Public Health England

Protecting and improving the nation's health

Antenatal infection screening in London
2015 data

Field Epidemiology Service South East and London

March 2017

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Executive summary

Antenatal screening for infectious diseases (hepatitis B, HIV, syphilis and rubella) is successfully established in London with approximately 152,000 women screened in 2015.

According to data provided by maternity units in London, the calculated uptake of antenatal screening is high in London with 99% of women attending antenatal clinics being screened. This is higher than seen nationally (98%)[5, 6, 7]. All maternity units reported data and all but one unit screened more than 95% of women attending antenatal clinics in London for all four infections.

The burden of infection remains disproportionately high in London. The positivity rate (the percentage of those tested who are positive) for hepatitis B (0.8%), HIV (0.3%) and syphilis (0.2%) are all higher in London than observed in any other region. Since 2011, the proportion testing positive for HIV remained relatively stable at 0.3% in 2011 and 2015. Syphilis reduced slightly from 0.4% in 2011 to 0.2% in 2015. The notable change over time was an increase in the percentage of antenatal women who screen negative for rubella antibodies, which rose from 4.9 % in 2011 to 7.6% in 2015. There was a slight decline in hepatitis B from 1.0% in 2011 to 0.8% in 2015. Of all positive antenatal screening tests in England, 42% of hepatitis B, 43% of HIV and 39% of syphilis positive tests were in women resident in London, while 21% of all tests were carried out in London[5, 6 7].

Out of the 1,269 women identified as positive for hepatitis B in London in 2015, a third were newly diagnosed (n=408, 32%). The burden of infection varied considerably across London with the positivity rate varying fivefold from 0.3 to 1.6% across London maternity units. 19 out of every 20 antenatal women testing positive for hepatitis B in London were born abroad (95%). Two-fifths were born in Africa (40%) and one in six in Eastern Europe (16%)[5, 8].

Out of the 551 women identified as positive for HIV in London in 2015, 19% were newly diagnosed (n=106). The positivity rate for HIV varied from 0 to 0.9% across London maternity units[5].

In 2015, 367 women had a positive test for syphilis (further tests are required to indicate whether they had infection) through antenatal screening in London. The positivity rate for syphilis varied from 0 to 0.6% across London maternity units[5].

In 2015, 15 of the 27 London trusts reported 100% uptake for rubella testing, with all but one successfully screening at least 97% of women attending antenatal services. In 2015, 11,287 women were identified as not having demonstrable antibodies to rubella through antenatal screening. The negativity rate for rubella antibodies in London (7.6%) in 2015 was higher than observed in 2011 (4.9%) but lower than that in England in

2015 (8.3%). The negativity rate in 2015 varied from 2% to 15% across London maternity units[5, 6, 7]. Following a review of evidence by the UK National Screening Committee (UK NSC) in 2003 and 2012, it was decided to stop rubella susceptibility screening in pregnancy in England on 1 April 2016. Efforts will be focussed on identifying women of childbearing age who are not fully immunised, and providing immunisation against rubella before they get pregnant[3, 4].

Women accessing antenatal care in London continue to have a higher burden of infection. This highlights the importance of a high quality screening programme in London. In addition, the information gathered through screening allows maternity units to assess and improve their services and to ensure that patient pathways, control measures and interventions are robust and timely, allowing mothers and babies to get the best care.

Implications

The maternity unit screening less than 95% of women antenatally for rubella may consider reviewing screening processes to ensure uptake will not reduce for the remaining three infections being screened in the future. Maternity services should ensure that patient pathways for further diagnostic tests and interventions are robust and timely so that the expected benefits of screening are realised to their full potential.

Immunisation Commissioners should review patient pathways including considering how many babies of mothers identified as hepatitis B positive are subsequently reported by child health teams as having completed vaccination.

To improve uptake of screening and subsequent interventions, providers should use local enhanced surveillance of antenatal hepatitis B (ESAHB) data to determine and note the common languages spoken by clients and ensure information materials are available in these languages.

As a public health problem, prevention of congenital rubella syndrome is most effectively addressed prior to pregnancy through the MMR (measles mumps rubella) immunisation programme. For those who grow up in this country, the mainstay of prevention of congenital rubella syndrome is MMR vaccination, which is part of the routine UK childhood vaccination schedule. Antenatal screening for rubella susceptibility, implemented in the 1970s prior to the roll out of universal MMR in 1988, aimed to provide MMR to susceptible women following their pregnancy and hence reduce the risk of congenital rubella syndrome in any subsequent pregnancies. This screening programme ceased in April 2016.

