ABSTRACT

With several screening programs reporting a 15% incidence of hepatitis B virus (HBV) among Asian/Pacific Islanders (A/PI) living in the United States, there is a critical need for screening and preventive strategies aimed specifically at this population. This article explores recent prevalence studies and awareness surveys among various A/PI communities across the United States, offering screening recommendations and interpretation of tests and monitoring. Also included is a detailed discussion of counseling suggestions specific to A/PI communities, including use of alternative medicine and common misconceptions regarding HBV transmission. For example, many A/PI individuals believe that HBV can be spread by sharing food or chopsticks, the vaccine can transmit HBV infection, there is no real treatment for HBV, and liver cancer is caused by alcohol. Various surveys exploring Chinese health beliefs about the liver, vaccination, and preventive strategies offer clinicians insight regarding educational gaps and the types of counseling strategies that would be helpful in caring for A/PI patients. Ways of overcoming language barriers and information on finding a local expert are also included. (Adv Stud Med. 2007;7(15):476-481)

HEPATITIS B VIRUS SCREENING AND COUNSELING STRATEGIES FOR GENERAL PRACTITIONERS

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Although the number of Asian immigrants increases in North America, the burden of hepatitis B virus (HBV)-related consequences and risks of widespread transmission become increasingly evident in host societies.

Although population-based prevalence data for Asian/Pacific Islanders (A/PI) living in the United States are lacking, these individuals are likely to constitute a considerable percentage of persons with chronic HBV infection in the United States. One screening program (the Asian American Hepatitis B Program [AAHBP]) conducted among a predominantly immigrant Asian population found that 15% of newly tested positive New York City residents had chronic HBV infection, with the rate of hepatocellular carcinoma (HCC) being 5- to 11-fold higher compared with other ethnic groups. Another large screening program of over 61,300 Korean Americans living on the East coast reported a 7% overall prevalence rate of HBV. Due to the disproportionately higher incidence of HBV among A/PI individuals, active screening and educational efforts that are specific to this population are essential in reducing transmission of HBV and consequences of untreated infection, such as cirrhosis and HCC.

SCREENING FOR HBV

Although A/PI communities in the United States are generally aware of the connection between HBV infection and HCC, few recognize that HBV infection is common among Asian-born individuals and even fewer are aware that treatment is available. One study assessing awareness of HBV screening and vaccination among 256 Vietnamese Americans found that 46% of these individuals heard of HBV, approximately 33% knew about screening or vaccination availability, but only 7.5% and 6.3% underwent screening and vaccination,
Another survey assessing HBV knowledge and preventive practices among Asian Americans in San Francisco found that, despite college education in the majority of participants, knowledge regarding HBV transmission, prevention, symptoms, and risks was low. Those born in China or Southeast Asia had significantly poorer knowledge about HBV and HCC.

The healthcare community also appears somewhat unaware, as several recent surveys indicated underscreening of this population among general medicine practitioners. High-risk groups that should undergo HBV screening are well outlined in the literature, but for the purposes of this article, all members of the A/PI community should be screened (Table 1). Prevalence studies identified individuals of a southeast Asian and Chinese descent, recently arriving Asian immigrants, males, groups with low immunization rates, and those aged 36 to 45 to be particularly susceptible to a high probability of HBV infection. Because self-reporting of prior HBV vaccination has been shown to be unreliable, screening should take place regardless of vaccination status.

**Interpretation of Tests and Monitoring**

The tests used in diagnosing chronic HBV involve serologic and virologic markers of HBV infection, as well as biochemical markers of liver function and histology of liver disease. When interpreting HBV-related tests in A/PI patients, the overlying theme is to maintain a guarded approach in response to absence of symptoms and seemingly non alarming test results, such as normal alanine aminotransferase (ALT) levels and low HBV DNA levels.

Hepatitis B surface antigen (HBsAg) is one of the first serologic markers to appear after infection, and its persistence for more than 6 months indicates chronic HBV infection. The presence of antibody to HBsAg (anti-HBs) is associated with recovery and/or immunity to HBV, or immunity after HBV vaccination. Individuals who are HBsAg (+) and anti-HBs (-) are considered chronic carriers, those who are HBsAg (-) and anti-HBs (+) are immune to HBV, and individuals who are HBsAg (-) and anti-HBs (-) have no evidence of immunity or current infection and should be vaccinated.

