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OREGON PUBLIC HEALTH DIVISION • DEPARTMENT OF HUMAN SERVICES

SCREENING FOR CHRONIC HEPATITIS B VIRUS IN OREGON

Chronic hepatitis B virus (HBV) infection is a leading cause of liver failure, cirrhosis, and cancer, contributing to an estimated 620,000 deaths each year worldwide and 2,000–4,000 deaths each year in the United States.[1] Persons with chronic HBV infection can remain asymptomatic for years, unaware of their risk for premature death, and that they may transmit their infection to others. Improving the identification and public health management of persons with chronic HBV infection can help prevent chronic liver disease and transmission to other individuals.

CHRONIC HBV: STILL A PROBLEM

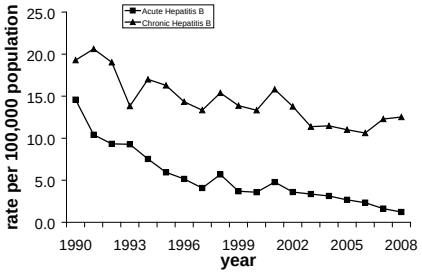
The hepatitis B virus is one of several genetically unrelated viruses causing hepatitis in humans and is transmitted by contact with the blood, semen or vaginal secretions of an infected person. Infection in adolescence or adulthood typically causes an acute illness with symptoms lasting two to four months, and carries a 5%–10% risk of chronic infection. When acquired in childhood, however, the disease is typically asymptomatic, and the likelihood of chronicity is much higher, ranging from 25% (in children infected after birth and before age 5) to 90% (in newborns infected at birth to e-antigen positive mothers).[2] Even worse, the probability of developing serious complications is also high in this group: 25% of patients infected with HBV during infancy will die prematurely from HBV-related hepatocellular carcinoma or cirrhosis.[3]

Globally, the prevalence of chronic HBV infection varies considerably. Regions where HBV is endemic include parts of Asia, Africa, Eastern Europe, the Pacific Islands, and some countries in Central America and the Caribbean. In the United States, the incidence of acute HBV infection has declined significantly since the hepatitis B vaccine was added to the recommended childhood immunization schedule in 1991.

WHO'S AT RISK IN OREGON?

In Oregon, as in most other states, rates of acute HBV infection have declined more than 80% since 1980. Chronic hepatitis B, however, remains a problem: more than 400 individuals have been newly reported as chronic HBV carriers every year since 1989 in Oregon (Figure). Consistent with national trends, the burden of disease has disproportionately affected Oregon's Asian and Pacific Islander (API) communities. Persons identifying as API, who represent only 3.9% of Oregon's general population,[4] accounted for 47% of the chronic HBV cases newly reported statewide in 2008. Of 2008's new cases, 70% were in persons born outside the United States, and of these persons, more than half had been born in China or Vietnam. Frequently cited places of birth also include other parts of Southeast Asia (including Laos, Cambodia, and Thailand), Pacific Islands (e.g. Micronesia), Central and Eastern Europe, and all regions of Africa.

Reports of acute and chronic hepatitis B, Oregon, 1990– 2008



The most commonly reported risk factors among newly reported chronic carriers were history of multiple sex partners, men having sex with men, history of incarceration, and intravenous drug use (reported, respectively, by 19%, 13%, 6.9%, and 6.6% of 2008's new cases). It is noteworthy that 36% did not identify a risk factor; many of these individuals can be assumed to have been infected in infancy or early childhood.

Despite our best efforts, public health personnel are not able to contact and counsel every Oregonian with chronic HBV infection. Major challenges encountered in case investigation include patients' reluctance to discuss such sensitive issues as drug use and sexual history. These obstacles are frequently compounded by language and cultural barriers. In these situations, thorough counseling and education from a trusted healthcare provider is crucial.

