

**Chronic Viral Hepatitis: Screening Recommendations for Primary Care Clinicians**  
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In January 2010, the Institute of Medicine released a report entitled *Hepatitis and Liver Cancer: A National Strategy for Prevention and Control of Hepatitis B and C* ([www.iom.edu/Reports/2010/Hepatitis-and-Liver-Cancer-A-National-Strategy-for-Prevention-and-Control-of-Hepatitis-B-and-C/Report-Brief-Hepatitis-and-Liver-Cancer.aspx?page=1](http://www.iom.edu/Reports/2010/Hepatitis-and-Liver-Cancer-A-National-Strategy-for-Prevention-and-Control-of-Hepatitis-B-and-C/Report-Brief-Hepatitis-and-Liver-Cancer.aspx?page=1)) and the California Department of Public Health released the *California Adult Viral Hepatitis Prevention Strategic Plan, 2010-2014* ([www.cdph.ca.gov/programs/Documents/California\\_Adult\\_Viral\\_Hepatitis\\_Prevention\\_Strategic\\_Plan,\\_2010-2014.Final.pdf](http://www.cdph.ca.gov/programs/Documents/California_Adult_Viral_Hepatitis_Prevention_Strategic_Plan,_2010-2014.Final.pdf)). Both reports called for increased awareness and use among primary care clinicians of the Centers for Disease Control and Prevention (CDC) viral hepatitis screening, prevention, and clinical management guidelines.

Viral hepatitis is a significant public health problem in California and nationwide. In the United States, there are 3.5 to 5.3 million people living with chronic hepatitis B virus (HBV) or chronic hepatitis C virus (HCV).<sup>1</sup> Hepatitis A and hepatitis B can be prevented by a vaccine; however, there is no vaccine against hepatitis C. If not diagnosed and treated promptly, chronic HBV and chronic HCV can cause serious complications, such as cirrhosis, hepatocellular carcinoma, and death.

Chronic HBV and chronic HCV also have enormous human and economic costs. One in four people with chronic hepatitis B infection will die of liver disease or liver cancer. Hepatitis C is the leading reason for liver transplants nationwide and the leading cause of non-AIDS death among HIV-infected individuals. By 2030, annual hepatitis C-related Medicare costs alone are expected to increase 600 percent, from \$5 billion to \$30 billion per year.<sup>2</sup> While it is unknown exactly how many people in California are living with viral hepatitis, in 2007 alone, HBV- and HCV-related hospitalization costs in California totaled \$2 billion.<sup>3</sup> These costs and complications can be prevented by early detection, treatment, and education.

For many adults with chronic HB, the virus was transmitted from mother to child at birth. Asian Americans and Pacific Islanders comprise more than half of all persons living with chronic HBV in the U.S.<sup>1</sup> Hepatitis C prevalence is highest among individuals born between the years 1945 and 1964; many of whom were infected with hepatitis C through blood transfusions conducted prior to 1992 or through past injection drug use.<sup>4</sup>

Unprotected sex with an infected individual is the leading cause of hepatitis B transmission among adults, while sharing syringes and other equipment used for injection drug use is the leading cause of hepatitis C transmission. For these reasons, CDC recommends screening for hepatitis B and hepatitis C in clinical settings serving adults at risk for viral hepatitis.

Primary care providers play an important role in prevention, diagnosis, and management of chronic viral hepatitis infection. **Identifying appropriate patients for hepatitis B vaccination is critical in preventing infection.** With health reform implementation

under way, primary care settings will soon see an influx of new patients, many of whom have chronic diseases, including viral hepatitis. Recognizing which patients should undergo serologic testing for chronic viral hepatitis is crucial as infected persons are often asymptomatic. CDC has recommendations to guide providers in identifying appropriate patients for chronic hepatitis B and hepatitis C screening. A summary of this guidance in easy-to-use, pull-out charts follows on pages [X-Y].