In view of the changing epidemiology of rubella and the good cover achieved in the national childhood immunisation programme, it is no longer the best approach to preventing congenital rubella syndrome. Rather, the focus will be on maintaining the high uptake of MMR vaccine in the childhood programme, and using healthcare contacts with women of childbearing age to assess MMR status and immunise them before pregnancy.

Commissioners and providers of immunisation should use all possible opportunities to maximise coverage of MMR in children and young people. This should include considering MMR status during health care contacts for adolescents, with an offer of MMR at the time of giving the adolescent ‘school-leaving’ booster (TdIPV) if the individual has not already had two doses. This will help to ensure that adolescents living in the UK are immune to rubella, including any who have missed doses earlier in childhood or migrated to the UK after the age at which routine MMR doses are given. PHE further advises that opportunities are taken to check MMR status for women of childbearing age at appropriate opportunities. For example, when they register with a new GP or attend a family planning clinic. This should include those not born in the UK who may not have been immunised with MMR in childhood.

Introduction

All women in England receiving antenatal care should currently be offered screening for hepatitis B, HIV and syphilis infection as part of the NHS Infectious Diseases in Pregnancy Screening (IDPS) Programme[1].

Screening aims to ensure that women with hepatitis B, HIV and syphilis are identified so that strategies can be put in place to prevent mother-to-child transmission of these conditions and to benefit the woman's own health. Prior to April 2016, this also included antenatal screening for rubella susceptibility. Women identified as susceptible to rubella were offered postnatal measles, mumps and rubella (MMR) vaccination to protect future pregnancies. Following a review this ceased in April 2016[2-4]. Please see Appendix 1 for the detailed rationale and Appendix 2 for standards for the programme.

This annual report aims to provide an overview of the antenatal screening data which has been collated from maternity units within London. The report provides a summary of data by maternity unit which can be used to review screening uptake, determine infection rates between 2011 and 2015, and compare figures nationally, allowing maternity services to assess and improve their IDPS services.

Data sources

National monitoring of antenatal screening for infectious diseases is coordinated by the National Antenatal Infections Screening Monitoring (NAISM) programme, Public Health England[6]. In 2004, the NAISM programme began monitoring the uptake and test results of antenatal screening for hepatitis B, HIV, syphilis and rubella susceptibility in England.

Information is requested at maternity unit or trust level on the number of pregnant women attending for antenatal care, the number previously diagnosed with hepatitis B and HIV, the number screened for each of the four infections, and the results of the screening tests. Rubella susceptibility testing ceased in April 2016. Therefore, following on from 1 April 2016 this information is no longer required.

In London, a special surveillance system called Enhanced Surveillance of Antenatal Hepatitis B (ESAHB) operates[8]. Antenatal clinics provide information on every case of hepatitis B diagnosed during antenatal care in London to the PHE Field Epidemiology Services with basic demographic information.

Please note that the data reported here may vary from data reported nationally due to a variety of reasons. These include different cut offs for data inclusion and different data cleaning methods.

In this report, data for uptake in previous years may vary to previously published reports due to a change of methodology in calculating uptake.

More information on data sources, including how figures are calculated and limitations, can be found in Appendix 3.

Reporting completeness

Of the 27 maternity units reporting for London in 2014, 26 provided NAISM reports for all four quarters[5].

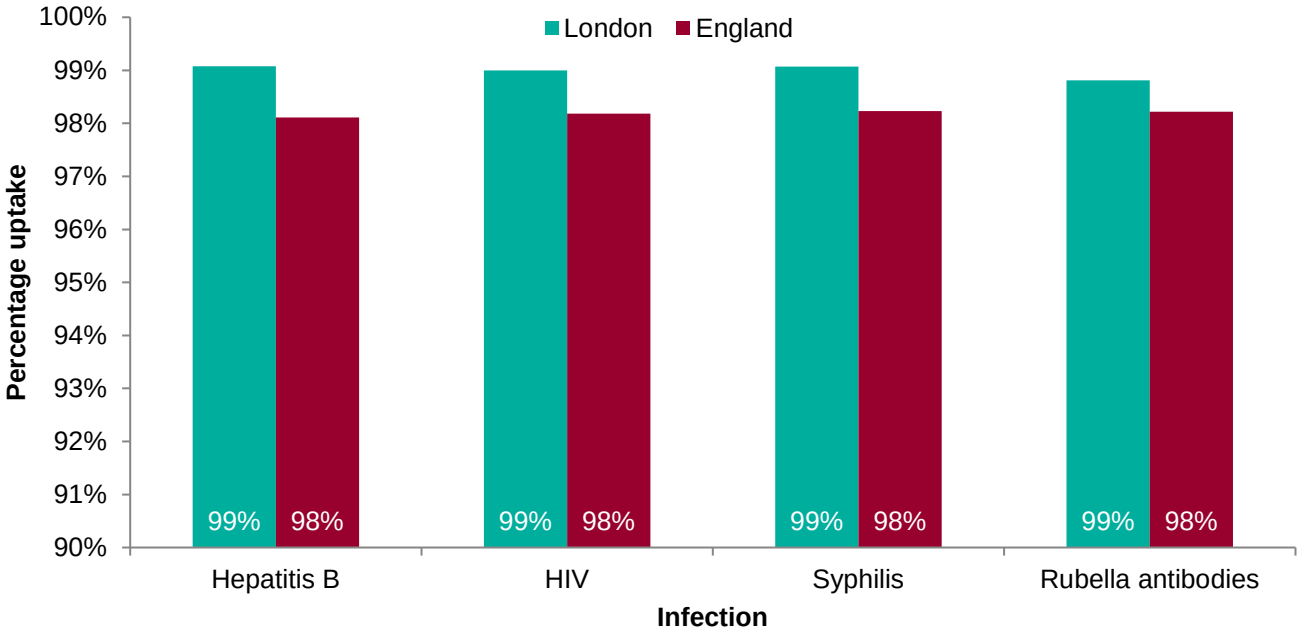
The completeness of data fields in NAISM returned forms from London antenatal clinics has remained similar to that seen in 2014, with a completeness level of 96% for all key variables, apart for rubella susceptibility (93%), in 2015[5].

