Congenital Syphilis: Prevention, Outcomes, and Aftercare

Prepared by the Saskatchewan Prevention Institute

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Key Findings

- Rates of congenital syphilis have been rising in Canada since 2018, with the highest provincial rates being seen in Saskatchewan. Congenital syphilis can have severe outcomes (e.g., miscarriage, stillbirth, and neonatal death), as well as negative impacts on children's long-term health (e.g., hearing and vision loss).
- Congenital syphilis prevention strategies include safer sex practices among women who are of reproductive age or pregnant and immediate treatment with penicillin G if the woman or pregnant person contracts syphilis. Treatment of maternal infection with penicillin G can help prevent vertical transmission as well as help treat fetal infection.
- To ensure timely maternal treatment, prenatal care should include syphilis screening in the first trimester or at the first prenatal visit. Repeat screening between 28-32 weeks gestation and at delivery is recommended for women at risk of infection or reinfection. Women at high risk of syphilis infection may have less access to standard prenatal care; therefore, screening pregnant women in emergency rooms is also recommended.
- The majority (70%) of newborns with congenital syphilis will be born asymptomatic. Newborns with congenital syphilis have excellent prognoses if treated immediately. Therefore, prior to discharge, newborns should be screened for congenital syphilis based on maternal history.
- Infected newborns can have a negative syphilis evaluation and serological test results if transmission happened shortly before delivery. Therefore, it is recommended that caregivers are educated on the signs of early and late congenital syphilis so they can seek immediate medical attention if they see any visible signs of congenital syphilis.

1. Introduction

Syphilis is a preventable and curable sexually transmitted and blood-borne infection (STBBI). When it is transmitted from a mother with syphilis to their baby it is referred to as congenital syphilis. The impact of untreated syphilis can be severe for both the mother and baby, including miscarriage, still birth, or neonatal death (National Collaborating Centre for Infectious Diseases [NCCID], 2024). The rate of syphilis among women of reproductive age and the rate of congenital syphilis have been increasing in Canada since 2018 (Aho et al., 2020). The most recently available data indicates that the majority of cases have been in the Prairies, with Saskatchewan having the highest rate of congenital syphilis (Public Health Agency of Canada [PHAC], 2024b). Therefore, prevention efforts related to congenital syphilis are especially critical in Saskatchewan. Understanding transmission pathways of syphilis from mother to baby and best practices for maternal treatment are critical for preventing congenital syphilis. Knowledge of current aftercare recommendations for babies born with congenital syphilis is important to improve immediate and long-term health outcomes. This literature review is based on recent evidence-based literature (i.e., research published since 2018) and will cover multiple aspects of congenital syphilis including transmission, prevention, treatment, aftercare, and short- and long-term outcomes.

2. Definitions and Prevalence

Syphilis is an STBBI caused by the spirochaete bacterium *Treponema pallidum*. Syphilis in adults has 4 stages based on length of exposure to the bacterium and symptomology. Primary syphilis usually occurs 3 weeks after infection, but can occur anywhere from 3 to 90 days post infection. During this stage, symptoms typically include chancres on the lips, mouth, throat, genitals, and/or anal area. They are often painless and may not be visible, meaning that many individuals may not realize they are infected (PHAC, 2025e). Secondary syphilis usually occurs between 2 to 12 weeks post infection, but can occur up to 6 months post infection. New symptoms will emerge including a rash on the hands and/or feet, but symptoms are typically mild and may go unnoticed (PHAC, 2025e). The next stage is latent syphilis during which individuals typically have no symptoms and can go without any signs of infection for up to 20 years (PHAC, 2025e). Early latent syphilis refers to individuals less than 12 months post infection, and late latent syphilis refers to individuals who have been infected for over 12 months. Syphilis that is untreated for years will develop into tertiary syphilis, which affects numerous organs and can lead to death (PHAC, 2025e).[1]

