with hepatic coma

070.42 Hepatitis delta without mention of active hepatitis B disease with hepatic coma

070.43 Hepatitis E with hepatic coma

070.44 Chronic hepatitis C with hepatic coma

070.49 Other specified viral hepatitis with hepatic coma

070.5 Other specified viral hepatitis without mention of hepatic coma

070.51 Acute hepatitis C without mention of hepatic coma

070.52 Hepatitis delta without mention of active hepatitis B disease or hepatic coma

070.53 Hepatitis E without mention of hepatic coma

070.54 Chronic hepatitis C without mention of hepatic coma

070.59 Other specified viral hepatitis without mention of hepatic coma

070.6 Unspecified viral hepatitis with hepatic coma

070.7 Unspecified viral hepatitis C

070.7 Unspecified viral hepatitis C without hepatic coma

070.71 Unspecified viral hepatitis C with hepatic coma

070.9 Unspecified viral hepatitis without mention of hepatic coma

ICD-10 codes

B15 Acute hepatitis A

- B15.0 Hepatitis A with hepatic coma
- B15.9 Hepatitis A without hepatic coma

B16 Acute hepatitis B

- B16.0 Acute hepatitis B with delta-agent (co-infection) with hepatic coma
- B16.1 Acute hepatitis B with delta-agent (co-infection) without hepatic coma
- B16.2 Acute hepatitis B without delta-agent with hepatic coma
- B16.9 Acute hepatitis B without delta-agent and without hepatic coma

B17 Other acute viral hepatitis

- B17.0 Acute delta-(super)infection of hepatitis B carrier
- B17.1 Acute hepatitis C
- B17.2 Acute hepatitis E
- B17.8 Other specified acute viral hepatitis

B18 Chronic viral hepatitis

- B18.0 Chronic viral hepatitis B with delta-agent
- B18.1 Chronic viral hepatitis B without delta-agent
- B18.2 Chronic viral hepatitis C
- B18.8 Other chronic viral hepatitis
- B18.9 Chronic viral hepatitis, unspecified

B19 Unspecified viral hepatitis

- B19.0 Unspecified viral hepatitis hepatic with coma
- B19.9 Unspecified viral hepatitis without hepatic coma