

Assessment of Kansas hospital policies to prevent perinatal hepatitis B transmission, 2015



Background

Hepatitis B virus (HBV) is spread via infected blood and other body fluids (saliva and semen). Individuals who are chronically infected are at an increased risk for cirrhosis of the liver and hepatocellular carcinoma (HCC). Vertical transmission (mother to child) during the perinatal period is one of the most efficient means of transmission. HBV-positive women have up to a 90% chance of transmitting the virus to their infant (1), which can result in significant morbidity and mortality for the infant. However, proper chemoprophylaxis has been shown to be 85-95% effective in preventing an infant from becoming a chronic carrier of HBV (2) (3) (4). The Advisory Committee on Immunization Practices (ACIP) has published guidelines addressing testing, treatment, and documentation of HBV-positive women and their infants (1). Recommended postexposure prophylaxis include admission of hepatitis B immunoglobulin (HBIG) and hepatitis B vaccine within 12 hours of birth, as well as, first dose of hepatitis B vaccine to all newborns prior to discharge from the hospital.

To aid in the identification of HBV-positive women, and thus reduce the risk of perinatal hepatitis B transmission, Kansas statute 65-153f states that all women shall be tested for hepatitis B within 14 days of diagnosis of pregnancy and the Kansas Department of Health and Environment regulation 28-1-2 states that each confirmed or suspected case of hepatitis B including hepatitis B in pregnancy are to be reported within 7 days to the Kansas Department of Health and Environment. All pregnant women should be tested for the hepatitis B surface antigen (HBsAg), which is a marker for HBV infection. Additionally, they can be tested for the hepatitis B “e” antigen (HBeAg), which indicates a high level of virus in the blood, and therefore high infectivity. Following a notification of a HBV positive pregnant woman, follow up is conducted by the local health department and the Kansas Department of Health and Environment (KDHE). Monitoring includes education regarding prevention interventions for infant and other household contacts, ensuring that household contacts are tested and vaccinated against hepatitis B, and making certain that infants receive proper chemoprophylaxis to prevent mother-to-child transmission. In addition, delivery hospitals should implement written policies and standing orders regarding pregnant HBsAg-positive women and pregnant women with unknown HBsAg status, as well as their infants.

Objective

The objective of this study was to assess the presence or absence of policies and procedures concerning prevention of perinatal HBV transmission in birthing hospitals throughout Kansas.

Methods

A 25 question survey was created to meet the objective of this study and was based on a previous survey created by the Centers for Disease Control and Prevention (CDC). Questions were asked to assess the existence of standing orders and written policies regarding prevention of perinatally acquired HBV. The surveys were emailed to the directors of labor and delivery (L&D) at Kansas birthing hospitals. A hospital was considered to have a policy in place if they responded affirmatively to having standing orders, written policies, or both for each recommended policy.

Results

Completed surveys were received from 61 (81.3%) birthing hospitals. Regarding maternal HBsAg status, nearly three-quarters of responding hospitals reported policies to review prenatal test results at time of admission; over half test for hepatitis B surface antigen reactivity if it is not already documented. However, only 6% of hospitals have standing orders and/or written policies to repeat HBsAg testing for hepatitis B negative women who are considered to be at high risk for infection, including those who have had more than one sex partner in the previous 6 months, have been evaluated for treatment of a sexually transmitted disease (STD), have recent or current injection drug use, have an HBsAg-positive sex partner or are symptomatic of hepatitis. Finally, less than half of hospitals had a policy in place to document maternal HBsAg results in the infant's chart.

Concerning administration of chemoprophylaxis to newborns over two-thirds of all reporting hospitals stated as having policies to give HBIG and first dose of hepatitis B vaccine within 12 hours of birth to all infants of HBsAg-positive and status unknown mothers. Moreover, three-quarters of study delivery facilities had policies to administer the first hepatitis B vaccine dose to every newborn prior to hospital discharge; similar to the 2013 state-wide level of 73%. Lastly, while approximately one-quarter of responding hospitals mentioned HBsAg status policies, nearly two-thirds had chemoprophylaxis policies and 27% had policies for both.