Congenital syphilis is when a pregnant person transfers this infection to their baby. Congenital syphilis has two stages: early and late. Early congenital syphilis refers to infection and symptomology within the first two years of life; however, most symptoms appear within the first 3 months of life (Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024; Sankaran et al., 2023). If left untreated, children over 2 years of age are diagnosed with late congenital syphilis. Late congenital syphilis involves long-term negative outcomes that occur from organ damage due to the infection (Chaki & Hardy, 2023; Fanella et al., 2024; NCCID, 2024; PHAC, 2025c). Early and late congenital syphilis symptoms and outcomes are discussed in detail later in this literature review.

[1] For a full list of syphilis symptoms in adulthood, visit: https://www.canada.ca/en/public-health/services/diseases/syphilis.html.

In Canada, the national rate of infectious syphilis increased significantly from 2011 to 2022, from 5.1 per 100,000 to 36.1 per 100,000 population (PHAC, 2024b). Although syphilis rates historically have been higher among men, the infection rate is currently highest among young women aged 15 to 39 years of age (Aho et al., 2020, 2022). The increase among young women began after 2017, resulting in an increase in the rate of congenital syphilis (Aho et al., 2020) due to transmission during pregnancy or at the time of delivery (PHAC, 2023). Recent data shows a 109% and 599% increase in syphilis and congenital syphilis rates respectively from 2018 to 2022 (PHAC, 2024b). PH

The rate of infectious syphilis is higher in Saskatchewan than other parts of Canada (164.3 cases per 100,000 population) (Aho et al., 2020). Saskatchewan experienced a 1,213% increase in infectious syphilis cases from 2018 to 2023 (PHAC, 2025a). In 2019, syphilis outbreaks were declared in several places across the province including northern Saskatchewan (Saskatchewan Health Authority [SHA], 2023). In 2022, Saskatchewan reported the highest rate of congenital syphilis with 175 cases per 100,000 live births (PHAC, 2024b). The Saskatchewan Syphilis Epidemic Investigation Coordinating Committee reported data showing that the increased rate of syphilis among women of childbearing age has resulted in an increase in congenital syphilis cases (SHA, 2023).

3. Vertical Transmission

Vertical transmission of syphilis primarily occurs during pregnancy when the bacterium that causes syphilis, *Treponema pallidum,* crosses the placenta and infects the fetus (NCCID, 2024). Transmission can occur starting in the ninth week of gestation and throughout the remainder of the pregnancy (NCCID, 2024). The stage of infection of the mother and gestational age of the fetus impacts the likelihood of transmission. Mothers with primary or secondary syphilis in the third trimester of pregnancy have the highest rates of vertical transmission (60%-100%) compared to mothers near term with later stages of infection (8-40%) (NCCID, 2024; Sankaran et al., 2023). Transmission during delivery can also occur if the baby comes into contact with infected genital lesions on the mother during the birthing process (NCCID, 2024; PHAC, 2023). Vertical transmission can also occur after delivery during breastfeeding or milk expression if infected lesions are present on the mother's nipples, areola, or breast tissue (NCCID, 2024; Sankaran et al., 2023). In the absence of lesions, breastfeeding is considered safe (Sankaran et al., 2023).

4. Prevention

4.1 Preventing Maternal Syphilis

The first strategy in preventing congenital syphilis is preventing infectious syphilis among females of childbearing age. PHAC (Aho et al., 2020; PHAC, 2025b, 2025d) and the National Collaborating Centre for Infectious Diseases (2024) have highlighted safer sex practices that reduce the risk of syphilis. They include:

- reducing the number of sexual partners
- correctly and consistently using condoms and dental dams during sexual activities
- avoiding sexual contact with partners who have symptoms of syphilis infection

- talking to partner(s) about their STBBI status and safer sex, and encouraging them to get tested
- getting tested regularly for syphilis and other STBBIs every 3 to 6 months for those who are sexually active

It is important for women of childbearing age to participate in these practices to prevent contracting syphilis. Additionally, if a woman contracts syphilis, it is important for them to receive treatment for the infection before becoming pregnant or receive treatment as soon as possible if they are already pregnant.