Reported screening uptake

Antenatal screening uptake was very high at 99% for all infections in London in 2015 and higher than observed in England (Figure 1)[5, 6, 7]. Overall, approximately 152,000 women were screened for antenatal infections.

Figure 1: Antenatal screening uptake, London and England, 2015[5, 6]

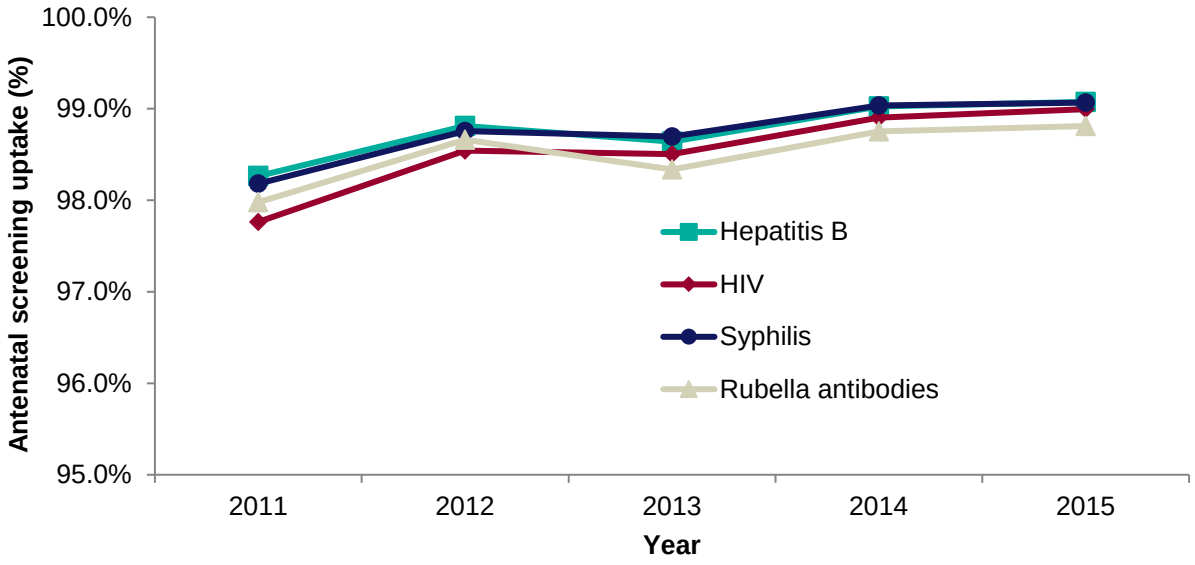
(please note scale starts at 90%)



The uptake of antenatal screening for infections in London has increased over the past five years (Figure 2)[5].

Figure 2: Antenatal screening uptake, London 2011 to 2015[5]

(please note scale starts at 95%)



All individual trusts reported screening above the benchmark of 90%. All trusts, bar one, reported an uptake of over 95% for screening each of hepatitis B, HIV, syphilis and rubella antibodies (Figures 3-6, Appendices 4-7)[5]. This trust had above 95% for hepatitis B, HIV and syphilis but 94% for rubella screening. 15 trusts reported screening uptake of 100% for all infections.

