Hepatitis A is a contagious liver disease resulting from infection with the human hepatitis A virus (HHAV). Disease severity can range from a mild illness lasting a few weeks to a severe illness lasting a few months. During the past 20 years, the prevalence of hepatitis A has decreased by more than 90% in the United States, with roughly 20,000 new infections now estimated to occur annually. Many experts attribute this decline to vaccination schedules that have been implemented for children and adults at risk for hepatitis A.\(^1\)

Hepatitis B is a common liver disease affecting millions of people around the world. An estimated 1 of every 3 people worldwide is infected with the hepatitis B virus (HBV). In the United States, 1 of every 20 (ie, 12 million) people have been infected with HBV, about 1 million people have chronic infection with the virus, and as many as 100,000 people become acutely infected each year with the virus.\(^2\) Hepatitis B can progress into chronic liver disease, cirrhosis, and hepatocellular carcinoma. Effective vaccinations exist to prevent infection with HBV.\(^3\)

The present article reviews the current understanding of hepatitis A and hepatitis B, including transmission, course of illness, prevention, and vaccination guidelines.

Recent trends suggest that the prevalence of hepatitis infection has declined in populations vaccinated against the hepatitis viruses. Still, with an estimated 20,000 new infections annually in the United States from human hepatitis A virus, as many as 100,000 annual cases of acute infection from hepatitis B virus, and more than 1 million individuals with chronic hepatitis B virus infection, there is room for further improvement. Although hepatitis A virus infection causes debilitating symptoms and illness, it is typically not a protracted illness, and it usually resolves over weeks to months without further sequelae. By contrast, hepatitis B may convert to a chronic infection that leads to cirrhosis and hepatocellular carcinoma, underscoring the importance of vaccinations in at-risk individuals.

Hepatitis A

The human hepatitis A virus is a type of RNA virus classified as a picornavirus. It is typically spread when an individual ingests fecal matter—even in microscopic amounts—from contact with food, beverages, water, or other material contaminated by feces from an infected person. Activities that can result in the spread of HHAV include the following: not washing hands after using the bathroom; insufficient washing of hands after changing diapers or cleaning up stool of an infected person; and oral-anal sexual contact with an infected person. The nature of HHAV transmission is why hepatitis A is associated with inadequate sanitation and poor personal hygiene.

Hepatitis A occurs sporadically and in epidemics worldwide. In 1980 in the United States, there were 29,000 reported acute cases and 124,000 estimated acute cases of HHAV infection, compared with 2600 reported acute cases and 11,000 estimated acute cases in 2008 (Figure 1).\(^2,4\) After adjustments for underreporting and the presence of asymptomatic infections, the total number of estimated new HHAV infections in 1980 was 234,000, compared with 22,000 in 2008.\(^2,4\)

Although HHAV infection does not cause chronic liver disease and is rarely fatal, it can cause debilitating symptoms, including fever, malaise, loss of appetite, diarrhea, nausea, abdominal discomfort, jaundice. Adults have signs and symptoms of illness more often than children, and the severity of disease and the mortality rate increase in older age groups. The serious, acute nature of HHAV infection is highlighted by estimates that 70% to 80% of individuals older than 14 years with hepatitis A also have jaundice. Most affected people, however, recover in several weeks or months without complications.

Besides such preventative measures as improved sanitation, proper sewage disposal, and better personal hygiene practices, the only way to prevent disease from HHAV is use of the hepatitis A vaccine. This vaccine contains an inactivated form of HHVA. Depending on the vaccine formulation, it should be administered in a 2-dose schedule with an ini-
Individuals unprotected from the virus. The group includes people who travel to foreign countries where the virus is common; who have anal contact with a sex partner; who work with primates infected with the virus; who may encounter the virus in research settings; who have chronic liver disease; and who have blood-clotting disorders though nonintact skin or mucous membranes; and dental, medical, or cosmetic procedures (eg, tattooing) in which needles or other equipment may become contaminated with blood.