4.2 Preventing Vertical Transmission of Syphilis

4.2.1 Prenatal Screening

To ensure timely treatment of maternal syphilis to prevent congenital syphilis, prenatal care for all individuals should include syphilis screening (Aho et al., 2020). Universal syphilis screening should occur in the first trimester or at the first prenatal visit, as well as repeat screening between 28-32 weeks gestation (third trimester) and at delivery for patients at risk of infection or reinfection (Adhikari, 2020; Aho et al., 2020; Fanella et al., 2024; NCCID, 2024; PHAC 2024a; Stafford et al., 2023; Workowski, 2021). Risk factors for syphilis infection are discussed in the *Risk Factors* section of this literature review. Repeat screening is also recommended for pregnant women living in geographical locations with high rates of syphilis (Aho et al., 2020; Fanella et al., 2024; NCCID, 2024; PHAC 2024a; Stafford et al., 2023). Women at high risk for syphilis infection may be more likely to have less access to standard prenatal care; therefore, screening pregnant women during emergency room visits is recommended (NCCID, 2024).

4.2.2 Maternal Treatment

Timely diagnosis and adequate treatment of maternal syphilis can prevent congenital syphilis (Aho et al, 2020; NCCID, 2024; Sankaran et al., 2023; Stafford et al., 2024). Therefore, pregnant women with syphilis should receive immediate treatment upon diagnosis to prevent transmission of infection to the fetus (NCCID, 2024). Penicillin G is highly effective in treating syphilis among pregnant women and preventing vertical transmission (Adhikari, 2020; Aho et al., 2020; Chaki & Hardy, 2023; NCCID, 2024; Thornton et al., 2022). Penicillin G can also reach therapeutic levels in fetal serum to treat fetal infection to prevent congenital syphilis (Viel-Theriault et al., 2019; Workowski, 2021). For specific treatment information in Saskatchewan, see the following Saskatchewan Health Authority documents: *Pregnant Patient Testing and Treatment of Syphilis* and *Syphilis Management and Care in Acute Care – Mother and Newborn*.

Adequate treatment of syphilis among pregnant women to prevent congenital syphilis involves the following (Adhikari, 2020; Aho et al., 2020; Chaki & Hardy, 2023; NCCID, 2024; Thorton et al., 2022; Williams et al., 2022):

- treatment with penicillin G completed at least 30 days prior to delivery
- evidence of treatment response
- no evidence of reinfection

Pregnant women with an allergy to penicillin should be desensitized and then treated with penicillin G as it is the only therapy with documented effectiveness for treating syphilis in pregnancy (Chaki & Hardy, 2023; Workowski, 2021). Serological testing should be performed at 6 and 12 months post treatment to ensure treatment success (NCCID, 2024; PHAC, 2025b). Specifically, syphilis non-treponemal test (NTT) serology results should be examined for changes in titre (i.e., quantity of antibodies present in the blood) between tests (PHAC, 2025b). A decrease of at least fourfold in titre after initial treatment indicates appropriate treatment response (NCCID, 2024). For women with symptoms that persist or titres that do not decrease at least fourfold, additional penicillin G treatment is recommended (NNCCID, 2024).

It is critical for pregnant women to be aware that they can become reinfected with syphilis even after treatment. To decrease the risk of reinfection, in addition to using safer sexual practices, it is important for pregnant women to inform their sexual partners of their syphilis infection so that they can receive treatment as well (PHAC, 2025c). This will prevent reinfection of the pregnant person and help prevent congenital syphilis (Fanella et al., 2024; Moseley et al., 2024).

