Management of neonates born to mothers with Hepatitis B infection

The World health organisation (WHO) estimates that 350 million people worldwide are chronically infected with the Hepatitis B virus. Chronic infection with the virus can lead to cirrhosis and hepatocellular carcinoma and as such represents a significant global public health issue.

Hepatitis B infection is screened for in the antenatal population and is diagnosed by the presence of Hepatitis B surface antigen (HBsAg) in the blood. Perinatal acquisition of the virus leads to chronic carrier status (persistence of HBsAg positivity for > 6 months) in a high proportion of infected neonates. Perinatal transmission can be prevented in over 90% of cases by appropriate vaccination starting at birth.

Further serological markers can give an indication of whether the risk of transmission is high or low. Accordingly, if the mother is e antigen positive (HBeAg) the risk of transmission is high, however if the mother is e antibody positive (anti-HBe) the risk is low. Neonates that are deemed at high risk of perinatal acquisition require both passive immunity with Hepatitis B Immunoglobulin (HBIG) and active immunity with a course of Hepatitis B vaccine (accelerated course) starting at birth.

### Indications for Hepatitis B vaccination (active and passive)

<table>
<thead>
<tr>
<th>Hepatitis B status of mother</th>
<th>Baby should receive Hepatitis B vaccine</th>
<th>Baby should receive HBIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother is HBsAg positive and HBeAg positive</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mother is HBsAg positive, HBeAg negative and anti-HBe negative</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mother is HBsAg positive where e-markers have not yet been determined</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mother had acute hepatitis B during pregnancy</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mother is HBsAg positive and HBV DNA viral load level is ≥1x10^6 IU/ml</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mother is HBsAg positive and anti-HBe positive</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

The response to the hepatitis B vaccine is slower in preterm and low birth weight infants. Therefore, babies with a birthweight lower than 1500g should receive HBIG in addition to the vaccine, regardless of the e-antigen status of the mother.

Although not routine practice, maternal viral load is being requested more frequently. Babies born to mothers with high viral loads (≥1x10^6 IU/ml) should be given HBIG as a precautionary measure.

All infants born to mothers with documented Hepatitis B infection should receive Hepatitis B vaccination.

**Drs J Calvert Dr S Barr and Dr R Jones April 2012. To be reviewed: April 2015**
**GP letter TB/LM/SB review date: February 2014**
**Update re Hep B Vaccine brands August 2013**
In addition, vaccination should be administered in the following circumstances:

- Infants born to parents who have previously, or are currently or may in the future use IV drugs (see separate guideline).
- Close family contacts of a case or individual with chronic hepatitis B infection.

For a complete guide to vaccine indications please refer to: Green book (2009 ed): The Department of Health - P&G: Health topics: Green book

**Vaccination Regimen:**

- The first dose of vaccine and/or Immunoglobulin should be given within 12 hours of birth:
  - Give 200 IU Hepatitis B immunoglobulin (intramuscular) into either thigh and 0.5mls Hepatitis B vaccine (intramuscular) into the opposite thigh.
- Further doses (accelerated course) of Hepatitis B vaccine should be given at:
  - 1 month, 2 months and 12 months of age

There are multiple brands of hepatitis B vaccine. Currently we use HBvaxPRO 5 micrograms (0.5 ml). Occasionally Engerix B may be used at a dose of 10 micrograms (0.5 ml). Please see the BNF for Children for an up to date list of Hepatitis B vaccines.

- Serology testing should be carried out at 12 months of age:
  - This will detect those infants who have become chronic carriers of the virus and in whom vaccination has failed.
  - Infants who are HBsAg positive at 12 months of age will require referral to either Dr Huw Jenkins or Dr Ieuan Davies (Paediatric Gastroenterologists, University Hospital of Wales).

There is evidence that the response to Hepatitis B vaccine is diminished in preterm and low birth weight infants. Thus, it is important that such infants receive the full paediatric dose of the vaccine.

The responsibility for administration of Hepatitis B immunoglobulin and Hepatitis B vaccine within 12 hours of birth lies with the neonatal medical team. The administration of further components of the vaccine schedule is co-ordinated by the primary care team. For those infants born to hepatitis B positive mothers, this is overseen by the Health Protection Nurse, Mrs Sam Ray (contact details below). Communication is therefore vital to ensure uptake of the vaccine.

A copy of the template letter (see appendix) should therefore be sent via the neonatal secretary to:

1. Mrs Sam Ray, Health Protection Nurse, Department of Public Health, Temple of Peace & Health, Cathays Park, Cardiff (Telephone: 02920402478)
2. Neonatal Consultant
3. General Practitioner
4. Copy for notes

**References:**

4. Hepatitis B antenatal screening and newborn immunisation programme; Best practise guidance 2011. DoH-Immunisation Branch
Dear ……………………………………….

Re: Insert sticky label

Hepatitis B Vaccination/ Immunoglobulin Notification

Indication for Vaccination: …………………………………………………………………………

This baby received Hepatitis B immunoglobulin within 12 hours of birth.
(Delete if not given).

This baby received the first dose of the Hepatitis B vaccine, as soon as possible after birth and no later than 24 hours of age. In order to protect this baby from developing Hepatitis B it is vital that the full vaccination schedule is completed.

I would be grateful if you could arrange for this baby to receive further doses of Hepatitis B vaccine at a dose of 0.5ml intramuscularly at 1 month, 2 months and 12 months of age.

At the time of the 12 month vaccination, serology testing should also be arranged to check the Hepatitis B surface antigen (HBsAg) status. If the result of this test is positive the baby will require referral to a Paediatric Gastroenterologist (Dr H. Jenkins or Dr I. Davies for further management).

Thank you for your assistance.

Yours sincerely,

Print Name: ……………………… Designation: ………………………

Cc: Mrs Sam Ray, Department of Public Health, Temple of Peace & Health, Cathays Park, Cardiff
Neonatal Consultant

*Please ensure a copy of this letter is left in Neonatal Records for future reference*

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