

VACCINES TO PREVENT HEPATITIS A AND HEPATITIS B

Hepatitis A and B can be prevented through immunization. Awareness of the importance of immunizing against these diseases is growing, and new initiatives are capitalizing on this interest.

No vaccine to prevent hepatitis C is available.

Hepatitis A and Hepatitis B are Serious Public Health Problems

Outbreaks of **hepatitis A** occur more easily in overcrowded areas where poor sanitary conditions exist. Hepatitis A virus (HAV) is primarily transmitted through the fecal-oral route, when a person puts something in his or her mouth (such as food or a beverage) that has been contaminated with the feces of a person infected with HAV. Outbreaks also occur among injection drug users (IDUs); transmission may result from sharing needles and drug preparation equipment, sexual contact, or poor hygiene. HAV infection can be very severe in those who already have chronic liver disease from hepatitis B virus (HBV) or hepatitis C virus (HCV) infection. During epidemic years, as many as 35,000 cases of hepatitis A have been reported. Once infected with HAV, people develop a protective immunity. They cannot get hepatitis A again, and they are no longer infectious to others.

In 2000, an estimated 73,000 people in the U.S. were newly infected with **hepatitis B** virus. About 5,000 die every year from liver disease caused by HBV infection. IDUs and people with high-risk

sexual behaviors (such as unprotected sex with multiple partners) are at high risk of HBV infection. About 2%-6% of those who were initially infected as older children or adults never clear the virus from their bodies. They develop chronic HBV infection and can transmit HBV to others. Much higher percentages of those infected as babies (90%) and young children (30%) become chronically infected. About 1.25 million people in the U.S. have chronic HBV infection. In about 15%-25% of these individuals, the virus causes gradual, progressive liver disease, leading to cirrhosis, liver cancer, or liver failure.

Vaccines are Available to Prevent Hepatitis A and Hepatitis B

Hepatitis A vaccine

Two hepatitis A vaccines are licensed in the U.S. for use in people aged 2 years and older. Each is given in 2 doses, 6 to 18 months apart. Immunization against hepatitis A is recommended for people at risk of getting infected or who may become seriously ill if infected (see chart). It is estimated that the protection against HAV infection provided by the vaccine will last for at least 20 years.

Who Should be Immunized Against Hepatitis A?

- injection and non-injection drug users
- travelers to places with high rates of HAV infection (Africa, Central/South America, Asia, Middle East, Russia)
- men who have sex with men
- people with clotting-factor disorders (hemophilia)
- people with any type of chronic liver disease
- people waiting for or who have had a liver transplant
- children living in areas of U.S. with consistently increased rates of hepatitis A

Hepatitis B vaccine

Immunization against HBV infection is recommended for all babies, children and adolescents aged 0-18 years, and people in high-risk groups (see chart). Two hepatitis B vaccines are approved for use in the U.S. Each is usually given in three doses over a 6-month period. A 2-dose regimen (the second dose is given 4-6 months after the first) for one of the vaccines has been approved for use in persons 11-15 years old.

In 2001, a combined hepatitis A and hepatitis B vaccine became available. This vaccine is approved for use in people aged 18 and older and is given in 3 doses over a 6-month period.

Developing a Vaccine for Hepatitis C is More Difficult

In all viral infections, the virus reproduces after it enters the body. When HCV reproduces, it produces a large number of viruses that differ slightly from each other in their genetic makeup. Scientists believe that this genetic diversity allows HCV to evade the body's immune system and it may be the reason why such a high percentage of people infected with HCV (75%-85%) develop chronic infection. This genetic diversity is also the reason why an effective hepatitis C vaccine has not yet been developed.

In contrast, HAV and HBV are more stable viruses and do not change very much genetically when they reproduce. This allows the body's immune system to effectively clear the virus and to develop a lifelong immunity to the disease and is the reason why scientists have been able to produce effective vaccines.