5. Risk Factors

Factors that directly explain the recent increase in syphilis rates in Canada are not completely understood (Aho et al., 2022). However, several risk factors exist that are associated with an increased likelihood of syphilis infection, especially among woman of reproductive age (Aho et al., 2020, 2022; Benoit et al., 2022; Fanella et al., 2024; Gratrix et al., 2022; NCCID, 2024; PHAC, 2023; Thornton et al., 2022; Williams et al., 2022), including:

- lack of prenatal care or inadequate care (e.g., treatment for syphilis with inadequate follow-up to administer additional required doses and/or to confirm treatment response)
- higher risk sexual practices
  - sex without use of condoms
  - sexual contact with multiple and/or anonymous partners
  - sex while using substances
  - transactional sexual activity
- having other STBBIs
- lack of housing and/or experiencing homelessness
- income instability

- lack of access to healthcare
- experiencing violence and/or sexual violence
- mental health illness
- use of substances (especially use of injection drugs and crystal methamphetamine)

Of the risk factors listed above, lack of or inadequate prenatal care is the most cited risk factor for congenital syphilis. Pregnant women experiencing homelessness have fewer prenatal visits than other women and often enter the hospital for labour having received no prenatal care (Gilmore et al., 2024). Therefore, it is critical to provide specialized care for this population that prioritizes prenatal care and reliable follow-up. Within the healthcare system, Indigenous people report experiencing discrimination and stigmatization, which leads to distrust and avoidance in seeking medical care and prenatal care (Aho et al., 2020; Government of Canada, 2023; NWAC, 2020; Statistics Canada, 2024). Experiencing discrimination within a healthcare setting also results in receiving poorer quality of care (Aho et al., 2020). Therefore, it is important to address discrimination in healthcare, along with other barriers to healthcare that Indigenous women of reproductive age are experiencing. This is especially important due to the lasting impacts of colonization and the residential school system, which are associated with increased risk factors associated with syphilis and syphilis rates for Indigenous people in Canada (Lavalley et al., 2018; National Collaborating Centre for Indigenous Health, 2020; Olson-Pitawanakwat & Baskin, 2020; Roudometkina & Wakeford, 2018; Statistics Canada, 2022a, 2022b).

6. Outcomes

If maternal syphilis is diagnosed and treated effectively, prognosis for the infant is excellent (Leslie & Vaidya, 2024). However, untreated maternal syphilis will result in adverse consequences in approximately 77% of pregnancies (NCCID, 2024). When maternal treatment fails to prevent syphilis transmission or fails to treat infection of the fetus in utero, possible adverse consequences include (Gratrix et al., 2022; Leslie & Vaidya, 2024; NCCID, 2024; Robinson et al., 2023):

- stillbirth (26%)
- premature birth (23%)
- low birthweight (23%)
- neonatal death (when a baby dies in first 28 days of life) (16%)
- miscarriage (15%)

Congenital syphilis can also cause severe consequences for children's health and development, including damage to (Leslie & Vaidya, 2024; PHAC, 2025c):

- organs (e.g., enlarged liver and spleen)
- bones and joints (e.g., abnormal bones and joints, skeletal malformations)
- vision (e.g., ocular abnormalities and/or blindness)
- hearing (e.g., hearing loss or deafness)
- nervous system (e.g., seizures, cerebral palsy)

Early treatment of congenital syphilis can cure the infection and reduce the risk of long-term health problems (Leslie & Vaidya, 2024). Therefore, timely newborn care is critical to prevent and/or reduce negative outcomes of congenital syphilis.

7. Immediate Post-Delivery Care

7.1 Newborn Care

When maternal syphilis treatment is unsuccessful in preventing transmission, prompt care of the newborn for congenital syphilis following delivery can prevent long-term health problems (Leslie & Vaidya, 2024). Newborns with suspected cases of congenital syphilis should receive in-depth evaluations including physical examination and diagnostic testing, and treatment as appropriate (Chaki & Hardy, 2023; PHAC, 2025c). Since most infants (70%) with congenital syphilis are asymptomatic at birth, maternal history is used to help determine the possibility of infection (Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024; Sankaran et al., 2023; Stafford et al., 2024).

