South Australian Perinatal Practice Guideline

Hepatitis B in Pregnancy

Note:

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

Explanation of the aboriginal artwork:
The Aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the Aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant woman. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.

Australian Aboriginal Culture is the oldest living culture in the world yet Aboriginal people continue to experience the poorest health outcomes when compared to non-Aboriginal Australians. In South Australia, Aboriginal women are 2-5 times more likely to die in childbirth and their babies are 2-3 times more likely to be of low birth weight. The accumulative effects of stress, low socio economic status, exposure to violence, historical trauma, culturally unsafe and discriminatory health services and health systems are all major contributors to the disparities in Aboriginal maternal and birthing outcomes. Despite these unacceptable statistics the birth of an Aboriginal baby is a celebration of life and an important cultural event bringing family together in celebration, obligation and responsibility. The diversity between Aboriginal cultures, language and practices differ greatly and so it is imperative that perinatal services prepare to respectfully manage Aboriginal protocol and provide a culturally positive health care experience for Aboriginal people to ensure the best maternal, neonatal and child health outcomes.

Purpose and Scope of Perinatal Practice Guideline (PPG)

This guideline provides clinicians with information on Hepatitis B virus in pregnancy. It includes details of risk groups, screening and interpreting tests and ongoing management. Newborn management is also described.