## References

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<sup>1</sup> IOM (Institute of Medicine). *Hepatitis and Liver Cancer: A National Strategy for Prevention and Control of Hepatitis B and C*. Washington, D.C.: The National Academies Press; January 2010.

<sup>2</sup> Pyenson B, Fitch, K, Iwasaki, K. *Consequences of Hepatitis C Virus (HCV): Costs of a Baby Boomer Epidemic of Liver Disease*. New York: Milliman; May 2009.

<sup>3</sup> California Department of Public Health, Immunization Branch. *Hospitalization Costs Associated With Liver Disease, Liver Cancer and Liver Transplants for Patients Infected With Hepatitis B or Hepatitis C, California 2007*.

<sup>4</sup> Armstrong GL, Wasley A, Simard EP, McQuilan GM, Kuhnert WL, Alter MJ. The prevalence of hepatitis C virus infection in the United States, 1999 through 2002. *Ann Intern Med*. May 16 2006;144(10):705-714.

# Hepatitis B and Hepatitis C: Whom to Test

Most people with chronic viral hepatitis do not know they are infected. Chronic hepatitis B infection and chronic hepatitis C infection are associated with cirrhosis, liver cancer, and liver failure. These complications can be prevented by early detection, treatment, and education. Serologic testing is the means for identifying persons with chronic viral hepatitis.

## **I. Populations recommended for hepatitis B testing<sup>1</sup>**

- All pregnant women
- Infants born to hepatitis B surface antigen (HBsAg)-positive mothers
- Persons born in geographic regions with HBsAg prevalence  $\geq 2$  percent<sup>2</sup>
- U.S.-born persons not vaccinated as infants whose parents were born in geographic regions with HBsAg prevalence of  $\geq 8$  percent<sup>3</sup>
- Household contacts, sex partners, and needle-sharing partners of hepatitis B-infected persons
- Persons with behavioral exposures to hepatitis B
  - Injection drug users
  - Men who have sex with men
- Persons with selected medical conditions
  - Elevated liver enzymes of unknown etiology
  - Renal disease requiring hemodialysis
  - HIV infection
  - Any disease requiring immunosuppressive therapy
- Persons who are the source of blood or body fluid exposures that might warrant postexposure prophylaxis (e.g., needlestick injury to a healthcare worker)

## **II. Populations recommended for hepatitis B vaccination, without pre-vaccination serology<sup>1</sup>**

- Persons under 19 years of age who have not been vaccinated against hepatitis B
- Persons having more than one (>1) sexual partner in the past six months
- Persons seeking evaluation or treatment for a sexually transmitted disease
- Health care or public safety workers with reasonably anticipated occupational exposures to blood or infectious body fluids
- Persons with select medical conditions:
  - Chronic (long-term) liver disease
  - End-stage renal disease
- Persons planning to travel to a country where at least two percent of the population has hepatitis B (Asia, Africa, the Amazon Basin in South America, the Pacific Islands, Eastern Europe or the Middle East)
- Persons who live or work in a facility for developmentally disabled persons
- Anyone who wishes to be protected from hepatitis B infection

## **III. Populations recommended for hepatitis C testing<sup>1</sup>**

- Persons who have ever injected illegal drugs, including those who injected only once many years ago
- Persons with selected medical conditions
  - All persons with human immunodeficiency virus (HIV) infection
  - Patients with signs or symptoms of liver disease (e.g., abnormal liver enzyme tests)
  - Recipients of clotting factor concentrates made before 1987
  - Recipients of blood transfusions or solid organ transplants before July 1992
  - Recipients of blood or organs from a donor who later tested hepatitis C virus (HCV)-positive
  - Patients who have ever received long-term hemodialysis
- Children born to HCV-positive mothers (to avoid detecting maternal antibody, these children should not be tested before age 18 months)
- Persons with known HCV exposures (e.g., healthcare workers after needlesticks involving HCV-positive blood)

<sup>1</sup> Source: Centers for Disease Control and Prevention (CDC). Access CDC recommendations and other clinical guidelines for viral hepatitis prevention, testing, management, and care as well as patient education materials at [www.cdc.gov/hepatitis](http://www.cdc.gov/hepatitis) or [www.cdph.ca.gov/programs/Pages/ovhp.aspx](http://www.cdph.ca.gov/programs/Pages/ovhp.aspx).

