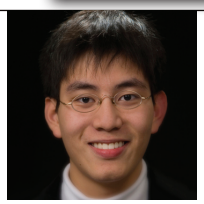
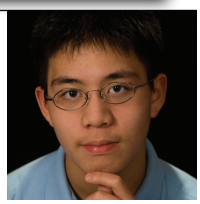
Andrew Hsu / Patrick Hsu





Hepatitis B: The Silent Killer

WCO's World Children Hepatitis B Vaccination Project

A Viral Predator

Can you guess your body's largest internal organ? It's your liver, which is located in your upper abdomen behind your ribcage. An adult liver weighs around 3 pounds. This glossy, dark red organ receives over 25% of the blood pumped from your heart. It has very important biological functions: the liver stores and metabolizes the nutrients you need, synthesizes proteins for blood clotting, and detoxifies your bloodstream. All these are crucial to your survival.

The Hepatitis B virus (HBV), the 10th leading cause of death worldwide, is one of your body's greatest enemies. It attacks your liver and causes gradual inflammation, hardening, and scarring. This can lead to liver cancer and death. Liver cancer is one of the five deadliest cancers we know of and 80% of primary liver cancer cases are caused by Hepatitis B. Worse, the Hepatitis B virus is a very infectious and resilient virus. Capable of developing into a lifelong chronic infection, HBV is 50-100 times more infectious than the AIDS virus - HIV. Over 350 million people worldwide are affected by chronic hepatitis B and up to 1.25 million die annually from diseases caused by the infection. An estimated 25% of chronically infected patients will eventually die from HBV-related diseases.

15 year old Ting was the top student in her class. Last month, her bright future went up in smoke when she died of a Hepatitis B-related disease. If she had received a timely immunization, her life would have been saved.

According to the World Health Organization, HBV is highly prevalent in Southeast Asia, sub-Saharan Africa, parts of South America, and Eastern Europe. Between 70% and 90% of the populations in parts of these areas have been infected by HBV before age 40; around 10% are chronically infected. The infection rates are much lower (less than 1% of the total population) in North America, Western and Northern Europe, Australia, and other developed countries. This is because a hepatitis B vaccine has been available and consistently administered in these countries since 1982, although HBV infection rates are still very high within certain ethnic groups such as Asians and Pacific Islanders.

The virus is transmitted in several main ways: from an infected mother to her baby; through contaminated needles, such as for drug injections, blood transfusions, or tattoos; by contact with the open wounds of an HBV carrier; through sharing personal care items such as toothbrushes or razors; via unprotected sex. HBV is not transferred through kissing, hugging, handshaking; sharing food, water, utensils; breast feeding; or coughing and sneezing.

Hepatitis B in China

In countries such as China, 40-50% of HBV infections are caused by "vertical" transmission from mother to child and another 40-50% is due to

"horizontal" transmission during childhood and adolescence through exchange of bodily fluids. The remaining 10% or so can be attributed to adult infections. 90% of infants infected in the first year of life will develop chronic hepatitis B, while children between ages 1-4 have a 30-50% chance.

Many mothers who transmit their infection to their newborns are completely unaware that they have HBV because over 30% of chronically infected patients exhibit no symptoms. Those who do generally show flu-like symptoms that are easily mistaken for other diseases. These can range from fatigue and stomachaches to vomiting and nausea. The easiest way to find out is through a simple blood test.