Table 1. Percent of hospitals with perinatal hepatitis B prevention policies

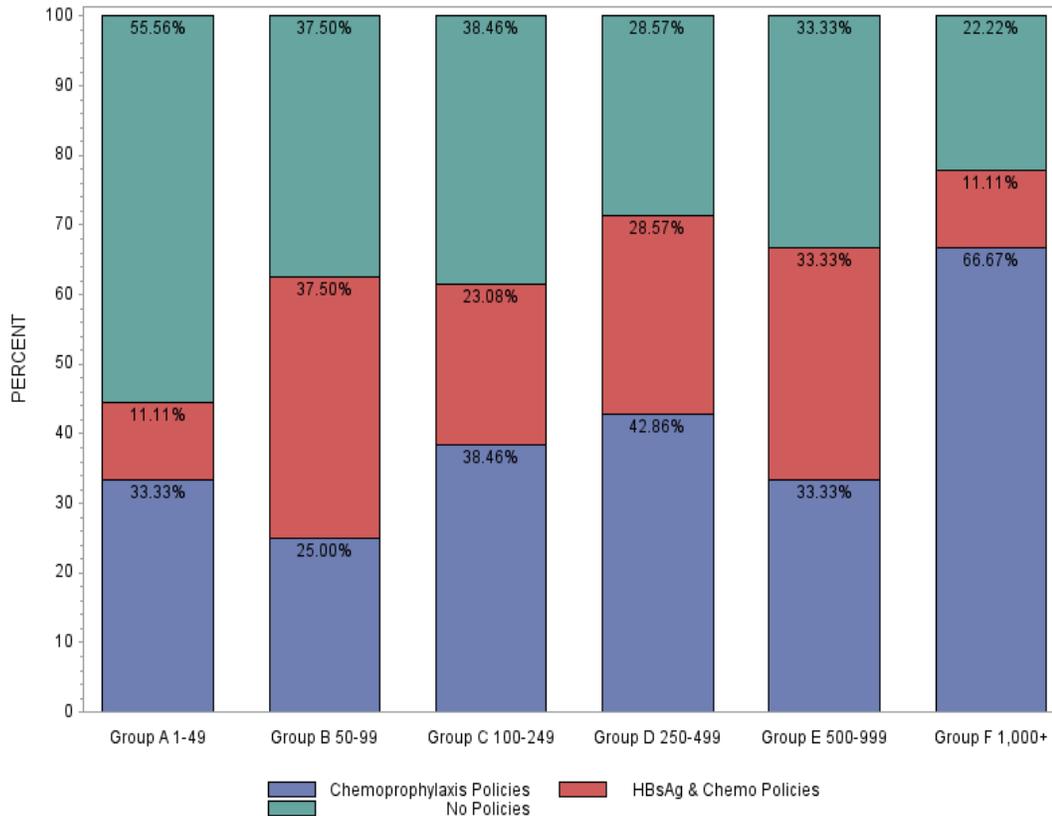
Policies	%
HBsAg Status Policies	
Have a policy to review prenatal HBsAg (hepatitis B surface antigen) test results at the time of admission to the Labor and Delivery (L & D) unit for all pregnant women	70.49
Have a policy for HBsAg testing as soon as possible after admission for women admitted to L & D who do not have a documented HBsAg test result	60.66
Have a policy for repeat testing of pregnant, HBsAg-negative women who are at risk for HBV infection during pregnancy? (e.g. >1 sex partner in the previous six months, evaluation or treatment for an STD, recent or current injection drug use, HBsAg-positive sex partner or who have had clinical hepatitis)	6.56
Have a written policy for documentation of maternal HBsAg test results in the infant's medical record	47.54
Chemoprophylaxis Policies	

Have a policy for administration of HBIG (hepatitis B immune globulin) within 12 hours of birth for all infants born to HBsAg-positive mothers	65.57
Have a policy for administration of hepatitis B vaccine within 12 hours of birth for all infants born to HBsAg-positive mothers	68.85
Have a policy for administration of hepatitis B vaccine within 12 hours of birth for all infants born to mothers with unknown HBsAg status	70.49
Birth Dose Policies	
Have a written policy to routinely administer the hepatitis B vaccine to all newborns before hospital discharge	77.05