Although the presence of hepatitis B e antigen (HBeAg) indicates active HBV replication, its absence does not necessarily signify cessation of viral replication, because HBeAg may not be detectable in HBeAg (-) chronic HBV because of precore or core promoter mutation. Antibody to HBeAg (anti-HBe) generally indicates conversion from HBeAg to anti-HBe, but it can also be found in patients with precore or core promoter mutant HBV infection. HBeAg seroconversion is considered a therapeutic endpoint for HBeAg (+) patients because it is associated with decreased viral replication and a lower risk for disease progression, but it is not always protective against later development of HCC. Commonly encountered serologic patterns of HBV infection and their interpretation are summarized in Table 2. With respect to HBV DNA (a measure of viral replication), it is generally recommended that treatment be considered for patients with detectable serum levels of HBV DNA (ie, >105 copies/mL or 20 000 IU/mL); however, the threshold HBV DNA level associated with progressive liver disease is unknown. Patients may have serum HBV DNA levels persistently less than 20 000 IU/mL, yet still have advanced liver disease.

Increased serum ALT levels indicate necroinflammation of liver cells, whereas persistently normal ALT levels are generally associated with milder inflammation on liver biopsy. However, some patients (particularly those older than 40 years) with normal ALT levels...
and increased HBV DNA levels may have significant inflammation and fibrosis on biopsy, but they may not receive adequate attention due to a common misconception that labels asymptomatic patients with HBV with normal ALT levels as “healthy” carriers. Current guidelines recommend use of liver biopsy examination and treatment as indicated in patients with normal ALT levels and HBV DNA levels higher than 20,000 IU/mL who are older than 40 years (see article by Ke-Qin Hu, MD, for detailed recommendations).

For patients who present with chronic HBV infection, initial evaluation should include a family history of HBV and HCC, risk factors for coinfection, and alcohol use. Laboratory tests should include assessment for liver disease, markers of HBV replication, and tests for hepatitis C virus (HCV) and hepatitis A virus (HAV). Periodic monitoring of patients with chronic HBV includes a twice-yearly physical examination and blood work (liver function, complete blood count, HBV DNA, HBeAg, anti-HBe, and α-fetoprotein [AFP] for patients older than 30) and annual liver imaging studies (ultrasound, computed tomography [CT], or magnetic resonance imaging [MRI]). It is important to note that AFP has a low sensitivity for detection of early HCC and should, therefore, be used with an imaging modality. Because Asian patients with presumed infection at the time of birth or in early childhood may develop HCC at an alarmingly young age (eg, before 30), it is preferable to start screening these individuals for HCC at 30 to 35 years of age, or even younger. Monitoring of AFP levels and ultrasound studies every 6 months can lead to early detection of HCC. MRI and CT scans, which are more sensitive but more expensive, may be preferred for patients who have cirrhosis.

Counseling Patients with Chronic HBV Infection

Counseling sessions should focus on lifestyle modifications, prevention of transmission, and the need for lifelong monitoring. Although dietary modifications have no impact on progression of chronic HBV, heavy alcohol con-

<p>| Table 2. Interpretation of the Hepatitis B Panel |</p>
<table>
<thead>
<tr>
<th>Tests</th>
<th>Results</th>
<th>Interpretation</th>
</tr>
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<tbody>
<tr>
<td>HBsAg</td>
<td>negative</td>
<td>Susceptible</td>
</tr>
<tr>
<td>anti-HBc</td>
<td>negative</td>
<td>Immune due to natural infection</td>
</tr>
<tr>
<td>anti-HBs</td>
<td>positive</td>
<td>Immune due to hepatitis B vaccination*</td>
</tr>
<tr>
<td>HBsAg</td>
<td>positive</td>
<td>Acutely infected</td>
</tr>
<tr>
<td>anti-HBc</td>
<td>positive</td>
<td>Chronically infected</td>
</tr>
<tr>
<td>IgM anti-HBc</td>
<td>negative</td>
<td>Four interpretations</td>
</tr>
<tr>
<td>anti-HBs</td>
<td>positive</td>
<td>possible†</td>
</tr>
<tr>
<td>HBsAg</td>
<td>negative</td>
<td>Four interpretations</td>
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<tr>
<td>anti-HBc</td>
<td>positive</td>
<td>possible†</td>
</tr>
<tr>
<td>anti-HBs</td>
<td>negative</td>
<td>possible†</td>
</tr>
</tbody>
</table>

