



Hepatitis B virus infection among pregnant women in Haiti: A cross-sectional serosurvey



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ABSTRACT

Background: Hepatitis B vaccine administered shortly after birth is highly effective in preventing mother to child transmission (MTCT) of infection. While hepatitis B vaccine was introduced in Haiti as part of a combined pentavalent vaccine in 2012, a birth dose is not yet included in the immunization schedule. **Objectives:** Determine the seroprevalence of hepatitis B virus (HBV) infection among pregnant women to evaluate the risk of MTCT.

Study design: We selected 1364 residual serum specimens collected during a 2012 human immunodeficiency virus (HIV) sentinel serosurvey among pregnant women attending antenatal care clinics. Haiti was stratified into two regions: West, which includes metropolitan Port-au-Prince, and non-West, which includes all other departments. We evaluated the association between demographic and socioeconomic characteristics and HIV infection with HBV infection.

Results: Of 1364 selected specimens, 1307 (96%) were available for testing. A total of 422 specimens (32.7%) tested positive for total anti-HBc (38.2% in West vs. 27% in non-West, $p < 0.001$), and 33 specimens (2.5%) were HBsAg positive (2.1% in West vs. 3% in non-West, $p = 0.4$). Of HBsAg positive specimens, 79% had detectable HBV DNA. Women aged 30 and older had more than double the odds of positive total anti-HBc than women aged 15–19 years ($p < 0.001$). Women with secondary (adjusted odds ratio (aOR) = 0.54; 95% CI: 0.36–0.81) and post-secondary education (aOR = 0.40, 95% CI: 0.19–0.79) had lower odds of total anti-HBc positivity compared with women with no education. HIV-status was not associated with HBV infection.

Conclusions: Haiti has an intermediate endemicity of chronic HBV infection with high prevalence of positive HBV DNA among chronically infected women. Introduction of a universal birth dose of hepatitis B vaccine might help prevent perinatal HBV transmission.

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1. Background

Hepatitis B virus (HBV) infection is a leading cause of morbidity and mortality due to hepatocellular carcinoma and liver cirrhosis worldwide. In the absence of vaccination, more than 50% of infec-

tion is attributable to infection during childhood and adolescence, and more than 20% of HBV-related deaths are attributable to perinatal infection [1,2]. The risk of progression to chronic infection is inversely related to the age of acquisition of infection; chronic infection develops in 80–90% of infants infected in the first year of life; this risk declines to 30–50% for children infected between 1 and 4 years of age [2].

In October 2012, Haiti became the last country in the Americas to introduce hepatitis B vaccine. The vaccine is provided at 6, 10, and 14 weeks of age, and is given as part of a combined pentavalent vac-

