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BLOODBORNE VIRUSES AND SEXUALLY TRANSMISSIBLE INFECTIONS IN ANTENATAL CARE

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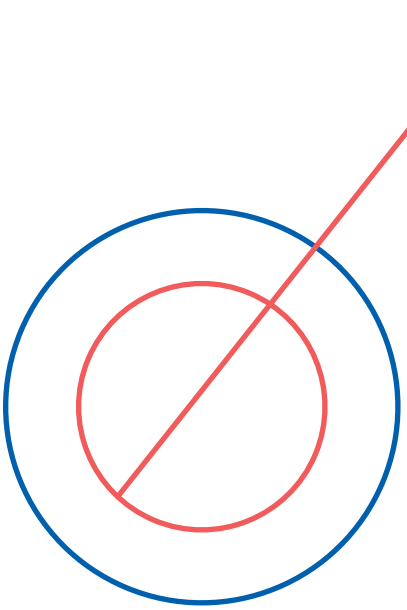

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ASHM resources
Further information on HBV, HCV, HIV and Syphilis is available on the Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM) website https://ashm.org.au/

Bloodborne viruses and sexually transmissible infections in antenatal care

This resource is for health professionals providing antenatal care, including midwives, general practitioners, Aboriginal and Torres Strait Islander Health Workers and Practitioners, and obstetricians. It contains advice about recommended antenatal testing for the 4 major bloodborne viruses (BBVs) and sexually transmissible infections (STIs): hepatitis B (HBV), hepatitis C (HCV), human immunodeficiency virus (HIV) and syphilis. In addition, it provides information about the management of these BBVs and STIs during pregnancy, labour and birth, and the postpartum period.

This is a document designed for nationwide use and is therefore necessarily broad. It is advisable to read this in conjunction with the **Australian College of Midwives (ACM) National Midwifery Guidelines for Consultation and Referral** and local policy and procedures regarding BBV and STI testing and management in pregnancy. For the latest guidance on HBV, HCV, HIV and syphilis testing, please refer to the National Testing Policies available at the **ASHM Testing Portal** and the **Clinical Practice Guidelines in Pregnancy Care.**

Further information on HBV, HCV, HIV and Syphilis is available on the Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM) website.

FURTHER INFORMATION

Aboriginal and Torres Strait Islander people continue to experience a disproportionate burden of STIs and BBVs, particularly in remote and very remote communities. Importantly this is not due to differing patterns of sexual behaviour and condom use but rather complex social factors including poverty, discrimination, lack of access to high quality and culturally appropriate health services, incarceration and **intergenerational trauma**. People who live in urban settings and who have a connection to higher prevalence remote communities with poorer access to health care are also at an increased risk of infection.

All healthcare workers must recognise that the universal use of the term woman may not fit the identity of all people for whom this document is relevant. We encourage all healthcare workers to become familiar with the education and advice provided through **AusPATH**, the peak body promoting communication and collaboration among professionals and community members involved in the health, rights and wellbeing of trans people, both binary and non-binary.

We encourage all healthcare workers to be gender inclusive, one step toward this is using trans-affirming language such as vertical transmission, people who are pregnant, and most importantly, using the terms preferred by the person receiving antenatal care. It's important not to assume that the reference to 'pregnant women' is the term most comfortable for every person. To learn more about trans-affirming practice we recommend accessing **TransHub** and **ASHM & ACON's Trans and Gender Diverse Sexual Health Care e-learning** which has been co-designed and developed for clinicians working in a sexual health clinical setting or delivering sexual health care in primary healthcare settings.

Key Points

Hepatitis B

- Universal screening in pregnancy is recommended
- Antiviral therapy may be indicated in 3rd trimester for a high viral load
- Labour – avoid / minimise procedures that may damage the baby's skin
- Newborn - delay non urgent invasive procedures until infant is bathed
- Hepatitis B immunoglobin for the newborn at birth
- Hepatitis B vaccine for all newborns at birth
- Chest/breastfeeding encouraged
- Resources: Gastroenterological Society of Australia (GESA) Australian consensus recommendations for the management of hepatitis B infection (2022); ASHM Decision Making in Hepatitis B