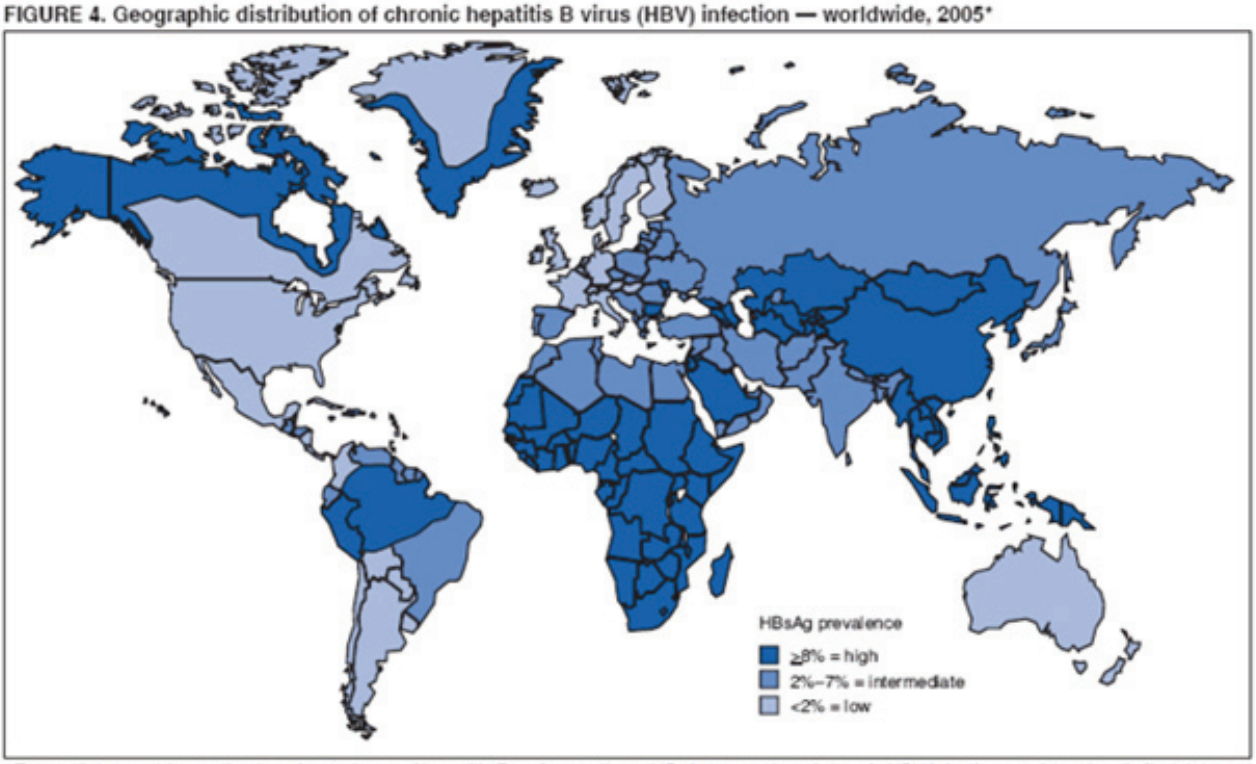
Get a Hepatitis B Vaccine

The Hepatitis B vaccine is extremely safe – over 70 million have been given in the U.S. since 1982 and over 1 billion doses have been administered worldwide! The first vaccine against a major human cancer, it is given as 3 doses over a period of 6 months for maximum protection. The first dose of vaccine is ideally given within the first 24 hours of birth because an infant is most susceptible to Hepatitis B infections in the first year of life. Children between 11-15 years of age can receive a two-dose vaccine sequence.

Scientists have spent so much time and resources yet cannot save the 10 million lives destroyed every year by AIDS or cancer. How can we explain why we are not helping the 1.25 million people who die from Hepatitis B annually, even though we have had a safe and effective vaccine for 26 years? This is a true human tragedy.