Figure 3: Hepatitis B screening uptake by maternity unit, London 2015[5]

(please note scale starts at 90%)

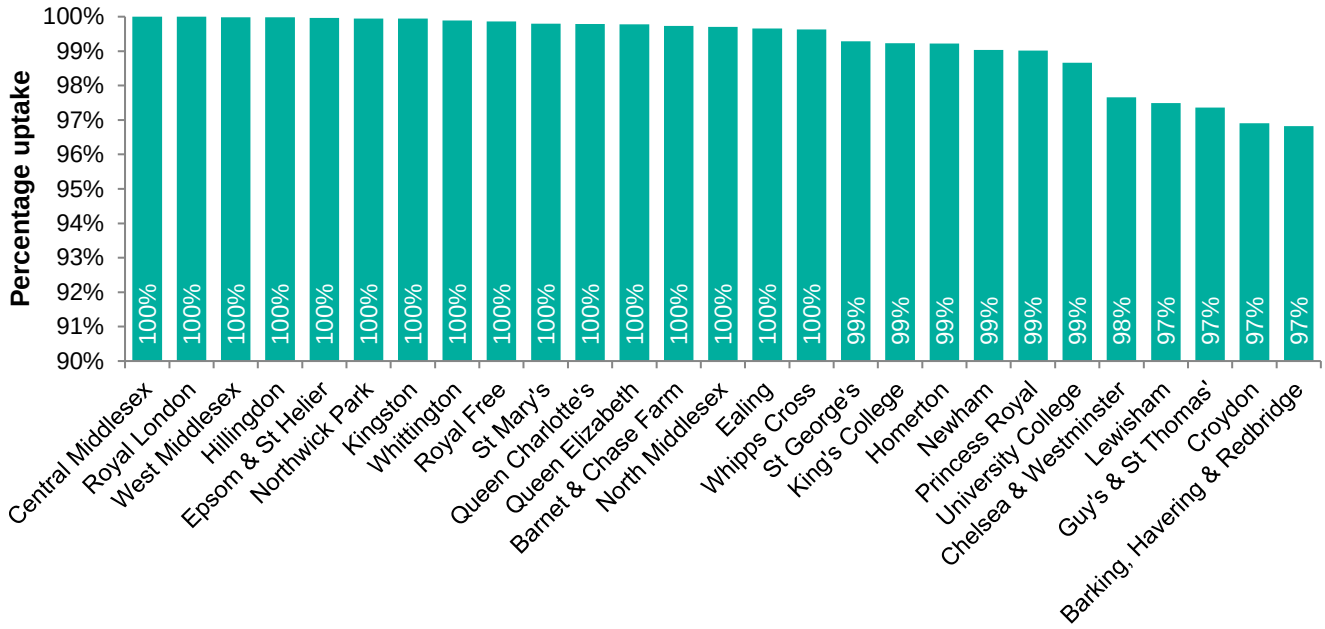


Figure 4: HIV screening uptake by maternity unit, London 2015[5]

(please note scale starts at 90%)