<sup>2</sup> Regions with  $\geq 2$  percent HBsAg prevalence include the regions described below as well as South, Central, and Southwest Asia, Japan; Russia; Eastern and Southern Europe; Honduras; Guatemala; North America (Alaska Natives and indigenous populations of Northern Canada); and the areas surrounding the Amazon River basin. (A complete list is available at [wwwnc.cdc.gov/travel/destinations/list.aspx](http://wwwnc.cdc.gov/travel/destinations/list.aspx).)

<sup>3</sup> Regions with  $\geq 8$  percent HBsAg prevalence include Southeast Asia; South and Western Pacific Islands; Africa; the Middle East (except Israel); Haiti; the Dominican Republic; and the interior Amazon River basin. (A complete list is available at [wwwnc.cdc.gov/travel/destinations/list.aspx](http://wwwnc.cdc.gov/travel/destinations/list.aspx).)

# Hepatitis B and C: Patient Self-Administered Risk Assessment

Hepatitis B and C are transmitted in different ways. Most people do not know they are infected until they are tested. Hepatitis vaccination and testing are available at this clinic. Please check if these statements apply to you.

## **I. Have you been exposed to hepatitis B?**

- Were you born in an area of the world where at least two percent of the population has hepatitis B (Asia, Africa, the Amazon Basin in South America, the Pacific Islands, Eastern Europe, or the Middle East)?
- Were you not vaccinated for hepatitis B as infants?
- Was your mother infected with hepatitis B when you were born?
- Are you pregnant?
- Are you HIV-positive, have an HCV infection, or on immunosuppressive therapy?
- Did you have abnormal liver enzyme test results for an unknown reason?
- Have you ever been on hemodialysis?
- Have you had a sexual partner who was infected with hepatitis B?
- Have you lived in the same house with someone infected with hepatitis B?
- Are you a man who has sex with men?
- Have you ever injected illicit drugs or shared drug injection equipment?
- Have you shared needles with someone infected with hepatitis B?
- Are you a health care or public safety worker with a known, recent occupational exposure to hepatitis B-infected blood or bodily fluids (e.g., through an accidental needle stick)?

\_\_\_\_\_ None of the above

\_\_\_\_\_ Yes, at least one of the above applies to me

## **II. Do you need to be vaccinated against hepatitis B?**

- Are you under 18 but have not been vaccinated against hepatitis B?
- Have you had more than one sexual partner in the past six months?
- Are you seeking evaluation or treatment for a sexually transmitted disease?
- Are you a health care or a public safety worker with reasonably anticipated occupational exposures to blood or infectious body fluids?
- Do you have chronic (long-term) liver disease?
- Do you have end-stage renal disease?
- Are you planning to travel to a country where at least two percent of the population has hepatitis B (Asia, Africa, the Amazon Basin in South America, the Pacific Islands, Eastern Europe or the Middle East)?
- Do you live or work in a facility for developmentally disabled persons?
- Do you wish to be protected from hepatitis B infection?

\_\_\_\_\_ None of the above

\_\_\_\_\_ Yes, at least one of the above applies to me

## **III. Have you been exposed to hepatitis C?**

- Have you ever injected illicit drugs, even once, many years ago?
- Did you receive donated blood or donated organs before 1992 and/or blood clotting products before 1987?
- Have you ever been on hemodialysis?
- Are you a health care or public safety worker with a known, recent occupational exposure to hepatitis C-infected blood or bodily fluids (e.g., through an accidental needle stick)?
- Are you HIV-positive?
- Have you had signs or symptoms of liver disease (e.g., abnormal liver enzyme tests, jaundice)?
- Was your mother infected with hepatitis C when you were born?

