Top Ten Hepatitis B News Items for 2010

by Christine M. Kukka

A potential new, powerful treatment for hepatitis B, treating pregnant women to prevent infection of newborns, increased political and medical awareness of hepatitis B, and health care reform provisions have all had an impact on the hepatitis B community during 2010.

Three years ago, there were far fewer articles, studies and reports about monitoring, treating and preventing hepatitis B. This year, numerous studies and clinical trials have tracked the effectiveness of antivirals and interferon, and researchers have come up with new methods to monitor liver health, and screen those at risk of hepatitis B virus (HBV) infection.

Here are some of the major discoveries, reports, and public health initiatives that have had an impact on hepatitis B worldwide in 2010

Treating pregnant women with antivirals to prevent infection of newborns gains momentum:

Increasingly, researchers are examining the safety and effectiveness of treating HBV-infected pregnant women with antivirals to lower their viral load, which then lowers the risk of transmitting the infection to their newborns. Even when infants are immediately immunized at birth, many born to women with high viral loads still become infected.

Treating HIV-infected women with antivirals has proven safe and effective, and now researchers from China and the U.S. have tried using the antivirals telbivudine (Tyzeka) and tenofovir (Viread), —which have proven safe in HIV-infected women—in HBV-infected pregnant women. Babies born to these women had substantially lower infection rates (4% vs. 23%) than babies born to untreated women with high viral loads.

While not yet approved by the U.S. Food and Drug Administration, these studies show increasing acceptance and use of antivirals to break the cycle of mother-to-child infection, which causes the majority of chronic HBV infections worldwide.

New treatment appears promising, clearing infection within weeks:

Canadian and Bangladeshi researchers have developed an experimental drug that resulted in the complete clearance of chronic hepatitis B infection in five of six patients treated with REP 9 AC.

Research suggests that the hepatitis B surface antigen (HBsAg), the protein that provides the "cover" of the hepatitis B virus (HBV), plays a role in suppressing the immune system, which results in chronic hepatitis B. Researchers administered REP 9AC, a DNA-based polymer that stops infected liver cells from producing HBsAg, in six hepatitis B "e" antigen (HBeAg)-positive patients who had high viral loads and fibrosis.

Five out of six patients cleared HBsAg and developed surface antibodies—clearing the infection. In some patients, this occurred just seven days after starting treatment. In others, this occurred within 15 weeks after receiving higher doses of the drug.

Three patients achieved a 3- to 7-fold reduction in HBV DNA after 7-13 weeks of treatment. Additionally, two other patients cleared HBV DNA, and developed surface antibodies and have stopped treatment and are now being monitored carefully. One of the patients remains HBV-free six months after stopping treatment.

Researchers hope human clinical trials can start within four years.

Officials acknowledge many infected with HBV remain unscreened and untreated in U.S.:

Combating a public health hazard takes action from several sources, and at last the medical establishment and government health agencies are slowly recognizing and broadcasting the inadequate screening and treatment of people with chronic hepatitis B in the United States.

A study of 5,143 Asian-American patients cared for by primary care providers affiliated with the Mayo Clinic revealed that only 31% were screened for HBV infection between 1994 and 2009. Of those screened, 8% were HBsAg-positive, and therefore chronically infected and at high risk of liver disease and cancer. Of the remaining 1,474 patients, 70% were surface antibody positive (showing a resolved infection or immunization), and 30% showed no immunity against hepatitis B.

“HBV screening has been grossly inadequate,” Mayo Clinic researchers noted. “In those screened, the prevalence of HBV remained high. Despite publicity and awareness efforts, HBV remains one of the largest yet under-diagnosed health disparities in the U.S.”

In the December issue of the *Journal of Viral Hepatology*, a group of heavy hitters in the hepatitis B world, including the Hepatitis B Foundation, the Centers for Disease Control and Prevention, the Alaska Native Medical Center, the Children's Hospital and Research Center in Oakland, Calif., the California Pacific Medical Center's Liver Transplant Program in San Francisco, and the Fox Chase Cancer Center in Philadelphia, broadcast the disturbing under-treatment of hepatitis B in this country.

Despite the fact that there are an estimated 2 million chronic HBV infections, fewer than 50,000 people are treated annually. The reasons for this shameful lack of screening and treatment of Asian-Americans and others at high risk of infection include physician ignorance, lack of insurance, and poor referrals of these patients by primary care providers to specialists.

To underscore this point, one recent study of 257 patients found that though half of them should have been treated with interferon, only 19% were. Those receiving treatment tended to be male and Caucasian.

A national model emerges to screen and treat Asian-Americans for hepatitis B

In 2007, community organizers in San Francisco began organizing the Hep B Free Campaign to increase screening, treatment, and immunization for hepatitis B. The initiative, which started with minimal funding, now involves more than 50 public and private health care organizations, businesses, and educational institutions, as well as Major League Baseball's San Francisco Giants, and has become a national model for increasing access to health care for those at risk of HBV.

The campaign, focusing on a city that has the highest rate of liver cancer in the country, has created seven low-cost public access hepatitis B screening and vaccination sites through collaboration with community partners, public and private hospitals, doctors, insurance and pharmaceutical companies, and non-profit organizations.

San Francisco, with its high percentage of Asian-American residents, has the highest rate of liver cancer in the nation and is the gateway for immigrants from Asian countries where there is a high prevalence of hepatitis B. The model is now being copied in San Mateo, San Jose, Orange County and Los Angeles, and federal and state health officials are touting its success and suggesting it be used in other cities with at-risk populations across the country.