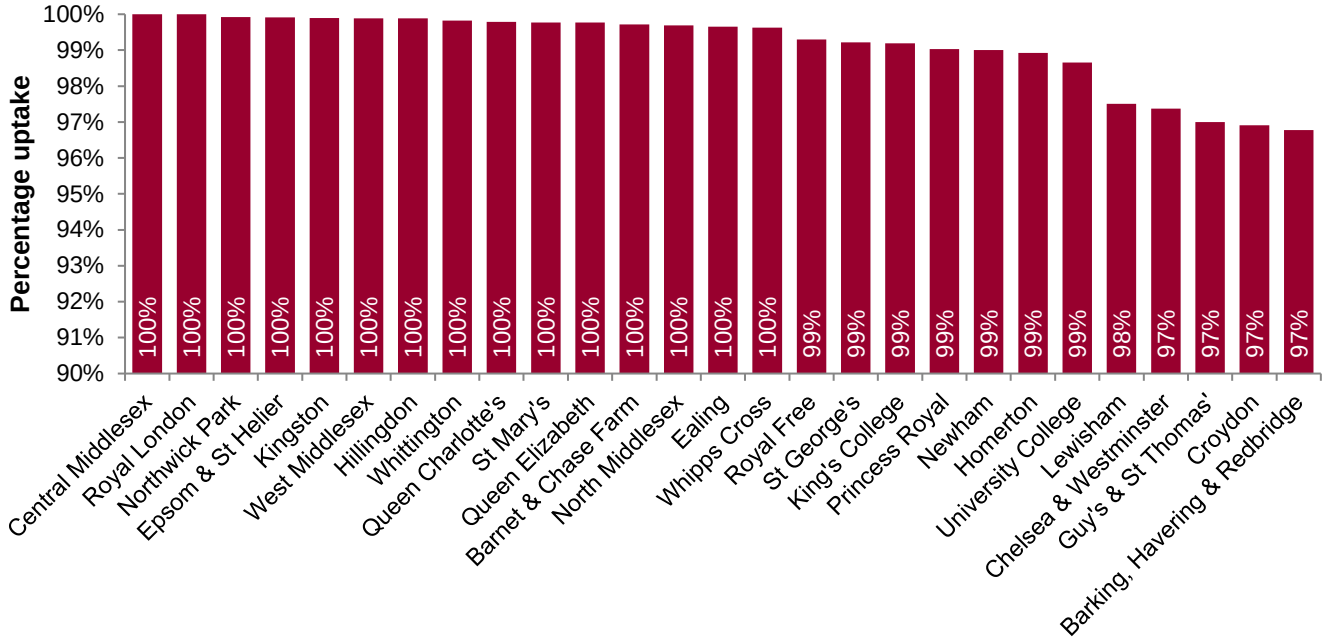


Figure 5: Syphilis screening uptake by maternity unit, London 2015[5]

(please note scale starts at 90%)

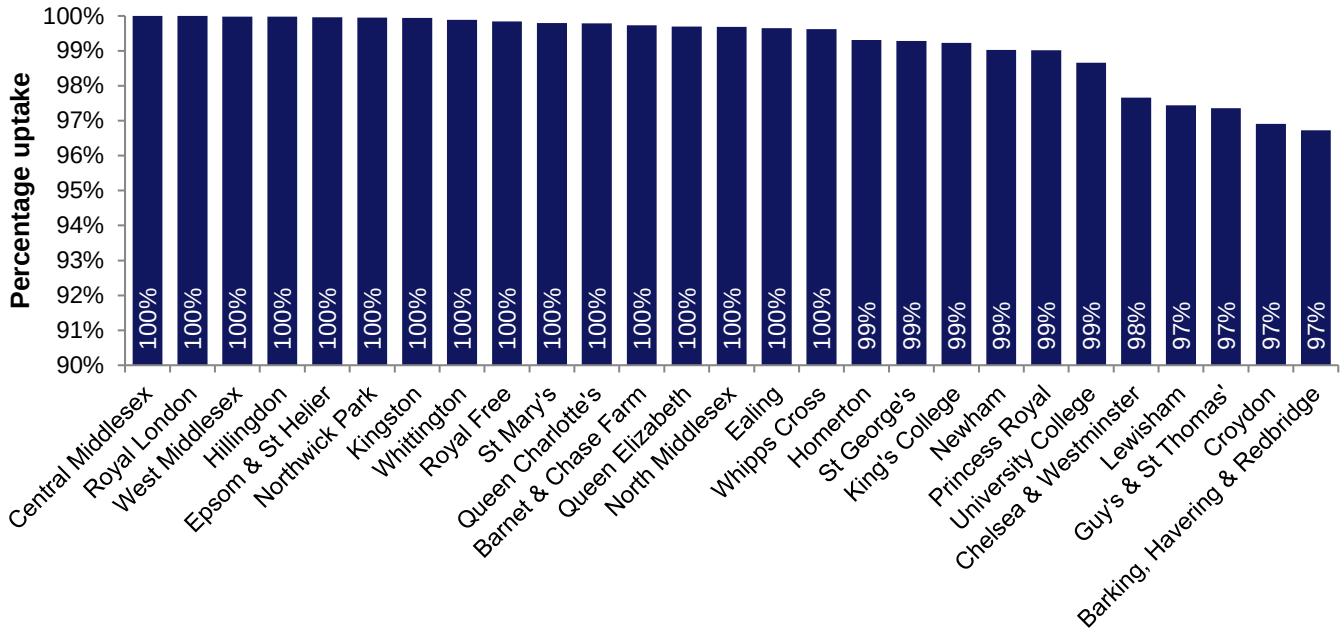
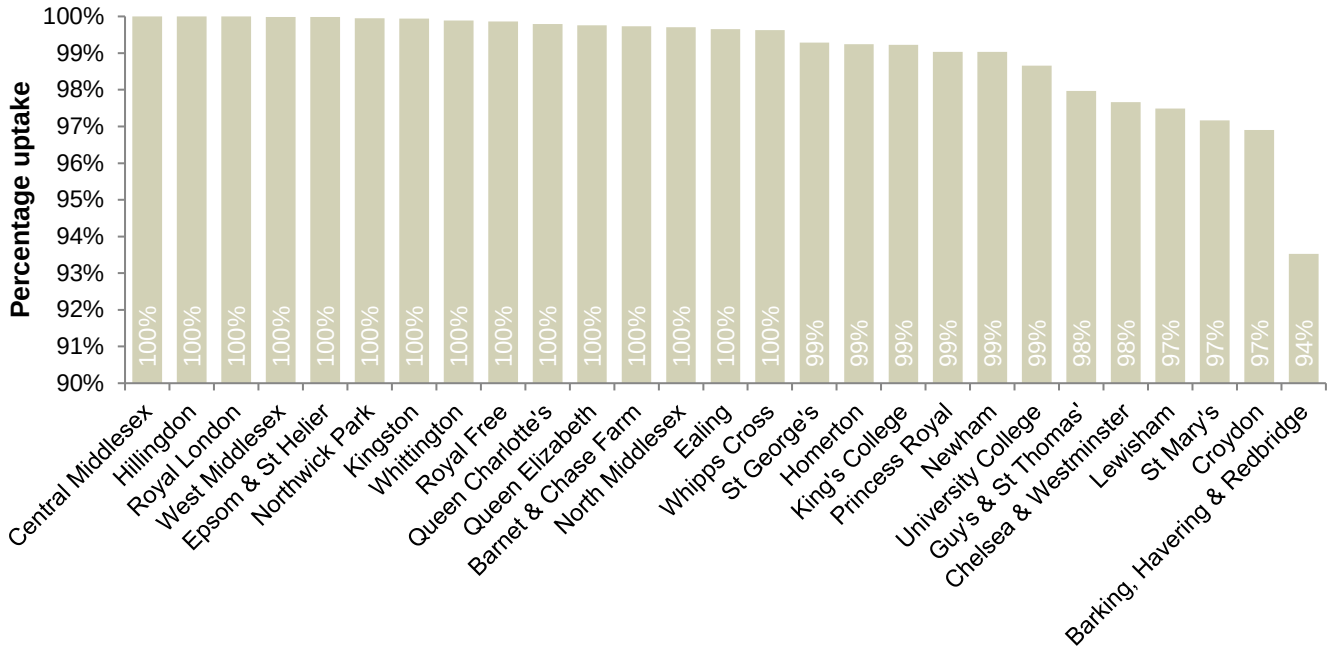


