Perinatal Hepatitis B Prevention Program

By

Julie A Miracle, RN, BSN, CPAN

KY Perinatal Hepatitis B

Prevention Program Coordinator

Kentucky UNBRIDLED SPIRIT

Case Classification

- Hepatitis B surface antigen (HBsAg) positivity in any infant aged > 1-24 months who was born in the United States or in U.S. Territories to an HBsAg-positive mother

Risk of Chronic Infection related to age

- 90% Infants will become chronically infected if infected prior to 1 year of life
- 25% to 40% will become chronically infected if infected between 2-5 years of age
- In contrast, ~ 95% adults recover completely from infection and do not become carriers

- From the CDC website: HBV FAQs for Health Professionals

Kentucky UNBRIDLED SPIRIT

Strategies to Eliminate HBV in US

- Universal immunization of infants beginning at birth
- Prevention of perinatal HBV infections through routine screening of **ALL** pregnant women and appropriate treatment of infants born to HBsAg-positive mothers
- Routine immunization of adolescent children who previously have not been vaccinated.
- Immunizations of unimmunized adults at-risk for HBV infections.

Kentucky
UNBRIDLED SPIRIT

Hepatitis B Vaccine (HepB)

- Hepatitis B vaccine can prevent hepatitis B virus infection
- It is routinely given as a 3 dose series
- 95% efficacy rate (range 85-100%)
- The **MOST EFFECTIVE** way to prevent HBV infections is pre-exposure immunization.

Kentucky UNBRIDLED SPIRIT

Hepatitis B Vaccine continued

- Effectiveness of postexposure treatment depends on length of time between exposure and treatment
- The rate of new HBV infections has declined 82% since 1991
- Greatest decrease in children and teens. (98% decrease in children under 19.) Vaccine success

Hepatitis B Vaccine Schedule for Infants

DOSE	USUAL AGE	MINIMUM INTERVAL
PRIMARY 1	BIRTH	----------
PRIMARY 2	1-2	4 WEEKS
PRIMARY 3	6-18 MONTHS*	8 WEEKS**

*infants whose mother are HBsAg (+) or whose status is unknown should receive the third dose by 6 months of age

**at least 16 weeks after the first dose. Minimal age of 24 weeks

Kentucky UNBRIDLED SPIRIT

Hepatitis B Birth Dose

- ACIP recommends all newborns should receive the birth dose of hepatitis B vaccine prior to discharge from the birthing facility.
  - ❖ Key element in the elimination of hepatitis B infections
  - ❖ Prevents at-risk infants from falling through the cracks
  - ❖ Increases likelihood of series completion
  - ❖ Healthcare providers need to support the birth dose.

Kentucky UNBRIDLED SPIRIT

HepB Schedule for Adults/Adolescent

DOSE	USUAL INTERVAL	MINIMAL INTERVAL
Primary 1	----------	----------
Primary 2	1 month	4 weeks
Primary 3	5 months	8 weeks*
*Third dose must be separated from first dose by at least 16 weeks		

Kentucky UNBRIDLED SPIRIT

Hepatitis B Immune Globulin (HBIG)

- Used in postexposure prophylaxis
- Passive Immunity
- Provides short term protection for 3-6 months
- 85-95% effective in preventing perinatal infection if given with HepB vaccine.

Kentucky
UNBRIDLED SPIRIT

Perinatal Hepatitis B Prevention Program

- The goal of the KY Perinatal Hepatitis B Prevention Program is to reduce the incidence of perinatal hepatitis B infections in Kentucky.