Stratified by Hospital Size:

The data was stratified by number of live births per year to determine if hospital size revealed any trends among presence or absence of policies. Responding hospitals with 50 – 99 live births per year had the

Graph 1: 2015 Policies by Hospital Size



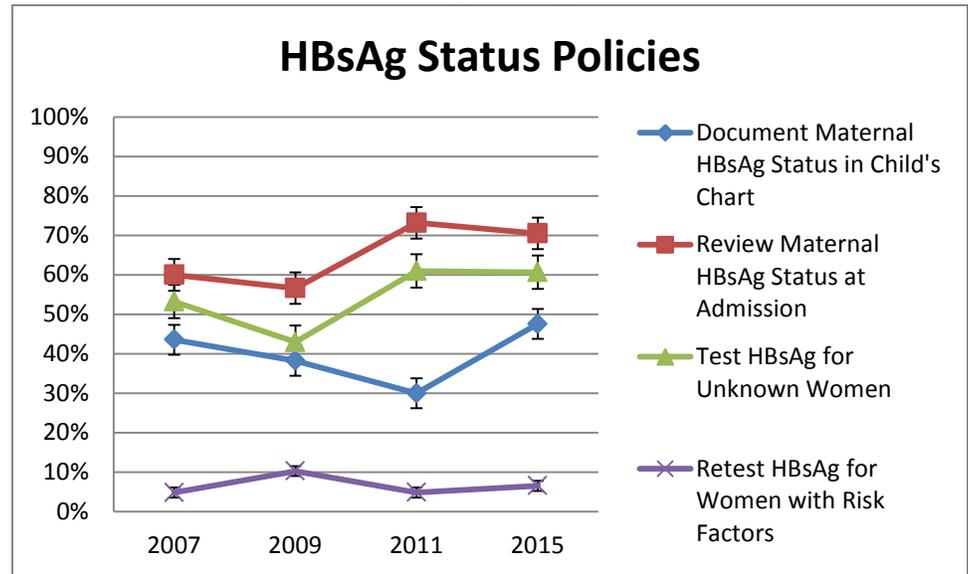
highest proportion of delivery facilities claiming policies, with 37%; followed closely by one-third of hospitals with 500-999 live births (see Graph 1). The very large and very small hospitals (over 1,000 and under 50 births respectively) had the lowest percent of L&D units with 11% reporting policies in place. This trend is mirrored when

looking at only HBsAg status policies; however, in terms of chemoprophylaxis over three-quarters of the largest hospitals reported having orders. Conversely, a majority of L&D units with less than 50 live births per year have no orders concerning hepatitis B mothers or their children.

Trending data: This survey has been completed five times by area labor and delivery facilities since 2003; while response rates have varied, important trends can now be established. The most notable trend concern policies to retest HBsAg-negative women with known risk factors, averaging 7%, are markedly below levels of other (see Graph 2). Between 2011 and 2015, policies to document HBsAg status of the mother in child's medical

chart increased significantly by 50%. Additionally, between 2009 and 2011 there was a significant increase in the percentage of hospitals that reported having policies in place to review maternal HBsAg status and test for it if unknown at time of admission. However, after this initial increase, rates of hospitals reporting policies have maintained 2011 levels.