\_\_\_\_\_ None of the above

\_\_\_\_\_ Yes, at least one of the above applies to me

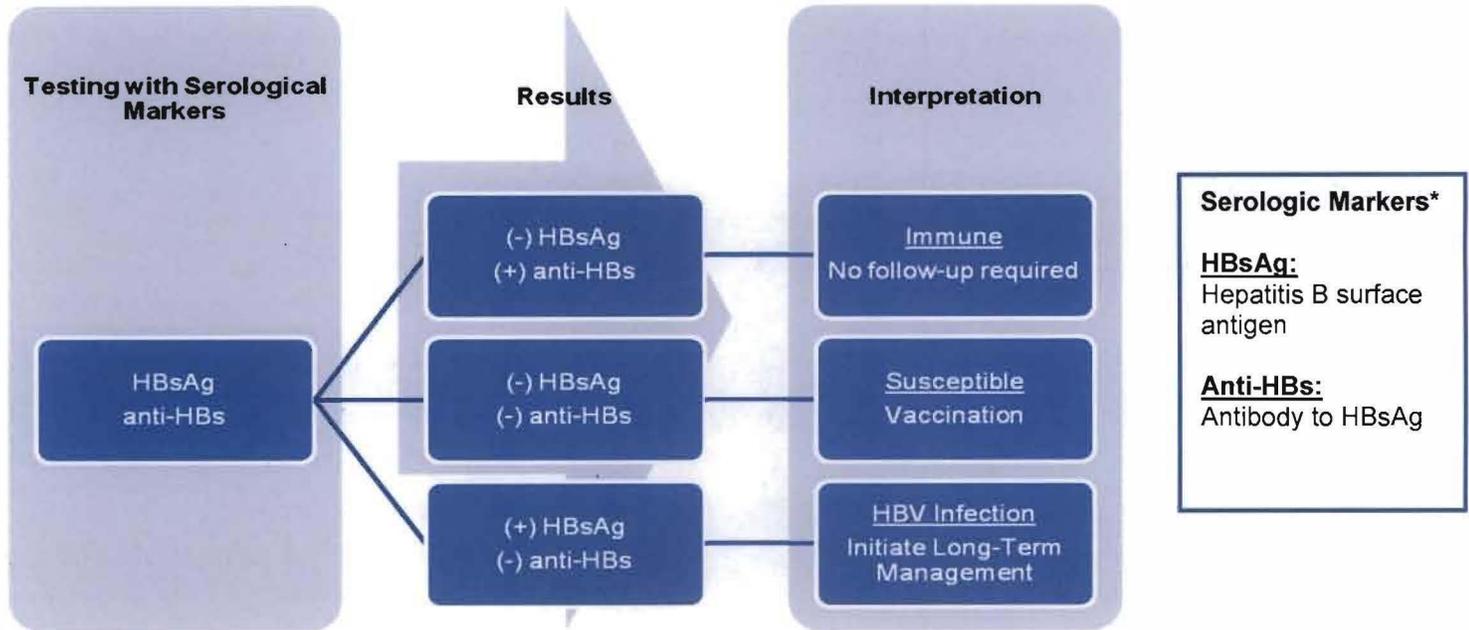
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For administrative use only:

|  |                          |
|--|--------------------------|
| If yes to I, order test for HBV (HBsAg and anti-HBs) | <input type="checkbox"/> |
| If yes to II, administer first dose of HBV vaccine   | <input type="checkbox"/> |
| If yes to III, order test for HCV (anti-HCV)         | <input type="checkbox"/> |

## Hepatitis B: Testing and Serology

Hepatitis B is an infection caused by the hepatitis B virus (HBV). Chronic infection with HBV is associated with cirrhosis, liver cancer, and liver failure. These complications can be prevented by treatment and patient education (e.g., regarding alcohol use and liver self-care). Serologic testing is the primary means for identifying persons with chronic HBV infection. An effective vaccine is available to prevent HBV infection.