Activists utilize provocative social marketing to fight hepatitis B:

For years, critics have faulted hepatitis B activists for their low-profile, under-the-radar efforts to raise awareness of hepatitis B among those at risk for the infection, particularly Asian-Americans. Unlike AIDS activists, who publicly acknowledged their infections and staged public protests to raise awareness and push for fast-track development of AIDS drugs, hepatitis B organizers have been quiet, in part because many Asian-Americans found the culture of public protest and discussion of illness and death distasteful.

As part of San Francisco's Hep B Free campaign, the Asian-American advertising agency DAE produced a provocative ad campaign entitled "Which One Deserves to Die" to alert the public that 1 in 10 Asian-Americans is chronically infected with HBV.

The posters appeared in local ethnic and mainstream newspapers, billboards, and bus transit boards in May 2010 in honor of the 15th anniversary of National Hepatitis Awareness Month and Asian Pacific Heritage Month. They showed groups of Asian-American beauty contestants, a sports team, and a family of 10 with the caption, "Which one deserves to die?"

Tenofovir's effectiveness against hepatitis B endorsed by several 2010 studies:

Tenofovir, the antiviral first developed to treat HIV in 2001, continues to prove itself as one of the most effective antivirals against "e" antigen (HBeAg)-positive and -negative hepatitis B.

Notoriously hard-to-treat, HBeAg-positive patients generally have high viral loads and their immune systems lack the ability to generate antibodies or infection-fighting T-cells to combat and control the infection. This year, several research teams found that prolonged use of tenofovir was effective in lowering viral load in HBeAg-positive patients and appeared to cause no drug resistance after four years of treatment.

Researchers compiled 3.5 million patient years of tenofovir treatment history to show it was more effective than other antivirals in achieving undetectable viral load in 76% of HBeAg-patients after just 48 weeks. This is important because the longer a patient has a high viral load, especially after many years of HBV infection, the higher the risk of liver damage and cancer.

A study of 130 patients (73% male, average age 35, 53% white and 35% Asian, with equal distribution of HBV strains or genotypes), found that after four years, 96% of those receiving tenofovir achieved undetectable HBV DNA, and 77% achieved normal ALT levels.

What was especially noteworthy was the high rates of of HBeAg and HBsAg loss with long duration of tenofovir treatment. Researchers found that after four years of treatment, 29% lost HBeAg and developed "e" antibodies, 10.8% lost HBsAg and 7.7% cleared the infection and developed surface antibodies.

Tenofovir also continues to be the leader in lowering viral load and improving liver health among patients with HBeAg-negative hepatitis B.

Longer and higher-dose interferon treatments produce better results:

While pegylated interferon is frequently recommended as a first treatment for people with chronic hepatitis B, experts are still experimenting with the dose and duration of treatment. Because interferon causes side effects, is administered through weekly injections, and is very costly, doctors are hesitant to force patients to undergo treatment for longer than 24 weeks.

However, this year a number of studies reported that extending treatment up to 12 months, and increasing the weekly dosage from 90 to 180 µg/week was far more effective. One study reported a HBeAg seroconversion rate of 36.2% with pegIFN 180 µg/week for 48 weeks compared to 14.1% at the 90 µg/week dose. ALT levels normalized in 52% of those treated with higher doses, compared to 30% at lower dose, and HBV DNA declined to less than 20,000 international units per milliliter (IU/mL) among 42% for those treated with the higher dose, compared to 22% treated with the lower dose.

New liver cancer test promises more accuracy:

To date, doctors have relied on a blood test that measures alpha fetoprotein (AFP) to identify liver cancer, but this test can be inaccurate and may not reveal liver tumors until it's too late for treatment. Chinese researchers found that measuring Golgi protein 73 (GP73) levels in the blood produces a far more accurate test for liver tumors than the AFP test. The sensitivity and specificity accuracy of GP73 testing for liver cancer were 74.6% and 97.4% respectively, compared with 58.2% and 85.3% for AFP.

Vaccine alone as effective as vaccine-HBIG combination in infants born to infected mothers:

Currently, medical guidelines require administering both the first hepatitis B vaccine dose and hepatitis B immune globulin (HBIG-hepatitis B antibodies) immediately when an infant is born to an HBV-infected mother to prevent mother-to-child infection. However, HBIG is costly, and often is not available in developing countries.

An Indian study looked at 170 infants born to HBV-infected mothers over 18 weeks and found that those who received both HBIG and the vaccine at birth had the same rate of HBV infection as those who received only the vaccine. If this result in verified in larger trials, only the vaccine may be recommended to infants born to infected mothers.

Health care reform's impact on people with hepatitis B:

In addition to increasing access to health care, two striking provisions in this year's monumental health care reform package affect people with hepatitis B.

First, the law over time prohibits insurers from denying coverage to people with pre-existing conditions, such as chronic HBV infection.

The rollout of this provision starts with children. Starting in September, insurers could no longer exclude children with preexisting conditions, such as HBV, from being covered by their family policy.

However, insurers will not have to take the same steps for adults until 2014. Why will it take so long? Because it will be years before the bill's mandate that individuals have health insurance takes effect. The mandate is expected to bring in tens of millions of new customers for insurance firms-which generates compensation for accepting people with preexisting conditions, which can be costly.

The second impact on hepatitis B will be the requirement that private sector health plans cover vaccines, including the hepatitis B vaccine for all newborns, teens and other at-risk groups. While most health plans currently cover almost all pediatric and adolescent vaccines, some do not cover them without charging a copay, and most plans do not cover hepatitis B immunizations in adults.

In addition, private plans must extend coverage for dependent children up to age 26 if they are not currently covered by their own employer. These two provisions are expected to increase access for many adults to hepatitis B vaccines. The Medicaid system will provide similar coverage for pediatric and adult hepatitis B immunizations without copay charges.