TEST AND IMMUNIZE

Active screening among high-risk population subgroups is an important strategy in preventing the transmission of HBV, given the lack of symptoms in most chronic carriers. In 2008, the Centers for Disease Control and Prevention (CDC) issued an updated set of recommendations for identification and public health management of persons with chronic HBV infection (Table 1).[5]

Table 1. Updated CDC Screening Guideines for chronic HBV infection[5]

Testing is now recommended for:

- men who have sex with men
- persons who inject drugs
- persons needing immunosuppressive therapy
- persons with abnormal liver function tests of unknown etiology
- **persons born in regions of intermediate (prevalence 2%–8%) or high (≥8%) HBV endemnicity**
- US-born persons (not vaccinated as infants) whose parents were born in regions of high endemnicity

Testing continues to be recommended for:

- pregnant women
- infants born to HBsAg-positive mothers
- household and sexual contacts of HBV-infected persons
- persons with HIV
- hemodialysis patients
- donors of blood, plasma, organs, tissues, or semen

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Testing should include a serologic assay for HBsAg (Table 2). A confirmed HBsAg-positive result indicates active HBV infection, either acute or chronic; chronic infection is confirmed by the absence of IgM anti-HBc or by the persistence of HBsAg or HBV DNA for at least 6 months. Additionally, patients who screen negative but who have an ongoing risk of acquiring hepatitis B (injection drug users, MSM, or household or sex partners of known HBV carriers) should be tested for anti-HBc to determine if previously exposed. Any person who screens negative for HBsAg should be immunized. The recommended vaccine regimen for adults is three injections administered at 0, 1, and 6 months, and per CDC's recommendations, the first dose should be administered during the same visit as serologic testing.

COUNSEL AND EDUCATE

Patients whose serologic tests reveal hepatitis B infection should be informed about their elevated risk of serious liver disease and of the importance of lifelong follow-up (which may include viral load testing, liver biopsy, ultrasound, and alpha-fetoprotein testing) to monitor the status of their infection—even if they have never been symptomatic or do not currently feel sick. They should also be advised to avoid alcohol consumption and, if not already immune, to be immunized against hepatitis A.

It is important that persons with chronic HBV understand that they may be infectious for the rest of their lives. They should be advised to practice safe sex and not to share razors, toothbrushes, needles, or other potentially blood-contaminated objects. Pregnant and sexually active women should be told about the risk of hepatitis B infection to newborns of infected mothers, and of the importance of prophylaxis for such newborns. All patients with chronic HBV should be educated about the modes of HBV transmission, and be assured that HBV is *not* spread by breastfeeding; kissing; sharing food, water, or eating utensils with an infected individual; or casual touching.

Finally, persons with chronic HBV should understand that they can help protect their household and sexual contacts by encouraging these persons to be tested for—and, if susceptible, vaccinated against—HBV infection. If it is not feasible to screen and vaccinate at your practice, these persons should be strongly advised to seek testing from their own health care providers or from their local health department.

Table 2. Interpretation of common serologic tests for hepatitis B virus

Hepatitis B surface antigen (HBsAg)	Marker of infectivity. Persists indefinitely in chronic carriers.
Surface antibody (anti-HBs)	Indicates the development of immunity, either from past infection or immunization
Viral DNA (HBV DNA)	Marker of infectivity. Detectable in about 50% of chronic carriers; can be present when HBsAg is undetectable.
Total core antibody (anti-HBc)	Marker of past infection. Generally elevated for two years after transient infection, may remain elevated for life in carriers. NOT produced by vaccination.
IgM core antibody (IgM anti-HBc)	Indicative of infection in the recent past (usually <6 months). This is the best test to diagnose acute hepatitis B.
Hepatitis B e antigen (HBeAg)	Marker of enhanced infectivity. Seen transiently in most infections; persists indefinitely in some carriers.

RESOURCES

- American Association for the Study of Liver Disease (*www.aasld.org*): new treatment guidelines address antiviral therapy, drug resistance issues, and indications for special populations.
- Hepatitis B Foundation (*www.hepb.org*): offers patient education resources in multiple languages, frequent clinical updates.

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