Hepatitis C

- Universal screening in pregnancy is recommended
- Avoid procedures that risk breaching the baby's skin or mucous membranes
- The evidence does not support routine caesarean section for HCV
- Delay intramuscular injections until after all maternal blood has been washed from the baby
- Chest/breastfeeding is safe if nipples are intact. Express and discard chest/breast milk if nipples are bleeding
- HCV is curable with treatment (after birth and chest/breastfeeding are completed)
- Resources: Gastroenterological Society of Australia (GESA) Australian recommendations for the management of hepatitis C virus infection: a consensus statement (2020); ASHM Decision Making in Hepatitis C; ASHM Decision Making – Hepatitis C in Children

HIV

- Universal screening in pregnancy is recommended
- Combination antiretroviral therapy (cART) is universally recommended during pregnancy
- Viral load and CD4 at 36/40 weeks to inform birth decision making
- Undetectable viral load = no transmission risk to healthcare providers
- Undetectable viral load = very low transmission risk to baby
- For more information on the national Undetectable = Untransmissible (U=U) campaign, see the U=U ASHM Guidance for Healthcare Professionals
- Elective lower (uterine) segment caesarean section is no longer routinely indicated
- Avoidance of chest/breastfeeding
- Neonatal ART
- Resources: Decision Making in HIV

Syphilis

- Universal screening in pregnancy is recommended
- Higher rates of **syphilis** occur in regional and remote areas. Clinicians should have a low threshold for testing in people with possible symptoms of **syphilis**
- Recommend repeat testing early in the 3rd trimester (28–32 weeks), and at the time of birth for women at high risk of infection or reinfection.
- For a person at high risk of syphilis, refer to local guidelines for when to further test
- Dependent on local guidelines, Aboriginal and Torres Strait Islander people who are pregnant should have additional testing at 28 weeks, 36 weeks, at the time of birth, and 6 weeks postnatally, as well as testing at entry to care
- Prompt and early antenatal treatment with benzathine benzylpenicillin is essential to prevent congenital syphilis
- Screen newborns born to a person with suspected or confirmed syphilis
- Chest/breastfeeding is encouraged
- Resources: **ASHM Decision Making in Syphilis**

Hepatitis B Virus

TABLE 1: Hepatitis B virus (HBV) summary
○ Routine universal antenatal screening for HBV ○ Vertical transmission risk from HBV in pregnancy, if no intervention • 90% if hepatitis B e antigen (HBeAg) positive • 10% if HBeAg negative ○ High risk of chronic hepatitis B for infants who acquire HBV
INTERVENTIONS
1 Antiviral therapy in the 3rd trimester for people who are pregnant with high viral load
2 Hepatitis B immunoglobin (HBIG) at birth for all **newborns of people with HBV** can reduce HBV infection in exposed infants by up to 95%
3 Hepatitis B vaccine at birth for **all newborns** plus hepatitis B vaccine series at 2, 4 and 6 months regardless of HBV status.

The risk of vertical transmission to the fetus is the most significant effect of HBV in pregnancy. Studies suggest increased rate of intrahepatic cholestasis (strong evidence), increased risk of preterm birth with HBeAg (fair evidence) and increased risk of spontaneous abortion (fair evidence).

Epidemiology in the Antenatal Population and Mode of Transmission

Chronic hepatitis B affects approximately 300 million people worldwide.[1] In Australia, antenatal testing data suggest a prevalence of chronic hepatitis B of 1%, with higher rates in people born in endemic areas overseas.[2] HBV is endemic in many countries of origin of culturally and linguistically diverse (CALD) Australian communities. In Australia, high rates of chronic hepatitis B are seen in CALD communities from the Asia/Pacific and Africa/Middle East regions. Aboriginal and Torres Strait Islander populations also have a higher prevalence of chronic hepatitis B than the general population,[3] with a rate 1.3 times that of the general population.[4] HBV is transmitted by contact with infected blood or body fluids. HBV may be transmitted vertically during pregnancy or birth;[5] horizontally through close contact, usually in childhood; via blood exposure such as injecting drug use, tattooing, piercing, and unprotected sex.[6]

Effect of HBV on Pregnancy

The risk of vertical transmission to the fetus is the most significant effect of HBV in pregnancy. Studies suggest increased rate of intrahepatic cholestasis (strong evidence), increased risk of preterm birth with HBeAg (fair evidence) and increased risk of spontaneous abortion (fair evidence). There is no evidence suggesting that acute HBV in pregnancy increases mortality or is teratogenic. Antiviral prophylaxis has not shown any increased risk to the newborn.[7]

Effect of Pregnancy on HBV

Generally, people with chronic hepatitis B who are pregnant remain stable during pregnancy.[8] Pregnancy-induced immunological changes may alter HBeAg seroconversion.[9] Cirrhosis is uncommon in people who are pregnant; however, if cirrhosis is present, they should be monitored for coagulation disturbances that may affect the pregnancy and birth.[10] Some people who are pregnant will have hepatitis flares, most commonly in the early postpartum period.[9, 11] Hepatocellular carcinoma (HCC) is rare in pregnancy but requires early intervention[9] and is associated with high perinatal mortality.

