

Acute Hepatitis B, Connecticut, 2007-2010

Hepatitis B is a contagious liver disease and is caused by infection with hepatitis B virus (HBV). It is transmitted when blood, semen, or other bodily fluids infected with HBV enters the body of an uninfected person. Transmission can occur during child birth, sex, sharing needles, razors, or direct contact with the blood or open sores of an infected person. Infection with HBV can be acute or chronic. Chronic infection is most prevalent in persons infected at an early age. Approximately 90% of infected infants, 30% of infected children <5 years of age, and <5% of infected persons aged ≥ 5 years will experience chronic infection (1). Hepatitis B infection is vaccine preventable and many segments of the population are recommended to receive hepatitis B vaccination. To monitor trends in hepatitis B infection and evaluate immunization recommendations, the Connecticut Department of Public Health (DPH) conducts surveillance for hepatitis B infection.

The national surveillance case definition for acute hepatitis B illness includes clinical findings of acute illness with a) discrete onset of symptoms and b) either jaundice or elevated serum aminotransferase levels, as well as laboratory confirmation (2). Physicians are required to report acute hepatitis B cases and pregnant women who are hepatitis B surface antigen (HBsAg) positive. Laboratories are required to report positive HBsAg results and positive results for IgM antibody to the hepatitis B core antigen (IgM anti-HBc). Follow-up is conducted on all positive laboratory reports. Report forms that include questions to determine acute or chronic status, risk factors, and demographic information are routinely sent to ordering providers.

During 2007-2010, 2,510 follow-up letters and forms were sent for positive HBsAg and IgM anti-HBc

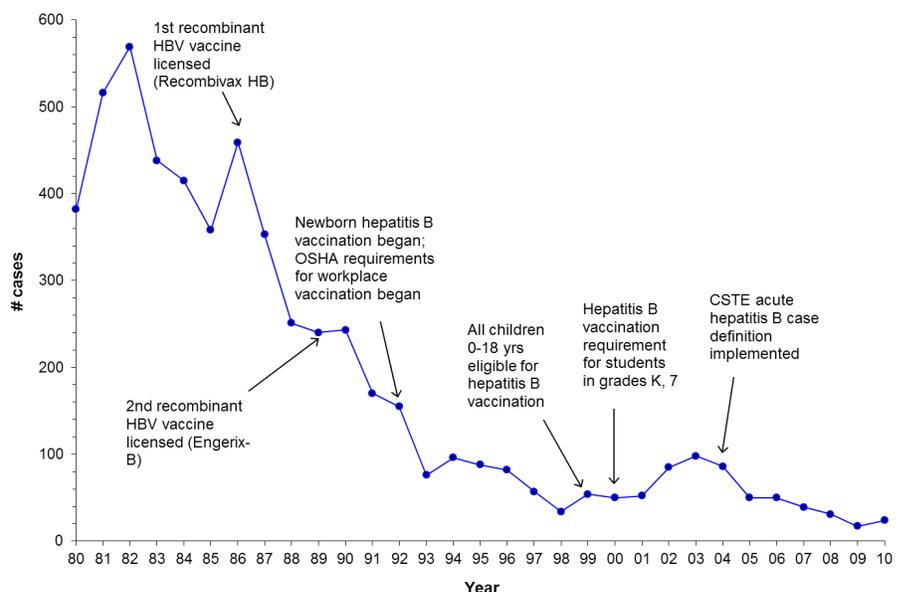
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laboratory reports. Of these, 2,028 (80.8%) were returned. In an effort to capture a truer incidence of illness, health care providers were contacted to complete the form by phone when a follow-up report was not returned to the DPH for positive IgM anti-HBc cases. In 2009, DPH surveillance staff began abstracting medical records at hospitals and provider offices that had 2 or more forms not returned over a 4 to 6 month period.

