

Chronic Hepatitis B, Connecticut, 2007-2011

Hepatitis B is caused by infection with the hepatitis B virus (HBV) and is transmitted through percutaneous or mucosal contact with infectious blood or bodily fluids. Infection with HBV can be either acute or chronic. Age is a determining factor in chronic infection. Approximately 90% of infants infected at birth, 30% of children infected at ages 1-5 years, and 5% of persons infected over the age of 5 years become chronically infected. About 25% of adults who became chronically infected with HBV as children will die from cirrhosis or liver cancer later in life (1). HBV is endemic in certain regions of the world, with some countries having a prevalence of HBV greater than 8% of the population. To monitor trends in HBV, the Department of Public Health (DPH) conducts statewide hepatitis B surveillance.

Hepatitis B is both health care provider and laboratory reportable in Connecticut. Since 1992, the DPH has been collecting data on acute HBV, hepatitis B surface antigen (HBsAg) in women of childbearing age, and perinatal infections. In 2004, the DPH added chronic HBV to the surveillance program and uses the Counsel of State and Territorial Epidemiologists' chronic HBV case definition to classify cases. Chronic HBV infection is defined as IgM antibody to the hepatitis B core antigen (IgM anti-HBc) negative AND either a positive hepatitis B surface antigen (HBsAg), hepatitis B e antigen (HBeAg), or hepatitis B viral DNA (HBV DNA); or, any two positive results of HBsAg, HBeAg, or HBV DNA at least 6 months apart. No clinical evidence is required for classification of a confirmed case.

As positive laboratory reports are received by the DPH, staff conduct follow-up on each case. Supplemental forms are sent to the ordering health care provider requesting additional demographic, risk, and testing information. During 1992-2011, the DPH HBV registry contains 5,447 chronic cases, of which 5,141 (94%) are living. During 2007 - 2011, 2,210 cases were confirmed chronic, of which 2,139 are living (97%). Cases living with chronic HBV were primarily male (60%) and 30 - 49 years old (54%). Although 4% of Connecticut's population is Asian

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and 9% is black, more people living with chronic HBV were Asian (36%) and black (17%) (Table 1).

During 2007 - 2011, follow-up forms were returned on 1,818 cases (82%). Of these, the most common risk factor for chronic HBV infection was being foreign born (39%) (Table 2, page 10). Country of birth was known for 917 cases, of which 74% were born outside of the United States (Figure 1, page 10). Of these, 30% were born in China, 10% in Vietnam, and 4% in Ghana, among other countries. Other risks included household contact of a person with hepatitis B (10%), injection drug use (IDU, 6%), sex with a hepatitis B positive partner (3%), and men who have sex with men (MSM) (2%). The most common reason clinicians reported for ordering HBV testing was that the patient had a

Table 1. Cases living with chronic HBV by sex, age, and race/ethnicity, Connecticut, 2007-2011.

| | Number | % | Rate* |
|----------------------------|--------|-----|-------|
| Total | 2139 | 100 | |
| Sex | | | |
| Male | 1277 | 60 | 73.4 |
| Female | 862 | 40 | 47.0 |
| Age group | | | |
| 0-14 | 31 | 1 | 4.7 |
| 15-19 | 54 | 3 | 21.5 |
| 20-29 | 343 | 16 | 77.6 |
| 30-39 | 629 | 29 | 146.8 |
| 40-49 | 527 | 25 | 95.3 |
| 50-59 | 327 | 15 | 62.4 |
| 60+ | 228 | 11 | 32.1 |
| Race/ ethnicity | | | |
| White | 430 | 20 | 16.9 |
| Black | 373 | 17 | 111.3 |
| Asian | 772 | 36 | 571.6 |
| Hispanic | 174 | 8 | 36.3 |
| Other/ Unknown | 390 | 18 | -- |

* Prevalence rate per 100,000 persons based on 2010 Census.

Table 2. Risk factors for chronic HBV cases, based on receipt of a follow-up form, Connecticut, 2007-2011.

| | Number | % |
|-------------------------|--------|-----|
| Total | 1818 | 100 |
| Foreign born | 701 | 39 |
| Household contact | 177 | 10 |
| IDU | 112 | 6 |
| Sex contact | 55 | 3 |
| MSM | 40 | 2 |
| Other | 191 | 11 |
| None determined/Unknown | 542 | 30 |

history of hepatitis B (21%). Asymptomatic screening (19%), risk factors (16%), and elevated liver function tests (13%) were also common reasons. In 2010, the DPH began asking health care providers if their patient's chronic HBV infection was being medically managed, and if their patient had ever taken medication for chronic HBV infection. Less than half of cases (45%) were referred to or were seeing a provider, and 8% had ever taken medication for chronic HBV infection.