Perinatal Transmission – Vertical / Horizontal

Vertical transmission of HBV can occur during pregnancy or labour and birth. Intrapartum exposure is believed to be the primary mode of vertical transmission. The primary determinant of transmission is the presence of HBeAg.[12] Without interventions, up to 90% of children born to a HBeAg positive people will acquire HBV infection, compared to less than 30% of those born to HBeAg negative people.[13] Newborn immunoprophylaxis can reduce HBV infection in exposed infants by up to 95% with the administration of HBIG and HBV vaccine.[13] Horizontal transmission (infection acquired after delivery) can occur from parent-to-child contact[14-16] and sibling contact.[16, 17]

Antenatal HBV Screening

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG)[18] and the Australasian Society of Infectious Diseases (ASID)[19] recommend universal screening for HBV of all people who are pregnant. The recommended screening test for HBV is hepatitis B surface antigen (HBsAg). Regardless of previous testing or vaccination, HBsAg testing should be offered at the first antenatal visit in each pregnancy.[20] Universal screening is preferred over selective screening, as cases may be missed with a selective approach.[21]

During pregnancy all people with HBV should be referred to ensure they obtain access to expert advice, appropriate higher-level testing such as HBeAg, liver function tests and HBV viral load. A high viral load in pregnancy increases the risk (up to 8-9%) of newborns' developing HBV, despite immunoprophylaxis with HBIG and HBV vaccine.[22] The administration of antiviral therapy in the last trimester to reduce viral load has been demonstrated to lead to a reduction in perinatal transmission.[23-27] If HBV DNA load is more than 200 000 IU/mL, antiviral therapy is recommended from 28 weeks until postpartum to minimise vertical transmission.[28] It is crucial to provide accurate and detailed information regarding the risk of HBV transmission to the infant. It is also the healthcare professional's responsibility to ensure sexual or household contacts receive counselling, testing, follow-up and vaccination, where required.

People exposed to HBV during pregnancy should have urgent serology to test for immunity. People without the infection who are anti-HBs negative should be given HBV vaccine and HBIG within 72 hours of high-risk exposure. They should complete the HBV vaccination course and have testing for HBsAg at 3 months post-exposure and, provided this test is negative, have routine management.[19]

Interventions During Antepartum, Intrapartum and Postpartum

Invasive procedures during pregnancy and labour can contribute to the transmission of HBV. These procedures include amniocentesis,[29] fetal scalp sampling and scalp electrodes.[30] There is no robust evidence to support caesarean section as an intervention to reduce vertical transmission of HBV.[30] Interventions should be based on obstetric needs and parental choice.[30]

To minimise the risk of transmission of HBV, infants born to a person with chronic hepatitis B should be wiped down immediately after birth to remove all excess blood. It is recommended to bathe the newborn promptly (within 2 hours from birth). When possible, delay intramuscular injections until after the baby has been bathed.[31]

Chest/breastfeeding by people with chronic hepatitis B is not considered a risk factor for horizontal transmission.[32,33] Chest/breastfeeding may continue in patients receiving antiviral therapy.[34] Infants born to people with chronic hepatitis B should be given HBIG within 12 hours of birth.

The Australian Technical Advisory Group on Immunisation (ATAGI)[35] advises that the efficacy of newborn immunoprophylaxis decreases markedly if the administration is delayed beyond 48 hours. This intervention should be discussed with the family during the pregnancy, to obtain consent before delivery. The first dose of the HBV vaccine should be given at the same time as HBIG but in the opposite thigh. The 3 subsequent doses of HBV vaccine should be given at 2, 4 and 6 months of age (see **ATAGI immunisation handbook**), so that the infant is given a total of 4 doses of HBV-containing vaccine.[35]

Follow-up care

The newborn should be tested for HBsAg and hepatitis B surface antibodies (Anti-HBs), 3 to 12 months after the final dose of HBV vaccine.[35] A 3-month postpartum follow-up consultation is recommended for people who received antiviral treatment during pregnancy as these people are at risk of a peripartum hepatitis flare.[18]

Ensure the parent and family understand the importance of completing the baby's hepatitis vaccination series and are aware of the vaccine schedule (2, 4 and 6 months). The HBV status of the household members should be established, and vaccination offered to non-immune contacts. See link to the **Immunisation Handbook for Hepatitis B** for more information.