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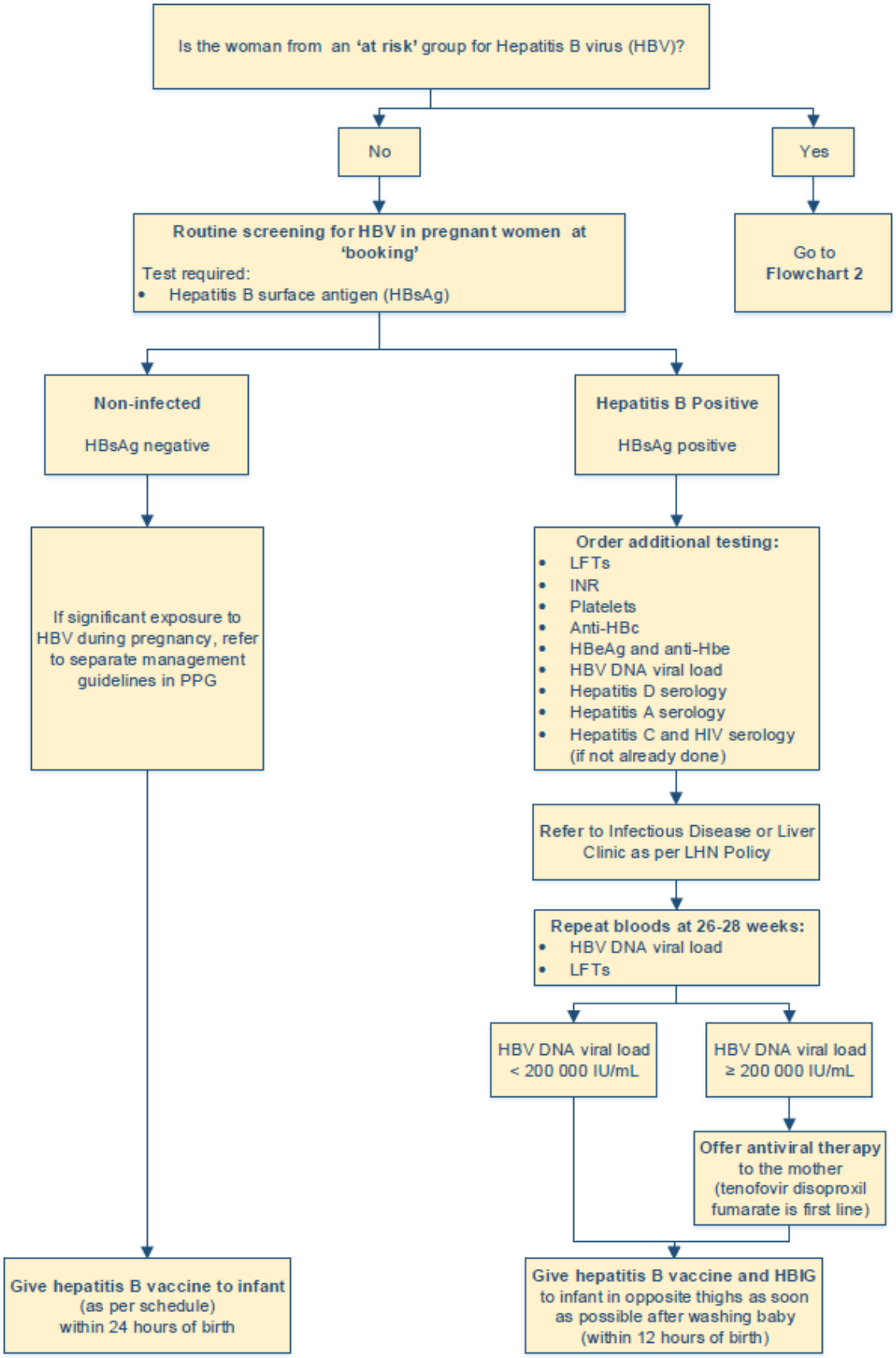
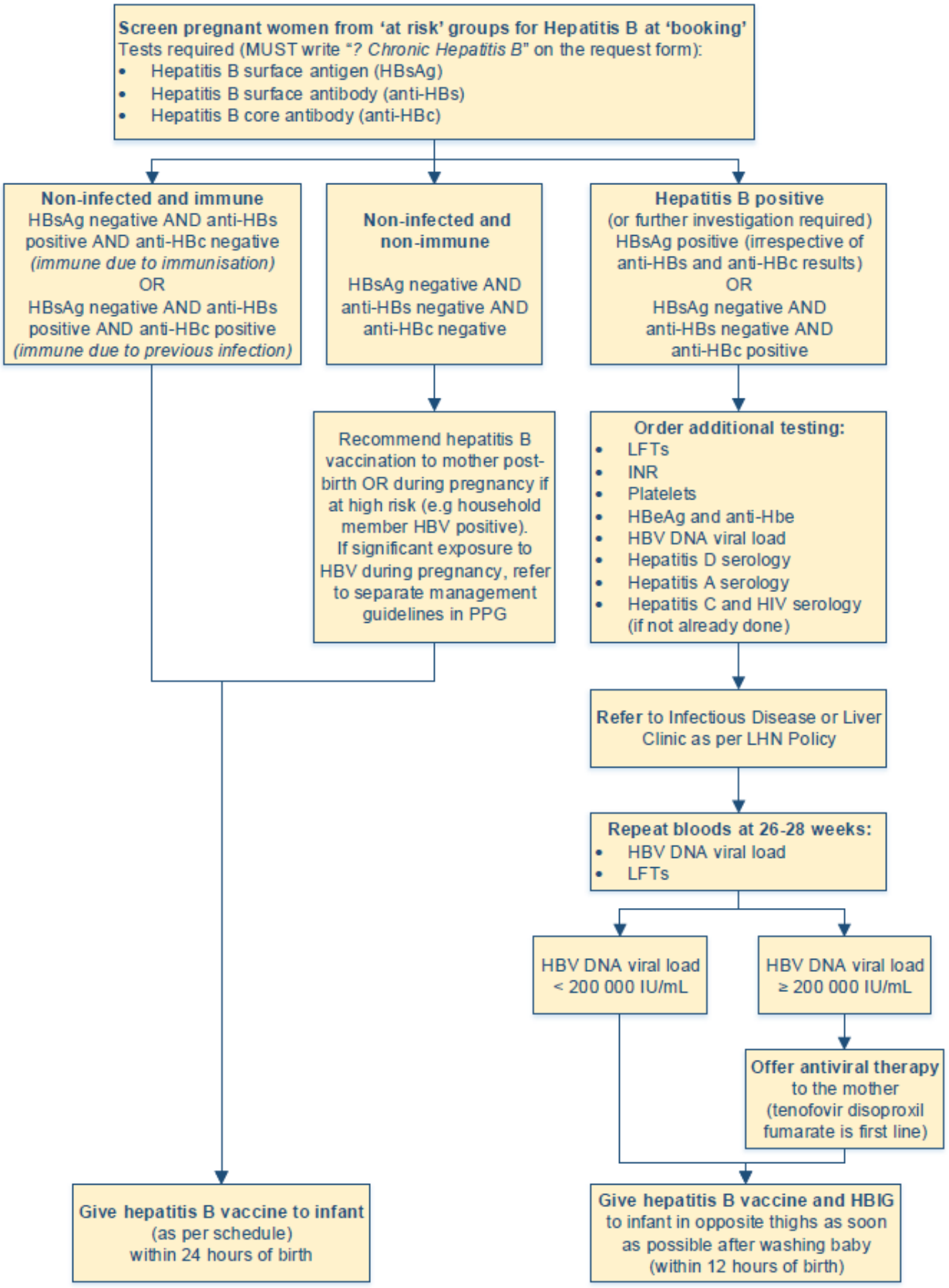
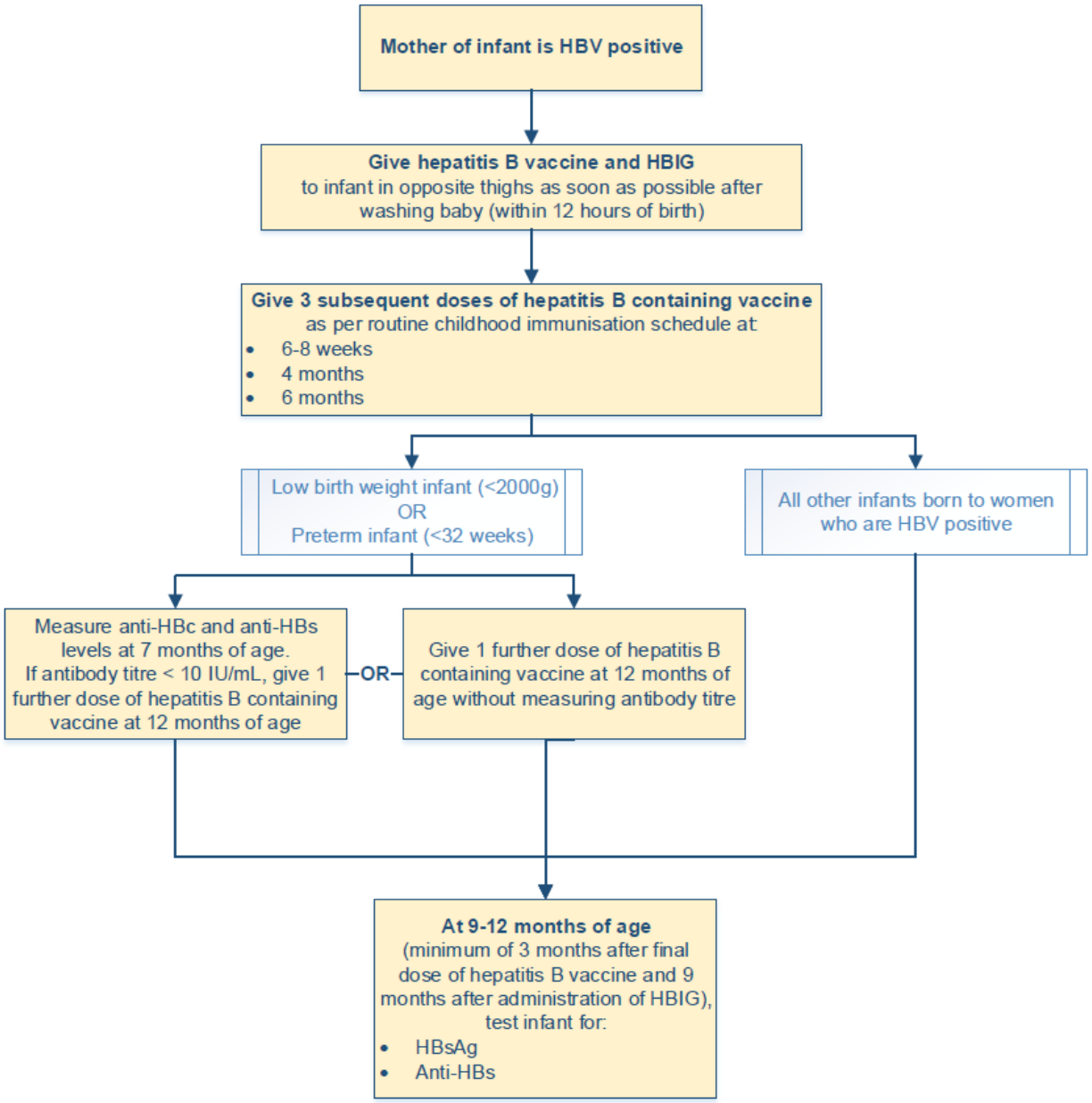
Flowchart 1: Routine screening in pregnancy and reducing risk of maternal to child transmission of hepatitis B virus