Immunizing IDUs against Hepatitis A and Hepatitis B is Especially Important

Approximately 50%-70% of IDUs become infected with HBV within 5 years of beginning to inject drugs. This means that IDUs should be immunized against HBV as soon after starting to inject as possible. Outbreaks of hepatitis A also occur among IDUs. If they are not already immune because of previous infection, IDUs should be immunized against this hepatitis virus as well.

However, many IDUs lack a regular source of health care. When they do receive care, it is often in settings, such as emergency rooms, that do not routinely offer hepatitis A and hepatitis B immunization. The myths and stigma surrounding IDUs – beliefs that they can't be reached by outreach initiatives, that they can't or won't get the full vaccine series, and that they won't take other protective measures – also make it difficult to stimulate efforts to immunize IDUs.

Currently, most resources are dedicated to ensuring hepatitis B immunization of babies, children, and adolescents through infant immunization schedules and school admission immunization requirements. Health care providers don't necessarily think about the need to immunize adults or routinely ask about high-risk behaviors that might suggest a need for immunization. In addition, funds for large-scale immunization programs for adults are limited.

Community-based organizations who are working on HIV, IDU, and substance abuse issues are becoming increasingly aware of the importance of viral hepatitis and the need to immunize high-risk groups. However, limited staffing, expertise, and funding for vaccines may make it difficult for them to add this issue to their existing efforts.

Who Should be Immunized Against Hepatitis B?

- all babies, at birth
- all children aged 0-18 years old who have not been vaccinated
- injection drug users
- sexually active heterosexuals (more than 1 partner in prior 6 months, recently acquired sexually transmitted disease [STD])
- men who have sex with men
- sex contacts of people with chronic hepatitis B
- household contacts of people with chronic hepatitis B
- people with jobs involving contact with human blood
- kidney dialysis patients and patients with early renal failure
- families of children with evidence of past infection who have been adopted from areas with high rates of HBV infection (Southeast Asia, Africa, Amazon Basin, Pacific Islands, Middle East)
- those traveling internationally for more than 6 months in areas with high or intermediate rates of HBV infection
- inmates of correctional facilities
- clients and staff of institutions for developmentally disabled

New Initiatives are Turning Challenges into Opportunities

New federal hepatitis A and hepatitis B vaccination initiative. The Centers for Disease Control and Prevention's National Center for Infectious Diseases (NCID), National Center for HIV, STD, and TB Prevention (NCHSTP), and National Immunization Program (NIP) and the Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Treatment (CSAT) have launched a new initiative. This effort is aimed at raising awareness of the importance of hepatitis A and hepatitis B immunization among high-risk individuals seen in public health outreach and service settings, such as STD clinics, HIV counseling and testing sites, correctional facilities, and substance abuse treatment facilities. The initiative will promote the availability and use of vaccines. It will also encourage staff of these settings to work with state immunization staff to develop estimates of needs for vaccines, review readiness of state-level programs to receive and administer immunizations, and develop strategies to promote immunization among high-risk individuals.

Washington State hepatitis B immunization program. An outbreak of hepatitis B among IDUs in Pierce County, Washington, detected in 2000, led to an innovative and successful immunization collaboration among the health and corrections departments and community-based organizations, particularly the local syringe exchange program (SEP). The county health department opened the first immunization clinics at the SEP and the health department. Additional immunization clinics were later opened at the county jail, a soup kitchen, and a substance abuse treatment program for women. Slightly more than 60% of those who began the vaccine series reported that they had ever injected drugs. Participants did not have to pay for the

immunization and also received a \$5 reimbursement for travel with each dose. Just over half (53%) of the 1,981 participants who received the first dose returned for the second dose, and 27% completed the series of three doses. Completion rates for IDUs and non-IDUs were very similar.

To Learn More About This Topic

Read the overview fact sheet in this series – “Viral Hepatitis and Injection Drug Use.” It provides basic information, links to the other fact sheets in this series, and links to other useful information (both print and Internet).

