Congenital Syphilis: Assessment and management of neonates born to mothers with syphilis - GL375

Approval

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<tr>
<th>Approval Group</th>
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1.0 Purpose of this guideline

The purpose of this guideline is to assess the risk to a neonate, born to a mother with syphilis, of having contracted congenital syphilis and to determine the correct management according to the level of risk.

2.0 Function of this guideline

To provide guidance on identifying those neonates at risk of congenital syphilis and guide clinicians in the appropriate level of testing, treatment and follow up of the neonate.

This guideline is designed for use by health professionals on delivery suite, the postnatal wards, the Midwifery Led Unit (MLU) and the Special Care Baby Unit.

3.0 Introduction

Syphilis is caused by infection by the bacterium Treponema pallidum. It is classified as either acquired (adult) or congenital (neonatal/infant), where the neonate has contracted syphilis in utero.

Congenital syphilis is further categorized as early - diagnosed before 2 years of age and late - with symptoms presenting after 2 years of age.

Congenital syphilis can cause premature birth, low birth weight, stillbirth, perinatal death and congenital abnormalities if untreated.

The presence of signs of congenital syphilis at delivery depends on duration of maternal infection and timing of treatment and many neonates will be asymptomatic at birth but develop signs by 5 weeks if untreated.

Globally nearly 2 million pregnant women are infected with syphilis each year and although in the UK syphilis has been on a sharp increase since the 1950’s, there is now a larger proportion of primary and secondary infection which indicates that it is being caught and treated earlier.

This has in-turn led to the near elimination of congenital syphilis with the figures from 2014 showing an incidence of 0.0024/1000 births which is well below the World Health Organisation’s target of 0.5/1000 births.

Much of this is due to the achievement of over 97% of mother’s being screened antenatally and justifies the importance of continued vigilance.
4.0 Transmission

Congenital syphilis is transmitted via the trans-placental passage during pregnancy. T. pallidum readily crosses the placenta and transmission can occur at any time during the pregnancy. If adequately treated only 1% - 2% of infants of infected mothers will contract congenital syphilis.

5.0 Assessing the Level of Risk to the neonate of congenital syphilis

In assessing the level of risk to the neonate and therefore being able to determine the need for treatment and follow up, several factors must be appreciated and a knowledge of the types of testing acquired.

5.1 Maternal Testing

There are two types of testing - Treponemal and Non- Treponemal.

Treponemal tests (including TPPA and EIA IgG and IgM) when reactive only indicate previous exposure to syphilis and are not an indicator of current infection as they generally remain reactive for life - even following adequate treatment.

Non-Treponemal tests (VDRL) are reported as a titre (e.g 1:2) and are useful in determining current infection and response to treatment. For example a fall in titre fourfold (e.g. from 1:32 to 1:8) indicates effective treatment. These tests do have a moderate false positive rate and follow up treponemal testing should be performed.

All women are offered a VDRL as part of their antenatal screening. However if she is deemed to be high risk of contracting syphilis throughout the pregnancy, further testing should be performed at 28 weeks and at delivery.

A VDRL titre of >16 is suggestive of current infection.

A VDRL titre of <16 cannot exclude current infection, especially where clinical signs are suggestive of syphilis or inadequate treatment is suspected.

5.2 Adequacy of maternal treatment

Maternal treatment for Syphilis:

Maternal treatment is as per the British Association of Sexual Health recommendations which can be accessed from the following link.
Non-penicillin alternatives include Ceftriaxone, erythromycin and azithromycin; however for the purposes of determining risk of transmission to the neonate, this is determined generally as being **inadequate** treatment.

A fourfold drop in VDRL titre is suggestive of successful treatment; however this may take several months to observe and may not be demonstrable prior to the birth.

Maternal treatment must be **> 4weeks prior to the delivery** to be considered adequate.

### 5.3 Clinical Examination of the neonate

This should be performed in all neonates whose mothers have a reactive serum test.