Flowchart 2: Screening for women from **'at risk'** groups in pregnancy and reducing risk of maternal to child transmission of hepatitis B virus



Flowchart 3: Follow-up of infants whose mothers are HBV positive



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Summary of Practice Recommendations

Routine antenatal screening for hepatitis B surface antigen (HBsAg) and hepatitis B surface antibody (anti-HBs) is recommended for ALL pregnant women at their first antenatal appointment, unless they are in an 'at risk' group.

For women in 'at risk' groups, antenatal screening for hepatitis B surface antigen (HBsAg), hepatitis B surface antibody (anti-HBs) **and** hepatitis B core antibody (anti-HBc) is recommended at their first antenatal appointment.

Each interaction that a pregnant woman who is positive for hepatitis B virus (HBV) has with health practitioners should be used as an opportunity to provide education about disease management, plan ongoing care and test family and close contacts.

For HBsAg positive women with high viral loads (> 200,000 IU/mL), specialist (hepatologist or infectious diseases consultant) referral should be undertaken for consideration of antiviral therapy to commence between 28 and 32 weeks gestation to further reduce the risk of perinatal transmission.

Women who are HBsAg positive should be encouraged to breastfeed as there is no evidence of HBV transmission through breastfeeding.

Infants of HBsAg positive women should be given both hepatitis B immunoglobulin (HBIG) and the first dose of the hepatitis B vaccine within 12 hours of birth, followed by a full course of hepatitis B vaccine, offered as part of the routine childhood immunisation schedule.

Infants of HBsAg positive women should be tested for HBsAg and anti-HBs at 9-12 months of age (at least 3months after final dose of hepatitis B vaccine). Do not test the infant before 9 months of age, to avoid detecting anti-HBs from the HBIG given at birth.

Follow up advice should be provided in the hospital discharge summary of infants born to women who are HBV positive to ensure appropriate vaccination and testing.

Follow up advice should be provided to women who are HBV positive in the hospital discharge summary following birth.

Women with chronic hepatitis B infection should be referred for regular, lifelong monitoring by infectious diseases or liver specialist, or with a suitably experienced GP.