Visit websites of the CDC (www.cdc.gov/idu) and the Academy for Educational Development (www.health-strategies.org/pubs/publications.htm) for these and related materials:

- *Preventing Blood-borne Infections Among Injection Drug Users: A Comprehensive Approach*, which provides extensive background information on HIV and viral hepatitis infection in IDUs and the legal, social, and policy environment, and describes strategies and principles of a comprehensive approach to addressing these issues.
- *Interventions to Increase IDUs' Access to Sterile Syringes*, a series of six fact sheets.
- *Drug Use, HIV, and the Criminal Justice System*, a series of eight fact sheets.
- *Substance Abuse Treatment and Injection Drug Users*, a series of six fact sheets.

Visit these CDC websites:

- the Division of Viral Hepatitis (www.cdc.gov/hepatitis) for information materials and on-line training for health professionals;
- the National Immunization Program (www.cdc.gov/nip/); and
- the Advisory Committee on Immunization Practices (www.cdc.gov/nip/ACIP/default.htm).

Check out these sources of information:

Advisory Committee on Immunization Practices, CDC. Prevention of hepatitis A through active or passive immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP). *Morbidity and Mortality Weekly Report*, 1999;48(RR12):1-37. www.cdc.gov/mmwr/preview/mmwrhtml/rr4812a1.htm

Advisory Committee on Immunization Practices, CDC. Hepatitis B virus: a comprehensive strategy for eliminating transmission in the United States through universal childhood vaccination: recommendations of the Immunization Practices Advisory Committee (ACIP). *Morbidity and Mortality Weekly Report*, 1991;40(RR-13):1-19. www.cdc.gov/mmwr/preview/mmwrhtml/00033405.htm

Advisory Committee on Immunization Practices, CDC. Protection against viral hepatitis: recommendations of the Immunization Practices Advisory Committee (ACIP). *Morbidity and Mortality Weekly Report*, 1990;39(RR-2):1-26. www.cdc.gov/mmwr/preview/mmwrhtml/00041917.htm

Alter MJ, Moyer LA. The importance of preventing hepatitis C virus infection among injection drug users in the United States. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology* 1998;18 (Suppl 1):S6-S10.

Centers for Disease Control and Prevention (CDC). Hepatitis B vaccination for injection drug users – Pierce County, Washington, 2000. *Morbidity and Mortality Weekly Report* 2001;50(19):388-399. www.cdc.gov/mmwr/preview/mmwrhtml/mm5019a5.htm

Centers for Disease Control and Prevention (CDC). Hepatitis B vaccine fact sheet: August, 2002. www.cdc.gov/ncidod/diseases/hepatitis/b/factvax.htm

Centers for Disease Control and Prevention (CDC). Twinrix®: combined hepatitis A and hepatitis B vaccine. [Fact sheet] June, 2001. www.cdc.gov/ncidod/diseases/hepatitis/twinrix.index.html

Centers for Disease Control and Prevention (CDC). Notice to readers: FDA approval for a combined hepatitis A and B vaccine. *Morbidity and Mortality Weekly Report* 2001;50(37):806-807. www.cdc.gov/mmwr/preview/mmwrhtml/mm5037a4.htm

Goldstein ST, Alter MJ, Williams IT, et al. Incidence and risk factors for acute hepatitis B in the United States, 1982-1998: implications for vaccination programs. *Journal of Infectious Diseases* 2002;185(6):713-719.

Ochnio JJ, Patrick D, Ho M, et al. Past infection with hepatitis A virus among Vancouver street youth, injection drug users and men who have sex with men: implications for vaccination programs. *Canadian Medical Association Journal* 2001;165(3):293-297.



Department of Health and Human Services

<http://www.cdc.gov/idu>

Through the Academy for Educational Development (AED), IDU-related technical assistance is available to health departments funded by CDC to conduct HIV prevention and to HIV prevention community planning groups (CPGs). For more information, contact your CDC HIV prevention project officer at (404) 639-5230 or AED at (202) 884-8952.