

HBV JOURNAL REVIEW

Volume 9, Issue 2

February 1, 2012

Hepatitis B

Christine Kukka

Many U.S. Residents at Risk of Hepatitis B Still Aren't Vaccinated

Despite the availability of a safe and effective vaccine, more than 80,000 U.S. residents are infected each year with the hepatitis B virus (HBV). About half of people at high risk of infection are not vaccinated despite the fact they have regular contact with doctors, according to a report published in the January issue of *Infection*.

Brown University researchers surveyed 15,000 adults enrolled in the U.S. Centers for Disease Control and Prevention's 2007 Behavioral Risk Factor Surveillance Survey, which studied 430,000 people across the country. They found that 51.4% of those at high risk due to their sexual behaviors, health care professions, or injecting

drug had not been immunized—despite the fact they had regular contacts with providers who should have recommended and administered the vaccine.

Vaccination rates group were highest among:

- Health care workers
 - Those vaccinated against pneumonia and influenza
 - And adults screened for human immunodeficiency virus (HIV) at a counseling or drug treatment facility.
- Rates were lowest among:
- Those at risk because of sexual contacts or drug use
 - Those older than 33 (who missed childhood or adolescent immunizations)
 - Those lacking health insurance
 - And inmates who were screened for HIV, but were never tested for

HBV nor vaccinated against the sexually-transmitted and blood-borne infection.

“The findings of this study underscore the inadequacy of vaccination coverage in high-risk adults and highlight advantageous opportunities to bridge gaps in vaccination coverage,” the authors wrote.

New York City Report Also Confirms Missed Immunization Opportunities

A report in the Jan. 13, 2012 issue of the CDC's *Morbidity and Mortality Weekly Report* found that many New York City doctors fail to screen and immunize patients at high risk of hepatitis B, despite recommended medical guidelines. Each year, there are 11,500 to 13,000 new HBV infections reported in the city.

HBV Journal Review
A publication of the Hepatitis
C Support Project

Executive Director
Editor-in-Chief,
HCSP Publications
Alan Franciscus

Contributor
Christine Kukka

Managing Editor,
Webmaster
C.D. Mazoff, PhD

Contact Information:
The Hepatitis C Support
Project
PO Box 427037
San Francisco, CA 94142

www.hbvadvocate.org

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In this study, the New York City Department of Health and Mental Hygiene investigated 180 randomly chosen new hepatitis B cases reported between June 2008–November 2009.

About two-thirds of HBV-infected patients were Asian-American, and researchers discovered that in 27% of the cases, the doctors had recommended screening and testing because the patients' ethnicity/race put them at high risk of infection, but in 70% of cases, the clinician did not know or ask the patient about risk factors for hepatitis B.

Additionally, 75% of the doctors did not recommend that patients notify close contacts about their risk of infection.

According to the report, 75% of providers counseled patients about infection transmission and prevention. Sixty-two percent of doctors did not know their patient's hepatitis A vaccination status nor did they recommend that vaccination in order to guard against another liver infection, despite medical recommendations.

In response to the findings, the department of health now routinely distributes HBV patient education materials to populations at risk of infection.

New York City Study: An unrelated study, published in the January issue of the *Journal of Urban Health*, found that New York City's rate of chronic hepatitis B is two- to four-times the national average because of the high number of foreign-born residents in the city who come from countries with high HBV infection rates.

Thirty-six percent of city residents are foreign-born (compared to 11% nationwide), and half were born in China, where hepatitis B is prevalent. Researchers used two approaches to estimate chronic HBV rates in the city—a census-based estimate that used local and national infection rates for specific ethnic groups and ages and a surveillance-based estimate using city health data.

Both approaches yielded a chronic hepatitis B infection rate of 1.2%—two- to four-times the estimated national average. According to the census-based data, more than 93% of all HBV are among foreign-born residents, half of whom come from China.

The study authors promoted use of Chinese language programs and health education.

Minnesota Study: Another study of hepatitis B

and C among Somali refugees living in Minnesota reported in the Mayo Clinic's journal, *Mayo Clinical Proceedings*, found high rates of chronic hepatic B—209 males and 123 females per 1,000 Somali patients served between July 1996 and October 2009. In contrast, the infection rate was 20 and 9 respectively for non-Somali male and female patients.