Abbreviations

CDCB	Communicable Disease Control Branch
DNA	Deoxyribonucleic acid
e.g.	For example
GP	General practitioner
HB	Hepatitis B
anti-HBc	Hepatitis B core antibody (previously HBcAb)
HBeAg	Hepatitis B e antigen
anti-HBe	Hepatitis B e antibody (previously HBeAb)
HBIG	Hepatitis B immunoglobulin
anti-HBs	Hepatitis B surface antibody (previously HBsAb)
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HBV DNA	Hepatitis B virus deoxyribonucleic acid
INR	International normalised ratio
IU	International units
IgM anti-HBc	IgM antibody to the hepatitis core antigen
IM	Intramuscular
LBW	Low birth weight
mL	Millilitre/s
NHMRC	National Health and Medical Research Council
PCR	Polymerase chain reaction
PT	Prothrombin time

Hepatitis B Virus (HBV)

HBV is an infection that causes both acute and chronic liver disease. It is excreted in various body fluids (e.g. blood, saliva, vaginal fluid and breastmilk), that may be highly infectious. Adults with chronic infection may have no symptoms.[1]

People with chronic hepatitis B should receive regular, lifelong monitoring of disease progression by a general practitioner (GP), infectious diseases or liver specialist. Routine monitoring (biannually) even when there are no symptoms, can prevent severe liver disease including liver cancer.[3]

Worldwide, transmission of infection from mother to infant around the time of birth is one of the most important causes of chronic HBV infection in underdeveloped countries. The risk of perinatal transmission is associated with the presence and level of hepatitis B e antigen (HBeAg) in maternal serum. The HBeAg-seropositive status in a person with chronic HBV infection is associated with high levels of viral replication. Without the use of postpartum hepatitis B vaccination and immunoprophylaxis (hepatitis B immunoglobulin (HBIG) up to 95% of infants of HBeAg-positive mothers will become chronically infected. By administering HBIG and the hepatitis B vaccine soon after birth, the risk of vertical transmission is reduced to 5-10%.[4]

In pregnancies of women with chronic HBV infection, where the maternal viral load is high (>200,000 IU/ml), there remains a risk of viral transmission despite use of vaccination and immunoprophylaxis. This risk is minimised by the use of tenofovir antiviral treatment in the third trimester of pregnancy to reduce maternal viral load.[5]

There are no data to justify a recommendation on the mode of birth in HBV infection. There is insufficient evidence that offering caesarean section provides additional protection against perinatal hepatitis B virus transmission over the recommended neonatal regimen of hepatitis B immunoglobulin and vaccination.[6]

It is vital to ensure babies born to hepatitis B surface antigen (HBsAg) positive mothers receive hepatitis B vaccine plus HBIG at birth. The hepatitis B vaccine course must be completed with doses at 6-8 weeks, 4 and 6 months of age.[2,6]

Transmission of HBV

Hepatitis B virus infection may result from transmission through broken or penetrated skin, or by mucosal contact with blood or other body fluids (mainly vaginal fluids and semen) from an infectious person. The risk of spread is increased when there are higher levels of virus in the blood. The level of virus varies considerably between people infected with hepatitis B.

Women with acute hepatitis caused by HBV and those with chronic hepatitis B viral infection (HBsAg positive) may transmit HBV to their infants.[2]

- Newly acquired cases of HBV infection in Australia mostly occur in young adults through injecting drug use, skin penetration procedures and sexual contact. There are approximately 12,000 notifications in Australia per year.
- Acute hepatitis B diagnosed in the first or second trimester carries a perinatal transmission risk of about 10%, increasing to about 75% in the third trimester. Although not routinely recommended, maternal vaccination has been shown to be safe and effective in pregnancy.[2,6]
- Most perinatal transmission can be prevented with antiviral prophylaxis during pregnancy for women with high viral loads and appropriate prophylaxis given to the infant at the time of birth

In Australia the most likely ways young children become infected are:

- Mother-to-baby transmission at or around the time of birth, particularly for people born outside Australia in countries where hepatitis B is common, in women from remote Aboriginal and Torres Strait Island communities, in women who inject drugs and in women who participate in unprotected sex with individuals that are HBV positive.
- From child-to-child usually through contact between open sores or wounds, particularly for people born outside Australia in countries where hepatitis B is common, and in remote Aboriginal and Torres Strait Island communities.

Other ways of contracting hepatitis B include:

- sharing equipment used for injecting drugs
- unprotected sex (anal and vaginal)
- tattooing, body piercing and other skin penetration procedures with unsterilised equipment
- household contact, including sharing razors, hair clippers and toothbrushes
- accidental needle stick or blood splash to broken skin or mucous membrane.

At risk groups

Women from areas of high prevalence (more than 2%)[2,7]

- Australian Aboriginal and Torres Strait Islanders
- New Zealand Maoris
- Pacific Islands: Melanesia, Micronesia, Polynesia
- South Asia: India, Bangladesh, Pakistan, Sri Lanka
- South East Asia: Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam
- East Asia: China, Hong Kong, Korea, Taiwan
- Africa (except white South African)
- South America: Chile
- Mediterranean: Crete, Cyprus, Greece, Italy, Malta
- Middle East: Egypt, Iran, Jordan, Lebanon, Turkey
- Central Europe: Romania, countries of former Yugoslavia.