Figure 6: Rubella antibody screening uptake by maternity unit, London 2015[5]

(please note scale starts at 90%)



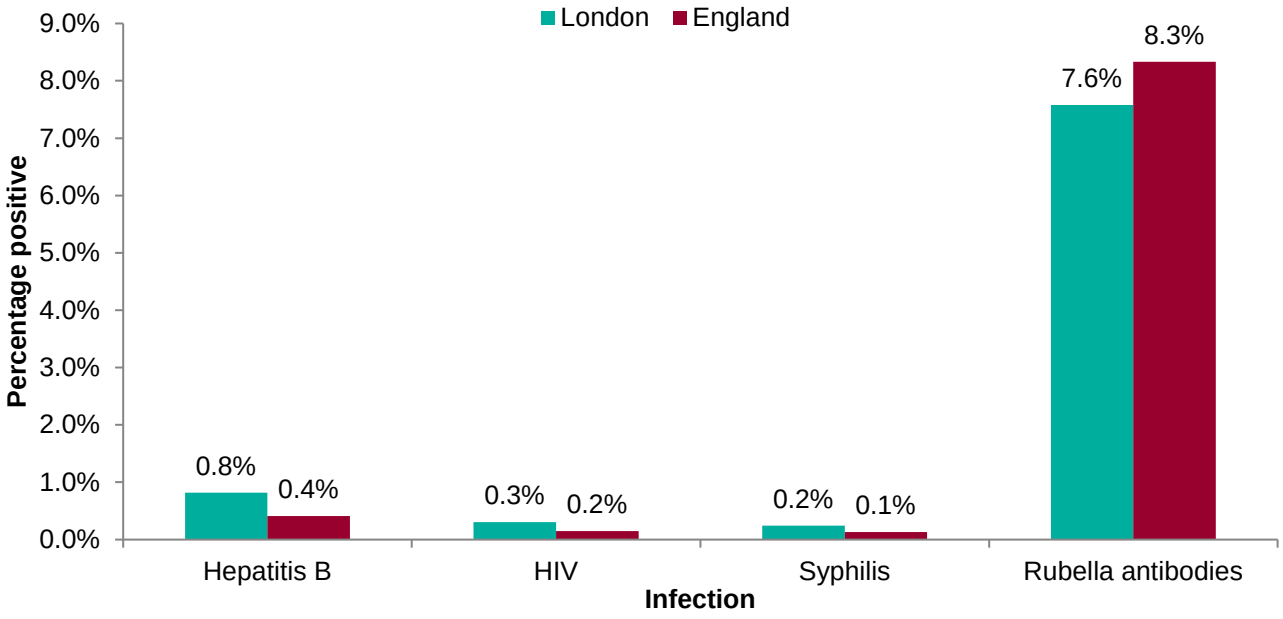
Positivity for hepatitis B, HIV, and syphilis, and negativity for rubella antibodies