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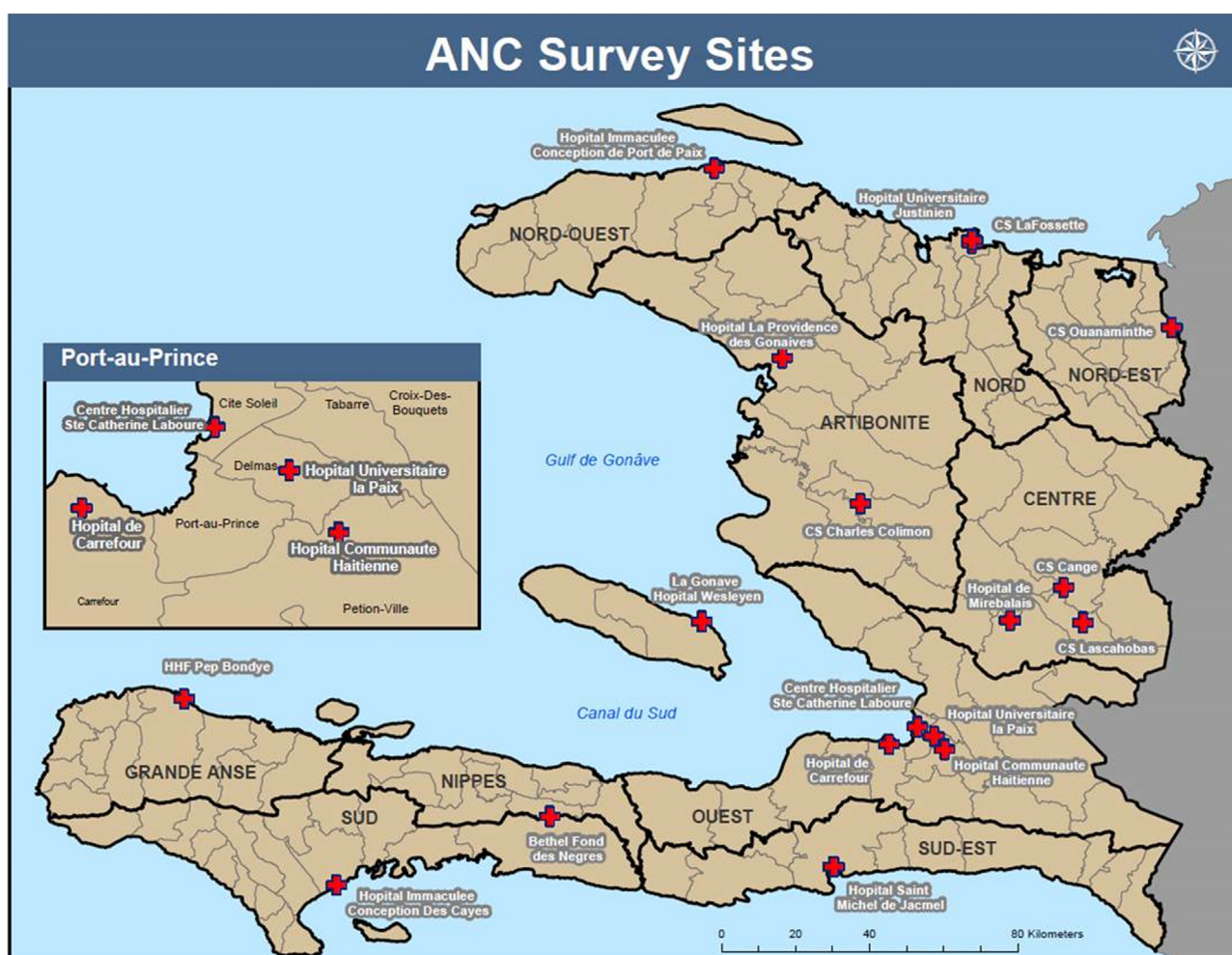


Fig. 1. Distribution of the hospitals included in the antenatal care clinic serosurvey—Haiti, 2012.

cine that protects against diphtheria, pertussis, tetanus, *Hemophilus influenza* type b (Hib) and hepatitis B. Despite recommendations by the World Health Organization (WHO) [2], a birth dose of hepatitis B vaccine is not included in the present vaccination schedule in Haiti. While childhood vaccination is effective in preventing horizontal HBV infection, it does not prevent perinatal transmission. In addition, pregnant women in Haiti are not routinely screened for HBV infection.

Since 2012, the Pan American Health Organization (PAHO) has been in the process of developing a regional strategy to address viral hepatitis. One of the components of this strategy is to establish baseline country estimates of the burden of hepatitis. Data on the hepatitis B disease burden in Haiti are outdated and limited. A study conducted in 2006 among pregnant women reported an overall seroprevalence of hepatitis B surface antigen (HBsAg) of 5% with wide variations ranging from 1.0% to 8.5%, depending on the sampling clinic [3]. However, no data were available on hepatitis B envelope antigen (HBeAg) or HBV DNA levels which are important predictors for risk of mother to child transmission (MTCT) of hepatitis B. Small studies conducted in the 1980s and among Haitian immigrants in the United States and Canada reported almost 50% prevalence of total antibody to hepatitis B core antigen (total anti-HBc) and a prevalence of HBsAg varying from 4% to 6% [4–7], indicating past or present infection. In a review of the 2013 blood donation screening data from the national blood transfusion program in Haiti, the prevalence of HBsAg was 3.5%

with wide variability by department (2–8%) (Ernst Noel, personal communication).

2. Objectives

We conducted this study among pregnant women to assess the seroprevalence of HBV infection in this population and subsequent risk of MTCT. These results are essential to build evidence for introduction of a hepatitis B vaccine birth dose in Haiti.

3. Study design

3.1. Sample selection

We selected 1364 specimens from 6241 de-linked, residual serum specimens collected for the 2012 Biannual Sentinel Sero-survey for HIV among Pregnant Women. In summary, the sentinel HIV serosurvey included 18 antenatal care (ANC) sites, which were chosen to be geographically representative, with at least one site selected per department and representing urban and rural areas (Fig. 1). The ANC sites provide services for the prevention of MTCT of HIV.

Haiti is divided into 10 departments including Metropolitan Port-au-Prince. For this survey, we stratified Haiti into 2 regions: (1) the West region which includes the Ouest department along with metropolitan Port-au-Prince, and houses almost one third of the Haitian population, and (2) the non-West region which

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