Women who are non-immune or whose immunity status is unknown with a history of:

- Household / intimate contact with an individual that is HBV positive
- Multiple sexual partners
- Injecting drugs
- Tattoos / body piercing
- Jaundice or other clinical or biochemical features of acute hepatitis
- Incarceration
- Hepatitis C infection.

Antenatal screening

Hepatitis B virus infection is diagnosed by serological testing. Hepatitis B serology allows clinicians to determine susceptibility, active infection, or immunity through vaccination or past infection.

Routine screening for all pregnant women (see flowchart 1)

In South Australia, routine antenatal screening for HBsAg is recommended for pregnant women at their first antenatal appointment.

Screening women from 'at risk' groups (see flowchart 2)

In women from at risk groups, the initial screening should include HBsAg, hepatitis B surface antibody (anti-HBs / HBsAb) and hepatitis B core antibody (anti-HBc / HBcAb)[6]. Interpretation of these results allows categorisation of most women either as non-immune, immune, or chronically infected with HBV.[6,7]

Note: To be able to order all 3 diagnostic tests simultaneously and retain Medicare eligibility, the requesting doctor should write "? Chronic hepatitis B" on the request form.

In women from at risk groups, ensure household contacts have been screened (by their general practitioner) for HBV and vaccinated if non-immune.

Interpretation of results

- HBsAg positivity implies infection with hepatitis B
- If HBsAg is negative and anti-HBs is positive, the woman is considered not infected and immune.
- If HBsAg, anti-HBs and anti-HBc are all negative this indicates that the woman is not infected and non-immune to hepatitis B infection. She should be vaccinated post-birth unless there is a significant risk of exposure to hepatitis B during pregnancy. See section on 'Exposure to HBV in pregnancy'.
- If anti-HBc is positive then hepatitis B viral load (HBV DNA viral load) and additional testing (HBeAg and hepatitis B e antibody [anti-HBe]) should be requested.

Note: Viral mutations in the HBsAg can result in a false negative test (detectable hepatitis B DNA with negative HBsAg). This is not apparent if anti-HBc is excluded in hepatitis B screening. Therefore HBsAg, anti-HBs and anti-HBc should be requested for women 'at risk' of HBV.

Further information on interpretation of results in women with suspected HBV is available via the Australasian Society for HIV Medicine, Viral Hepatitis and Sexual Health Medicine (ASHM) Testing Portal[8] at: http://www.testingportal.ashm.org.au/hbv.

Women who are HBsAg and anti-HBs negative (non-infected and non-immune)

Women who are non-infected and non-immune are susceptible to HBV infection if there is a significant exposure to HBV during pregnancy. Women should be informed of their non-immune status with the following recommendations:

- Post-birth vaccination with HBV-containing vaccine OR
- Vaccination with HBV-containing vaccine during pregnancy if at high risk (e.g. household member or partner is HBV positive)
- Further testing and administration of HBIG and HBV-containing vaccine may be required as part of post-exposure prophylaxis if significant exposure occurs during pregnancy. If women are concerned they should contact their maternity care provider as soon as practicable following exposure. For further details, refer to Exposure to HBV during pregnancy below.

Note: Women who have had prior HBV vaccination but anti-HBs is undetectable may be immune. Women with immune memory should respond to a single booster dose of the HBV vaccination. See https://immunisationhandbook.health.gov.au/ for further detail.

Notification and counselling of women who are HBsAg positive

Notification to the Communicable Disease Control Branch (CDCB)

Hepatitis B is a notifiable condition[9] and must be reported to the CDCB within 3 days of suspecting or confirming a diagnosis

The medical officer should either

- Telephone CDCB on 1300 232 272, Monday to Friday (8.30 am to 5.00 pm) with patient details including risk factor information OR
- Complete the 'Report of Notifiable Condition: Hepatitis B virus or Related Death' form upon receipt of a positive laboratory result. The form is available online via the following link: http://www.sahealth.sa.gov.au/NotifiableDiseaseReporting
- Fax form to the CDCB on (08) 8226 7187
- **This form is NOT to be sent by email for reasons of confidentiality.**

Post-test counselling

The attending medical officer should inform the woman of her chronic hepatitis B infection, explaining the associated risk to baby, household members and caregivers. Consider use of an interpreter as appropriate to ensure understanding.

The woman should be provided with[8]:

- Her HBsAg result early in the consultation, using clear language (e.g. "You have hepatitis B")
- An explanation that hepatitis B is a notifiable disease
- Methods of transmission risk including current and subsequent pregnancies
- Requirement for lifelong monitoring of liver health
- The need to test +/- vaccinate sexual and household contacts
- Verbal and written information about:
    - Course of the illness
    - Preventing transmission
    - Need for further serology and monitoring throughout pregnancy and beyond
    - Issues around disclosure and stigmatisation.

It is important for the woman to understand her condition so that she can make informed decisions about:

- Her baby's care during the perinatal period
- Care in any subsequent pregnancies
- Her own health by embarking on a program of lifelong monitoring of liver health including screening for the need for possible treatment and hepatocellular carcinoma.