*Antibody response (anti-HBs) can be measured quantitatively or qualitatively. A protective antibody response is reported quantitatively as ≥10 mIU/mL or qualitatively as positive. Post-vaccination testing should be completed 1–2 months after the third vaccine dose for results to be meaningful.

†Four interpretations:
1. Might be recovering from acute HBV infection.
2. Might be distantly immune and test not sensitive enough to detect very low level of anti-HBs in serum.
3. Might be susceptible with a false-positive anti-HBc.
4. Might be undetectable level of HBsAg present in the serum, and the person is actually chronically infected.

Definitions:
- Hepatitis B surface antigen (HBsAg): A serologic marker on the surface of HBV. It can be detected in high levels in serum during acute or chronic hepatitis. The presence of HBsAg indicates that the person is infectious. The body normally produces antibodies to HBsAg as part of the normal immune response to infection.
- Hepatitis B surface antibody (anti-HBs): The presence of anti-HBs is generally interpreted as indicating recovery and immunity from HBV infection. Anti-HBs also develops in a person who has been successfully vaccinated against hepatitis B.
- Total hepatitis B core antibody (anti-HBc): Appears at the onset of symptoms in acute hepatitis B and persists for life. The presence of anti-HBc indicates previous or ongoing infection with HBV in an undefined timeframe. It is not a protective antibody.
- Immunoglobulin M antibody to hepatitis B core antigen (IgM anti-HBc): This antibody appears during acute or recent HBV infection and is present for approximately 6 months.

HBV = hepatitis B virus.
sumption is considered a risk factor for cirrhosis and HCC (in male patients).\textsuperscript{10,12,13} Patients with cirrhosis should avoid raw shellfish because of the increased morbidity and mortality related to \textit{Vibrio vulnificus} infection.\textsuperscript{13} Patients should also be cautioned against using unknown drugs, herbal medicines, or herbal teas that can harm the liver.

People with chronic HBV infection are the major source of HBV transmission in the United States, and therefore, should be educated regarding various routes of transmission.\textsuperscript{12} Because many A/PIs become infected when they are infants or young children, these individuals are particularly prone to transmitting the virus during early childhood through direct contact with blood of infected individuals (eg, contact between open wounds, sharing contaminated toothbrushes or razors, or tattooing). Parents and children should be thoroughly educated regarding these particular modes of transmission (Table 3).\textsuperscript{6,14}

Because HBV is very efficiently transmitted via unprotected sex (100 times more infectious than HIV), all A/PI adults who are sexually active should be vaccinated to prevent infection. Sex partners of infected individuals who have not been tested or have not completed the full immunization series should be encouraged to use barrier protection methods. Because efficacy of latex condoms in reducing HBV transmission is still unknown, vaccination remains the best form of protection from HBV.

Prevention of perinatal transmission is of the utmost importance in the Asian community. HBsAg (+) women who are pregnant should be counseled on the importance of allowing their newborn to receive hepatitis B immune globulin and the HBV vaccine at delivery and the need to complete the recommended vaccination series. Additionally, pregnant women with very high HBV DNA, especially if they are HBeAg (+), should be considered for prophylactic treatment with safe nucleoside analogues during the third trimester to reduce the risk of transmission to the child. Infants of carrier mothers should be tested at 3 to 9 months after vaccination. Many erroneously assume that children born to an HBV carrier mother will always become chronic HBV carriers, when in fact, the aforementioned prophylaxis regimen will protect 98% of babies born to HBV (+) mothers.\textsuperscript{6} It is recommended that HBeAg (+) healthcare workers not perform exposure-prone procedures without prior counseling regarding under what circumstances, if any, they should be allowed to perform these procedures.