Among Somali patients testing positive for hepatitis B core antibody (indicating past HBV infection), the numbers were 644 men and 541 women per 1,000 patients. The authors pressed for stepped up screening and patient education among Somali patients.

HBV Cases Climb 17 million Worldwide Between 1990 and 2005

Despite the availability of the hepatitis B vaccine, the number of people with chronic hepatitis B (who tested positive for hepatitis B surface antigen—HBsAg) increased from 223 million in 1990 to 240 million in 2005, according to a World Health Organization report in the January issue of *Vaccine*.

WHO officials, who analyzed available data and reports published between 1990 and 2005, found HBV infections

decreased in some regions of Africa, Central America, Southeast Asia and Central Europe, but increased in East Asia for a total net increase of 17 million people.

The highest prevalence was in sub-Saharan Africa and the lowest prevalence (below 2%) was in Central America, North America and Western Europe. Some Asian regions showed some declines, especially among children as a result of immunization initiatives, but rates increased 8.6% in East Asia.

The increasing number of HBV infections and widespread differences in HBV prevalence rates call for targeted approaches to tackle hepatitis B, researchers noted. "HBV infection prevalence data are needed at country and subnational levels to estimate disease burden and guide health and vaccine policy," they wrote.

Statins May Lower Risk of Liver Cancer in Hepatitis B Patients

Statins (HMG-CoA reductase inhibitors) used to lower cholesterol may confer protection against liver cancer, according to a study published in the January issue of the *Journal of Clinical Oncology*.

Statins lower "bad" cholesterol levels by inhibit-

ing the enzyme HMG-CoA reductase, which plays an important role in the liver's production of cholesterol. Taiwanese researchers investigated liver cancer rates among 33,413 HBV patients.

Over 328,946 person-years, researchers identified 1,021 liver cancers in HBV-infected patients--representing 310.4 liver cancers per 100,000 person-years. They found that hepatitis B patients who took statins had lower cancer rates, and the longer patients took statins the lower their liver cancer rates were.

HBIG—Used to Prevent Reinfection after Liver Transplants—May Soon Be Phased Out

Antivirals, which disrupt viral replication, may soon replace costly hepatitis B immune globulin (HBIG—hepatitis B antibodies) to prevent hepatitis B reinfection after liver transplants, according to a new report published in the *Journal of Hepatology*.

For nearly 30 years, HBIG has been the key tool to prevent HBV recurrence after liver transplantation. Increasingly, it is now used along with antivirals to prevent rein-

fection, and that treatment combination is successful in 90% of transplant recipients.

However, HBIG is extremely expensive and researchers have been experimenting successfully with using lower doses of HBIG or stopping use of HBIG entirely as long as antivirals are used.

The recent successful practice of lowering a transplant patient's HBV DNA (viral load) before surgery has also contributed to the high efficacy of these reduced HBIG regimens. "Additionally, the success of antiviral rescue therapy for those patients who fail (HBIG) and develop recurrent HBV infection (after) transplant has provided the impetus to move increasingly towards HBIG-free approaches," researchers wrote.

New techniques to detect low levels or occult HBV (which replicates despite an absence of HBsAg) may allow clinicians to use only antivirals—without HBIG—in some patients.

Patient Age, Along with Viral Load and ALT Levels, May Affect Treatment Choices

Increasingly, doctors are treating patients with high

viral loads because research shows high HBV DNA levels increase the risk of liver damage and cancer. However, many young adults often have high viral loads, so should these young patients be treated, which could commit them to decades of antiviral treatment?

A team of Chinese researchers, writing in the *European Journal of Gastroenterology and Hepatology*, tackled the relationship between age and when-to-treat in a recent study. They segregated 1,572 hepatitis B patients by age: younger than 20; between ages 20 and 40; and over 40.

- As expected, 86% of those younger than 20 were in the "immune tolerant" stage and had high viral loads.
- About 36% in the 20-40 age group were experiencing immune clearance, with antibodies and immune cells fighting the infection and producing elevated alanine aminotransferase (ALT) levels, indicating intermittent liver damage as the immune system attacked the infected liver cells.
- Patients in the plus-40 group had more reactivation cases, with spikes in HBV DNA and ALT levels.

More than half of the younger cases undergoing immune clearance

achieved spontaneous HBeAg seroconversion within four years without treatment, and the younger the patient, the shorter the time to seroconversion.