All infants born to mothers with the following history should be evaluated for congenital syphilis at the time of delivery before being discharged from the hospital (Aho et al., 2020; Fanella et al., 2024; NCCID, 2024; PHAC, 2025b; Sankaran et al., 2023):

- untreated syphilis at time of delivery
- treated for syphilis during pregnancy without penicillin G
- treated for syphilis with penicillin G less than 30 days before delivery
- treated for syphilis with penicillin G without follow-up testing to confirm response to treatment or did not demonstrate a response to treatment
- evidence of reinfection or relapse post treatment

Additionally, newborns presenting with visible symptoms of early congenital syphilis should receive a full evaluation even if the mother's syphilis testing is negative as the mother may have become infected just prior to delivery (PHAC, 2024a).

7.1.1 Newborn Symptoms

Health professionals should look for the following indicators of early congenital syphilis (Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024; PHAC, 2025c; Sankaran et al., 2023; Stafford et al., 2024; Workowski, 2021):

- maculopapular rash (both flat and raised pink or red areas on the skin), most commonly present on palms and soles of feet
- desquamation (peeling of the skin)
- rhinitis/snuffles (excessive nasal discharge)
- necrotizing funisitis (umbilical cord has yellow-white bands, commonly described as appearing like a "barber shop pole")
- hepatosplenomegaly (enlarged liver and spleen)

- lymphadenopathy (enlarged lymph nodes)
- hematological abnormalities
    - anemia (low red blood count, can cause low energy)
    - thrombocytopenia (low platelet count, can result in easy bruising or excessive bleeding if cut)
- musculoskeletal problems
    - long bone osteolytic lesions (bones that appear moth-eaten)
    - osteochondritis or periostitis (inflammation of cartilage and bone in joints or inflammation of connective tissue surrounding bones)
- pneumonia alba (white pneumonia, firm and pale lungs)
- jaundice (yellowing of the skin or eyes), typically appears between 2-4 days after birth
- hydrops fetalis (swelling due to excess fluid in tissues and/or organs)
- meningitis (inflammation of brain membranes and spinal cord)
- neurosyphilis (infection of the central nervous system, can manifest as seizures)
- sepsis

7.1.2 Newborn Evaluation

The above symptoms of early congenital syphilis can be detected through the following recommended evaluation methods (Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024; Sankaran et al., 2023; Workowski, 2021):

- physical exam
- syphilis non-treponemal test serology (i.e., quantity of antibodies present)
- complete blood count test with differential and platelets
- cerebrospinal fluid test for cell count, differential, glucose, and protein
- liver function tests (e.g., alanine aminotransferase)
- neuroimaging and ultrasound for enlargement of liver and/or spleen
- long-bone radiographs
- chest x-ray for pneumonia alba
- audiological screening via auditory brain stem response
- ocular assessment
- nasopharyngeal swab and swabs of any mucosal or skin lesions for *T. pallidum* polymerase chain reaction (PCR)
- pathologic examination (+/− *T. pallidum* PCR) of the placenta for women with concerns for active infection at birth

Hearing loss, ocular abnormalities, and neurological complications (e.g., seizures) can indicate congenital neurosyphilis, meaning that *T. pallidum* has entered the newborn's central nervous system (Chaki & Hardy, 2023; Fanella et al., 2024; NCCID, 2024; PHAC, 2025c). A lumbar puncture is recommended for confirmation of neurosyphilis (Fanella et al., 2024).