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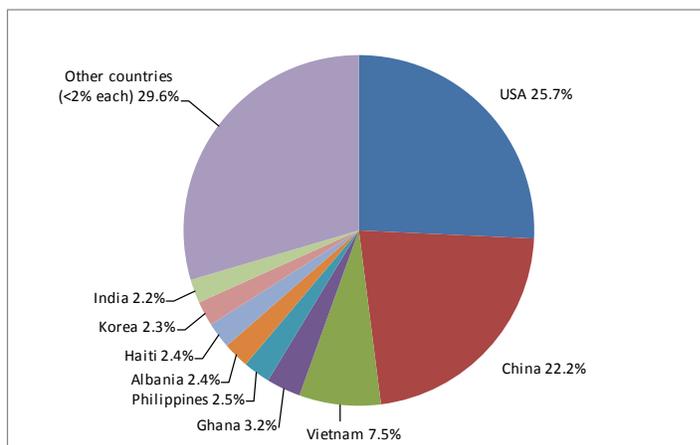
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Editorial

The Centers for Disease Control and Prevention (CDC) recommend that anyone born in areas with HBsAg prevalence $\geq 2\%$ be tested for chronic HBV infection. This includes many areas of Asia, eastern Europe, Africa, the Middle East, and the Pacific Islands (2). Other testing recommendations include but are not limited to, persons whose parents were born in areas with HBsAg prevalence $\geq 8\%$, injection drug users, men who have sex with men, pregnant women, household contacts, and sex partners of chronic carriers. Despite these recommendations, Connecticut data show that testing for hepatitis B because of a risk factor was only the third most common reason for testing.

Foreign born persons are disproportionately affected by chronic HBV. Although the census estimates that only 14% of Connecticut's residents are foreign born, of chronic HBV cases reported during 2007-2011 in which country of birth was documented, nearly 75% were born outside of the United States. In the United States, all infants are recommended to start the hepatitis B vaccine series at birth. Factors leading to higher prevalence of chronic HBV in some foreign countries are lack of

Figure 1. Country of birth in chronic HBV cases (n=917), Connecticut, 2007-2011.



HBV vaccination, stigma associated with having chronic HBV, or infection control issues. Providers should review the CDC testing guidelines and ensure that foreign born persons and those whose parents were born in endemic areas are tested for hepatitis B.

Household contacts and sex contacts of hepatitis B carriers also need to be tested. Vaccination is recommended for those who test negative. The Perinatal Hepatitis B Program follows up with pregnant HBsAg+ women to ensure that their infants are vaccinated appropriately, and has found that partners and other household members have not been tested or vaccinated in some cases.

Most of the persons infected with chronic HBV were not seeing a provider for medical management of their infection, and only a small percentage had ever taken medication for HBV. A limitation to this finding is that these questions were asked at the time of evaluation, and the ordering clinician may not know if the patient went on to treatment. Additionally, cases might not be eligible for treatment or may have declined treatment. Providers should refer cases of chronic HBV for further evaluation. The DPH has developed a statewide directory of providers, community health centers, and HIV and STD clinics to increase hepatitis B screening, testing, vaccination, and linkage to care.

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

- 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).

- Centers for Disease Control and Prevention. Recommendations for identification and public health management of persons with chronic hepatitis B virus infection. MMWR 2008; 57(No. RR-08).

Chronic Hepatitis C, Connecticut, 2007-2011

Hepatitis C virus (HCV) infection is the most common chronic blood borne infection in the United States. Chronic hepatitis C develops in approximately 75% of infected persons. Of these, 60-70% will develop chronic liver disease and 5-20% will develop cirrhosis over a period of 20-30 years. Transmission of HCV predominantly occurs through percutaneous exposure to infected blood, such as sharing drug needles or equipment, or poor infection control practices. Transmission can also occur through perinatal, occupational, sexual exposure, and inefficiently through sharing personal care items. Currently there is no vaccine available to prevent hepatitis C and in recent years, deaths as a result of chronic HCV have surpassed HIV death rates (1).

Positive hepatitis C laboratory results have been reportable to the Connecticut Department of Public Health (DPH) since 1994. Approximately 54,000 Connecticut residents have been reported with positive anti-HCV laboratory results. For epidemiological purposes, the DPH uses the Counsel of State and Territorial Epidemiologists (CSTE) case definition, which classifies hepatitis C cases that don't meet the acute case definition as hepatitis C, past or present (see box insert).

The DPH has been performing statewide enhanced surveillance on newly reported hepatitis C cases since 2007. Enhanced surveillance consists of sending a follow-up form to the ordering clinician to solicit information regarding the patient's demographics, clinical indicators, reason tested, and risk factors for exposure. During 2007-2011, 10,553 cases of people living with hepatitis C, past or

present were reported. Males accounted for 63% of cases with 46% white, 17% Hispanic, and 10% black; 57% were between 40-59 years old (Table 1). The Hispanic and black populations in Connecticut were disproportionately affected with hepatitis C at a prevalence rate of approximately 2 times that of whites. In addition, people aged 40-49 and 50-59 had a prevalence rate of chronic hepatitis C approximately 2.5 and 3 times that of people less than 40 years old (Table 1). During 2007-2011, of all the 10,966 chronic reported HCV cases, 397 (4%) died and 66% of these cases were born between years 1945-1965.

