Congenital Syphilis
Frequently Asked Questions

1. What is Congenital Syphilis?

Congenital syphilis is syphilis infection occurring in a child as a result of the vertical transmission of Treponema pallidum, the organism that causes syphilis. Mother-to-child transmission of syphilis occurs in up to 80% of cases in untreated mothers. Early congenital syphilis occurs in infant or child (< 2 years) whose mother had untreated or inadequately treated syphilis at delivery, regardless of signs in the infant. Late congenital syphilis manifests from third year of life onwards following vertically acquired infection.

2. How is Congenital Syphilis transmitted?

The vertical transmission of syphilis occurs primarily through the placenta and sometimes through contact with syphilitic lesions in the birth can during delivery. Transplacental transmission from the infected mother to her unborn child may occur at any gestation; however, the risk of transmission to the fetus is highest in the third trimester of pregnancy. Syphilis screening and treatment of the mother in the first months of gestation can prevent vertical transmission. Syphilis screening should happen at the first ante-natal visit and during subsequent antenatal care visits according to the National Department of Health (NDOH) guidelines for the prevention of vertical transmission of syphilis. Adverse pregnancy outcomes due to untreated maternal syphilis infection include: miscarriage, stillbirth, peri-natal death, non-immune hydrops foetalis and symptomatic congenital syphilis in the newborn.

3. What are the signs and symptoms of Congenital Syphilis?

The stage of maternal syphilis at transmission, gestational age of foetus, adequacy of maternal treatment and the immunological response of the foetus causes the varied manifestations of congenital syphilis.
Approximately 30-40% of all infants who acquire syphilis while in-utero, die shortly before or after birth.
Congenital syphilis presents with varied clinical, radiological and laboratory features as follows:

- Maternal history – mother maybe unbooked for antenatal care, booked but not tested, tested but not adequately treated
- Clinical signs and symptoms- congenital syphilis is a multisystem disease affecting most systems in the infant/ child's body
    - General: oedema, lymphadenopathy, failure to thrive (IUGR)
    - Respiratory: respiratory distress, pneumonia alba
    - Mucocutaneous: Peeling rash, vesiculobullous lesions, -petechiae, rhinitis with mucopurulent bloodstained discharge (snuffles)
    - Gastrointestinal system: hepatosplenomegaly, ascites, hepatitis, jaundice
    - Central nervous system: seizures, acute meningitis, delayed milestones
    - Skeletal: pseudoparalysis of limbs
    - Ophthalmic: chorioretinitis, uveitis
    - Haematological: anaemia, thrombocytopaenia, hypoalbuminaemia
- Radiological features on X-rays of long bones: translucent metaphyseal bands, osteochondritis, osteitis, metaphysitis and periostitis
- Laboratory features
    - Treponema pallidum PCR on placenta, autopsy material, skin lesions, nasal secretions
    - RPR positive with high RPR titres (four-fold that of the mother), RPR positive six months after birth
    - High CSF protein or positive VDRL test on CSF

An infected infant may be asymptomatic at birth and only develop symptoms and signs during the first three months of life.

4. How is Congenital Syphilis diagnosed?

The diagnosis of congenital syphilis depends on a combination of symptoms and signs on history taking and physical examination, radiographic examination, serologic or molecular laboratory evidence. The presence of maternal antibodies (non-treponemal and treponemal IgG) which are passively transferred transplacentally to the fetus, makes the interpretation of reactive serological tests for syphilis in infants difficult. It is therefore necessary to compare infant's titres with maternal serological titres using the same non-treponemal test, and obtain maternal treatment history for syphilis during pregnancy. At birth: if congenital syphilis is suspected at delivery, confirmatory laboratory tests may be performed on placenta/ amniotic fluid/ autopsy material/ exudates from suspicious lesions/ body fluids e.g. nasal discharge, CSF. A presumptive serological diagnosis may also be made when:

a) Infant's non-treponemal (RPR) titer is higher (preferably four-fold higher) than that of mother when both blood samples are drawn at the time of delivery
b) Infant has a reactive non-treponemal serologic titre which is equal to or less than the maternal titre, if the mother has been untreated or inadequately treated for syphilis during pregnancy
c) Infant's non-treponemal titer persists or increases after birth when serial tests are performed
d) Infant's treponemal antibody (TPHA, TPPA, TPAb) titre remains positive at 12-18 months of age.
e) Infant has a reactive serum non-treponemal test and a reactive serum IgM antibody test (e.g. FTA-Abs IgM)

5. How is Congenital Syphilis treated?

The WHO recommends that treatment of congenital syphilis in developing countries should be based on the following:

- Identifying maternal syphilis (by RPR) during pregnancy and/or at time of delivery
- Determining the quantitative RPR result of the infant
- Identifying whether a sero-reactive infant has clinical features compatible with early congenital syphilis.
- Determining whether an infected mother was adequately treated for syphilis during pregnancy i.e. received at least **1 dose** of benzathine penicillin **more than 30 days before** delivery.