Hepatitis C

TABLE 2: Hepatitis C virus (HCV) intervention summary
○ Routine screening and testing are recommended in the first trimester ○ Re-test in third trimester if there are current risks (e.g. current injecting drug use) ○ If HCV-ab positive, test for HCV RNA to determine current HCV infection ○ Risk of vertical transmission is 5.8% if HCV RNA is detected (higher with HIV co-infection) ○ Avoid procedures that risk breaching the baby's skin or mucous membranes, e.g. amniocentesis, fetal scalp electrodes, forceps birth ○ Chest/breastfeeding is safe if nipples are intact. Express and discard chest/breast milk if nipples are bleeding.

Epidemiology in the Antenatal Population and Mode of Transmission

At the end of 2020, an estimated 117,810 Australians were living with chronic hepatitis C of whom 18% (21,548) were Aboriginal and Torres Strait Islander people.[36] The prevalence of HCV antibodies in the Australian antenatal population is estimated at 1%[37]. Approximately 70% of people with HCV antibodies have ongoing viral infection as indicated by a detectable HCV RNA test.[38] Risk factors for HCV are in Table 3 below.[39]

TABLE 3: Risk factors for HCV
○ People who have ever injected drugs ○ People who are, or have been, incarcerated ○ Recipients of organs, tissues, blood or blood products before February 1990 in Australia, or at any time overseas ○ People with tattoos or skin piercings • indications to test will include poor infection control procedures, e.g. tattooing and skin piercings which were carried out in some overseas countries or in a custodial setting ○ People born in countries with high hepatitis C prevalence (Central and East Asia, Africa) ○ Sexual partners of people with hepatitis C.

Effect of HCV on Pregnancy

People with HCV are generally at no greater risk of obstetric or perinatal complications than people without HCV.[40] Advanced liver disease is uncommon in pregnancy, however if present, the conditions arising from this situation, such as coagulation (blood clotting) disturbances, may complicate the pregnancy and birth.[20]

Effect of Pregnancy on HCV

Studies examining HCV during pregnancy and in the postpartum period have reported a trend to normalisation of liver function tests with an increase in the HCV viral load during the third trimester of pregnancy.[41,42] The viral load returns to pre-pregnancy levels in the postpartum period with the proportion of viraemic people remaining unchanged. People with HCV may be at risk of a hepatic flare in the months following birth and should be monitored by an infectious diseases specialist or a hepatologist.[43]

The estimated rate of vertical transmission of HCV in viraemic people is approximately 5.8%, although this may be higher if they also have HIV co-infection.[42] HCV can be transmitted to the infant in utero or during the peripartum period. Infection during pregnancy is associated with increased risk of adverse fetal outcomes, including fetal growth restriction and low birthweight.[43] The risk is the same for vaginal and caesarean births, therefore birth mode should be decided based on other clinical risk factors.[44]

Antenatal HCV Screening

Routine antenatal screening for HCV antibody is recommended as part of the first trimester screening.[44] If the person is HCV-ab positive, test for HCV RNA to determine the current HCV infection. Liver function tests are recommended.

Pregnant people who are HCV-antibody positive and HCV RNA negative do not currently have the infection, therefore the fetus is not at risk of transmission. However, as HCV antibodies are not protective, these people are at risk of re-infection if re-exposed.

For pregnant people who are HCV RNA positive, the virus is curable with oral antiviral medication. However, treatments for HCV are contraindicated in pregnancy. For those diagnosed with HCV during pregnancy, treatment should commence after birth and completion of chest/breastfeeding (or immediately after the birth if the infant is formula fed). Treatment reduces the risk of significant liver disease and the risk of perinatal infection for subsequent pregnancies.