During 2007-2011, 10,387 follow-up forms were sent and 8,081 were received. The most predominant reason collected for hepatitis C testing was asymptomatic screening due to a risk factor at 35% followed by 21% for screening based on elevated liver enzymes (Figure 1). During 2010 -

Table 1. People living with hepatitis C, past or present by sex, race/ethnicity, and age, Connecticut, 2007-2011.

| | N | % | Rate* |
|-----------------------|---------------|------------|-------|
| Sex | | | |
| Female | 3,847 | 37 | 209.7 |
| Male | 6,706 | 64 | 385.5 |
| Race/Ethnicity | | | |
| White | 4,847 | 46 | 190.4 |
| Black | 1,091 | 10 | 325.6 |
| Asian/PI | 121 | 1 | 90.0 |
| Hispanic | 1,806 | 17 | 377.0 |
| Other | 49 | <1 | 68.4 |
| Unknown | 2,639 | 25 | |
| Age group | | | |
| <15 | 37 | <1 | 5.6 |
| 15-19 | 124 | 1 | 49.4 |
| 20-29 | 1,584 | 15 | 358.3 |
| 30-39 | 1,624 | 15 | 378.9 |
| 40-49 | 2,749 | 26 | 496.8 |
| 50-59 | 3,352 | 32 | 639.1 |
| 60+ | 1,083 | 10 | 152.6 |
| Total | 10,553 | 100 | |

*prevalence rate per 100,000 based on 2010 census.

CSTE case definition for HCV, past or present

- HCV recombinant immunoblot assay positive, OR
- Nucleic Acid Test positive for HCV RNA (including genotype), OR
- Antibodies to hepatitis C virus (anti-HCV) screening-test-positive with a signal to cut-off ratio predictive of a true positive as determined for the particular assay and posted by CDC. (http://www.cdc.gov/ncidod/diseases/hepatitis/c/sc_ratios.htm)

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

2011, data were collected on medical management of chronic infections and if medication was ever taken for chronic hepatitis C. Based on follow-up, 45% of cases were seeing a provider for their chronic infection, while 28% were not. In addition, 7% of cases received treatment or were presently being treated while 62% had never taken medications.

Reported by

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Editorial

Connecticut has a high rate of chronic HCV cases being reported but based on national prevalence estimates of 1.6%, approximately 10,000 more residents are living with hepatitis C than reported in Connecticut (2). The majority of screened and reported hepatitis C cases had elevated liver enzymes or risk factors demonstrating clinicians' attempts to follow CDC screening recommendations (3). Even following the current screening recommendations, many residents remain unaware of their infection. Based on national and state numbers, HCV is most prevalent in baby boomers, those born between the years 1945-1965. A one-time screening recommendation based on this birth cohort is being considered by CDC in order to better

identify infected individuals and allow them to be connected to care earlier. Recently, Rein et al (2012) demonstrated that primary care screening of the 45-64 birth cohort was cost effective if followed by treatment (4).

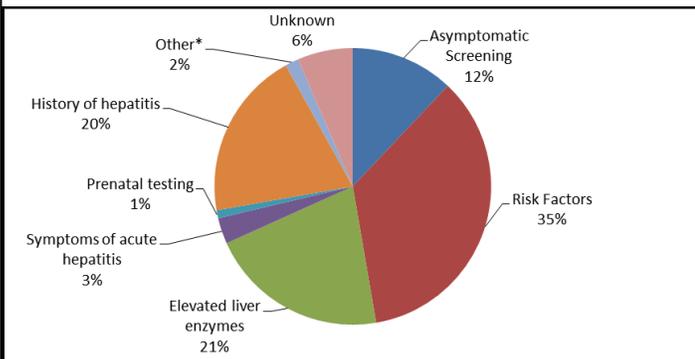
According to Connecticut's data, less than half of chronic HCV cases in 2010 and 2011 were documented as seeing a provider for their care and most were not receiving treatment. Although Connecticut findings regarding managing and treating HCV has limitations because it is being asked at time of initial report, it still provides insight into the lack of individuals being connected to care or being considered for treatment. In order to improve access to care and treatment, DPH has developed a statewide directory of community health centers, HIV and STD clinics by geographic location. DPH is also supporting and facilitating increased screening and testing efforts with both the new rapid testing technology and phlebotomy. In addition to state efforts to improve screening and connections to care, CDC has designated May 19, 2012 to be the first national "Hepatitis Testing Day" and is releasing education and campaign materials. Please consider increasing awareness, screening, and testing in the communities that you serve. (<http://www.cdc.gov/hepatitis/KnowMoreHepatitis.htm>).

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

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4. Rein D, Smith B, Wittenborn J, Lesesne S, Wagner L, Roblin D, Patel N, Ward J, Weinbaum C. The Cost-Effectiveness of Birth-Cohort Screening for Hepatitis C Antibody in U.S. Primary Care Settings. *Ann Intern Med.* 2012;156:263-270.

Figure 1. Reason for testing chronic hepatitis C cases (n=8,081), Connecticut, 2007-2011.



*Other includes blood donor or otherwise unclassified.

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