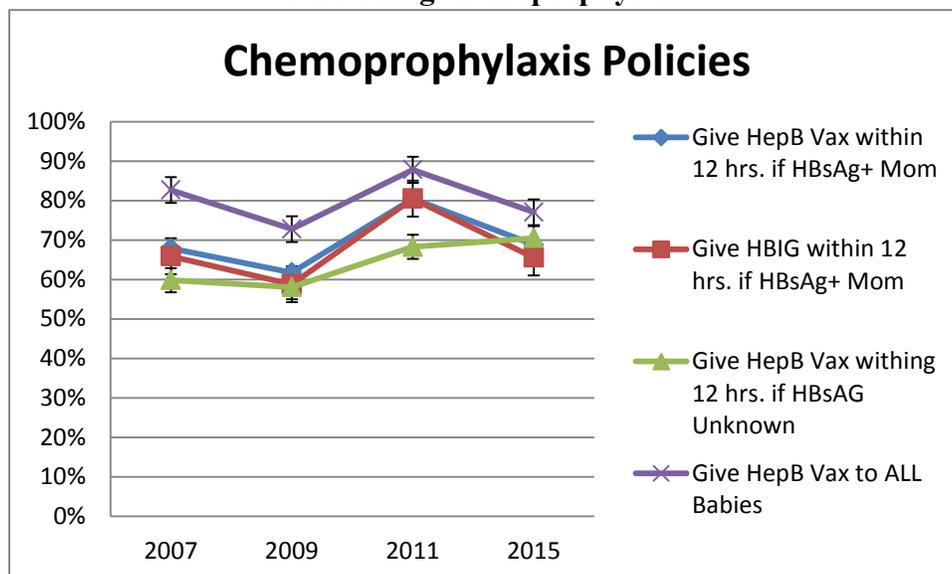
Graph 2: Trends of percentages of hospitals with policies concerning HBsAg status



Policies for admission of chemoprophylaxis were higher in responding hospitals than those concerning HBsAg screening. Orders to give the first dose of the hepatitis B vaccine saw a four year average of 80% with no significant change over the past 7 years (see Graph 3). Furthermore, the percentage of hospitals giving hepatitis B vaccinations within 12 hours of birth to babies with unknown maternal HBsAg status has significantly increased since initial collection of data in 2007. Furthermore, this is the one policy that has seen an increase year-over-year since 2009 and has surpassed policies concerning admission of HBIG within 12

hours of birth to infants whose mothers are HBsAg-positive. Lastly, well over 50% of study hospitals have chemoprophylaxis policies in place since the first year of available data.

Graph 3: Trends of percentages of hospitals with policies concerning chemoprophylaxis



Discussion

A majority of Kansas hospitals have policies in place to determine HBV test results of newly admitted pregnant women,

test women whose hepatitis B status is unknown, administer HBIG and HBV vaccine to infants born to HBsAg-positive women and women of unknown status, and to routinely administer the HBV vaccine to all infants prior to hospital discharge.

The prevalence of women chronically infected with HBV with a positive HBsAg test is higher in pregnant women who receive no prenatal care than in women who receive prenatal care. Those with no prenatal care will likely show up with an unknown HBsAg test and while 70% of Kansas hospitals have a policy in place to test these women and to ensure that their infants are vaccinated within 12 hours there are still many who do not have these policies in place (5). In 2012, approximately 1% of women who gave birth in Kansas received no prenatal care (6). Additionally, the CDC projects that every year, Kansas should identify between 102 and 145 infants born to hepatitis B positive mothers. From 2011-2013, Kansas identified an average of 79 infants; therefore, KDHE may not be identifying all infants born to HBsAg-positive women.

To ensure that all infants are managed properly, there are numerous policies that can be implemented to prevent perinatal transmission of hepatitis B (Appendix A). HBsAg status should be reviewed for all women upon admission to labor and delivery. If there is no documented HBsAg status, testing should be performed, and results should be obtained within 24 hours to assure proper chemoprophylaxis is given to the infant. Hospitals that do not have HBsAg-testing capabilities should make arrangements with a local laboratory to ensure test results are obtained within the recommended time frame, or if possible testing capabilities should be developed in-house.

To ensure this appropriate treatment is routinely given, hospitals should implement standing orders and written policies based on ACIP recommendations (1). Additional information can be found on the CDC website <http://www.cdc.gov/hepatitis/HBV/PerinatalXmtn.htm> and KDHE's website <http://www.kdheks.gov/hiv/hepatitis.htm>. Furthermore, in 2013, ACIP and CDC initiated the birth dose honor roll which exemplifies hospitals that have a 90% or higher rate of administration of first dose of the hepatitis B vaccine to all newborns, regardless of maternal HBsAg status. With this goal in mind, it is clear to see that hospitals in this study, and Kansas as a whole, should work to increase its birth dose rate with implementing policies to do so as the first major step towards success.