Interventions During Pregnancy, Birth and Postpartum

Knowledge of HCV status during pregnancy means interventions that may increase the risk of vertical transmission (via fetal scalp blood sampling, internal electronic fetal heart rate monitoring via scalp electrode, episiotomy) can be avoided.[20]

Referral to an infectious diseases specialist or hepatologist, as well as to hepatitis support groups for information and advice, should be made if HCV is identified during the pregnancy.[43] This approach will facilitate provision of accurate information, counselling and linkages for follow-up and treatment if desired postpartum.[45] Use standard precautions for infection control and when possible, delay intramuscular injections until after the baby has been bathed.[46]

There is no evidence that chest/breastfeeding is associated with an increased risk of HCV transmission to the newborn despite the detection of HCV RNA in chest/breast milk. Consideration should be given to expressing and discarding milk if nipples are cracked and bleeding, until the nipples are healed.[47]

The infant should have an HCV antibody test at 12-18 months of age. If HCV-antibody positive, the infant requires HCV RNA testing to determine if they are viraemic, and should be referred to a paediatric hepatologist. Earlier detection with qualitative HCV RNA testing at 2-3 months is possible, and is recommended if there are concerns the child may be lost to follow-up, however this situation is unlikely to alter the immediate clinical management of the newborn. If HCV RNA test is negative, it is recommended to have an antibody test at 18 months.[48]

For those diagnosed with HCV during pregnancy, treatment should commence after birth and completion of chest/ breastfeeding (or immediately after the birth if the infant is formula fed).

Human Immunodeficiency Virus

TABLE 4: Human immunodeficiency virus (HIV) intervention summary

- Routine universal screening is recommended: HIV-ab
- The risk of vertical transmission without intervention is 20-40%
- With treatment, virus levels in the blood become undetectable, greatly reducing risk of transmission
- Recommended interventions to reduce transmission include:
  - Antiretroviral therapy to all HIV-positive people antenatally
  - where indicated, antiretroviral therapy during labour and birth, neonatal antiretroviral treatment
  - avoidance of chest/breastfeeding
- There is < 1% risk of vertical transmission with intervention.

HIV may be transmitted to the baby during pregnancy, labour, birth, or via chest/breastfeeding. Rates of vertical transmission without treatment have been reported to be between 20% and 40%

Epidemiology in the Antenatal Population and Mode of Transmission

In 2020, the Kirby Annual Surveillance report estimated that 29,090 people were living with HIV in Australia with 3620 being women.[49] Of these 29,090 people, an estimated 91% were diagnosed by the end of 2020. The research also shows that 91% of people diagnosed with HIV were receiving treatment, and of those on treatment, 97% had an undetectable viral load[49] which greatly reduces risk of vertical transmission in the perinatal period.

Despite most women being diagnosed during their reproductive years,[49] currently the prevalence of HIV infection among pregnant people in Australia is unknown. The most common mode of HIV transmission in Australia is via sexual contact. Other reported modes of transmission include: vertical transmission; injecting drug use; unsafe tattooing and piercing; and receipt of blood products before 1985. People from countries with a high prevalence of HIV and their sexual partners are at increased risk of HIV.

Effect of HIV on Pregnancy

Untreated HIV infection can lead to several adverse pregnancy outcomes, however where specialist multidisciplinary care and support are provided, these risks can be minimised. Despite earlier conflicting opinions, there is now global consensus that cART is recommended during pregnancy to decrease the risk of vertical transmission.[50] While there have been reports of adverse pregnancy outcomes resulting from cART, early input from an HIV specialist will ensure that the treatment regimen and ongoing care are appropriate during pregnancy.

Effect of Pregnancy on HIV

Pregnant people with HIV are not at increased risk of mortality or progression to acquired immunodeficiency syndrome (AIDS).[51] Maternal plasma HIV viral load levels are not generally affected by pregnancy, however, the CD4 counts often decrease due to physiological changes attributed to haemodilution.[52] Pregnancy is a dynamic state, and the associated physiological alterations may affect the pharmacokinetics of cART, resulting in reduced efficacy.[53] People receiving cART subsequently require close monitoring and potential adjustments to their dosing during pregnancy.

Vertical Transmission

HIV may be transmitted to the baby during pregnancy, labour, birth, or via chest/breastfeeding. Rates of vertical transmission without treatment have been reported to be between 20% and 40%.[54] In high income countries, where early diagnosis and cART are available, the rate of vertical transmission is now said to be below 1%.[55] cART has 2 main aims: to reduce the amount of HIV virus in the bloodstream (the viral load) and to improve and maintain the health of the person who is pregnant. Regular assessment of the pregnant person's plasma HIV viral load is the most effective way of determining the risk of vertical transmission.[50] cART should ideally be commenced before 24 weeks gestation with the aim of reducing the viral load to an undetectable level.[51]