Hepatitis B is a worldwide health problem, with about 600,000 deaths occurring each year across the globe secondary to HBV disease. The United States is considered a low-endemic area, though US public health efforts have been unable to eradicate HBV. Data recently presented at a meeting of the ACIP indicate an increasing prevalence of hepatitis B among adults with diabetes mellitus compared to adults without diabetes mellitus. This is an alarming observation, especially considering the increasing prevalence of obesity, metabolic syndrome, and diabetes mellitus in the United States.

The hepatitis B virus has an incubation period of 60 to 150 days, and as with HHAV, typical signs and symptoms of infection include abdominal pain, anorexia, fatigue, jaundice, malaise, nausea, and vomiting. In contrast to hepatitis A, which rarely becomes chronic, acute hepatitis B progresses to chronic infection in 30% to 90% of individuals infected as infants or young children—though chronic HBV infection occurs in less than 5% of individuals infected during adolescence or adulthood. It is estimated that more than 350 million individuals worldwide are chronically infected with HBV.
mentally disabled persons; and travelers to regions with intermediate or high rates of hepatitis B. As with the hepatitis A vaccine, recent ACIP guidelines have extended recommendations for the hepatitis B vaccine to people involved in international adoptions, as well as to family members who will be in contact with the adopted child. Recommendations for hepatitis B vaccination in adults are summarized in Figure 3. It is possible that the ACIP will further extend hepatitis B vaccination recommendations to individuals with diabetes mellitus who meet requirements based on benefit-to-cost models and evidence that these patients are at increased risk of acquiring HBV.

Hepatitis B vaccines have been shown to be safe for people of all ages. Similar to reactions to the hepatitis A vaccine, reactions to the hepatitis B vaccine are generally mild and last no longer than 24 hours. The most common adverse effects from the vaccine are swelling at the injection site, soreness, redness, headache, nausea, fever, and fatigue.

Clinical trials of hepatitis B vaccines licensed in the United States have suggested that the vaccines are very effective. A positive immune response to the vaccine is defined as the development of hepatitis B antibodies at titers of more than 10 mIU/mL. On the basis of this level as a positive response, the seroconversion rate is about 95% in healthy adults younger than 30 years. The seroconversion rate decreases with increasing age, to 86% in the fourth decade of life and 47% in the sixth decade of life.

Conclusion

The incidence of hepatitis A and hepatitis B has decreased in the United States as a result of increasing knowledge of the viruses and implementation of vaccination programs. However, there is room for improvement in hepatitis immunization, and physicians must continue to vaccinate individuals when indicated and remain current on vaccination guidelines, which continue to evolve. Physicians must also continue educating the public regarding the dangers and risks associated with hepatitis viruses. Improved public health efforts could essentially eradicate hepatitis A and reduce the prevalence of chronic liver disease, cirrhosis, and hepatocellular carcinoma secondary to hepatitis B.

Figure 2. Recommendations for hepatitis A vaccination in adults, from the Advisory Committee on Immunization Practices of the Centers for Disease Control and Prevention. Vaccine brands may be used interchangeably.

- All people who want to be protected from human hepatitis A virus (HHAV) infection
- People who travel or work anywhere except in the United States, Canada, Western Europe, New Zealand, Australia, or Japan
- People with chronic liver disease
- Injection and noninjection drug users
- Men who have sex with men
- People who receive clotting-factor concentrates
- People who work with HHAV in experimental laboratory settings
- Food handlers, when health authorities or private employers determine vaccination to be appropriate
- People who anticipate having close personal contact with an international adoptee from a country of high or intermediate endemicity during the first 60 days after the adoptee’s arrival in the United States
- Adults aged 40 years or younger with recent (ie, within 2 weeks) exposure to HHAV; for people older than 40 years with recent exposure to HHAV, immune globulin is preferred

References

Figure 3. Recommendations for hepatitis B vaccination in adults, from the Advisory Committee on Immunization Practices of the Centers for Disease Control and Prevention. Vaccine brands may be used interchangeably. In addition to these recommendations, serologic screening should be provided for immigrants from endemic areas. If a patient is chronically infected, appropriate disease management should be provided. For sex partners and household contacts of people who test positive for hepatitis B surface antigen, serologic screening and the initial dose of hepatitis B vaccine should be provided at the same visit.6,8


