Epidemiology Update

April 2007

Chronic Hepatitis B Infection in Pregnant Women

Hennepin County Key Findings

During 2001 – 2006, pregnant women infected with HBsAg were most often from the following countries:

Hennepin County	Total = 782	
Somalia	(161)	21%
Hmong*	(153)	20%
Liberia	(93)	12%
Vietnam	(44)	6%
China	(24)	3%

*Laos and Thailand

Testing

- Routinely test all pregnant women for HBsAg during an early prenatal visit during each pregnancy even if they have been previously vaccinated or tested.
- Pregnant women who have high risk behaviors and who initially test negative for HBsAg should have repeat testing done early in the third trimester.

Treatment

- Some healthcare providers specializing in treatment of hepatitis B are treating HBsAg infected women during the third trimester of pregnancy.

Introduction

This *Epidemiology Update* presents the data from 2001-2006 on pregnant women chronically infected with hepatitis B.

This issue is one in a series of reports that profile disease occurrence in Hennepin County. Copies of previous reports are available from Hennepin County Public Health Protection – Epidemiology.

Background

Worldwide, it is estimated that 2 billion people have serologic evidence of hepatitis B virus (HBV), approximately 350 million are thought to be chronically infected. In the United States, there are an estimated 1.25 million hepatitis B carriers. Worldwide, the leading cause of chronic hepatitis B is perinatal infection (vertical transmission) and child to child (horizontal transmission).[3] A carrier is defined as a person that is positive for hepatitis B surface antigen (HBsAg) for longer than 6 months.

Chronically infected persons (carriers) are at increased risk of developing chronic liver disease or liver cancer later in life and also serve as the major reservoir for continued hepatitis B transmission. Chronic infection occurs in approximately 90% of infected infants, 30% of infected children aged < 5 years, and < 5% of infected persons aged ≥ 5 years. The risk of developing chronic hepatitis B infection is directly related to the age at which one becomes infected with the virus.[1]

Anyone with a positive HBsAg test should be considered infectious and counseled on how to prevent spread to others.

There have been an increasing number of pregnant women who are testing positive for HBsAg in Hennepin County. The overwhelming majority are foreign born from areas of intermediate or high endemicity (Table 1). Some of these women are presenting with clinical signs and symptoms of disease, elevated liver enzymes and high hepatitis B viral DNA results. There is an increasing concern about the risk of the fetus/baby born to mothers with high viral loads of developing hepatitis even with the treatment (Hepatitis B Immune Globulin [HBIG] and the first dose of hepatitis B vaccine) started at birth.

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Transmission

Hepatitis B virus is transmitted through these body fluids:

- blood
- semen
- vaginal fluids
- saliva

HBV infection can be acquired through:

- sexual contact
- sharing needles to inject drugs or perform tattoos and/or acupuncture
- occupational exposures
- household contact with a person with acute infection or someone chronically infected with hepatitis B
- perinatal infection

Blood transfusion or other blood products are rarely the source for HBV because of the current screening procedures.

Babies born to HBV-infected mothers may be infected during the perinatal period (vertical) or by person-to-person (horizontal) transmission during the first 5 years of life.

Hepatitis B virus can remain viable for ≥7 days on environmental surfaces at room temperature. This emphasizes the need to clean and disinfect surfaces that may be contaminated with blood or blood-containing body fluids whether you can see the blood or not.

Profile of Pregnant Woman with Chronic Hepatitis B Infections

Table 1. Geographic areas with intermediate* and high† hepatitis B virus endemicity [1,2]

Africa: all countries
South Asia: all countries except Sri Lanka
Western Pacific: all countries and territories except Australia and New Zealand
Middle East: all countries except Cyprus
Eastern Europe: all countries except Hungary
Newly Independent States of the former Soviet Union: all countries
Western Europe: Greece, Italy, Malta, Portugal, and Spain
North America: Alaska Natives and indigenous populations of Northern Canada and Greenland
Central America: Belize, Guatemala, Honduras, and Panama
South America: Argentina, Bolivia, Brazil, Ecuador, Guyana, Suriname, Venezuela, and the Amazonian areas of Colombia and Peru
Caribbean: Antigua and Barbuda, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Trinidad and Tobago, and Turcs and Caicos.