7.1.3 Newborn Treatment

Newborn treatment for congenital syphilis is based on confirming infection or determining the probability of infection. A key component in determining infection among newborns is serological syphilis testing of both the infant and the mother. This is because newborns can be uninfected by syphilis but still have antibodies present at time of delivery due to transmission of antibodies from the mother in utero (Fanella et al., 2024; NCCID, 2024). Therefore, treatment recommendations are based on the newborn's quantity of antibodies present (i.e., NTT titre) compared to that of their mother. Due to this, expediting maternal and infant syphilis serology testing at delivery is recommended to allow comparison of antibody quantities to determine newborn treatment (Fanella et al., 2024). Additionally, syphilis testing is recommended for mothers who present in labour and delivery with limited or no prenatal care and unknown syphilis status (Fanella et al., 2024).

When newborn serum NTT titre is fourfold higher than the mother's, the risk of congenital syphilis is high (Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024; PHAC, 2024a; Sankaran et al., 2023; SHA, 2024; Stafford et al., 2024; Workowski, 2021). In these cases, a full evaluation should be completed to confirm infection and a course of penicillin G administered. For treatment details, see the following Saskatchewan Health Authority documents: *Infants Born to Individuals with Syphilis – Initial Management Orders* and *Syphilis Management and Care in Acute Care – Mother and Newborn*.

When a newborn's serum NTT titre is equal to or less than fourfold their mother's at delivery and their evaluation is normal, maternal history is used to determine the probability of congenital syphilis and the subsequent course of therapy (Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024; PHAC, 2024a; Sankaran et al., 2023; SHA, 2024; Stafford et al., 2024; Workowski, 2021). The following outlines possible scenarios.

- Possible case of congenital syphilis if any of the following are present in maternal history:
  - did not receive treatment during pregnancy or was not treated with penicillin G
  - was treated but treatment was incomplete or ineffective and did not have a fourfold decrease in NTT titre
  - was treated less than 30 days before delivery

  In these cases, the newborn is to be treated with a therapy of penicillin G.

- Congenital syphilis less likely if all are present in maternal history:
  - was treated for syphilis with penicillin G with the last dose occurring at least 30 days before delivery
  - had a fourfold decrease in NTT titre
  - has no evidence of reinfection

  In such cases, no treatment may be considered if follow-up is certain.

- Congenital syphilis is unlikely, and no newborn treatment is required if maternal syphilis treatment was adequate (i.e., treated with penicillin G, evidence of treatment response) and completed prior to pregnancy.

If a dose is missed for over 24 hours for newborns receiving treatment, the entire course of treatment must be restarted (Leslie & Vaidya, 2024; Workowski, 2021). A full 10-day course of penicillin G is recommended even if ampicillin and gentamicin were administered for suspected sepsis (Stafford et al., 2024; Workowski, 2021). Additionally, neonates with a history of penicillin allergy should go through trials of desensitization and then be treated with penicillin G (Workowski, 2021).

7.1.4 Newborn Follow-Up

Infants treated for congenital syphilis should have serology testing repeated at 3, 6, and 18[2] months (Fanella et al., 2024; NCCID, 2024; Workowski, 2021). By 6 months of age, infant serology should be negative (Stafford et al., 2024; Workowski, 2021). If antibodies are still present after 6 months of age, infants should be reevaluated and retreated with another 10-day course of penicillin G if additional evaluation indicates a case of persistent infection (Stafford et al., 2024; Workowski, 2021).

For infants not treated immediately after delivery (e.g., those deemed less likely to be infected based on their serological testing, evaluation, and maternal history), serology testing should be conducted every 2-3 months until at least 6 months of age to ensure no transmission of syphilis occurred just before delivery (Fanella et al., 2024; Workowski, 2021). Positive serological testing during this timeframe with NTT titres becoming greater than fourfold that of the mother's indicate late transmission of syphilis during pregnancy and that penicillin G treatment should be administered (Fanella et al., 2024; NCCID, 2024).

7.2 Maternal Treatment

As previously described, mothers can still transfer syphilis to their child post-delivery during breastfeeding or milk expression if lesions are present on the nipple, areola, or breast tissue (NCCID, 2024; Sankaran et al., 2023). Therefore, it is critical that mothers are adequately treated for infectious syphilis post-delivery. Successful treatment of mothers is also important for preventing congenital syphilis in any future pregnancies.