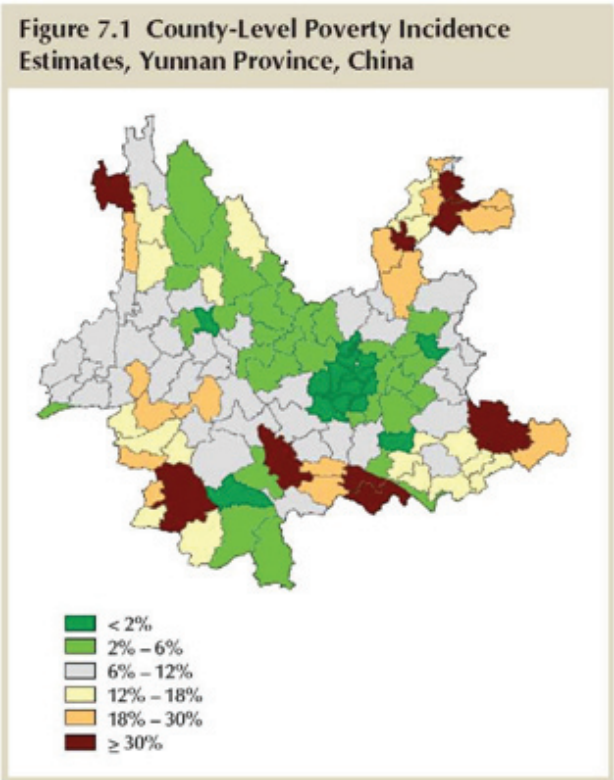
Of all places on Earth, China has the greatest burden of hepatitis B. Out of the 350 million chronically infected worldwide, over one third are living in China. These 120 million people account for 9% of China's population. It is not unjustifiable to say that Hepatitis B is the national disease of China. Estimates of annual deaths caused by Hepatitis B range from 300,000 to 500,000 Chinese.

FIGURE 4. Geographic distribution of chronic hepatitis B virus (HBV) infection — worldwide, 2005*



* For multiple countries, estimates of prevalence of hepatitis B surface antigen (HBsAg), a marker of chronic HBV infection, are based on limited data and might not reflect current prevalence in countries that have implemented childhood hepatitis B vaccination. In addition, HBsAg prevalence might vary within countries by subpopulation and locality.

Hepatitis B prevalence worldwide



Source: World Bank and NBS 2003.

County-level poverty incidence map of Yunnan

Luckily, the China-Global Alliance for Vaccines and Immunization partnership is fighting the virus on its own turf. Between 2003 and 2006, 15 million children under the age of 5 in China-GAVI targeted provinces received Hepatitis B vaccines. The Chinese government has also had a free, universal Hepatitis B vaccination program since 2002 for infants. However, 3 major areas – Tibet, Guizhou, and Yunnan – and nearly 50% of all China-GAVI targeted counties still have timely birth dose coverage levels under 75%. There is still plenty of work to be done as far as young children and infants are concerned.

Achieving the goal of the ultimate elimination of Hepatitis B in China would take generations unless the nation implements a catch-up vaccination program for young children and adolescents. Consider this: in 1997, 30% of infants received an HBV birth dose, and only 70% completed the HepB 3-dose series. There was no national Hepatitis B survey conducted before 1997, but it is safe to assume vaccination coverage was even lower before then. That means there are tens of millions of young children and adolescents who are HBV carriers. Later in life, many will develop liver cancer and die. The infant immunization program will not protect them.

WCO's Action Plan

Of the provinces with low Hepatitis B vaccination coverage rates, WCO has chosen Yunnan Province in western China as a starting point. We can deal a severe blow to Hepatitis B in Yunnan by instituting a mass vaccination catch-up program for school-aged children. We will target younger children of elementary and middle school age - between 6 and 15 – to maximize the preventive potential of our hepatitis B vaccines. We chose the western province of Yunnan and are organizing a 3-dose, 6 month hepatitis B vaccination project.

There are 4 main items necessary in our vaccination campaign:

- Hepatitis B educational materials to inform the public
- The Hepatitis B vaccine, which is manufactured locally in China as single-dose ampoules
- Auto-disable (AD) syringes – these syringes feature locking or deforming mechanisms to ensure single injection usage. AD syringes are standard equipment for mass immunization campaigns.
- Safety boxes – these puncture-proof containers are for the safe and convenient disposal of used syringes and needles. They are filled once and then disposed of through incineration.

We estimate that the cost is 5-6 U.S. dollars for each person, so the total cost for the vaccination of 100,000 schoolchildren would be 500,000 dollars.

As schoolchildren age, the possibility that they have already been affected by HBV also increases. We must vaccinate them as soon as possible or they may be infected by HBV. Every week is a week they could be infected by hepatitis B. Let us take action now. ■

Notes:
Please visit www.andrewhsu.com/hepB for details on WCO's "World Children Hepatitis B Vaccination Project."