The positivity rate (percentage of those tested who test positive, regardless of whether they have been tested before) for individual screening tests in London and the negativity rate for rubella antibodies are reported below (Figure 6)[5]:

- 8.2 per 1,000 were positive for hepatitis B (0.8%, n=1,246)
- 3.1 per 1,000 were positive for HIV (0.3%, n=463)
- 2.4 per 1,000 tested positive for syphilis (0.2%, n=367)
- 75.8 per 1,000 screened negative for antibodies to rubella (7.6%, n=11,287)

Compared to England, the positivity rate for hepatitis B, HIV and syphilis was higher in London. A lower proportion tested negative for rubella antibodies in London than in England (Figure 7)[5, 6, 7].

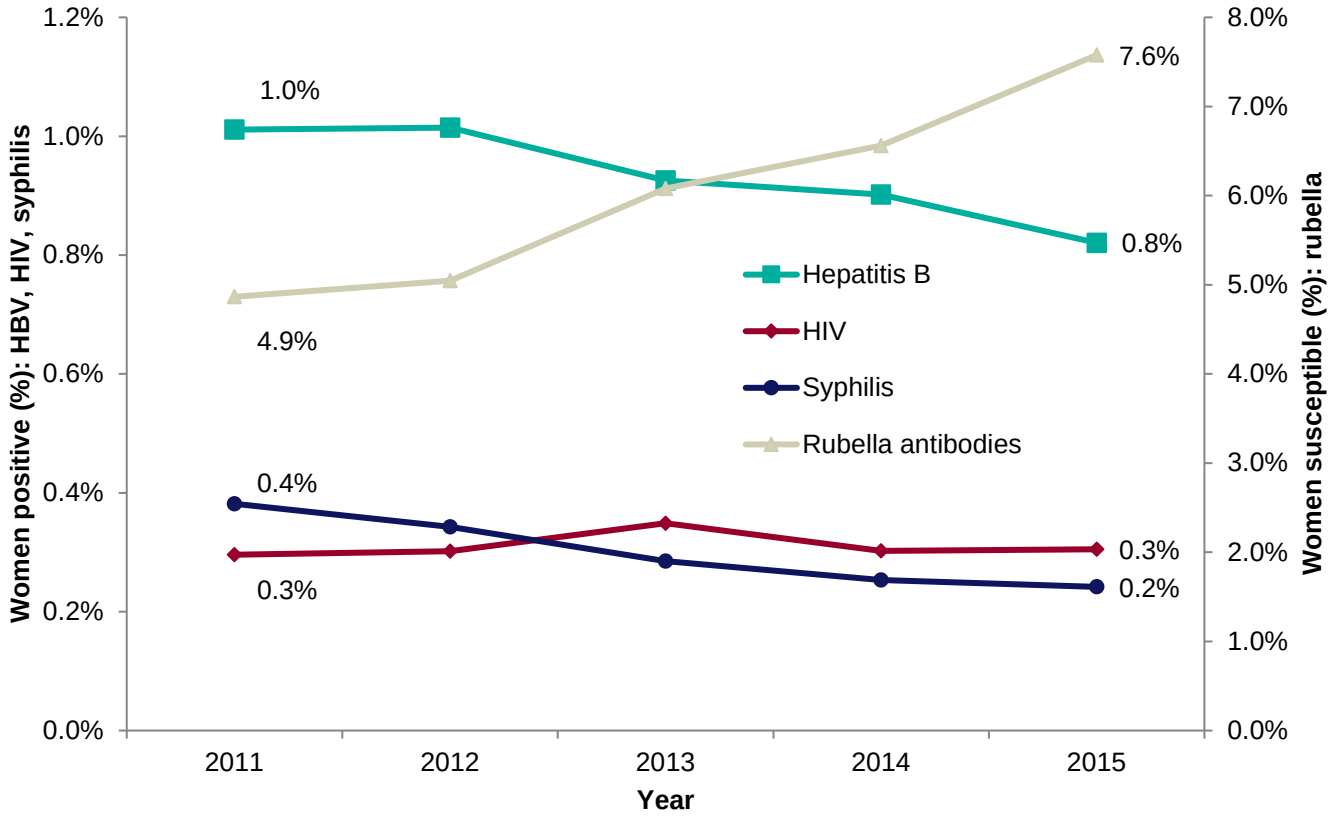
Figure 7: Percentage of women with positive tests for hepatitis B, HIV, syphilis, and negative for rubella antibodies of all women tested in maternity units in London and England, 2015[5, 6, 7]



London accounts for around two-fifths of all positive antenatal infection tests in England. Of all positive antenatal screening tests in England, 42% of positive hepatitis B tests, 43% of positive HIV tests and 39% of positive syphilis tests were identified from London maternity units. In comparison, approximately 21% of all antenatal tests are conducted in London maternity units.