A positive diagnosis is often a shock. Aim to minimise the psychological impact at this time. Reassure the woman about confidentiality and offer information about available sources of support.

It is important to assess how much information the woman can process. There may be a need to arrange a number of consultations to discuss implications for the woman and her unborn baby.

The woman's GP should be informed to facilitate ongoing care (e.g. contact tracing other family members, vaccinating household contacts if susceptible).

Aboriginal women should be referred to their nominated aboriginal health professional.

Available support services:

Hepatitis SA

Hepatitis SA is a non-government organisation providing hepatitis B and hepatitis C information, education and support services to all South Australians. The Hepatitis SA Helpline Information and Support Service offer free and confidential telephone information and support about hepatitis B and C to people affected and their families and health and community workforces.

- Face to face appointments can be arranged.
- The Helpline operates Monday – Friday 9am – 5pm, by calling 1800 437 222.
- Further information on the range of services offered by Hepatitis SA is available at www.hepsa.asn.au

Viral hepatitis nurses:

Viral Hepatitis Nurses are Nurse Consultants who work with people affected by hepatitis B and C in the community, general practice and tertiary hospitals. They provide specialised education and care coordination to patients as well as support and advice to GPs and healthcare staff.

- Located at all metropolitan Local Health Networks
- Women may contact Nurses directly
- Support is also available for people in country areas
- For contact details, see https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/clinical+resources/clinical+programs+and+practice+guidelines/infectious+disease+control/viral+hepatitis+nursing+support/viral+hepatitis+nursing+support

PEACE Multicultural Services at Relationships Australia:

This service employs workers with a long experience of working with people with chronic hepatitis B who are from a country other than Australia. They have a well-developed understanding of cultural issues and can be contacted to:

- Provide women with further information and support to deal with chronic hepatitis B
- Guide and refer to other services as indicated
- Accompany women to medical appointments or other relevant services
- Telephone contact: (08) 8245 8100
- For further resources follow link to 'Chronic Hepatitis B the four stages'. http://www.youtube.com/watch?v=ZhL92VZtMHw

Health care workers can contact the AMIC worker or aboriginal health professional (e.g. Aboriginal Liaison officer) in their local area to provide support for Aboriginal and Torres Strait Islander women.

Women who are HBsAg positive OR HBsAg negative, anti-HBs negative and anti-HBc positive

When to refer

Refer women with the following screening results to an infectious diseases specialist or hepatologist and order the additional investigations (below):

- HBsAg positive
- HBsAg negative AND anti-HBs negative AND anti-HBc positive.

Additional investigations[6,7,8]:

- Anti-HBc if not performed already
- HBeAg
  - the e antigen identifies a high infective status
- Anti-HBe
  - positive status indicates the woman is at lower risk of spreading HBV infection than HBeAg positive women
- Liver function test (repeat at 28 weeks)
- Complete blood picture
- HBV viral load (HBV DNA viral load)
  - provides an accurate reflection of infectivity (high risk carriers have high viral loads). This should be done before 32 weeks of gestation
- PT, INR
- Hep A, C and D antibody[7]

Women with high antenatal viral loads (HBV DNA viral load ≥ 200,000IU/mL)

Active and passive immunisation (hepatitis B vaccine and HBIG) of babies within 24 hours of birth is effective in preventing transmission of hepatitis B in more than 95 % of babies. The 5% of babies who fail to be protected by this regimen and develop hepatitis B are usually those who do not receive the full regimen of vaccination, or who are born to mothers with very high HBV viral load.

Oral antiviral agents given from 28-32 weeks gestation have been shown to reduce the viral load and reduce the risk of mother-to-child transmission at birth.[10,11] In consultation with the woman, the infectious diseases specialist or hepatologist will consider treatment from approximately 28 to 32 weeks with tenofovir 300mg daily.[5,11]

If treatment is solely for prevention of perinatal transmission then antiviral therapy is often stopped between 4 and 12 weeks postpartum. However, rebound rise in HBV viral load and / or ALT may occur; while usually mild women should be monitored closely.[1,6]

Women with antenatal HBV DNA viral load < 200,000IU/mL

At present there is no evidence for routine initiation of antiviral therapy to prevent vertical transmission to the baby.

Antiviral therapy may be considered in cases where it has prevented hepatitis B transmission to a baby in a previous pregnancy.

Women already taking anti-viral treatment / women with cirrhosis

In pregnant women already taking antiviral therapy with tenofovir or lamivudine, treatment should be continued. If a pregnant woman is taking entecavir it should be switched to tenofovir (because of a lack of pregnancy safety data for entecavir). This should take place in consultation with an infectious diseases or hepatology specialist.[12]

Long-term treatment with tenofovir is recommended for all pregnant women with cirrhosis and chronic hepatitis B. Multidisciplinary management of cirrhosis in pregnancy including obstetricians and hepatologists is advised.[13]

Risk of vertical transmission during invasive procedures in pregnancy

There is limited research indicating that transmission of HBV to the fetus can occur during invasive procedures such as amniocentesis or chorionic villus sampling (CVS). It is thought that the transmission risk is slightly lower with amniocentesis compared to CVS. However, transplacental amniocentesis increases the risk of blood contamination of amniotic fluid and should be avoided where possible.[5] For women with high viral loads the transmission risk is increased in both amniocentesis and CVS. Non-invasive perinatal testing may be useful for women with an identified increased risk of aneuploidy.[5]

Infection control measures

Attending clinicians should practice standard precautions with blood and body secretions when giving injections, taking blood or performing vaginal examinations.