\* Note: Another HBV test is total antibody to hepatitis B core antigen (anti-HBc), which can be used to distinguish whether immunity is due to past infection (anti-HBc-positive) or to previous vaccination (anti-HBc-negative). In patients with chronic HBV infection, anti-HBc is also present. In the absence of HBsAg or Anti-HBs, an anti-HBc-positive test result has one of four interpretations: 1) recovering from acute HBV infection; 2) distantly immune, test not sensitive enough to detect very low level of anti-HBs in serum; 3) susceptible with a false positive anti-HBc; or 4) chronically infected with an undetectable level of HBsAg in serum.

### Hepatitis B Vaccination

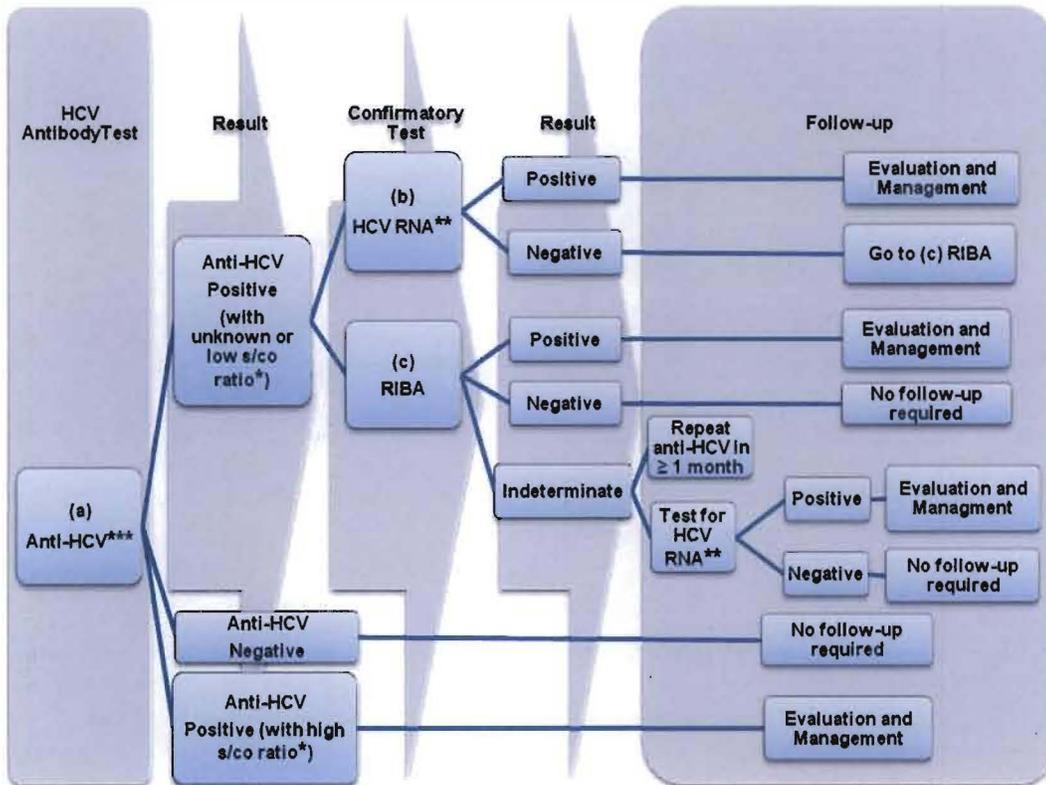
- 3 doses are administered at 0, 1, 6 months; a combination hepatitis A/hepatitis B vaccine is available and follows the same dosing schedule
- If partially vaccinated, the patient does not need to restart the series
- Vaccine is safe for pregnant and HIV-infected persons
- Post-vaccine serology testing (anti-HBs) is recommended for household, needle-sharing, and sexual contacts of HBsAg-positive persons, HIV-positive persons, and healthcare workers
- Booster doses may be indicated for hemodialysis patients, HIV-infected persons, and other immunocompromised persons

