



ANTENATAL CARE

HEPATITIS B IN PREGNANCY

Keywords: HBV, Hepatitis B, Hepatitis B antibody, HBV positive,

AIMS

- Offer antenatal hepatitis B virus (HBV) screening to all pregnant women.
- Provide education to women positive for hepatitis B regarding disease management during the pregnancy, intrapartum and postpartum periods.
- Educate women about prevention of transmission of HBV.
- Measure hepatitis B viral load in all women with hepatitis B and arrange urgent hepatology clinic assessment if the viral load is $\geq 10^6$ copies/ml
- Offer hepatitis B vaccination to all neonates, and additionally provide hepatitis B immunoglobulin (HBIG) to the neonate if a woman is hepatitis B surface antigen (HBsAg) positive.

BACKGROUND INFORMATION

Transmission of HBV occurs through contact with infected blood or body fluids. It occurs in 90% of cases via vertical transmission, and 8-15% of cases via horizontal transmission. However, in regions with a low HBV prevalence, infected patients occur through routes such as intravenous drug use, sexual intercourse, rarely via occupational exposure, or are detected via screening programmes in migrants from countries at high risk for the virus.(1) The virus is relatively stable in the environment and can be viable for up to 7 days on surfaces at low levels, even without visible blood.(2) A woman who develops an *acute* infection of HBV during pregnancy may be asymptomatic, or present with symptoms such as loss of appetite, nausea, vomiting, fever, jaundice, abdominal pain(2, 3), right upper quadrant or epigastric pain, and may have dark urine and grey stools.(2) Normally women with *chronic* HBV are asymptomatic. However they may present with fatigue(3). Monitoring of liver function during pregnancy will indicate any exacerbation of illness which may develop during this period or shortly after delivery.(3, 4)

In pregnancy a higher incidence of low birth weight and risk for prematurity have been associated with HBV. Acute infection in early pregnancy is linked to an increased risk for perinatal transmission of about 10%, with this rate increasing substantially if infection occurs in the third trimester. Maternal vaccination has been shown to be safe and effective in pregnancy.(5)

If a mother is hepatitis B e antigen (HBeAg) positive the risk of transmission to the neonate without postnatal vaccination and immunoprophylaxis can be as high as 70-90% at 6 months of age, with up to 90% of these infants developing chronic HBV infection.(6) However, by administering hepatitis B immunoglobulin (HBIG) and the hepatitis B vaccine soon after birth, it can decrease risk of transmission to 5-10%,(5, 6) especially if the woman is HBeAg-positive.(7) Transmission cannot be reduced to zero in highly infectious mothers with post delivery immunoprophylaxis and vaccination because of occult maternal-fetal blood transmission occurring in utero

prior to delivery. Hepatitis B surface antibody (Anti-HBs) level should be measured post vaccination in infants of HBsAg/HBeAg positive carrier mothers 9-12 months after completing the primary vaccination course²⁰ The primary HBV vaccination course is considered complete after the 4th dose (including the birth dose), where the 4th dose is administered either at 6 or 12 months, depending on vaccination schedule. The infant is considered protected if the anti-HBs levels are adequate and the HBsAg is negative.(8) Referral to a paediatric infectious diseases clinic or gastroenterology clinic is advised for all babies born to all mothers with active hepatitis B infection.

Studies have indicated that potentially the intra-uterine transmission of HBV can be reduced with the use of prophylactic measures such as intramuscular HBIG, hepatitis B vaccination, and use of the drug lamivudine or tenofovir. High HBV DNA viral load levels are associated with decreased efficacy of neonatal immunoprophylaxis(7) Therefore it is important for these women to be referred to a hepatology clinic for assessment and possible treatment during pregnancy. This is an evolving area of research but current recommendations are for consideration of antiviral therapy when the HBV viral load is $\geq 10^6$ IU /ml¹⁹

KEY POINTS

1. All pregnant women should be offered screening for HBV.
2. All women who are HBsAg positive should be offered referral to a hepatology clinic as early as possible in pregnancy.
3. If appropriate prophylactic HBV vaccination and HBV immunoglobulin (HBIG) administration are implemented for the neonate, there is no conclusive evidence that the mode of delivery affects risk of infection.(4)
4. Hepatitis B vaccination and HBIG can safely be given to all women during pregnancy and the breastfeeding period.(2, 3) Non-immunised women exposed to HBV during pregnancy should be offered prophylaxis immediately.
5. Breastfeeding does not increase the risk of HBV transmission provided the neonate receives HBV vaccination and HBIG at birth.(9, 10)
6. HBV carrier mothers should be advised not to donate breast milk.
7. Household contacts, other children and sexual partners of women with HBV should be referred to their GP for screening of HBV infection and immunity and vaccination if non immune and have not been previously assessed.(4)
8. Viral loads for HBV should be checked prior to 30 weeks gestation. If at 30-32 weeks gestation a high viral load ($>10^6$ copies/ml) is found the woman may be considered suitable for anti-viral therapy after consultation with the hepatology clinic doctors.(4) Referrals to the hepatology clinic for these women should be requested urgently. At Royal Perth Hospital Contact the Hepatology Nurse Practitioner (phone 92242186 or page through switch; FAX 92243388) to expedite an appointment. At SCGH the hepatology clinic numbers are 9346 3228, fax 9346 3098 ,urgent requests are made directly by paging the Registrar via the hospital switchboard (08) 9346 3333 Pager 4063

