

Quality Improvement Intervention to Accelerate Diagnosis of Congenital Syphilis

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Introduction

Congenital syphilis results from the transmission of *Treponema Pallidum* from mother to fetus. It can lead to stillbirth or prematurity and has a range of clinical presentations including rash or hepatomegaly, making the diagnosis challenging. In the United Kingdom (UK), syphilis cases are at the highest level since 1948 (1). As a result, enhanced awareness of congenital syphilis is essential for clinicians.

Antenatal testing has a key role in diagnosis and current practice involves screening at 12 weeks gestation, with subsequent testing only if further risk factors are identified. Missed or late opportunities for diagnosis can occur due to factors such as sub-optimal antenatal care or delayed seroconversion (2). A recent case of congenital syphilis in Northern Ireland (NI), diagnosed at 20 months of age, triggered a review of current care.

Motivated by this case, we set out to implement quality improvement measures to improve and accelerate the diagnosis of congenital syphilis.

Case

This infant presented at 4 months-old with bronchiolitis and was found to have hepatosplenomegaly, anaemia (haemoglobin 52), and unremitting napkin dermatitis. He was transferred to Paediatric Intensive Care with respiratory distress. LFTs were abnormal and he was hyponatremic. Extensive testing, including metabolic, haematology, HIV and toxoplasmosis investigations were performed. Syphilis was not considered, as antenatal screening had been negative, at 11 weeks gestation. He improved clinically with six days of Ceftriaxone despite a lack of definitive diagnosis. He was subsequently diagnosed at 20 months of age after his mother tested positive in a later pregnancy. In this case the patient was thankfully incidentally treated with empirical antibiotics. On review, maternal delayed seroconversion (greater than 9 weeks) had a role in the late diagnosis in this case.

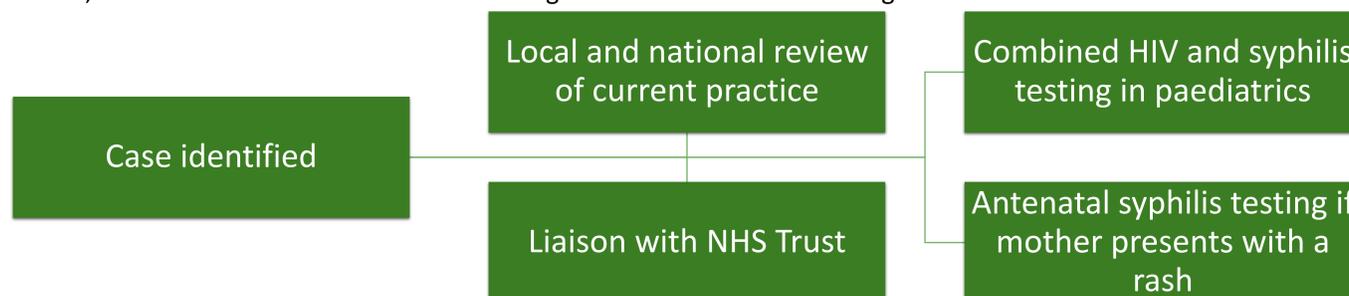
Methods

The case was reviewed locally at Multidisciplinary Team meetings- involving public health, virology, antenatal coordinators and paediatrics. Representatives from these teams then attended a national review by the Integrated Screening Outcomes Surveillance Service (ISOSS) Clinical Expert Review Panel (CERP). The clinical case was reviewed and opportunities for the prevention and earlier diagnosis of congenital syphilis were explored. Additionally, these meetings assessed the current NI and UK practices. These were compared to guidelines and best practice in different areas, enabling the exploration of the feasibility to expand the provision of syphilis testing.

Results

The CERP identified that suboptimal screening and delayed diagnosis is an ongoing risk to children. As a result, potential quality improvement interventions such as expanded syphilis testing were reviewed. We established links with a NHS Trust in England who had experienced similar delayed or missed syphilis cases. This Trust had established a protocol that tested for both syphilis and HIV in paediatric patients. Our local teams then reviewed the potential feasibility and expense of implementing similar measures in NI.

Following this review, we have introduced the two main changes as demonstrated in the Figure below.



Conclusion

Current protocols for congenital syphilis may lead to a missed diagnosis. Quality improvement interventions were considered to improve surveillance and accelerate the diagnosis of syphilis in NI. As a result, HIV and syphilis testing will be performed together for unwell infants, to avoid similar cases whereby syphilis was overlooked. In addition, any antenatal patient presenting with a rash will be tested for syphilis as per updated UKHSA guidance.

The implementation of these measures will aim help to ensure more timely diagnosis and treatment of congenital syphilis in NI.

References

- (1) UK Health Security Agency, 'Official Statistics: Sexually transmitted infections and screening for chlamydia in England: 2022 report' (October 2023)
- (2) Sparling PF. Natural history of syphilis. In: Sexually Transmitted Diseases, Holmes KK, Mardh PA, Sparling PF, et al (Eds), McGraw-Hill, New York 1990. p.213.