Additionally, protective eyewear, gown / apron and gloves should be worn at all times during birth.

Arrange single room with own toilet facilities for women following birth (risk of blood cross-contamination).

Intrapartum management

Mode of birth (caesarean section versus vaginal birth) has not been shown to affect the risk of mother-to-infant HBV transmission.

Routine caesarean section is not recommended and should be reserved for usual obstetric indications.[5,10]

Procedures to avoid that may infect the baby include:

- Fetal scalp electrodes
- Fetal scalp blood sampling
- Vigorous aspiration or oral suctioning of the baby
- Note: If there is an obstetric indication to expedite birth in second stage, an instrumental birth may be the safest mode; however, there is a small risk of traumatising the fetal skin and infecting the baby

Care of the newborn baby

Standard precautions should be utilised when handling the baby.

- Consider washing (with soap and water) any visible blood and body fluids from hair or skin before contact with extended family

The baby should remain in the birthing room until transfer to the ward unless transfer to the nursery is indicated.

Babies are encouraged to direct room in with their mother or may be cared for in the ward nursery if clinically indicated.

Aboriginal women should be consulted on the care of the newborn baby in the first instance. Consult with the preferred aboriginal health professional if requested.

Breastfeeding

Although HBV DNA and HBsAg have been detected in breast milk, breastfeeding does not appear to increase the risk of HBV transmission to the infant.[6]

Breastfeeding should be encouraged.

Note: Breastfeeding is not contraindicated in women taking oral antiviral drugs for hepatitis B.[11]

Newborn Immunoglobulin and Vaccination

Infants of HBsAg positive women should be given both HBIG and the first dose of the hepatitis B vaccine within 12 hours of birth, followed by a full course of hepatitis B vaccine as part of the childhood immunisation schedule.[2,6]

- The skin at the injection site should be cleaned with soap and water (if blood is visible) OR with an alcohol swab before administering hepatitis B vaccine, immunoglobulin and Konakion® (vitamin K) via separate syringes in separate sites
- Ensure details of the immunoglobulin / vaccine are entered in the 'Birth details' and 'Immunisation record' pages of the Government of South Australia "My Health and Development Record" (the 'Blue Book').

Hepatitis B immunoglobulin:

- See Hepatitis B immunoglobulin neonatal medication guideline available at www.sahealth.sa.gov.au/neonatal).
- Obtain HBIG from the Hospital Transfusion service (Request with a Transfusion Request Form). If there is no 24 hour Transfusion service, contact the Australian Red Cross Service Inventory and Distribution Department at (08) 83593164 and fax a Transfusion request form for HBIG 100 units to fax (08) 83325741
- Give HBIG 100 units in an intramuscular injection (thigh) within 12 hours of birth (must be within 48 hours as efficacy decreases markedly if delayed beyond this time).[6]

Hepatitis B vaccine:

- See Hepatitis B vaccine neonatal medication guideline available at www.sahealth.sa.gov.au/neonatal
- Give thiomersal-free monovalent HB vaccine (0.5 mL) 5 micrograms HB-Vax-II OR 10 micrograms Engerix-B paediatric – in an intramuscular injection (opposite thigh to HBIG)
- If concurrent administration with HBIG is not possible, vaccine must be administered within 7 days of birth and before discharge
- Early administration of HB vaccine (within 12 hours) results in seroconversion rates of more than 90 % in neonates, despite concurrent administration of HBIG[6]
- *Refer to hospital standard for administration guidelines
- Three subsequent doses of hepatitis B containing vaccine should be given at 6-8 weeks, 4 months and 6 months so that the infant receives a total of 4 doses of hepatitis B containing vaccines, as part of the routine childhood immunisation schedule.

Low birth weight (LBW) and/or preterm newborn[2,6]

As LBW infants (< 2,000g) and / or preterm infants (< 32 weeks gestation) do not respond as well to hepatitis B containing vaccines as full-term infants, the 4 dose schedule of hepatitis B vaccine at birth, 6-8 weeks, 4 months and 6 months of age is recommended, followed by either:

- Measuring anti-HBc and anti-HBs level at 7 months of age; if the antibody titre is < 10 IU/mL giving one further dose at 12 months of age (due to a better immunogenic response at this age compared with a younger age); OR
- Giving one further dose of a hepatitis B containing vaccine at 12 months of age (without measuring antibody titre).

Universal recommendation for vaccination

The National Health and Medical Research Council[2] recommends that all children should be offered a four dose course of Hepatitis B vaccine, beginning with the first dose a short time after birth (preferably within 48 hours but always within 7 days), then combination vaccines at 6-8 weeks, 4 and 6 months of age

- Details of the vaccine should be entered in the 'Immunisation record' section of the Government of South Australia "My Health and Development Record"

Follow up

Infants

Infants of HBsAg positive women should be followed up with medical review approximately 2 months after completion of the primary immunisation course (8-12 months).