Mandatory Testing

- KY law (KRS 214.160) mandates all pregnant women be screened for hepatitis B surface antigen (HBsAg) during each pregnancy
- Those with positive (+) results must be reported to LHD in the patient's county of residence or to the State Health Department
- High risk mothers, previously tested and HBsAg(-), and mothers with unknown HBsAg status must be tested at the time of admission to the hospital for delivery

Kentucky UNBRIDLED SPIRIT

Serology Testing

- Serology markers of HBV infection vary depending on whether the infection is acute or chronic
- HBsAg is the most commonly used test for diagnosing HBV infection (both acute and chronic)
- The presence of HBsAg indicates the person is infectious regardless of acute or chronic status
- Anti-HBc (core antibodies) develops in all HBV infections and indicates infections at some undefined past.
- IgM Anti-HBc is a marker for acute infections

From the CDC's Viral Hepatitis Website

Kentucky UNBRIDLED SPIRIT

Serology Testing

- IgM anti-HBc(-) with HBsAg(+) indicates chronic infection. Anti-HBc should also be positive.
- HBeAg is a marker associated with the number of infective HBV particle in the serum and high infectivity.
- Anti-HBs (surface antibodies) is a protective neutralizing antibody.
- Presence of Anti-HBs after infection indicates recovery and natural immunity
- Quantitative Anti-HBs Antibody level (Ten mIU/mL or greater) indicates immunity after hepatitis B vaccine series

From the CDC Viral Hepatitis Website.

Kentucky UNBRIDLED SPIRIT

Interpretation of HBV Serologic Testing

Tests	Results	Interpretation
HBsAg……	Negative	Susceptible
Anti-HBc……...	Negative	
Anti-HBs…….	Negative	
HBsAg……..	Negative	Immune due to vaccination
Anti-HBc……..	Negative	
Anti-HBs……...	Positive with ≥10mIU/mL	
HBsAg……..	Negative	Immune due to natural infection
Anti-HBc	Positive	
IgM anti-HBc……	Negative	
Anti-HBs……	Positive	

Kentucky UNBRIDLED SPIRIT

Interpretation of HBV Serologic Tests

Tests	Results	Interpretation
HBsAg……..	Positive	Acute Infection
Anti-HBc……	Positive	
IgM anti-HBc…….	Positive	
Anti-HBs……	Negative	
HBsAg……..	Positive	Chronically Infection
Anti-HBc…….	Positive	
IgM Anti-HBc…….	Negative	
Anti-HBs…….	Negative	
HBsAg……..	Negative	1. May be recovering from acute infection. 2. May be distantly infected and test is not sensitive enough. 3. May be susceptible with a false positive anti-HBc 4. May be chronically infected and have a undetectable HBsAg level.
Anti-HBc……	Positive	
Anti-HBs Negative…….	Negative	

Kentucky UNBRIDLED SPIRIT

Perinatal Risk of Exposure

- Without postexposure prophylaxis to the infant born to HBsAg-positive woman the risk of infection is :
  - ❖ 70% to 90% for the infant if the mother is both HBsAg and HBeAg positive
- Compare to
  - ❖ 5% to 20% for the infant if the mother HBsAg positive but HBeAg negative.

Kentucky UNBRIDLED SPIRIT

Perinatal HBV Management

- All babies born to HBsAg-positive mothers must receive Hepatitis B vaccine and Hepatitis B Immune Globulin (HBIG) 0.5mL in different sites within 12 hours of birth to protect them from HBV infection.
- When HBsAg status is unknown, HBIG can be held for infant weighing greater than 2,000 if the HBsAg testing can be completed prior to discharge. HBIG must be given to infants weighting less than 2,000 grams if HBsAg is unknown at time of delivery.
- HBIG must be given within 7 days.

Kentucky UNBRIDLED SPIRIT

Perinatal HBV Management

- The infant must complete a valid hepatitis B vaccine series with the second dose at 1-2 months of age and third dose at 6 months of age.
- Serology testing for HBsAg and Quantitative Anti-HBs is recommended at 9-15 months of age.

Kentucky UNBRIDLED SPIRIT

Post Vaccination Serology Results

Serology Test	Result	Interpretation
HBsAg……. Quantitative Anti-HBs…	Negative Ten mIU/mL or greater	Immunity to HBV. Case Closed
HBsAg……. Quantitative Anti-HBs…	Positive Negative	Report to NEDSS as perinatal hepatitis B infection
HBsAg……. Quantitative Anti-HBs…	Negative Less than ten mIU/mL	Not immune. Some people repeat vaccination with a 3 dose series of a different brand of monovalent vaccine. Repeat serology testing 2 months after last dose of vaccine.