Antenatal HIV Screening

The 2020 Australian Department of Health Pregnancy Care Guidelines state that all pregnant people should be offered HIV testing at their first antenatal visit and that clear referral pathways must be in place to ensure that people with HIV are cared for by the appropriate specialist teams.[20] The screening test for HIV infection is an enzyme immunoassay (EIA) for HIV antibodies. The majority of tests in Australia are fourth generation assays that detect HIV antigen as well as HIV antibodies. Although false-positive tests on EIAs are rare, all positive specimens are confirmed with a Western Blot test. Repeat testing may be required if the pregnant person has an indeterminate test result or HIV exposure in the preceding 3 months. The important benefits of a person's knowing their HIV status include the opportunity to receive medical care for their own health and the prevention of transmission to current or future partners and to the baby through vertical transmission.

Interventions During Pregnancy, Labour, Birth and Postpartum

It is important to ensure that in addition to physical health needs, the person's psychosocial needs are also assessed to ensure the provision of appropriate multidisciplinary care.[56] Where possible, the benefits of peer support should also be discussed, particularly when the person is newly diagnosed.[57] cART to reduce vertical transmission is recommended for all pregnant people with HIV, including those with an undetectable viral load.[50]

Antiretroviral therapy (ART) can reduce vertical transmission through a variety of mechanisms. During pregnancy, antiretroviral drugs decrease the pregnant person's viral load in their blood and genital secretions. Where indicated, antiretroviral therapy administered to the person immediately before and during birth cross the placenta and provide pre-exposure prophylaxis (PrEP) to the newborn. Administration of antiretroviral drugs to the newborn after birth provides post-exposure prophylaxis (PEP) against any virus exposure during the birth.[50]

Before the widespread use of cART, elective caesarean section was the recommended mode of delivery for all people with HIV due to the associated benefit of reducing the risk of vertical transmission. It is now recommended that if the viral load is below 50 copies/mL at 36 weeks gestation and there are no other contraindications, a vaginal or physiological birth is considered safe.[19] Only in cases where the viral load is above 400 copies/mL is the intrapartum administration of ART and elective caesarean section absolutely indicated.[19]

Avoidance of Invasive Procedures

It is generally recommended that procedures which may lead to a breach in the skin or mucous membranes of the baby, such as the application of fetal scalp electrodes, fetal scalp blood sampling, and vigorous aspiration of the newborn, be avoided if the pregnant person is known to have, or is at high risk of having, a bloodborne virus. Avoidance of these procedures as a strategy to prevent vertical transmission has not been adequately assessed in prospective trials, but there are limited data suggesting a protective benefit.[58,59]

It is recommended that the birthing parent continue cART into the postpartum period and beyond.[50] Neonatal ART for PEP should be commenced orally within 4 hours of birth.[50] The drug choice and duration of treatment will depend on local policy and the determined risk of vertical transmission. The administration of intramuscular medications should be delayed until after the baby has been bathed.

Infant Feeding and Neonatal Care

Transmission of HIV via chest/breast milk has been reported.[50] The 2021 ASHM Guidance for Healthcare Providers regarding Infant Feeding Options for People Living with HIV and 2016 updated 2012 NHMRC Infant Feeding Guidelines advise that people with HIV should avoid chest/breastfeeding if a chest/breast milk substitute is acceptable, feasible, affordable, sustainable and safe. [60,61]

The non-chest/breastfed infant should be tested with an HIV PCR test in the first week of life, week 6 and week 12. If all PCRs remain negative, a clinical review at 12 months is recommended and an HIV antibody test at 18 months to document sero-reversion.

Syphilis

TABLE 5: Syphilis intervention summary
○ Routine/universal screening is recommended at first antenatal visit ○ Screening tests include: treponemal specific – TPPA, TPHA, EIA or non-treponemal specific –RPR, VDRL ○ Recommend repeat testing early in the 3rd trimester (28–32 weeks), according to local guidelines ○ Initiate treatment with benzathine benzylpenicillin within 2 days of confirmation of the infection to minimise the risk of congenital syphilis ○ People with a penicillin allergy will require penicillin de-sensitisation ○ Different treatment regimens are required for different stages of syphilis infection ○ Treat contacts of syphilis promptly, even if asymptomatic. Do not wait for serological confirmation ○ At-risk newborns (syphilis during pregnancy of the parent) must be screened and receive follow-up assessment for congenital syphilis. ○ As per the STI Management Guidelines, in the case of a positive result, fetal monitoring may be advised if more than 20 weeks of pregnancy.