### Principles of Long-Term Hepatitis B Management

- Provide patient with culturally and linguistically appropriate educational materials (see links below)
- Report case to local health department within seven days
- Vaccinate against hepatitis A unless immune
- Encourage patient's sex partners, household members, and injection-drug sharing contacts to seek HBV testing, medical evaluation, and vaccination
- Counsel patient to minimize alcohol consumption and other liver toxins
- Counsel patient to avoid sharing razors, toothbrushes or personal injection equipment
- Seek a hepatitis B-experienced clinician to evaluate for, manage, and treat chronic HBV infection
- Access clinical guidelines for HBV prevention, testing, management, and care as well as patient education materials at [www.cdc.gov/hepatitis](http://www.cdc.gov/hepatitis) or [www.cdph.ca.gov/programs/Pages/ovhp.aspx](http://www.cdph.ca.gov/programs/Pages/ovhp.aspx).

## Hepatitis C: Testing and Serology

Hepatitis C is an infection caused by the Hepatitis C virus (HCV). Chronic infection with HCV is associated with liver failure, cirrhosis, and liver cancer. Serologic testing is the primary way to identify persons with chronic HCV infection. These complications can be prevented by treatment and patient education (i.e., regarding alcohol use and liver self-care). Currently, no vaccine is available to prevent HCV infection.



### Serologic Markers

#### Anti-HCV:

Hepatitis C surface antibody is used to detect the presence of antibodies to the virus, indicating exposure to HCV

#### HCV RNA:

Test used to detect the presence (qualitative) or amount (quantitative) of virus and distinguish between a current or past infection

#### RIBA:

Recombinant immunoblot assay used as an additional and more specific test to confirm the presence of HCV antibodies and rule out false positives

\* Note: 95 percent of samples with a high signal-to-cutoff (s/co) ratio will be predictive of a true antibody positive result, regardless of the anti-HCV prevalence or characteristics of the population being tested. A list of the s/cos (or threshold values) that are predictive of a true positive for available commercial assays can be retrieved at [www.cdc.gov/hepatitis/HCV/LabTesting.htm](http://www.cdc.gov/hepatitis/HCV/LabTesting.htm). If a false positive test result is suspected, supplemental HCV antibody and/or HCV RNA testing should be conducted.

\*\* Note: A single HCV RNA test result cannot determine chronic HCV infection status, as persons may have intermittent viremia. Two positive HCV RNA tests six months apart are needed to diagnose a case of chronic HCV infection.

\*\*\* Note: Patients with recent (< 6 months) exposure who test anti-HCV-negative may not have yet developed detectable antibodies. HIV-infected persons may not develop hepatitis C antibodies. HCV RNA testing should be considered for immunocompromised persons.

### Principles of Long-Term Chronic HCV Evaluation and Management

- Provide patient with culturally and linguistically appropriate educational materials (see links below)
- Report case to local health department within seven days
- Vaccinate patients against hepatitis A and B unless immune
- Advise patients to reduce or eliminate intake of alcohol and other liver toxins
- Counsel patients to practice safer injection, follow infection control guidelines in healthcare and in settings such as tattoo parlors, and avoid sharing personal items that might have blood on them, such as razors
- Counsel patients to practice safer sex when engaging with multiple sex partners or infected with HIV
- Seek a hepatitis C-experienced clinician to evaluate for, manage, and treat chronic HCV infection, either by referral or through clinical consultation
- Access clinical guidelines for HCV prevention, testing, management, and care as well as patient education materials at [www.cdc.gov/hepatitis](http://www.cdc.gov/hepatitis) or [www.cdph.ca.gov/programs/Pages/ovhp.aspx](http://www.cdph.ca.gov/programs/Pages/ovhp.aspx)