* Hepatitis B surface antigen (HBsAg) prevalence of 2%-7%
† HBsAg prevelance of ≥ 8%

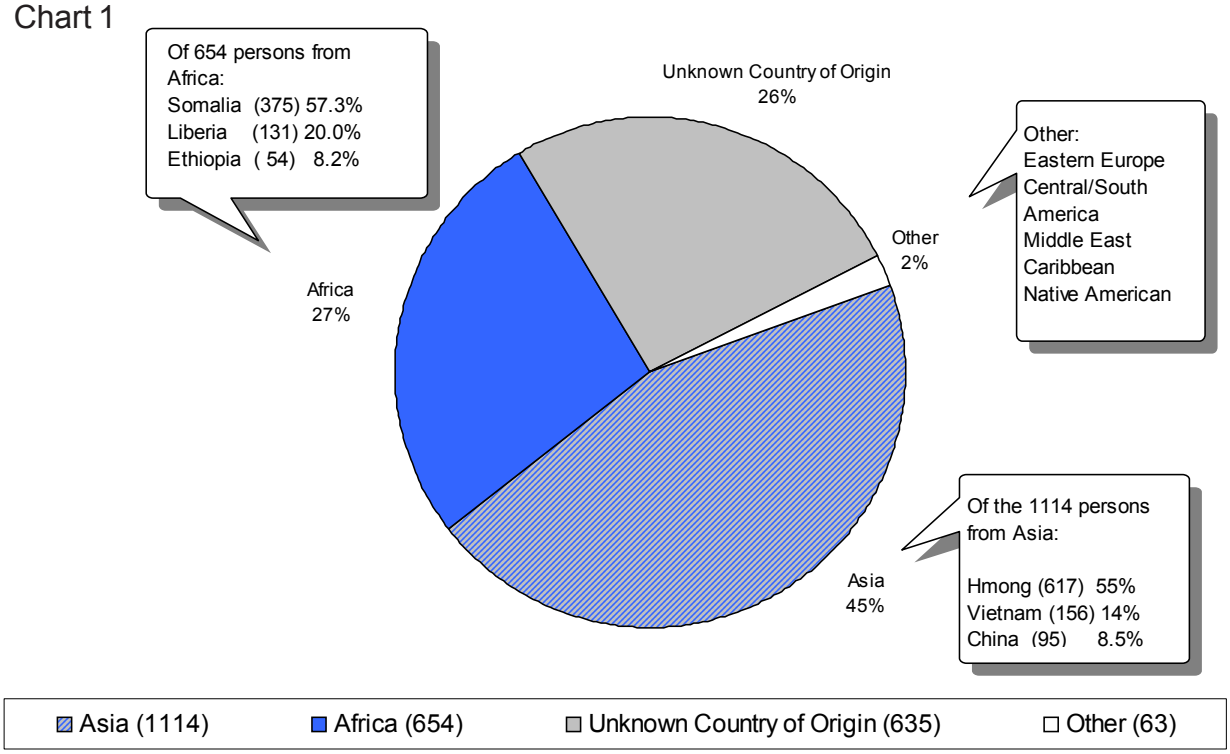
Testing Pregnant Women

- **Routinely test all pregnant women for HBsAg (hepatitis B surface antigen) during an early prenatal visit during each pregnancy even if they have been previously vaccinated or tested.**
- Test women who have been admitted for delivery who have not had an HBsAg test done.
- Report all positive HBsAg tests to the Minnesota Department of Health (MDH).
- Test all household contacts (unless known to be infected or immune) for HBsAg, antibody to hepatitis B core (antiHBc) and antibody to HBsAg (antiHBs). This screening can be done by the family's pediatrician, primary care provider, or the healthcare provider evaluating the pregnant woman.
- Assess pregnant women for risk factors and check to see if they may be co-infected with hepatitis C, hepatitis D or HIV.
- Assess pregnant women for co-infections of hepatitis and HIV during routine sexually transmitted disease (STD) screening.