Education on symptoms should focus on the idea that HBV is a silent killer, in that most chronically infected people are asymptomatic until they develop cirrhosis or advanced liver cancer. At that time, they may experience abdominal distention and pain, gastrointestinal bleeding, fatigue, edema, or jaundice. Many programs, such as the Asian Liver Center at Stanford University, the AAHBP, and the newly founded Asian Pacific Liver Center at St. Vincent Medical Center in Los Angeles, offer more extensive patient counseling material specific to the A/PI population.

### Table 3. Reducing Transmission: Patient Education

**DO's**
- Cover all cuts and open sores with a bandage.
- Discard used items, such as bandages and menstrual pads, carefully so no one is accidentally exposed to your blood.
- Wash hands well after touching your blood or infectious body fluids.
- Clean up blood spills. Then clean the area again with a bleach solution (1 part household chlorine bleach to 10 parts water).
- Tell your sex partner(s) you have HBV so they can be tested and vaccinated (if not already infected or vaccinated). Partners should be tested after 3 doses of vaccine are completed to be sure the vaccine worked.
- Use condoms (rubbers) during sex unless your sex partner has had HBV or has been immunized and has had a blood test demonstrating immunity to HBV infection. (Condoms might also protect you from other sexually transmitted diseases.)
- Tell household members to see their doctors for testing and vaccination for HBV.
- Tell your doctors that you are chronically infected with HBV.
- See your doctor every 6–12 months to check your liver for abnormalities, including cancer.
- If you are pregnant, tell your doctor that you have HBV infection. It is critical that your baby is started on hepatitis B shots within a few hours of birth. Discuss with your doctor whether prophylactic treatment is appropriate for you in the third trimester to reduce HBV transmission to the child.

**DON'Ts**
- Don’t share chewing gum, toothbrushes, razors, washcloths, needles for ear or body piercing, or anything that might have come in contact with your blood or infectious body fluids.
- Don’t pre-chew food for babies.
- Don’t share syringes and needles.
- Don’t donate blood, plasma, body organs, tissue, or sperm.

HBV = hepatitis B virus.

ADDRESSING A/PI BELIEFS

Asian patients who hold culturally rooted health beliefs may not seek out preventive screening, diagnostic testing, and treatment. In traditional Chinese culture, if a person feels well, there is no need to see a doctor. Also, because blood is considered a nonrenewable vital energy for the body, patients may resist having blood tests. Cultural beliefs about cancer being an inevitable death sentence may be a barrier to cancer screening. Clinicians should be able to address common misperceptions and myths in A/PI communities regarding HBV. For example, many believe that HBV can be spread by sharing food or chopsticks, the vaccine can transmit HBV infection, there is no real treatment for HBV, and HCC is caused by alcohol. Some HBV (+) individuals, who are unaware of the preventive benefits of vaccination, believe that there is no way of preventing liver cancer. Other already infected patients believe that HCC is inevitable. It is important to reassure these patients that not everyone with chronic HBV will develop HCC, that highly effective antiviral therapy is available to stop/deter the progression to HCC, and that regular AFP testing and ultrasound can lead to early detection of HCC and successful treatment outcomes.

Many Asian communities hold the belief that emotional upset will affect activity of the liver, citing negative emotions (ie, anger and worry) as potential causes of hepatitis. In one study examining lay beliefs about HBV among North American Chinese, individuals often perceived causes of HBV to include potentially harmful food (eg, fried or contaminated foods), alcohol, contact with infected individuals, stress, and inadequate rest. Preventive strategies associated with Chinese health beliefs included the use of Chinese herbal medicine, maintaining a stress-free mind, strengthening the body’s natural defenses, getting enough sleep, maintaining good hygiene, and avoiding contact with infected persons. In a survey assessing HBV beliefs among Korean immigrants in western Washington, participants often expressed beliefs about transmission and prevention that were more applicable to other forms of hepatitis (eg, HAV or alcoholic hepatitis). Although study participants were aware that a vaccination against HBV existed, few were able to accurately state whether they had received the complete 3-dose series. In another survey of HBV knowledge among Cambodian American women in Seattle, the majority of respondents did not know that HBV is lifelong and active, that asymptomatic individuals can spread HBV, and that sexual intercourse with an infected person can lead to infection. In order to meet the educational needs of the A/PI population and ultimately dispel some of these common myths, it is imperative for clinicians to be aware of the knowledge gaps and misbeliefs that are specific to these communities.

