

Time for Renewed Commitment to Viral Hepatitis Prevention

Over the last 2 decades, successful public health interventions have altered the epidemiology of viral hepatitis in the United States. Vaccination of children and adolescents has reduced the incidence of hepatitis A virus (HAV) and hepatitis B virus (HBV) infections to historic lows. American Indians/Alaskan Natives, a population whose HBV rate was once 5 times that of other racial/ethnic populations, now has the lowest (0.5 cases per 100 000).¹⁻³ Since the adoption in 1991 of a strategy to eliminate HBV transmission, HBV vaccination of infants, children, and adolescents has largely contributed to an 81% decline in new cases of HBV, and infant HBV vaccination is now on par with that of other vaccines in the childhood schedule.^(1,2,4,5) With more than 90% of pregnant women screened for HBV infection and postexposure prophylaxis 85% to 95% effective in preventing mother-to-child HBV transmission at delivery, substantial progress has been made in the prevention of perinatal HBV infections.⁴

In the absence of a vaccine to prevent HCV, the advent of laboratory testing in 1992 to protect the nation's blood supply and prevention efforts to reduce risk behaviors among injection drug users (IDUs) have led to a 78% decline in new HCV infections.^{1,2,6} Health care-related transmission of HBV and HCV is now rare thanks to widespread vaccination of health care workers and the adoption of universal infection control procedures.⁷

Although these prevention successes are remarkable, challenges remain. Despite the existence of risk-based vaccination recommendations, HAV and HBV infections remain common.^{3,5} In 2006, an estimated 32 000 persons were infected with HAV, with risks highest among international travelers, individuals in close contact with infected persons, men who have sex with men, and IDUs; food-borne outbreaks also continue to be reported.² Of an estimated 46 000 new HBV infections in 2006, more than 80% were attributable to injection drug use and high-risk sexual activity.^{2,5}

Children continue to be infected at birth. Of approximately 24 000 infants born to HBV-infected women annually, only about one quarter complete case management and are tested for infection or susceptibility (CDC, unpublished data, 2007). In 2006, a total of 86 perinatal HBV cases were reported to the CDC, but testing and reporting are incomplete; thus, the true number of perinatal HBV cases per year is likely 10 to 20 times higher.

Approximately half of persons with chronic HBV in the United States are Asian Americans (CDC, unpublished data, 2006). HBV-related liver cancer is a leading cause of cancer deaths in this population.⁸ Although the incidence of HBV infection in the United States is declining, the prevalence of chronic HBV is sustained by immigration from HBV-endemic countries in Asia, Africa, and Eastern Europe; each year, an estimated 40 000

persons with chronic HBV immigrate to the United States from these countries.⁵

In 2006, approximately 20 000 persons were infected with HCV.² Injection drug use was responsible for most of these new cases, and at least one third of IDUs are HCV infected.⁹

Despite the decline in the number of new infections, the number of persons with chronic viral hepatitis is over 4 million, including 3.2 million chronic HCV infections and 800 000 to 1.4 million chronic HBV infections (CDC, unpublished data, 2006).¹⁰ Chronic viral hepatitis is a major cause of morbidity responsible for approximately two thirds of chronic liver disease and conservatively 9000 deaths per year.^{11,12} Mortality from HCV is expected to rise as the HCV-infected population ages, extending their years of living with the infection and increasing their risk of liver cirrhosis and cancer.¹³ Cofactors such as HIV infection and alcohol use accelerate the progression of HCV; approximately 25% of the 1 million persons infected with HIV are co-infected with HCV.⁶ Finally, cases of health care-associated HBV and HCV transmission continue to occur.

The changing epidemiology of viral hepatitis reveals both gaps in the delivery of proven interventions and new opportunities to reduce the health consequences of chronic disease. The Centers for Disease Control and Prevention (CDC) has identified new priorities to improve current programs and develop new prevention goals.