Kentucky UNBRIDLED SPIRIT

Preterm Infants Born to HBsAg (+) Moms

- Infants born to HBsAg (+) or unknown status mothers and who weigh less than 2000 grams must be given HBIG and hepatitis B vaccine within 12 hours of birth.
- This birth dose will not be counted in the three dose series.
- The 3 dose series should start at 1 month of age

Kentucky UNBRIDLED SPIRIT

Preterm Infants Born to HBsAg (+) Moms

- Dose one of the three dose series should be started at one month of age or at least 4 weeks from the birth dose
- Dose two should be administered 1-2 months later.
- Third dose of the series should be given at 6 months of age.
- Check Quantitative Anti-HBS and HBsAg at 9-18 months of age

Kentucky UNBRIDLED SPIRIT

Challenges to the PHBPP

- CDC indicates approximately only 50% of expected births to HBsAg(+) mothers are identified.
- 1-2% of all deliveries will be born to HBsAg(+) mothers.
- In KY that will be about 95-160 infants born to HBsAg(+) mothers (From The PHBPP Birth Table 2008)
- Our program identified 49 cases in 2009, 80 cases in 2010, and 58 cases in 2011
- Case management can follow mother and child for over a two-three year period until serology is completed on infant.

Kentucky UNBRIDLED SPIRIT

Challenges to the PHPP

- The following are the reasons babies may not being reported:
  - ❖ Healthcare providers awareness of reporting requirements
  - ❖ Communication errors
  - ❖ Documentation errors
  - ❖ Testing errors

Kentucky UNBRIDLED SPIRIT

Who Can Identify a Case

- Private Providers (EPID-394)
- Laboratory Facility Reports (NEDSS)
- DPH Reportable Disease Section (NEDSS)
- Perinatal Hepatitis B Coordinator
- Birthing Hospitals at time of delivery (EPID-399)
- LHD personnel (EPID-394 & initiate the EPID 395)

Kentucky UNBRIDLED SPIRIT

Roles of the LHD & LHD Nurse in PHBPP

- Each LHD must have nurse delegated to manage Perinatal Hepatitis B Prevention Cases for their agency. **(Perinatal Hepatitis B Prevention Nurse Case Manager)**

Roles Cont.

- Determine pregnancy status on all HBsAg(+) women between 11-46.
- Contact, counsel and offer vaccination to all pregnant women and postpartum women who are at high risk and susceptible.
- Pregnancy and Lactation are not a contraindication for vaccination

Roles Cont.

- Initiate Case Management/Follow-up which includes:
  - ❖Review all EPID-394 forms or cases reported in NEDSS– research and complete missing information
  - ❖ May use an EPID-395 form for case management
  - ❖Counsel the pregnant woman concerning HBV infection, Transmission, vaccination, and prevention of perinatal hepatitis B infection in her newborn

Kentucky UNBRIDLED SPIRIT

Roles Cont.

- Identify, counsel, test, and if susceptible vaccinate all sexual and household contacts
- Track
  - ❖ Infant delivery
  - ❖ Administration of Hepatitis B vaccine series & HBIG
  - ❖ Serology testing of the infant
- **Send all updates to the State Perinatal Hepatitis B Coordinator, Julie Miracle , RN , BSN, CPAN**

Kentucky UNBRIDLED SPIRIT

EPID 394, 395, and 399 Forms

- These forms are used to report Perinatal Hepatitis B Infection in a Pregnant Woman or Child.
- The provider, hospital or lab facility completes the forms and forwards them to the LHD or DPH when a case is identified. Some providers will use a EPID 200
- EPID 395 is used for case management of these at-risk infants
- Copy of all the forms are in your handouts