If mothers were not treated for syphilis during pregnancy, treatment should begin immediately. If treatment began in pregnancy but response to treatment was not evident, treatment should be repeated (PHAC, 2024a). Treatment that began near delivery should be continued post-delivery until serological follow-up testing shows adequate decline in NTT titre to confirm successful treatment of infection (NCCID, 2024).

[2] A Treponema pallidum Particle Agglutination (TPPA) serology test is conducted at 18 months to confirm clearance of antibodies passed on from the mother in utero.

8. Long-Term Care

8.1 Signs of Early Congenital Syphilis

Although the majority (70%) of newborns with congenital syphilis will be asymptomatic at birth (Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024; Sankaran et al., 2023; Stafford et al., 2024), untreated congenital syphilis can have severe negative impacts on children's short and long-term development (Leslie & Vaidya, 2024; PHAC, 2025c). As congenital syphilis screening is not required of all newborns before discharge, it is important for caregivers to be aware of early congenital syphilis symptoms (i.e., infection within the first two years of life). These symptoms typically appear within the first 3 months of life, approximately between 3 and 14 weeks of age (Aho et al., 2020; Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024; PHAC, 2025b; Sankaran et al., 2023; Stafford et al., 2024).

Signs of early congenital syphilis include those that health professionals should look for directly after birth (see *Newborn Symptoms* section), as well as the following (Chaki & Hardy, 2023; Fanella et al., 2024; NCCID, 2024; PHAC, 2025c; Stafford et al., 2024):

- rash with open lesions*
- desquamation (peeling of the skin), typically on hands and feet*
- laryngitis with hoarseness or aphonic cry (physical crying without sound)*
- cataracts (clouding of the eye lens)*
- chorioretinitis (inflammation of eye tissue and retina)

* visible without diagnostic testing or imaging

If caregivers see any of the above visible symptoms of early congenital syphilis, they should seek immediate medical attention. Prompt medical attention and treatment is necessary to prevent organ damage and long-term health consequences (Chaki & Hardy, 2023; Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024). Treatment for infants over the age of 30 days is the same as newborns in terms of penicillin G dosage and duration. In addition to this treatment, serological testing should be conducted every 3 months until titre has decreased fourfold. In these cases, titre reduction may take longer than 6 months since treatment was started after the neonatal period (Fanella et al., 2024).

8.2 Late Congenital Syphilis

Infants with untreated early congenital syphilis are considered to have late congenital syphilis when they are 2 years of age or older (NCCID, 2024; Sankaran et al., 2023). Due to the ongoing infection causing inflammation and/or scarring, consequences of late congenital syphilis can be severe (Fanella et al., 2024). Commonly affected areas and complications include those listed below (Chaki & Hardy, 2023; Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024; PHAC, 2025c; Sankaran et al., 2023; Stafford et al., 2024).

Commonly Affected Areas and Complications

- Dental
  - Hutchinson's teeth (notched incisors)
  - Mulberry molars (molars with multiple cusps instead of four)
  - perforation of the hard palate
- Hearing
  - sensorineural hearing loss
- Vision
  - interstitial keratitis (inflammation of the cornea)
  - cornea scarring
  - glaucoma (damage to the optic nerve)
  - optic atrophy (degeneration of optic nerve)
- Hematological
  - hemoglobinuria (excessive breakdown of red blood cells), signs include dark reddish-brown urine
- Nervous System
  - seizures
  - paresis (nerve damage resulting in muscle weakness)
  - cranial nerve palsies (weakness in facial muscles)
  - intellectual disability
- Skeletal and Joints
  - frontal bossing (protruding forehead)
  - saddle nose deformity (indentation in bridge of nose)
  - saber shin (bowing of shins)
  - Clutton's joints (painless swelling of the knee)
  - painless arthritis
- Skin
  - scarring
  - perioral fissures (cracks or splits in the skin around the mouth)
  - gummas (soft non-cancerous growths)