The number of acute hepatitis B cases has been declining over time (Figure 1). There were 111 acute hepatitis B cases confirmed during 2007-2010 (0.79 per 100,000 person-years), with 39 in 2007, 31 in 2008, 17 in 2009, and 24 in 2010. The rate in males was significantly higher than in females ($p < 0.001$). The differences between race/ethnicity groups were also significant, with the rate in blacks significantly higher than in whites ($p < 0.001$) and Hispanics ($p < 0.05$). Overall, 52.3% of the cases were white, 27.9% black, 14.4% Hispanic, 1.8%

Figure 1. Acute hepatitis B cases, Connecticut, 1980-2010.



Asian, and 3.6% other/unknown race/ethnicity. The majority of cases, 69 (62.2%), were between the ages of 30 and 49 with only 10.8% of cases younger than 30 years of age. There were no cases <19 years of age reported (Table 1).

Risk factors included 22 (20%) injection drug use (IDU) or street drug use, 10 (9%) men who had sex with men (MSM), and 17 (15%) sexual contact with a person who had hepatitis B. Nearly one third (32%) of all cases had a risk factor of "other risk" (Figure 2). The "other risk" category included contact with another person's blood, tattooing, piercing, hospitalization, surgery, residence in a long-term care facility, incarceration, injections in an outpatient setting, employment in a medical or dental field, and dental work. However, it is important to note that the presence of these exposures does not necessarily indicate the source of infection.

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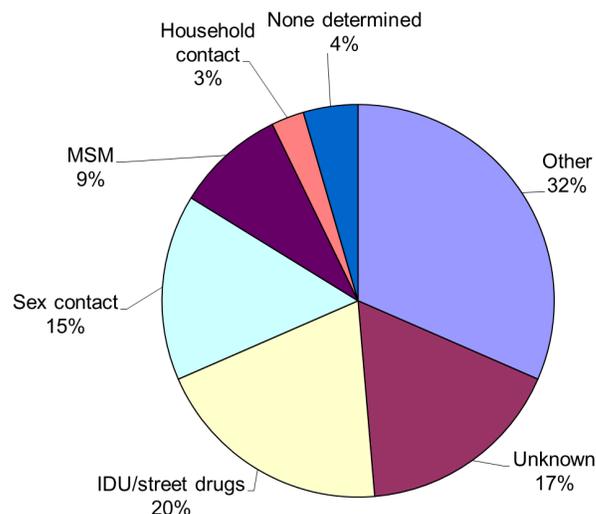
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Table 1. Acute hepatitis B cases by race/ethnicity, sex, and age, Connecticut, 2007-2010.

	Number	%	Rate*
Race/Ethnicity			
Black	31	27.9	2.4
White	58	52.3	0.6
Asian	2	1.8	0.4
Hispanic	16	14.4	1.0
Other	1	0.9	--
Unknown	3	2.7	--
Sex			
Male	75	67.6	1.1
Female	36	32.4	0.5
Age			
0-19	0	0.0	0
20-29	12	10.8	0.7
30-39	32	28.8	1.8
40-49	37	33.3	1.6
50-59	19	17.1	1.0
60+	11	9.9	0.4
Total	111	100	0.8

* Rate per 100,000 person-years based on 2007 and 2008 census estimates.

Figure 2. Risk factors for acute hepatitis B infection, n=(111), Connecticut, 2007-2010.



Risks mutually exclusive.

Editorial

The [Advisory Committee on Immunization Practices](#) (ACIP) recommends hepatitis B vaccination for all infants, children, and adolescents aged <19 years (3). In addition, there are specific recommendations for people in other risk categories grouped by characteristics, behaviors, or occupations. Since 2001, the DPH has provided state and federal funds for hepatitis B vaccination of persons in selected high-risk groups such as MSM, injection drug users, and clients of state funded sexually transmitted disease clinics.