TABLE 6: Risks for syphilis in pregnancy
Risks for syphilis infection in pregnancy include: ○ Age < 30 years old ○ Recent STI – in current pregnancy or within the previous 12 months ○ Aboriginal and Torres Strait Islander community member ○ A previous history of syphilis in pregnancy ○ Engaging in intravenous substance use during pregnancy, especially methamphetamine ○ Residing in a declared outbreak area or an area of known high prevalence ○ Limited or no antenatal care ○ Homelessness ○ Partners of men who have sex with men ○ Sexual contact of a syphilis-positive case. Please see the **Australian STI Management Guidelines** for further information on risks and factors that increase the risk of re-infection.

Epidemiology in the Antenatal Population and Mode of Transmission

Syphilis is a sexually acquired bacterial infection caused by *Treponema pallidum.* The rate of syphilis infection among people of reproductive age (15 to 44 years) in Australia has tripled from 2015 to 2019 (5.2 to 16.2 per 100,000 women).[62] International data also indicate an increase in the rate of syphilis.[63] The rate of syphilis among Aboriginal and Torres Strait Islander populations is higher than in the general population which is due to complex social factors including poverty, discrimination, lack of access to high quality and culturally appropriate health services, incarceration and **intergenerational trauma**.The rate of notification for infectious syphilis among Aboriginal and Torres Strait Islander women is up to 40 times greater than among non-Indigenous women (97.4 vs 2.3 per 100,000).[64]

In Australia, between 2015 and 2019, the congenital syphilis notification rate increased from 1.3 to 2.0 notifications per 100,000 live births.[62] Nationally, between 2016 and June 2021, there have been 47 cases of congenital syphilis in newborns, with 25 of the 47 cases reported in Aboriginal and Torres Strait Islander infants. In this same time period, nationally, there were 11 congenital syphilis associated deaths reported: 9 of the 11 reported deaths were Aboriginal and Torres Strait Islander infants.[65]

Effect of Syphilis on Pregnancy

The most significant risk in pregnancy is to the fetus with vertical transmission of the disease across the placenta. Syphilis readily crosses the placenta with severe consequences to the fetus. If untreated, it can lead to congenital malformation and newborn death. Untreated syphilis in pregnancy is associated with increased rates of miscarriage, preterm birth, low birth weight and stillbirth.[66] The bacterium (*Treponema pallidum*) damages the placenta and invades fetal organs, resulting in hepatomegaly, ascites, hydrops, fetal anaemia, congenital malformations, including skeletal abnormalities, and neurological impairment.[67,68]

Effect of Pregnancy on Syphilis

Pregnancy has no known effect on the clinical course of syphilis.[69]

Stages of Syphilis

An untreated syphilis infection progresses through 4 stages (primary, secondary, latent and tertiary). People with syphilis are highly contagious in the primary and secondary stages and can transmit the infection to sexual partners.

Vertical and Horizontal Transmission

Vertical transmission is greatest during the primary or secondary stages of syphilis when the spirochete bacterium is active. However, transplacental transmission can occur at any stage of syphilis, with vertical transmission occurring in 35% of cases with latent stage infection.[70] The risk of vertical transmission is highest during the second and third trimesters.[71] Unless there is a syphilis chancre during labour, the likelihood of transmission during birth is low.[72]

Antenatal Screening

Universal testing is recommended in early pregnancy at the first antenatal contact for all people who are pregnant.[20] Syphilis can be acquired at any stage during the pregnancy, therefore, dependent on local guidelines, repeat testing is recommended early in the 3rd trimester (28–32 weeks) and at the time of birth for people at high risk of infection or re-infection.[20] Additional testing may be required and dependant on local guidelines. RANZCOG recommends using a treponemal test (TPPA, TPHA, EIA) to avoid missing latent syphilis.[73]

The ASID algorithm includes both non-treponemal tests (RPR, VDRL) and treponemal testing.[19] Treponemal testing can include point-of-care tests.[20] Screening should be performed at the first antenatal visit in each pregnancy, regardless of previous testing.[20] Dependent on jurisdictional guidelines, Aboriginal and Torres Strait Islander pregnant people should have additional testing at 28 weeks, 36 weeks, at the time of birth, and 6 weeks postnatally, as well as testing at entry to care.

