



# Elimination of congenital syphilis in the United Kingdom: the end of a public health problem?

I Simms<sup>1</sup> ([ian.simms@phe.gov.uk](mailto:ian.simms@phe.gov.uk)), PA Tookey<sup>2</sup>, BT Goh<sup>3</sup>, H Lyall<sup>4</sup>, B Evans<sup>1</sup>, CL Townsend<sup>2</sup>, C Ison<sup>5</sup>

<sup>1</sup> HIV & STI Dept, Public Health England, Colindale  
<sup>2</sup> University College London Institute of Child Health  
<sup>3</sup> Royal London Hospital, Barts Health NHS Trust, London

<sup>4</sup> Imperial College Healthcare NHS Trust, London  
<sup>5</sup> Sexually Transmitted Bacterial Reference Unit, Public Health England, Colindale

## INTRODUCTION

- The re-emergence of infectious syphilis which started in 2001 has seen a sustained increase in diagnoses in reproductive age women<sup>1</sup>.
- Anecdotal reports indicated that congenital syphilis was more widespread than GUM data suggested.
- Concerns have been raised over the effectiveness of control strategies despite the 96% coverage of the English antenatal screening programme.

## AIM

- To estimate the incidence of congenital syphilis and investigate associated determinants.

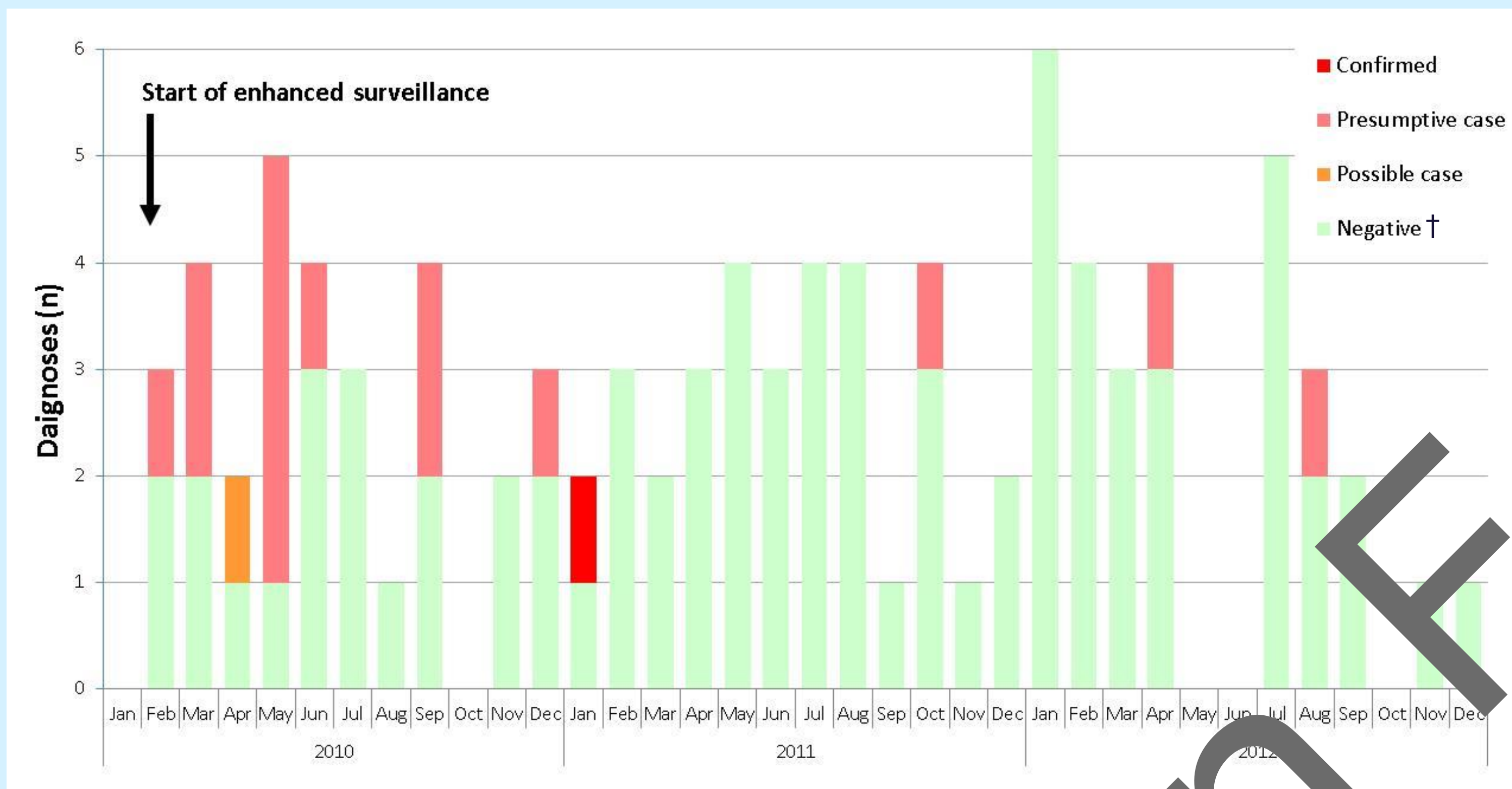
## METHODS

- 5 year study (2010 to 2014).
- Methodology described at: <http://www.rcpch.ac.uk>
- Included infants diagnosed under 24 months of age.
- Returns to the British Paediatric Surveillance Unit were combined with laboratory reports, GUM clinic reports (GUMCADv2) and anecdotal reports of suspected cases.
- Cases were classified using criteria described in *MMWR*<sup>2</sup>.
- Information was collected on demographic characteristics, clinical presentation, stage of infection, laboratory results, history of antenatal screening and treatment regimes.
- Foetal wastage was not estimated.

## RESULTS

### Epidemiology

Figure Surveillance of congenital syphilis\*: 2010 to 2012



\* Case definitions given on reverse of miniature posters  