Infants of HBsAg positive women should be tested for HBsAg and anti-HBs at 9-12 months of age (at least 3 months after final dose of hepatitis B vaccine). Follow up of the infant's HBV status should be advised in the hospital discharge summary. Do not test the infant before 9 months of age, to avoid detecting anti-HBs from the HBIG given at birth.

If HBsAg is positive, referral to paediatric gastroenterologist or infectious diseases paediatrician is recommended.

Woman

In cases where HBV is diagnosed during pregnancy, inform the woman's GP. Provide copies of any relevant blood tests and advise the GP if the woman has been referred to a hepatology or infectious diseases clinic.[7]

- Recommend that the GP arranges HBV testing for the woman's partner and for any other household contacts and to offer vaccination if the partner is non- immune.
- HBsAg positive women should be followed up by their GP and/or infectious diseases specialist or hepatologist every 12 months to assess their liver function, viral markers and to monitor for hepatocellular carcinoma.
- Ask the GP to follow up the status of known hepatitis B women in their subsequent pregnancies.
- Ensure the woman is referred to a Viral Hepatitis Nurse for education and support.
- Ongoing follow up of the woman's HBV infection should be advised in the hospital discharge summary following birth.

All follow up of Aboriginal women should be referred to the nominated Aboriginal Health Professional.

Exposure to HBV during pregnancy[6]

For information regarding Hepatitis B exposure – post exposure prophylaxis (PEP), follow link to www.sahealth.sa.gov.au/hepatitisbPEP

If previously known to be hepatitis B immune (previously documented anti-HBs titre ≥ 10 IU/mL) no intervention is required.

In the absence of previously documented anti-HBs titre ≥ 10 IU/mL, antibody levels should be determined as quickly as possible. If maternal anti-HBs titre < 10 IU/mL with significant exposure, and there is no evidence of hepatitis B infection (HBsAg negative) give mother:

- **Hepatitis B immunoglobulin (HBIG) (400 IU, IM) as soon as possible but within 72 hours of exposure AND
- HB vaccine as soon as possible but within 7 days (percutaneous, ocular or mucous membrane exposures) or 14 days (sexual exposures) of exposure, and repeat at 1 and 6 months post initial dose
- Repeat testing of mother for HBsAg at 1 month and 3 months
- **Obtain HBIG from the Hospital Transfusion service (Request with a Transfusion Request Form). If there is no 24 hour Transfusion service, contact the Australian Red Cross Service Inventory and Distribution Department at (08) 83593164 and fax a Transfusion request form for HBIG 100 units to fax (08) 83325741.
- Provide pre and post-test counselling and refer to a Viral Hepatitis Nurse if further support and follow up is required.

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Useful web sites

- ASHM 2018. All you wanted to know about Hepatitis B. A guide for primary care providers, available at https://www.hepatitisb.org.au/
  - Diagnostic testing and interpreting
  - Clinical assessment
  - Treatment and management
  - Pregnancy, children, co-infection and immunosuppression
- RANZCOG "Management of hepatitis B in pregnancy", available at: http://www.ranzcog.edu.au/college-statements-guidelines.html
- SA Department of Health: "You've got what – hepatitis B" Fact Sheet https://www.sahealth.sa.gov.au/wps/wcm/connect/09b7a61c-68e5-4369-9e76-870b92446d17/Hepatitis+B+FINAL+20171228.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-09b7a61c-68e5-4369-9e76-870b92446d17-n5jtl.l
- http://www.hepbhelp.org.au/index.asp?PageID=7 Fact Sheets for Consumers
- Hepatitis Australia https://www.hepatitisaustralia.com/Pages/Category/hepatitis-b

Acknowledgements

The South Australian Perinatal Practice Guidelines gratefully acknowledge the contribution of clinicians and other stakeholders who participated throughout the guideline development process particularly:

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Document Ownership & History

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Endorsed by: Commissioning and Performance, SA Health
Next review due: 28/09/2025
ISBN number: 978-1-76083-274-2
PDS reference: CG172
Policy history: Is this a new policy (V1)? **N**
Does this policy amend or update and existing policy? **Y**
If so, which version? **V 5.0**
Does this policy replace another policy with a different title? **N**
If so, which policy (title)?

Approval Date	Version	Who approved New/Revised Version	Reason for Change
28/09/20	V6	Lynne Cowan, Deputy CE, Commissioning and Performance Division, SA Department for Health and Wellbeing	Reviewed in line with scheduled 3-5 year plan
19/04/16	V5	SA Health Safety and Quality Strategic Governance Committee	Current.
19/12/14	V4	SA Health Safety and Quality Strategic Governance Committee	Reviewed
23/08/10	V3	SA Maternal and Neonatal Clinical Network	Reviewed.
21/04/08	V2	SA Maternal and Neonatal Clinical Network	Reviewed.
08/04/04	V1	SA Maternal and Neonatal Clinical Network	Original approved version.