Historically, higher rates of hepatitis B infection were identified in the IDU and sexual contact risk groups. The data presented here show that risk factors for acute hepatitis B infection are trending away from those groups and towards the more low-risk activities found in the "other" category. These results imply that targeted vaccination efforts for hepatitis B are working, and most vaccine-preventable cases of acute hepatitis B are being prevented. Fewer cases in younger age groups (<30 years old) likely reflect the aging of vaccinated birth cohorts and children vaccinated to meet school entry requirements, as well as vaccination of people with occupational risks and other young adults with behavioral risk. At least 49 of the acute hepatitis B cases from 2007-2010 have risks of IDU/street drugs, MSM or sex contact, and therefore represent missed opportunities for vaccination. To further

reduce incidence in these groups, efforts to vaccinate high-risk groups (IDU, MSM) and other adults who have a potential for exposure will continue to be needed, including in private provider settings.

For additional information and statistics on both acute and chronic viral hepatitis, see the DPH website (www.ct.gov/dph/hepatitis).

References

1. Centers for Disease Control and Prevention. A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: [recommendations of the Advisory Committee on Immunization Practices \(ACIP\); Part 2: Immunization of Adults](#). MMWR 2006;55(No. RR-16).
2. Centers for Disease Control and Prevention. Hepatitis, Viral, Acute, 2000 Case Definition. http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/hepatitisB2000.htm. Accessed April 6, 2011.
3. Centers for Disease Control and Prevention. A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: [recommendations of the Advisory Committee on Immunization Practices \(ACIP\); Part 1: Immunization of Infants, Children, and Adolescents](#). MMWR 2005;54(No. RR-16).

Acute Hepatitis C, Connecticut, 2008-2010

Hepatitis C virus (HCV) is the most common chronic bloodborne infection in the United States with an estimated 3.2 million persons chronically infected (1). HCV is transmitted predominately through percutaneous exposure to blood. Although sexual and perinatal transmission have been documented, they are far less efficient than the parenteral route. Acute HCV generally presents with mild or no symptoms and 70%-85% of acute cases develop chronic infection. Chronic infection leads to cirrhosis in 5%-20% of cases and chronic liver disease in approximately 60%-70% of cases. Based on national prevalence data, it is estimated that 60,000 people have chronic hepatitis C infection in Connecticut. HCV surveillance is conducted by the Department of Public Health (DPH) to determine the burden of HCV in Connecticut and to characterize trends in infection.

The national surveillance case definition for acute HCV includes an acute illness with a discrete onset of symptoms consistent with acute viral hepatitis (e.g., anorexia, abdominal discomfort, nausea, vomiting) and either a) jaundice, or b) serum alanine aminotransferase (ALT) levels >400 IU/L and

laboratory confirmation as defined by the Centers for Disease Control and Prevention (2). Acute HCV is physician-reportable and positive anti-HCV test results, recombinant immunoblot assays, and viral load test results are laboratory-reportable. In 2008, DPH began statewide follow-up on laboratory reports for hepatitis C to collect more complete information about risk factors, patient demographics, symptoms, laboratory results, and reasons for testing. Follow-up on all laboratory reports of HCV allowed for the systematic surveillance of acute HCV infection for the first time in Connecticut.

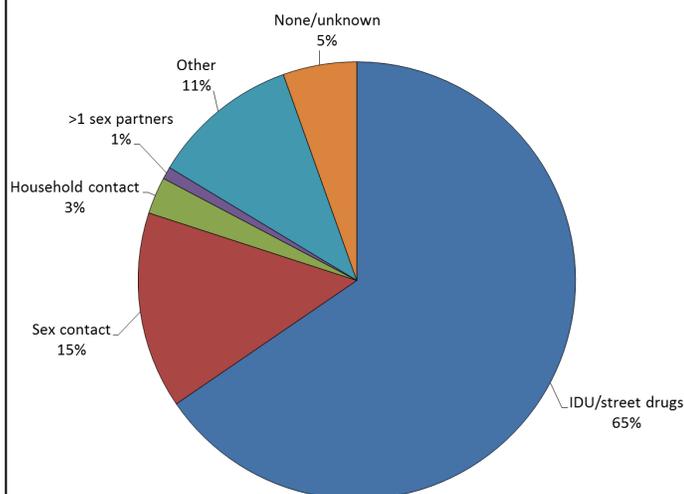
During 2008-2010, 7,070 follow-up forms soliciting information regarding acute or chronic status, risk factors, and demographics were sent to ordering clinicians on all newly reported hepatitis C laboratory test results. In addition, for newly identified HCV cases, non-responding clinicians were contacted by telephone to emphasize the importance of reporting and to obtain the follow-up information. In 2009, DPH surveillance staff began abstracting medical records at hospitals and provider offices that had 2 or more forms not returned over a 4-6 month period. Overall, 78% of cases reported during 2008-2010 had follow-up information collected.