† Mother diagnosed with congenitally transmissible infection but infant uninfected

- 14 presumptive cases (male=10; female=4), 1 confirmed case (male) and 1 possible case (male)
- All 16 cases were seen in England. No multiple births were reported
- Most (10/16) infants were born at >37 weeks
- Median birth weight = 2945g (range: 1340g to 3686g)
- Clinical presentation varied from asymptomatic (8/16) to acute (8/16) including severe anaemia, hepatosplenomegaly, rhinitis, skeletal damage, thrombocytopenia and neurosyphilis
- One infant was born deaf and blind
- Median maternal age = 21 years (range: 17 to 35)
- Most mothers (12/16) were of white ethnicity, 3 were born in eastern Europe or the Middle East
- Primary syphilis was seen in 7/11 cases and secondary in 4/11
- Congenital syphilis was generally seen in infants born to women who were unable to access healthcare services due to factors including cultural barriers, chaotic lifestyles, and high levels of socio-economic deprivation.

### Comparison with WHO elimination guidelines

- WHO elimination targets have been achieved (Table).
- Congenital syphilis incidence was below the WHO threshold: **2010** (0.0163/1000 births), **2011** (0.0023/1000) & **2012** (0.0024/1000).
- Median coverage of antenatal screening (England) for **2010**, **2011** and **2012** was 96.65% (range: 88.75 - 98.69%), 97.4% (94.6 - 98.85%) and 97.9% (96.6 - 98.8%) respectively.

Table WHO targets for validating the elimination of mother to child transmission of infectious syphilis<sup>3</sup>

Targets	Criteria met?
<b>Impact</b>	
≤50 cases of congenital syphilis per 100 000 (0.5/1000) live births	Yes
<b>Process</b>	
Antenatal care coverage (at least one visit) of ≥95%	Yes*
Coverage of syphilis testing of pregnant women of ≥95%	Yes <sup>4</sup>
Treatment of syphilis seropositive pregnant women of ≥95%	Yes <sup>5,6</sup>

\* Antenatal care services are universal in the UK (<http://www.maternityaction.org.uk>)