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Bibliography

1. **CDC.** Recommendations of the Advisory Committee on Immunization Practices (ACIP). A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States: Immunization of Infants, Children, and Adolescents. *MMWR*. 2005, Vol. 54, RR16.
2. *Perinatal hepatitis B virus transmission in the United States. Prevention by passive-active immunization.* **Stevens, CE, et al., et al.** 12, March 22-29, 1985, *JAMA*, Vol. 253, pp. 1740-5.
3. *Prevention of Perinatally Transmitted Hepatitis B Virus Infections with Hepatitis B Immune Globulin and Hepatitis B Vaccine.* **R Palmer Beasley, George Chin-Yun Lee, Cheng-Hsiung Roan, Lu-Yu Hwang, Chung-Chi Lan, Fu-Yuan Huang, Chiung-Lin Chen.** 8359, November 12, 1983, *The Lancet*, Vol. 332, pp. 1099-1102.
4. **CDC.** Recommendations of the Immunization Practices Advisory Committee Prevention of Perinatal Transmission of Hepatitis B Virus: Prenatal Screening of all Pregnant Women for Hepatitis B Surface Antigen. *MMWR*. 1988, Vol. 37, 22.
5. —. *Managing a Perinatal Hepatitis B Prevention Program: A Guide to Life.* Atlanta : s.n.
6. **Kansas Department of Health and Environment.** *Annual Summary of Vital Statistics, 2012.* 2013.
7. **American Academy of Pediatrics.** *Red Book: 2006 Report of the Committee on Infectious Diseases.* [ed.] Larry K Pickering, et al., et al. 27th. Elk Grove, IL : American Academy of Pediatrics, 2006.

APPENDIX A

Delivery Hospital Policies and Procedures to Prevent Perinatal Hepatitis B Virus Transmission

At time of admission for delivery

- Review hepatitis B surface antigen (HBsAg) status of all pregnant women.
- Record maternal HBsAg test results on both labor and delivery record and on infant's delivery summary sheet.
- Perform HBsAg testing as soon as possible on women who
 - do not have a documented HBsAg test result;
 - were at risk for hepatitis B virus (HBV) infection during pregnancy (e.g., >1 sex partner in the previous 6 months, evaluation or treatment for a sexually transmitted disease, recent or current injection-drug use, or HBsAg-positive sex partner); or
 - had clinical hepatitis since previous testing.

After delivery

HBsAg-positive mothers and their infants

- Administer single-antigen hepatitis B vaccine and hepatitis B immune globulin (HBIG) to all infants born to HBsAg-positive mothers ≤ 12 hours after birth and record date and time of administration of HBIG and hepatitis B vaccine in infant's medical record.
- Provide information regarding hepatitis B to HBsAg-positive mothers, including
 - advice that they may breast feed their infants upon delivery;
 - modes of HBV transmission;
 - need for vaccination of their susceptible household, sexual, and needle-sharing contacts;
 - need for substance abuse treatment, if appropriate; and
 - need for medical management and possible treatment for chronic hepatitis B.

Mothers with unknown HBsAg status and their infants

- Administer single-antigen hepatitis B vaccine (without HBIG) to all infants born to mothers with unknown HBsAg status ≤ 12 hours after birth and record date and time of administration of hepatitis B vaccine on infant's medical record.
- Alert infant's pediatric health-care provider if an infant is discharged before the mother's HBsAg test result is available; if the mother is determined to be HBsAg positive, HBIG should be administered to the infant as soon as possible, but no later than age 7 days.

All mothers and their infants

- Administer a dose of single-antigen hepatitis B vaccine to all infants weighing $\geq 2,000$ g.
- Ensure that all mothers have been tested for HBsAg prenatally or at the time of admission for delivery, and document test results.

At time infant is discharged

- Provide infant's immunization record to mother and remind her to take it to the infant's first visit to a pediatric health-care provider.