OVERCOMING LANGUAGE BARRIERS AND FINDING A LOCAL EXPERT

Asian Americans with limited English proficiency often have difficulties understanding the US healthcare system and communicating with clinicians. Many Asian Americans believe that their doctors do not understand their culture and values and are, therefore, less confident about their care compared to the overall population. Some interventions that may be helpful for Asian patients with limited English proficiency include bilingual signs that aid in making appointments, filling prescriptions, and obtaining laboratory tests; a bilingual list of common phrases, medical terms, and questions; and use of a 24-hour telephone interpreter service (eg, the AT&T Language Line, available in all major languages at 1-800-874-9426). One program (AAHBP), which estimated that 60% of Asian adults in New York City are limited-English proficient, launched campaigns targeting ethnic newspapers and radio stations, and developed educational videos and print information in Korean, Chinese, Mandarin, Cantonese, and Vietnamese. These tools, which can be viewed at http://www.oasas.state.ny.us/ asian/documents/hepbTsang.pdf, are ideal for use by patients in waiting rooms. Other programs that provide culturally sensitive material on HBV in various languages include the Hepatitis B Foundation (http://www.hepb.org/) and The Asian Liver Center at Stanford University (http://liver.stanford.edu/Edu/Edu_materials.php). Some of the same programs that offer these educational tools also have comprehensive HBV management services (eg, screening, vaccination, and treatment) for A/PIs. The Hepatitis B Foundation has a per-state liver specialist directory of physicians who specialize in chronic HBV and are willing to be contacted for further information. In Philadelphia, the Jaisohn Memorial Foundation-Medical Clinic takes care of the majority of Korean, Chinese, and Vietnamese residents, providing HBV education and vaccination services. Other major cities may offer similar programs for their A/PI communities.
USE OF ALTERNATIVE THERAPIES AND ASIAN COMMUNITIES

Complementary medicine, including herbal products and acupuncture, has become increasingly popular, especially in Asian communities where Chinese traditional medicine has been an accepted practice for centuries. Because of concerns over increased risks of HBV and HCV transmission associated with acupuncture, patients should be discouraged from using this therapy. Although some herbal preparations have shown promise in chronic HBV, evidence supporting their use is insufficient and only a few of them are well standardized and free of potential serious side effects. For example, Herbal Medicine 861, an aqueous extract of 10 herbs, may decrease hepatic inflammation and fibrosis, but its effects on HBV DNA levels and hepatic inflammatory scores are unknown. Plantago Asiatic has been shown to produce a modest decrease in HBV DNA, but levels return to those of pretreatment after stopping therapy. Liv 52, an Indian preparation containing several herbs, was shown to improve liver function in patients with acute viral hepatitis, but it caused deaths related to liver failure or bleeding complications, resulting in immediate market withdrawal. As with Liv 52, many herbs advertised for liver diseases can actually cause hepatic injury, such as toxic hepatitis, which is on the rise. Veno-occlusive disease is a well-known side effect of pyrrolizidine alkaloids, such as Senecio, Heliotropium, Crotalaria, and Symphytum (comfrey). Germander also causes severe hepatotoxicity and has been banned in some European countries. Along with hepatotoxicity, clinicians also need to be aware of potential interactions between herbal products and conventional drugs.

CONCLUSIONS

In minimizing transmission and consequences of HBV in the A/PI population, it is essential to understand and appreciate the beliefs and educational needs that are unique to these individuals. It is simply not enough to apply standard counseling strategies, without taking into consideration and addressing patients’ diverse cultural beliefs about healthcare and their common misconceptions about HBV. After all, to cure any disease, the first step is to get to know the patient.

REFERENCES