So who should be treated? Should treatment be postponed for younger patients despite elevated ALTs and viral load?

"Generally, there were significantly different HBV clinical virological characteristics in patients with chronic HBV infection of different ages," researchers wrote.

"Different features were observed in relapse (older) patients and patients with immune clearance at different ages, and these two types of patients needed antiretroviral therapy. Our study suggests that revisions of the timing and elevated ALT standards for chronic hepatitis B antiretroviral therapy in Chinese relapse patients and patients with immune clearance in different age groups are warranted."

Study Suggests 20%-30% of Teens Immunized at Birth May Require Booster Shots

For how long does a hepatitis B vaccine administered at birth continue to protect against infec-

tion? To find out, CDC officials administered hepatitis B booster shot (containing just HBsAg) to hundreds of youth 10 to 15 years after they were immunized at birth to see if their immune systems remembered the virus and quickly developed antibodies to guard against infection.

A robust response would show the immune systems retained a “memory” of the virus and could still effectively fight off infection. A weak response would underscore the need for booster shots to reboot the immune system’s “memory” to fight HBV.

Among 108 participants in the study who had steep declines in protective antibodies since their birth vaccine, more than 70% had an effective response to the booster dose and generated a large volume of protective antibodies.

However, 20% to 30% were unable to mount a robust immune response even after receiving the booster.

“Hepatitis B revaccination might be required for persons vaccinated starting at birth if opportunities for hepatitis B virus exposure exist,” researchers wrote in the January issue of *Vaccine*. They recommend more studies to determine if booster

shots should be recommended for teens.

Antiviral Treatment Plus Freezing Tumors Increases Liver Cancer Survival

A dual approach using antiviral treatment and cryoablation (freezing and destroying tumors) greatly improved liver cancer survival rates among hepatitis B patients, according to a Japanese report published in the *Journal of Vascular and Interventional Radiology*.

Cryoablation is a U.S. Food and Drug Administration-approved, safe and painless technique for killing tumor using ultrasound. The procedure is conducted under CT scan and involves placing a thin needle through the skin into a selected tumor. A freezing gas is injected into the tumor, creating a lethal ice ball. The ball is readily visible under the CT scan so it can be used to kill only tumor tissue.

Japanese researchers studied 81 patients (most male, average age 60) who received cryoablation treatment for liver cancer. They found that the patients who received both antiviral and cryoablation treatment had significantly higher survival rates. The 1-, 3-, and 5-year survival rates in patients also treated with antivirals plus cryoabla-

tion were 89.5%, 66.8%, and 40.5%, compared to survival rates of 72.6%, 27.5%, and 14.3% in the patients who experienced only cryoablation.

Researchers Find HBV, Nearly Identical to Human HBV, in Chickens

Researchers have found HBV, nearly identical to the type that infects humans, in chicken livers, according to a report in the *Virology Journal*.

Researchers in China examined 129 blood samples from broiler chickens for HBV antigens and antibodies, and 193 chicken liver samples were tested for HBV DNA and tested for HBV antigens.

The overall prevalence of HBsAg, surface antibodies, and core antibodies (showing past infection), was 28.68%, 53.49%, 17.05%, respectively. However, the hepatitis B “e” antigen and antibody were barely detectable, but three samples were positive for both surface and “e” antigens.

The HBV DNA identified in two of the chicken livers shared 92.2% of one known HBV strain and 97.9% nucleotide sequence of another HBV strain. “Our results showed the existence of HBV in chickens,” researchers wrote. “This

would present a significant risk to people who work with live chickens or chicken products if HBV found in chicken could be confirmed to be the same as human HBV.”

Interferon Treatment Should Stop after 12 Weeks If There Is No Sign of Success

Dutch researchers confirmed through two studies that if HBeAg-negative patients do not respond to pegylated interferon after 12 weeks of treatment, they are unlikely to respond positively over several months more of treatment.

They identified patients who failed to experience declines in HBsAg or more than a 100-fold drop in HBV DNA decline after 12 weeks of treatment, but who continued to receive treatment for up to 48 to 96 total weeks. The patients had a variety of HBV strains or genotypes.

They found that none of the patients who failed to respond after 12 weeks of treatment fared any better after 48 or 96 weeks of interferon, according to the report published in the *Journal of Hepatology*.