The most common complications and signs of late congenital syphilis are referred to as Hutchinson's Triad (Leslie & Vaidya, 2024; Medoro & Sanchez, 2021; Sankaran et al., 2023) and include:

- dental malformations
- interstitial keratitis (inflammation of the cornea)
- sensorineural hearing loss

Dental malformations due to untreated congenital syphilis typically present as disruption to the enamel, specifically Hutchinson incisors and mulberry molars (NCCID, 2024; Leslie & Vaidya, 2024; Medoro & Sanchez, 2021; Stafford et al., 2024). Children with dental malformations due to congenital syphilis can be referred to a pediatric dental specialist for dental restoration (Pessoa & Galvao, 2011).

Inflammation of the cornea due to congenital syphilis can lead to glaucoma or scarring of the cornea (Fanella et al., 2024; Leslie & Vaidya, 2024; NCCID, 2024; Pessoa & Galvao, 2011). Scarring of the cornea can cause visual impairment varying from blurred vision to blindness (Leslie & Vaidya, 2024; Pessoa & Galvao, 2011). Use of corticosteroid drops may help minimize scarring; however, eye damage will typically be irreversible (Gautheir et al., 2019; Leslie & Vaidya, 2024; Pessoa & Galvao, 2011).

Sensorineural hearing loss due to congenital syphilis involves inflammation of the eighth cranial nerve (Pessoa & Galvao, 2011). It is managed first by addressing the inflammation caused by the infection by administering penicillin G (Pessoa & Galvao, 2011). With earlier treatment, reduction in nerve inflammation can help restore some hearing; however, complete restoration of hearing is uncommon (Leslie & Vaidya, 2024; Pessoa & Galvao, 2011). The remaining hearing loss is then managed through the use of hearing aids and/or cochlear implants (Cleveland Clinic, 2024).

9. Conclusions and Recommendations

Congenital syphilis rates are on the rise, especially within Saskatchewan. Congenital syphilis can have severe outcomes including miscarriage, stillbirth, and neonatal death. Infants born with congenital syphilis can experience negative impacts on their short- and long-term health, including hearing and vision loss. Therefore, prevention efforts to reduce the cases of congenital syphilis in Saskatchewan are critical.

Prevention efforts for congenital syphilis include prevention of and treatment for syphilis infection in women of childbearing age. It is recommended that women of childbearing age educated about safer sex practices and participate in regular STBBI screening. If they become infected with syphilis, they should seek immediate medical attention, receive adequate treatment, and take steps to prevent reinfection, including encouraging testing and treatment among their sexual partners. Partner syphilis treatment is important for preventing reinfection.

Efforts to prevent vertical transmission of syphilis from mother to fetus include timely maternal treatment with penicillin G. Penicillin G can also treat fetal infection if transmission has occurred. To ensure timely treatment, universal syphilis screening is a recommended part of all prenatal care in the first trimester or at the first prenatal visit. Repeat screening is recommended between 28-32 weeks gestation and at delivery for women at risk of infection or reinfection. To help reach women who do not have access to prenatal care, it is recommended to also screen pregnant women for syphilis during emergency room visits.

If congenital syphilis prevention efforts are unsuccessful, newborns with congenital syphilis should receive immediate medical attention and treatment. As the majority (70%) of newborns with congenital syphilis will be born asymptomatic, it is recommended that they are evaluated based on maternal history. Newborns with congenital syphilis may still test negative for syphilis if

transmission occurred just before delivery. Therefore, it is recommended that caregivers be educated on the signs of early and late congenital syphilis (e.g., rash with lesions, peeling skin, clouding of eye lens, dental malformations, hearing loss) and informed to seek immediate medical attention if they see any visible signs congenital syphilis.

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