VACCINATE VULNERABLE POPULATIONS FOR HEPATITIS A AND B

The great majority of cases of HAV and new cases of HBV occur among at-risk adults, reflecting poor vaccination coverage among this vulnerable population. CDC assessments of strategies for adult viral hepatitis vaccinations have established the feasibility of integrating HIV, sexually transmitted diseases (STDs), and viral hepatitis prevention services.¹⁴ However, federal funding comparable to that provided for childhood vaccinations is lacking for adults, and lack of resources is a major barrier to adult vaccination. To promote adult HBV vaccination, the CDC recommends universal HBV vaccination in settings in which a high proportion of clients are at risk for the virus; HAV vaccination is also recommended for at-risk adults.^{3,5} To help public health programs implement its recommendations, the CDC recently directed \$20.5 million to 51 state and local grantees for the purchase of HBV or combination hepatitis A and B vaccines and to expand delivery of vaccination in STD clinics, correctional facilities, reproductive health centers, and other public health settings serving at-risk adults. Sustaining support for this initiative in future years is not assured but is essential to hastening elimination of HBV transmission among adults.

Once infected with HBV, newborns and infants tend to remain infected and at risk for liver disease in later life. To protect newborns and infants, the CDC recommends a birth dose for all newborns before hospital discharge; however, only 50% of newborns are currently

vaccinated.⁴ To improve perinatal prevention and ensure that all infants born to HBV-infected mothers receive prophylaxis, state and local perinatal prevention programs require the resources to provide prophylaxis for all exposed infants and to rigorously investigate all cases of perinatal HBV transmission to identify gaps in care and improve program performance; HBV-infected mothers must also be referred for care.

SCREEN FOR CHRONIC VIRAL HEPATITIS B AND C

The CDC recommends risk-based screening to identify those with chronic HCV, as well as prevention services to decrease transmission risks and to ensure infected persons receive needed referrals for evaluation and care.⁶ HBV and HCV screening is also recommended for persons with HIV.

Despite these recommendations and the potential benefits of prevention and care, many of the 3.2 million persons with chronic HCV are unaware of their infection.¹⁵ Barriers to screening include the long asymptomatic period (i.e., the silent epidemic), the lack of recognition of risks by patients and providers, and the limited resources available for clinical and public health settings to provide comprehensive risk-reduction counseling, screening, and referral.

Previous recommendations for HBV testing focused on its role in tissue and organ donation, maternal screening, and avoiding vaccination of previously exposed persons.⁵ To improve the identification and public health management of persons with chronic HBV infection, the CDC is drafting new recommendations

for chronic HBV screening that will define target populations for screening and the prevention and care services needed by persons found to be infected with HBV.

Full implementation of recommendations for HBV and HCV screening will require a commitment of resources. The CDC currently supports coordinators for state and local viral hepatitis prevention activities in 49 states and 6 local areas. State and local prevention coordinators need resources to grow HBV screening and chronic HCV programs with a special emphasis on integrating viral hepatitis prevention in care settings serving at-risk populations, and on building relationships with communities to reduce health disparities. Enhancements of chronic HBV and HCV screening will increase the demand for vaccination and care services, thus, increasing the need to prepare additional public health and medical systems to manage and care for persons with viral hepatitis.

BUILD SURVEILLANCE CAPACITY TO GUIDE PREVENTION SERVICES

Public health surveillance data are needed at the national, state, and local level to direct and evaluate prevention services. Current viral hepatitis surveillance systems are inadequate in their capacity to monitor chronic infections and to measure the burden of viral hepatitis morbidity and mortality. State and local health departments are challenged by the limited data provided by electronic laboratory reports of serologic test results, often with incomplete demographic information and little or no epidemiological data

essential for making prevention decisions.

The sheer volume of laboratory-based reports has strained the limited resources of local health departments, adversely affecting the completeness and quality of chronic viral hepatitis data. Although chronic HBV and HCV are nationally notifiable conditions, only 39 and 36 states, respectively, report cases to the CDC. National surveys exclude certain institutionalized at-risk populations such as the incarcerated and might underrepresent certain racial/ethnic minorities, particularly Asian Americans. All states need representative and robust surveillance systems with the capacity to accurately track acute and chronic infections, monitor key prevention objectives, detect new threats (e.g., antiviral resistance), and link with other disease surveillance (e.g., HIV and cancer) and vital record systems. Surveillance data can also be used by public health agencies to build disease registries as a means of helping persons receive prevention and care services.