Kentucky UNBRIDLED SPIRIT

EPID 399 Form

PERINATAL HEPATITIS B PREVENTION FORM FOR INFANTS

Full name of patient _____ Date of birth _____ Time of birth _____

Full name(s) of parent(s) _____ County of residence _____ Weight at vaccination _____

Patient's address _____ Obstetrician's name _____ Pediatrician's name _____

City _____ State _____ Zip _____

Phone Number _____

Biological Administered	Date	Time	Dosage	Manufacturer & Lot No.	RN Signature
Hepatitis B Vaccine			0.5cc		
HBIG			0.5cc		

If vaccine not given, please specify reason: _____

HBsAg testing **Yes ( )** **Pending ( ) *see below**

Mother's HBsAg Status: **Positive ( )** **Negative ( )** _____ **Date of Mother's lab work**

*****Notify the Infection Control nurse in your facility if the mother is HBsAg positive*****

*Pending ( ) A pending HBsAg is acceptable **only** if blood has been drawn and sent to a laboratory. Attempt to obtain a verbal report of result from laboratory before the infant is discharged. If HBsAg is pending _____ (name) at _____ (phone number) is responsible for confirming the laboratory results and telephoning the health department if the mother is HBsAg positive. If mother did not have HBsAg testing during prenatal care **or** if results are not available please collect at the time of delivery and review results prior to discharge.

Telephone **positive** results to the local health department immediately. **Infants born to HBsAg positive mothers must receive 0.5cc Hepatitis B vaccine and 0.5cc HBIG.**

_____ ( ) _____

Name of Hospital or Other Institution Telephone Number

Appropriate screening of pregnant women is an important step in the strategy to prevent perinatal hepatitis B infection. To decrease the perinatal transmission of hepatitis B, all pregnant women in Kentucky must be screened for hepatitis B surface antigen (HBsAg). State legislation mandating the testing became effective July 15, 1998. Administrative regulation 902.KAR 2:020 requires all licensed health professionals and facilities to report hepatitis B in a pregnant woman to the local or state health department. This form is required to be completed on all infants born to HbsAg positive mothers and those whose HbsAg status is pending or unknown to insure adequate follow-up of reportable disease. It is suggested that the form be completed on all births to confirm every pregnant woman's status has been verified and the infant has been treated appropriately.

White copy to LHD, Canary copy to parent, Pink copy to hospital, Goldenrod copy to physician

EPID-399

Kentucky UNBRIDLED SPIRIT

What to do with a EPID 399

- Review form for completion and accuracy
- Review lab reports/ results
- Screen the form for infant vaccination history
  - ❖ Hepatitis B vaccine received
  - ❖ HBIG given to infants of HBsAg-positive mother and mother of HBsAg-unknown status.

What to do with EPID 399 Forms

- **ALL HBsAg-POSITIVES** must be forwarded to the LHD Perinatal Hep. B Nurse Case Manager and/or to Julie Miracle, KY Perinatal Hepatitis B Prevention Program Coordinator

Important Reminders

- A complete and accurate EPID 399 form is imperative for timely completion of case management for at risk infants.
- Communication is essential to a successful Perinatal Hepatitis B Prevention Program.
- You provide one of the most important steps of management and prevention of hepatitis B infections in at risk infants.

Kentucky UNBRIDLED SPIRIT

Resources

- Immunization Action Coalition at http://www.immunize.org/
- CDC Information on Perinatal Hepatitis B Prevention at http://www.cdc.gov/hepatitis/HBV/PerinatalXmtn.htm
- Educational materials at http://www.cdc.gov/hepatitis/Partners/Perinatal/EducationalMaterials.htm

Kentucky UNBRIDLED SPIRIT

Questions? Call or Email DPH

Julie Miracle, RN, BSN,CPAN
502-564-4478 ext.4038
Fax 502-564-4760
Julie.Miracle@ky.gov

Margaret Jones, RN, BSN, BSEd
502-564-4478 ext. 3514
Margaret.Jones@ky.gov

Kentucky
UNBRIDLED SPIRIT