Clinical features of syphilis in a neonate include but are not limited to:

- Rash - vesicles or bullae may be present but usually maculo-papular
- Copious nasal secretions
- Haemorrhagic rhinitis (inflammation of the mucous membranes in the nasal passages) - symptoms include sneezing, nasal stuffiness, runny nose
- Oedema
- Hepatosplenomegaly
- Thrombocytopenia
- Haemolysis
- Periostitis
- Jaundice
- Non-immune hydrops
- Failure to move an extremity

### 6.0 Neonatal testing, treatment and follow up

In determining what testing, treatment and follow up the neonate requires, it must be determined whether the neonate is categorized as No risk, Low Risk or High Risk for congenital syphilis. Each of these categories is detailed below and in the flow chart in appendix A.

#### 6.1 No Risk

Babies only fall into this category if the mother:

- Has had syphilis in a **previous** pregnancy, which is determined to have been adequately treated. (Please refer to table of maternal treatment in section 5.2 to determine adequacy of treatment)
AND

- Maternal VDRL is negative OR titres are low (<1:2) (ideally should be checked both at booking and 28 weeks gestation.

If satisfied that the baby falls into the No Risk category, there is no need for neonatal testing or follow up.

6.2 Low Risk

Babies fall into this category if:

- There is concern that syphilis in a previous pregnancy has not been adequately treated or the mother had been treated in a previous pregnancy but VDRL titres are high, suggesting re-infection.

- Positive maternal serology in this pregnancy but with adequate maternal treatment >4 weeks prior to delivery.

Low Risk neonates require:

- **Clinical examination** – if there are any signs of congenital syphilis, the neonate should be re-categorized as High Risk.

- **Venous bloods** – Syphilis screen, quantitative non-treponemal serology (VDRL) and treponemal IgM (Red top sample). Both should be requested on the blood form. (Inform virology lab: Send away test to Colindale reference lab and takes 5 working days to get results)

  **Cord blood samples are NOT acceptable**.

  Maternal sampling should take place at the same time as the infant for comparison of VDRL titres (Red top sample).

  If neonates, VDRL titres are fourfold that of the maternal sample, infant should be re-categorized as High Risk

**Follow Up**

If neonate VDRL remains low and no clinical signs follow up should consist of:
• 3 monthly bloods until VDRL is negative – usually by 6 months of age. If titres remain stable or increase – infant should be treated as per High Risk

If any concerns about reliability in follow up – neonate should be re-classified as High Risk.

6.3 High Risk

Babies fall into the High Risk category if:

• Maternal treatment is deemed to be inadequate or <4 weeks prior to delivery
• Abnormal clinical examination
• Neonate was initially in Low Risk category but VDRL titres are high
• There is concern about co-operation with follow up in a Low Risk Neonate

High Risk neonates require:

• Venous bloods – Syphilis screen- VDRL and treponemal IgM (paired with maternal sample) FBC, U+E, LFT
• LP – WBC, protein, glucose, VDRL, TPPA
• PCR for T. pallidum - Samples from any exudate or from lesions if present. (Collect Dry swab – with no preservative or gel) send away test to Colindale reference lab and takes 5 working days to get results. Inform virology department.

Further testing such as CXR, Long Bone XR, Audiology and Ophthalmology may be indicated – please discuss with Consultant Paediatrician.

Treatment

For High Risk Infants a 10 day course of IV Benzylpenicillin is indicated. 30mg/kg bd for first 7 days of life and tds thereafter. Treat for 10 days.

Follow Up

Months 1 and 3: Venous bloods for Syphilis screen, VDRL and treponemal IgM

Months 6 and 12: VDRL only. Infant may be discharged if titre has dropped fourfold or becomes negative.
### Appendix A

#### Syphilis in previous pregnancy

- **Adequately treated and VDRL titres low**
  - **YES**
    - Treat as **No Risk**
  - **NO**
    - Treat as **Low Risk**

#### Syphilis in current pregnancy

- **Treated adequately >4 weeks prior to delivery**
  - **YES**
    - Treat as **No Risk**
  - **NO**
    - Treat as **High Risk**

#### Clinical Examination of neonate normal and VDRL titres low

- **YES**
  - **Any Concerns re co-operation with follow up?**
    - **YES**
      - Treat as **HIGH Risk**
    - **NO**
      - Treat as **Low Risk**
  - **NO**
    - Treat as **High Risk**
References