INTERPRETATION OF H.B.V. SCREENING RESULTS(11)

TEST	ABBREVIATION	DETECTION INTERPRETATION
Hepatitis B surface antigen	HBsAg	Detects a protein on the surface of HBV. A positive result indicates a person is infectious –acute or chronic.
Hepatitis B e-antigen	HBeAg	Indicates high level replication of HBV and is associated with significant infectivity. Some patients may not have detectable HBeAg but have high viral loads
Hepatitis B surface antibody	Anti-HBs	Indicates immunity either through resolution of natural infection, or through vaccination.
Hepatitis B e antibody	Anti-HBe	Shows a person’s immune system has responded to the virus with it not actively replicating at high levels. Low level viral loads and/or HBsAg detection may still occur
Hepatitis B core antibody	Anti-HBc. Indicating exposure to Hepatitis B or as Anti-HBc IgM indicating acute infection.	Presence of IgG and/or IgM antibody to the Hepatitis B antigen. IgM antibody to the core antigen disappears early in the course of a primary infection. Anti-HBc (total) Ab detected may indicate acute, chronic or past infection
Hepatitis B virus DNA load	HBV DNA	Measures the amount of virus in the bloodstream and is an indicator of how actively the virus is replicating.

ANTENATAL MANAGEMENT

- All women should have their HBV status (HBsAg detected or not detected) reviewed at the booking visit. If the woman has not been tested information should be provided, and screening for HBV performed with her consent even if she has been previously vaccinated or tested. (12, 13)
- All women who exhibit 'high risk' behaviours for contracting blood-borne viruses should be rescreened for HBV and HCV and HIV in the third trimester. (12)
- The Health Department of Western Australia directs that women with clinical hepatitis (of any cause) to be retested at the time of admission to hospital for delivery. (12)
- Inform the woman it is recommended that all household contacts, other children, and sexual partners be screened for HBV by their GP. (4)
- All HBsAg and/or HBeAg positive women should have HBV viral loads checked prior to 30 weeks gestation as a high viral load increases the risk for perinatal transmission. Anti-viral therapy may be considered in these circumstances. (4)
- Chorionic villus sampling or amniocentesis in HBV carrier women does not appear to increase the risk of vertical transmission. However, specific individual risk assessment is advised.

WOMEN EXPOSED TO HBV DURING PREGNANCY

Women who have been identified as being at risk of HBV with an *unknown* HBV immunity status should have their anti-HBs levels determined as soon as possible. Hepatitis B surface antibody (anti-HBs) levels can be determined rapidly, with results typically available within 24 hours. Women who are found to be non-immune (anti-HBs < 10 IU/mL) should receive both HBV vaccination and HBV immunoglobulin (HBIG 400 IU IM), preferably within 24 hours of exposure but can be administered up to 72 hours post exposure. Hepatitis B vaccine contains no live virus. No adverse effects have been shown to the fetus if vaccination is given in pregnancy. The woman should receive a further HB vaccine at one and six months post the initial dose (7, 14)

HBV unvaccinated women exposed to HBV should be offered (preferably within 24 hours) (2):

- Hepatitis B immunoglobulin HBIG (note: for sexual exposure, HBIG should not be administered more than 2 weeks after exposure)
- Hepatitis B vaccination (2)

MANAGEMENT FOR *NEWLY DIAGNOSED* HBV POSITIVE WOMEN AT KEMH

1. Provide verbal and written information about HBV mode of transmission, prevention of transmission, disease course, outcome of test results, pregnancy, intrapartum and postnatal management.