Hepatitis B Surface Antigen (BHsAg) Positive Pregnant Women by Geographic Region 2001–2006

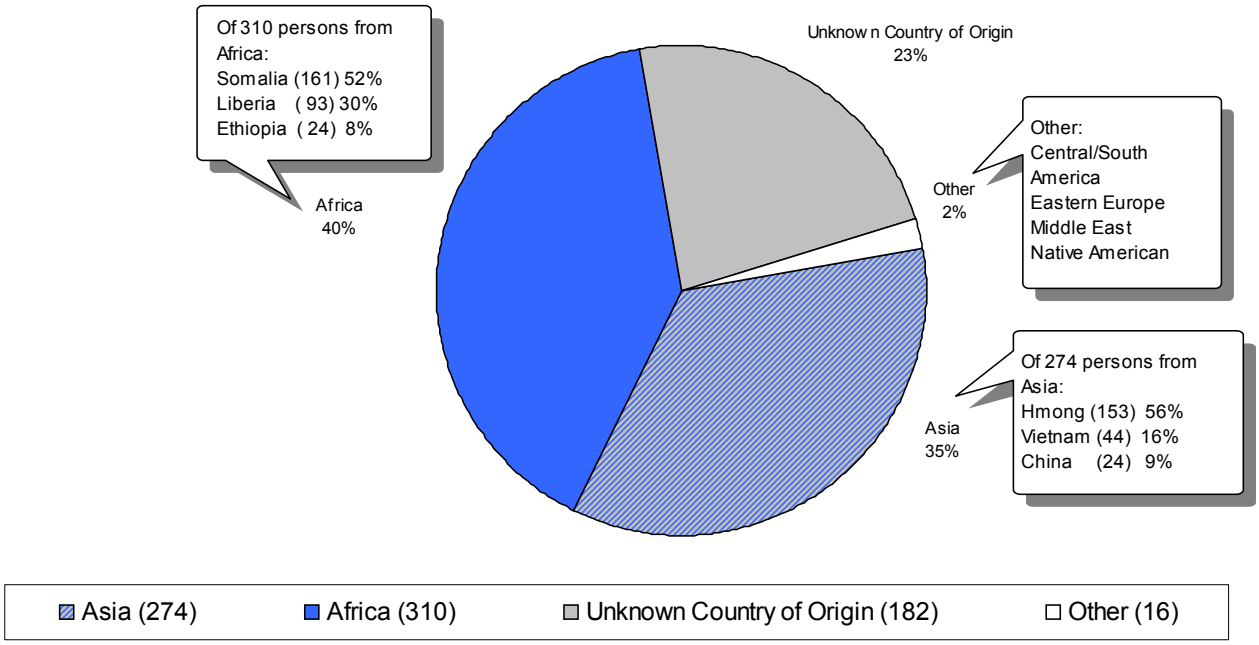
MINNESOTA

Chart 1



HENNEPIN COUNTY

Chart 2



Data limitations: The data collected did not have country of origin designated for those born in the United States. Race and country of origin was not always available from healthcare providers.

Data by Country of Origin

Chart 1(Minnesota) represents women from 55 countries and Chart 2 (Hennepin County) represents women from 34 countries. This data is reflective of the endemic rates for persons from these countries (see table 1). In Minnesota, there were 2466 HBsAg positive pregnant women reported from 2001-2006. Of these, 782 (32%) were reported from Hennepin County. Within Minnesota there are variations in the geographic distribution of persons from these different countries. For example, Hennepin County has large populations of persons from Somalia, Ethiopia and Liberia.