During 2008-2010, 110 (1.5%) newly reported HCV laboratory reports were determined to be acute (1.1 per 100,000 person years). Of these, 52% were female, 72% white, 22% Hispanic, 4% black, and 2% were Asian. The rate of acute HCV in Hispanics was significantly higher than in white, black or Asian race ($p<0.05$) (Table 1). A statistical difference was also seen in age group with the rate of acute infection decreasing with age ($p<0.001$). Of the 110 cases, 62% were between 20 and 39 years of age (2.65 per 100,000 person years). Injection drug use (IDU) and/or use of other illegal drugs was the most common risk factor identified and were associated with 65% of cases (Figure 1, page 20). In telephone interviews, cases with IDU history commonly admitted to sharing needles during a 2-week to 6-month period prior to onset of symptoms. Of the 72 acute cases identified with IDU/street drug risk, 53% were under 30 years of age, 83% were white, 14% Hispanic, and 3% were black (Table 1, page 20).

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Figure 1. Acute hepatitis C by risk factor, Connecticut, 2008-2010



Risks mutually exclusive. Other potential risk factors include dental work, infusions, high risk sex partner, hospitalization, surgery, other blood contact.

Editorial

Although acute HCV cases are physician reportable, lack of symptoms or mild symptoms make an accurate incidence estimate difficult. If only 20-30% of acute hepatitis C cases display symptoms or have symptoms severe enough to seek medical care, the number of acute HCV cases in 2008-2010 could be as high as 367. IDU and sharing drug-using equipment continues to be associated with acute hepatitis C cases and should be an ongoing focus of prevention efforts. Importantly, acute HCV cases during 2008-2010 were matched against the DPH HIV/AIDS registry at the end of 2010 and only one had been reported with HIV infection.

For additional information and statistics on both acute and chronic viral hepatitis, see our website (www.ct.gov/dph/hepatitis).

Table 1. Acute hepatitis C reported by race/ethnicity, sex, and age, Connecticut, 2008-2010.

	Total acute HCV cases			Acute HCV with IDU/street drug risk	
	N	%	Rate*	N	%
Race/Ethnicity					
White	80	72.7	1.0	60	83.3
Black	4	3.6	0.4	2	2.8
Asian	2	1.8	0.6	0	0.0
Hispanic	24	21.8	1.9	10	13.9
Sex					
Male	53	48.2	1.0	42	58.3
Female	57	51.8	1.1	30	41.7
Age					
0-19	6	5.5	0.8	5	6.9
20-29	40	36.4	3.1	33	45.8
30-39	29	26.4	2.2	21	29.2
40-49	20	18.2	1.2	10	13.9
50-59	14	12.7	0.9	3	4.2
60+	1	0.9	0.1	0	0.0
Total	110	100	1.1	72	100

* Rate per 100,000 person years based on 2008 census estimates.

References

1. Armstrong GL, Wasley A, Simard EP, McQuillan GM, Kuhnert WL, Alter MJ. [The prevalence of hepatitis C virus infection in the United States, 1999 through 2002.](#) *Ann Intern Med.* 2006;144(10):705-714.
2. Centers for Disease Control and Prevention. Hepatitis C, Acute 2007 Case Definition. http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/hepatitisacute2007.htm. Accessed April 6, 2011.

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