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Hepatitis B in the United States:**A Major Health Disparity Affecting Many Foreign-Born Populations****John W. Ward, MD****Kathy K. Byrd, MD, MPH***Division of Viral Hepatitis**National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention**Centers for Disease Control and Prevention*

In this issue of *Hepatology*, Kowdley et al. estimate 3.45% or 1.23-1.42 million of all foreign-born persons in the United States, are living with hepatitis B, a rate more than 10-fold higher than the prevalence of the general US population (0.27%) (1). High rates of chronic hepatitis B among the U.S. foreign born reflect the large global burden of hepatitis B, 370 million persons around the world, and the migration to the United States from countries where prevalence of HBV is highest. More than 60% of new immigrants to the United States come from countries of increased hepatitis B endemicity (HBsAg prevalence of >2%). Most HBV-infected persons from these countries become infected at birth or during early childhood, when the risk for chronic HBV infection is greatest; 25% of persons with chronic HBV remain at risk of premature death from hepatitis B-related liver disease (e.g., hepatocellular carcinoma [HCC]) (2).

In the United States, estimates of HBV prevalence are derived from the National Health and Nutrition Examination Survey (NHANES). However, this survey underrepresents some populations with high hepatitis B virus (HBV) prevalence. For example, NHANES data do not identify respondents born in most Asian or any African countries or report racial/ethnic categories that indicate origins in these countries (3,4). These limitations in data collection mask

hepatitis B-related health disparities contributing to the “silent epidemic” of viral hepatitis in the United States (5,6).

Seeking to fill the void in national health surveys, Kowdley et al. reviewed the medical literature published since 1980 to gather data for general population groups (e.g., pregnant women and military recruits) and then pooled these data to obtain the prevalence of chronic hepatitis B (HBsAg+) by country. To estimate the number of persons residing in the United States by country of origin, prevalence data were brought together with data from the U.S. Census American Community Survey (ACS), a household survey which collects various data, including country of birth (<http://www.census.gov/acs/www/>) (7). The authors acknowledge limitations to their approach: chronic HBV seroprevalence data were scarce for many countries (one third of countries had conducted fewer than six surveys), often varied substantially from one survey within a country to another, and most (72%) data were obtained from surveys conducted prior to 2000.

Compared with the results of another recently published study, the findings of Kowdley et al. appear to be conservative. Bringing together CDC and WHO data to estimate HBV prevalence, Mitchell et al. estimated chronic hepatitis B prevalence among persons who immigrated during 1974-2008 to be 4.6% (8), higher than the 3.45% estimate derived by Kowdley et al. The Mitchell analysis revealed that the number of imported cases of hepatitis B increased over time (30,000 in 1988 to 62,000 in 2006).

Data from these indirect approaches suggest that NHANES underestimates the number of persons with hepatitis B in the United States. However, like the Kowdley study, NHANES shows an increased burden of hepatitis B among the foreign born, albeit lower (0.03%--3.28%, depending on race/ethnicity) than the indirect estimations. Surveys of HBV infection specifically targeting foreign-born populations are needed to refine estimates of disease burden.

The Kowdley study is particularly valuable in estimating HBV prevalence by country of birth drawing attention to the diverse populations experiencing hepatitis B as a health disparity. In the United States, nearly 40% (~ 515,000 persons) of all foreign-born persons living with hepatitis B come from three countries: China, Vietnam, and the Philippines. However, a sizeable number of immigrants from other countries with increased burdens of HBV, including other countries of

Asia (e.g., India, ~54,000 cases), the Caribbean (e.g., Dominican Republic, 47,000 cases) and countries of Africa (e.g., Ethiopia, ~ 14,500 cases). The vast differences in culture and language represented by these populations require the development of culturally appropriate HBV prevention programs.

Hepatitis B is a vaccine-preventable disease, and immunization can virtually eliminate HBV transmission among vaccinated cohorts (5,9). Global and U.S. vaccination programs for newborn and infant hepatitis B immunization have resulted in increased hepatitis B vaccination coverage among children and adolescents. However, many countries have only recently implemented hepatitis B immunization; many foreign-born persons, who did not benefit from childhood vaccination programs at home, will be infected prior to arrival in the United States. Interventions are needed in this country to identify and reach these populations.

Since 2008, CDC has recommended HBsAg testing for all persons born in countries with HBsAg prevalence of $\geq 2\%$, referral of infected persons to care, and referral of close contacts for testing and vaccination (10). This strategy is cost-effective, and given prevalence estimates by Kowdley et al, capable of capturing 89% of foreign-born persons living with chronic hepatitis B. However, the IOM estimates up to 65% of persons living with hepatitis B infection are unaware they are infected (5).

To improve viral hepatitis prevention services, the U.S. Department of Health and Human Services (HHS) released a comprehensive plan outlining a set of actions for reducing health disparities among populations disproportionately affected by viral hepatitis, such as foreign-born persons (6). In accordance with this plan, several actions are being undertaken to improve availability of viral hepatitis data representative of foreign-born populations. For instance, CDC's REACH survey is targeting racial/ethnic minority communities to gather hepatitis B-related health information (11). Public health surveillance for acute and chronic hepatitis B also is providing valuable data; with support from CDC, health departments in San Francisco and New York City are conducting follow-up for hepatitis B case reports to collect country-of-birth and other data, which are used to evaluate recommendations for testing and direct persons to appropriate prevention and care services (12,13). Also being undertaken by CDC is an effort to use U.S. Census data and GIS programs to map populations for targeted interventions. Finally, NHANES is revising the 2011--2012 survey design to include an oversample of Asian

populations (of whom two-thirds are foreign born) that should increase the precision of estimates for hepatitis B among persons born in Asian countries (14). Although these initiatives will help reveal the prevalence of hepatitis B among communities of foreign-born persons, additional public health capacity is needed to better characterize HBV prevalence among these diverse populations at risk for hepatitis B and to direct prevention resources where they are most needed.

Community-based organizations (CBOs) have a unique ability to perform culturally appropriate outreach and, in partnership with health-care organizations and public health agencies, provide needed prevention services. In San Francisco, CBOs, healthcare organizations, and community leaders have united as part of the HEPB Free campaign to provide free or low cost hepatitis B screening and vaccination to Asian communities throughout the city (15). Unfortunately, examples of strong hepatitis-related CBO partnerships from other cities are few; a national search identified only 55 CBOs providing HBV prevention services and almost all function without federal support (16). Community health centers and health-care systems serving foreign-born populations also can play a vital role in ensuring that these persons are educated about their risk for HBV and provided with preventive services, including testing and linkage to care.

The study by Kowdley et al. provides convincing data that numerous and diverse foreign-born populations in the United States are at risk for chronic hepatitis B. These data, together with those from hepatitis B surveillance and community-based surveys, can help public health officials identify at-risk populations and direct prevention to communities in need of culturally appropriate services. HBV testing, followed by linkage to care and treatment, can prevent new cases of HBV infection among the foreign born and improve health outcomes for persons living with hepatitis B.

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