Written information may be obtained from:



- <http://www.hepatitiswa.com.au/>
 - Department Health Western Australia - [Fact Sheet Hepatitis B](#)
 - Department Health New South Wales – Hepatitis B at <http://www.hep.org.au/index.php?article=content/landing-page>
2. Women who are newly diagnosed with HBV attending a low risk midwives clinic should have their next antenatal appointment with their obstetric team to discuss ongoing management.
 3. A Health Department of Western Australia notification form should be completed by the doctor and explain to the patient that Hepatitis B is a notifiable disease
 4. Provide the woman's GP with serology results to enable current and future medical management. Even if a woman with active hepatitis B does not meet criteria for treatment during pregnancy, hepatology clinic referral is advised to ensure appropriate long term follow up.
 5. Arrange blood tests for:
 - HBeAg and anti-HBe
 - HBV DNA levels
 - Hepatitis C virus (anti-HCV)
 - Hepatitis A virus immunity (HAV IgG)
 - There is evidence that patients with any acute/chronic HBV or HCV are at increased risk for adverse outcomes if they acquire HAV. It is recommended that if they are not immune to HAV, to be vaccinated. This would be discussed by the hepatology team.
 - HAV vaccination is safe in pregnancy.
 - Liver function tests (LFT)
 - Full blood count (FBC)
 - International normalised ratio (INR) – coagulation assessment – indication of liver synthetic function.
 - This enables results to be taken by patient for a hepatology clinic review(4) and provides a current infective status.

MANAGEMENT FOR *KNOWN* HBV POSITIVE WOMEN ATTENDING KEMH

1. Ensure the woman has received education regarding HBV including mode of transmission, prevention of transmission, disease course, support services, and management during the pregnancy, intrapartum and postpartum periods.
2. Determine if the woman has been referred to a hepatology clinic by her GP. Refer to a hepatology clinic if she had no previous contact.



3. There is evidence that patients with any acute/chronic HBV or HCV are at increased risk for adverse outcomes if they acquire HAV. We would recommend if they are HAV non immune to be vaccinated. This would be discussed by the hepatology team. HAV vaccination is safe in pregnancy
4. Assess if current liver function tests are available. If not, arrange blood testing for:
 - HBeAg and anti-HBe
 - HBV DNA levels
 - Hepatitis C virus (anti-HCV)
 - Hepatitis A virus immunity (HAV IgG)
 - LFTs
 - FBC
5. Perform LFT's, FBP and INR each trimester.

INTRAPARTUM MANAGEMENT

- Standard precautions with blood and body secretions should be implemented as for care of all women. See Infection Control Manual Section 2.1 Standard Precautions.
- Avoid the use of fetal scalp electrodes during fetal monitoring.
- Avoid fetal blood sampling.

MODE OF DELIVERY

Evidence is not conclusive to indicate that preferred mode of delivery is influenced by the likelihood of HBV transmission regardless of viraemia.(5) However, it may be prudent to follow the same recommendation as for delivery of Hepatitis C positive patients i.e. if assisted delivery is required the use of *soft* cup for vacuum extraction or forceps is preferred over a metal cup which poses increased risk for scalp injury.(15)

- Standard precautions should be utilised when handling the baby.

POSTPARTUM MANAGEMENT

- Instruct the woman on management of standard precautions for blood and body secretions.
- Inform the GP if a woman has been diagnosed with HBV infection during pregnancy. Provide copies of any relevant blood tests performed at KEMH. Advise the GP if the woman has been referred to a hepatology clinic.

BREASTFEEDING

- Advise women who are Hepatitis B surface antigen positive there is no evidence that breastfeeding increases the risk of HBV transmission provided the neonate receives HBV vaccination and Hepatitis B immunoglobulin (HBIG) at birth.(9, 10, 16)
- Advise HBV carrier women not to participate in breast milk donation.(7)

- Seek microbiology or pharmacy advice for information regarding specific antiviral agents and safety in pregnancy.

NEONATAL MANAGEMENT

See Neonatal Postnatal Clinical Guidelines:

- [3 Maternal Hepatitis B](#)
- [3.1 QRG Maternal Hepatitis B](#)

These guidelines contain information on care of the neonate exposed to the HBV including vaccination and immunoglobulin administration, follow-up testing of the neonate, breastfeeding and prevention of transmission of the virus after birth.

Neonatal HBV vaccination and HBIG has the greatest benefit if given within 24 hours of birth, and must be given within 7 days. The recommendation of the Australian Perinatal Guidelines is for administration within 12 h. ¹⁸

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National Standards – 1- Care provided by the clinical workforce is guided by current best practice
3- Preventing and Controlling Healthcare Associated Infections

Legislation - Nil

Related Policies - Nil

Other related documents –

- <http://www.hepatitiswa.com.au/>
- DoH WA [Fact Sheet Hepatitis B](#)
- KEMH Neonatal Postnatal Clinical Guidelines: [3 Maternal Hepatitis B](#) & [3.1 QRG Maternal Hepatitis B](#)

RESPONSIBILITY

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