Category	Treatment Protocol	Alternative Treatment
Symptomatic neonates/ infants	Benzylpenicillin (Penicillin G), IV, 50 000 units/kg 12 hourly for 10 days.	IM procaine penicillin 50, 000 units/kg as a single daily dose for 10days
Asymptomatic infants born to RPR positive mothers OR mothers with unknown status	Single IM dose Benzathine Penicillin G 50, 000 units/kg given	

6. How can Congenital Syphilis be prevented?

Prevention of congenital syphilis is dependent on the effective screening of pregnant mothers for syphilis. The World Health Organization recommends that screening for syphilis should be conducted at the first antenatal care visit, ideally before 20 weeks' gestation and repeated at least once later in pregnancy (32-34 weeks). The National Department of Health (NDOH) in South Africa has adopted a more proactive maternal screening regime, recommending in the 2023 Prevention of Vertical Transmission of Infectious Diseases guidelines screening every four weeks if the syphilis screen at booking is negative. The NDOH has also recommended using rapid testing using dual HIV/syphilis or single syphilis rapid diagnostic tests in order to reduce time from screening to treatment which was contributing to continued transmission

despite high testing/screening coverage. Treatment of syphilis positive mothers comprise three weekly doses of 2.4 million units of Benzathine penicillin. A syphilis positive mother should receive at the first dose of the Benzathine penicillin at least 30 days before delivery. At delivery, women who for whatever reason do not have test results should be tested/retested.

7. Is congenital syphilis notifiable?

Congenital syphilis is a category 2 notifiable medical condition. This means that health care providers are required to notify a case within seven days of making a diagnosis.

8. Which infants with congenital syphilis should be notified?

Providers are required to notify infants/ children who meet the surveillance case definition. After making a presumptive or working diagnosis of congenital syphilis and or treating a child/ infant for congenital syphilis, providers should check if they meet the maternal history, clinical symptoms and signs, laboratory or radiological criteria included in the surveillance case definition. The full case definition is available from the NICD NMC website and accessible from here [https://www.nicd.ac.za/wp-content/uploads/2023/06/Updated_NMC_category-2-case-definitions_Flipchart_01October-2021_29May2023.docx.pdf]. The requirement to meet criteria for the surveillance case definition means that there will be some infants/ children treated by providers who may not meet the case definition and vice versa.

9. How do I notify cases of congenital syphilis?

To notify cases electronically, providers need to complete a combined case notification/ case investigation form available through NMC web portal or the electronic application. For paper based notification providers can download the paper based version of the combined case notification/ case investigation available from the CS tab on the NICD's diseases A-Z webpage [https://www.nicd.ac.za/diseases-a-z-index/congenital-syphillis/].

10. If I receive a notification from NICD that an infant/ child has CS, what should I do?

In addition to clinical notifications received from the health care providers, the NMC data mart also receives RPR positive results from tests done on infants/ children under the age of two years. These results are sent out as alerts or notifications to the providers who are supposed to assess and exclude congenital syphilis in the infant/ child in question. Upon assessment and review, if the infant/ child does not have the congenital syphilis, the providers do not need to do anything. If the infant/child does have CS and has NOT been reported to the NICD, the provider needs to complete a clinical notification form via the electronic app, web-based portal or paper based form. Only infants/ children who are notified by providers through these channels are counted as cases. RPR positive results alone are not diagnostic of CS and do not meet the criteria included in the surveillance case definition.

11. Where can I find out more information

- **For Medical/clinical related queries: Contact the NICD Hotline:** +27 82 883 9920 (for use by healthcare professionals only)
- **For Laboratory related queries:** CHIVSTI at NICD +27 11 555 0461/0477 (for healthcare workers/ laboratory staff).