The epidemiology of viral hepatitis is changing and presents new prevention challenges. A successful public health response will require partnerships among governmental, academic, and community-based organizations. Joined in their renewed commitment to viral hepatitis prevention, the twin goals of preventing infection and disease can be achieved. ■

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This editorial was accepted February 10, 2008.

doi: 10.2105/AJPH.2008.136275

Note. The findings and conclusions in this report are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention.

Acknowledgments

I acknowledge and thank Susan Wang, Scott Holmberg, Kathleen Gallagher, and Stephanie Neitzel for their assistance in preparing and reviewing the editorial.

References

1. Wasley A, Miller JT, Finelli L. Surveillance for acute viral hepatitis—United States, 2005. *MMWR Surveill Summ.* 2007;56(3):1–24.
2. Wasley A, Grytdal S, Gallagher K. Surveillance for acute viral hepatitis—United States, 2006. *MMWR Surveill Summ.* 2008;57(2):1–24.
3. Centers for Disease Control and Prevention. Prevention of hepatitis A through active or passive immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep.* 2006; 55(RR-7):1–23.
4. 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 1: immunization of infants, children, and adolescents. *MMWR Recomm Rep.* 2005;54(RR-16): 1–32.
5. 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 II: immunization of adults. *MMWR Recomm Rep.* 2006; 55(RR-16):1–33.
6. Centers for Disease Control and Prevention. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. *MMWR Recomm Rep.* 1998;47(RR-19):1–39.
7. Centers for Disease Control and Prevention. Updated U.S. Public Health Service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. *MMWR Recomm Rep.* 2001;50(RR-11):1–52.
8. McCracken M, Olsen M, Chen MS, et al. Cancer incidence, mortality, and associated risk factors among Asian Americans of Chinese, Filipino, Vietnamese, Korean, and Japanese ethnicities. *Ca Cancer J Clin.* 2007;57: 190–205.
9. Garfein RS, Swartzengruber A, Ouellet LJ, et al. Methods to recruit and retain a cohort of young adult injection drug users for the Third Collaborative Injection Drug Users Study/Drug Users Intervention Trial (CIDUS III/DUIT). *Drug Alcohol Depend.* 2007;91(suppl 1):S4–17.
10. Armstrong GL, Wasley A, Simard EP, McQuillan GM, Kuhnert WL, Alter MJ. The prevalence of hepatitis C virus infection in the United States, 1999 through 2002. *Ann Intern Med.* 2006; 144(10):705–14.
11. Wise M, Bialek S, Finelli L, Bell B, Sorvillo F. Hepatitis C mortality in the United States, 1995–2003. Paper presented at: 12th International Symposium on Viral Hepatitis and Liver Disease; July 1–5, 2006; Paris, France.
12. Vogt TM, Wise ME, Shih H, Williams IT. Hepatitis B mortality in the United States, 1990–2004. Paper presented at: 45th Annual Meeting of the Infectious Disease Society of America; October 4–7, 2007; San Diego, CA.
13. Armstrong GL, Alter MJ, McQuillan GM, Margolis HS. The past incidence of hepatitis C virus infection: implications for the future burden of chronic liver disease in the United States. *Hepatology.* 2000;31:777–782.
14. Buffington J, Jones TS. Integrating viral hepatitis prevention into public health programs serving people at high risk for infection: good public health. *Pub Health Rep.* 2007;122(suppl):1–5.
15. Wasley A, Finelli L, Bell B. The knowledge and behaviors of HCV infected persons identified in a seroprevalence survey, USA, 2001–2002. Paper presented at: 12th International Symposium on Viral Hepatitis and Liver Disease; July 1–5, 2006; Paris, France.