Case Management

Case management has been identified as an effective tool in: 1) ensuring high levels of initiation and completion of post exposure immunoprophylaxis among infants born to HBsAg-positive women, 2) identifying family members that are HBsAg positive or who are not immune and are candidates for hepatitis B vaccine, and 3) identifying resources for these families. In addition, the Hennepin County Perinatal Hepatitis B Prevention program staff has identified individuals in these families who were chronically infected and who were exhibiting symptoms. Referrals have been made to healthcare providers for testing and follow-up. Healthcare provider education and case management activities have become integral components of the perinatal program.

Chronic Infection

Persons with chronic hepatitis B infection require regular medical evaluation and monitoring. The frequency of evaluating and monitoring is variable depending on the presentation of clinical symptoms, the hepatitis B viral DNA results, and ALT and AST values. Periodic screening with ultrasonography and alfa-fetoprotein can enhance early detection of liver cancer. The purpose of liver biopsy is to determine the degree of liver damage and to rule out other causes of liver disease. The Hennepin County perinatal nurse has observed that for certain persons from some cultures having a liver biopsy goes against her/his beliefs. Consider exploring other options for diagnosis of liver damage that will keep the patient compliant with follow-up.

Treatment for Persons with Chronic Hepatitis B

Treatment of persons with chronic hepatitis B should be done under the supervision of a healthcare provider with experience in treatment of hepatitis B (liver specialist). Currently there are six treatment options and six different guidelines for treatment with corresponding algorithms. Aims of treatment are to achieve sustained suppression of HBV replication and remission of liver disease.

Some liver specialists are treating chronically infected pregnant women in their third trimester of pregnancy. The goal of treating during pregnancy is to reduce the risk of transmitting the virus to the fetus/baby and consequently reduce the prevalence of chronic disease.

PREVENTION STRATEGIES[1,2]

➢ Vaccinate all infants against hepatitis B within 12 hours of birth regardless of maternal hepatitis B status.

➢ Perform HBsAg screening of all pregnant women to identify those chronically infected with HBV. Provide hepatitis B immunoglobulin (HBIG) as soon as possible to infants born to HBsAg-positive women and vaccinate such children within 12 hours of birth.

Hennepin County Human Services and the Public Health Department Perinatal Hepatitis B Prevention Program is designed to follow-up on all pregnant mothers found to be HBsAg-positive. For more information call: **612-348-9282**.

➢ Assess HBV risk status for all adult patients and vaccinate those who are determined to be at increased risk for HBV infection, including:

- sexually active heterosexual persons with more than one sexual partner in the previous six months or who are seeking evaluation and treatment for a sexually transmitted disease;
- men who have sex with men;
- household contacts and sexual partners of HBsAg positive persons;
- current or recent injection drug users;
- healthcare workers, public safety workers, and others at occupational risk of exposure to blood or blood-contaminated body fluids;
- persons with end-stage renal disease, including predialysis, hemodialysis, peritoneal dialysis, and home dialysis patients;
- international travelers to areas of high or intermediate HVB endemicity (Table 1);
- persons with chronic liver disease;
- members of households with adoptees who are HBsAg positive;
- residents and staff of institutions for developmentally disabled persons; susceptible inmates of long-term correctional facilities.

The Hennepin County Red Door Services of the Public Health Clinic has a program designed to provide screening and vaccination services to persons whose behavior puts them at high risk for exposure to hepatitis B. For more information call **612-348-6363**.

➢ Vaccinate patients susceptible to hepatitis A, especially those who also have chronic hepatitis B and/or hepatitis C virus infection.

References:

1. CDC. A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices (ACIP) Part I: Immunization of Infants, Children, and Adolescents. MMWR 2005; 54:1-30.
2. CDC. A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices (ACIP) Part II: Immunization of Adults. MMWR 2006; 55:1-33.
3. Lok A, McMahon B. Chronic Hepatitis B: American Association for the Study of Liver Diseases Guideline. *Hepatology* 45:507-539, 2007.

For more information about this report call Hennepin County Human Services and Public Health Department—Epidemiology, (612) 543-5230.

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