Interventions During Pregnancy, Labour and Postpartum

Early treatment of an identified syphilis case is essential to prevent congenital syphilis. Congenital syphilis is preventable with early antenatal serum screening, and prompt treatment with antibiotics is essential.[65] The stage of pregnancy does not impact the treatment effectiveness.[74] History and a physical examination will help identify the stage of the syphilis infection, which will then indicate the treatment regime. The treatment is benzathine benzylpenicillin injection and should be initiated as soon as possible (within 2 days of confirmation).[20] It is crucial to provide accurate and detailed information regarding the risk of syphilis transmission to the infant. Contact tracing and treatment are essential to avoid re-infection. The healthcare professional's responsibility is to ensure that people with syphilis receive counselling, testing, and follow-up, where required. Successful treatment of a syphilis infection does not confer immunity, and a person is vulnerable to re-infection if exposed.

Newborn and Congenital Syphilis

Newborn screening and paediatric review should be performed on all infants who are born to a person with suspected or confirmed syphilis and should be screened for immunoglobulin M (IgM) and rapid plasma reagin (RPR) test along with testing of the person who is pregnant.[19]

Newborns at risk for congenital syphilis or who have a reactive serology test should be screened and followed for manifestations of congenital syphilis.[74] Newborns with congenital syphilis may be severely affected or may not show symptoms at birth.[71]

Other STIs

This resource has focused on BBVs and STIs that have a significant impact on the fetus and pregnant person, however, other STIs such as chlamydia and gonorrhoea can also affect pregnancy. The reader is referred to the **Australian STI Management Guidelines** which includes information on STI testing, management and follow-up.

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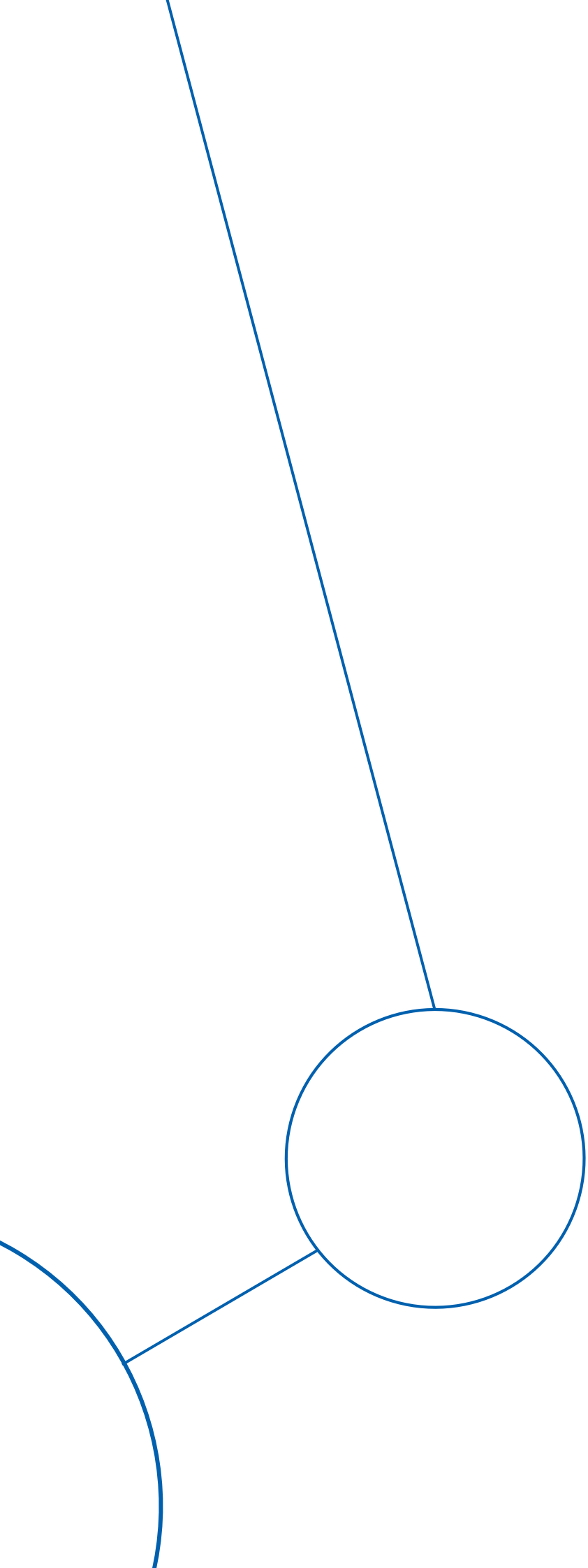

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Developing a sustainable HIV,
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