## DISCUSSION

- WHO Europe seeks to eliminate congenital syphilis by 2015 using a highly cost effective three step strategy: universal access to antenatal care: access to care in early pregnancy and on-site testing and treatment supported by clearly structured healthcare pathways<sup>3</sup>.
- In the UK, this well established strategy is supported by open access, free and confidential GUM services, including partner notification. Consequently the incidence of congenital syphilis is below the WHO elimination threshold.
- However, the continued presence of congenital syphilis in the UK indicates gaps within the coverage of prenatal care delivery systems and syphilis intervention strategies aimed at adults.
- Identifying women at high risk of infection and encouraging them to attend clinical services is very challenging as they are unlikely to come into contact with health-care services until delivery.
- Local, proactive multi-agency interventions aimed at improving service access for women, their children and sexual partners in communities that have low rates of GP registration and antenatal screening could play a vital role in increasing engagement with healthcare services.
- Reducing the public health impact of this avoidable disease in the UK is highly dependent on the successful implementation of WHO standards for the elimination of mother to child transmission of syphilis across Europe.

## REFERENCES

- Jebbari H, et al. *Sex Transm Infect* 2011;87:191-8.
- CDC. Case definitions for infectious conditions under public health surveillance. Recommendation and reports RR10. *MMWR* 1997;46.
- WHO. Global guidance on criteria and processes for validation: elimination of mother-to-child transmission (EMTCT) of HIV and syphilis. Geneva: World Health Organisation, 2013. Available at: <http://www.who.int/reproductivehealth/publications/9789241505888/en/index.html>.
- UK National Screening Committee. Infectious Diseases in Pregnancy Laboratory Survey 2012. Available at: <http://infectiousdiseasescreening.nhs.uk/news.php?id=10948>.
- Townsend CL, Tookey PA. Syphilis screening in pregnancy: results from a UK-wide surveillance study. Poster at PHE Annual Conference 2013, Warwick University.
- Personal communication, Dr Claire Townsend & Dr Pat Tookey.

## ACKNOWLEDGEMENTS

We would like to thank all the clinicians, microbiologists and public health colleagues who contributed to this study.



## Summary of congenital syphilis case definitions, MMWR 1997

Definitions	Terminology used in this study
<p>1 <i>Confirmed*</i> (definite†)            Demonstration of <i>T. pallidum</i> by darkfield microscopy, fluorescent antibody, or other specific stains in specimens from lesions, placenta, umbilical cord, or autopsy material. Also included specimens shown to be positive as a result of polymerase chain reaction (PCR) testing††</p>	Case
<p>2 <i>Presumptive</i> (probable†)            A condition affecting an infant whose mother had untreated or inadequately treated syphilis at delivery, regardless of signs in the infant, or an infant or child who has a reactive treponemal test for syphilis and any one of the following:</p> <ul style="list-style-type: none"> <li>• a reactive fluorescent treponemal antibody absorbed—I9S-IgM antibody test or IgM enzyme-linked immunosorbent</li> <li>• any evidence of congenital syphilis on physical examination</li> <li>• any evidence of congenital syphilis on radiographs of long bones</li> <li>• a reactive cerebrospinal fluid (CSF) venereal disease research laboratory (VDRL)</li> <li>• an elevated CSF cell count or protein (without other cause)</li> </ul>	Case
<p>3 <i>Possible**</i>†            Infants where CS was indicated but for which laboratory results were either not recorded or inconclusive. For example, where the result of the infant's IgM test was positive but no corresponding information was recorded for the mother.</p>	Case

\* Direct detection of *T. pallidum* was performed on three suspected cases: one infant was negative, the others positive.

† Terminology used by Hurtig *et al.*

\*\* Not included in MMWR definition but used by Hurtig *et al.* Included here for comparative purposes.

†† Criteria extended to include PCR diagnosis to reflect current diagnostic practice.

### Surveillance of Antenatal Screening

A parallel NSC-funded audit of antenatal syphilis screening (Surveillance of Antenatal Screening, SASS), carried out from UCL Institute of Child Health (PI Pat Tookey), is close to completion. Findings from this and the study described in this poster will be compared at a later stage.