The proportion testing positive for HIV remained relatively stable at 0.3% in 2011 and 2015. The proportion testing positive for syphilis reduced slightly from 0.4% in 2011 to 0.2% in 2015. The notable change over time was an observable increase in the percentage of antenatal women who screen negative for rubella antibodies, which has risen from 4.9 % in 2011 to 7.6% in 2015. There was a slight decline in hepatitis B from 1.0% in 2011 to 0.8% in 2015 (Figure 8)[5].

Figure 8: Percentage of women with positive tests for hepatitis B (HBV), HIV, syphilis, and who screen negative for rubella antibodies of all women tested in maternity units in London, 2011 to 2015[5]

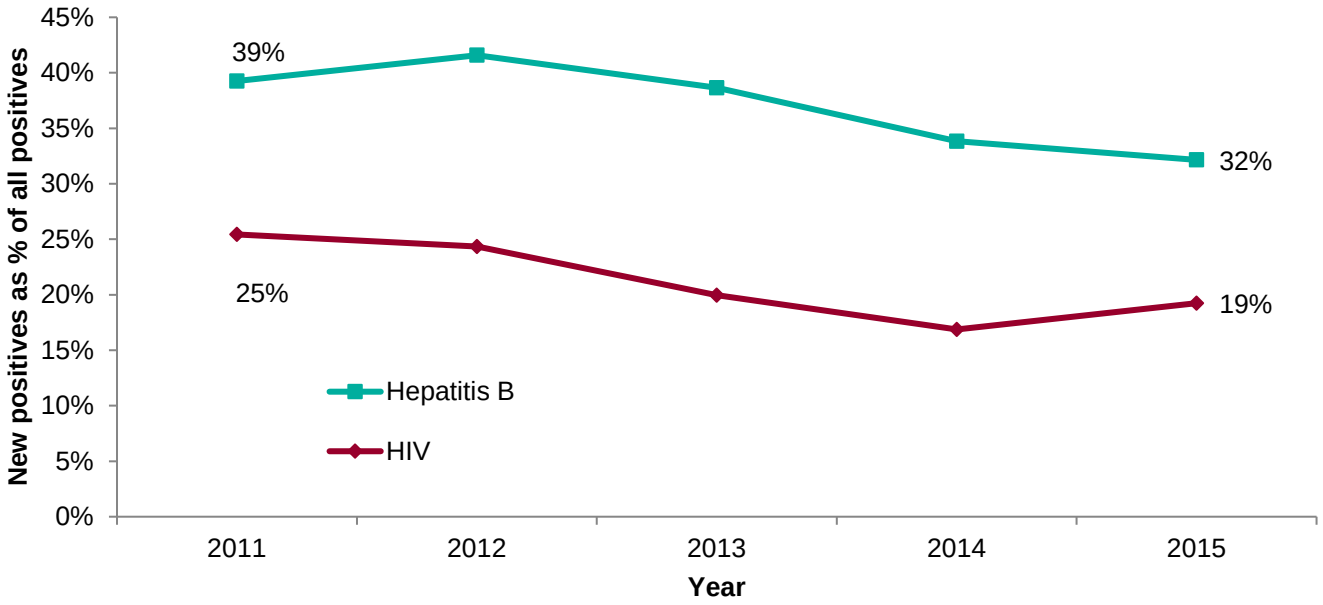


Newly diagnosed hepatitis B and HIV positive women

Most women reported as having hepatitis B identified antenatally were previously known to be positive. Out of the 1,269 women reported as being hepatitis B positive at antenatal screening in London in 2015, 32% were newly diagnosed (408), 68% were already known to be positive (838 were retested and 23 were not). This was a reduction in the proportion of all hepatitis B positives that were new diagnoses from a peak of 42% in 2012 (to 32% in 2015) (Figure 9, Appendix 9)[5].

Most women reported as being HIV positive at antenatal screening were previously known to be positive. Out of the 551 women identified as positive for HIV in London in 2015, 19% were newly diagnosed (106), 81% were already known to be positive (357 were retested and 88 were not). This was also a reduction in the proportion of all HIV positives that were new diagnoses from a peak of 25% of women in 2011 to 18% in 2015 (Figure 9, Appendix 11)[5].

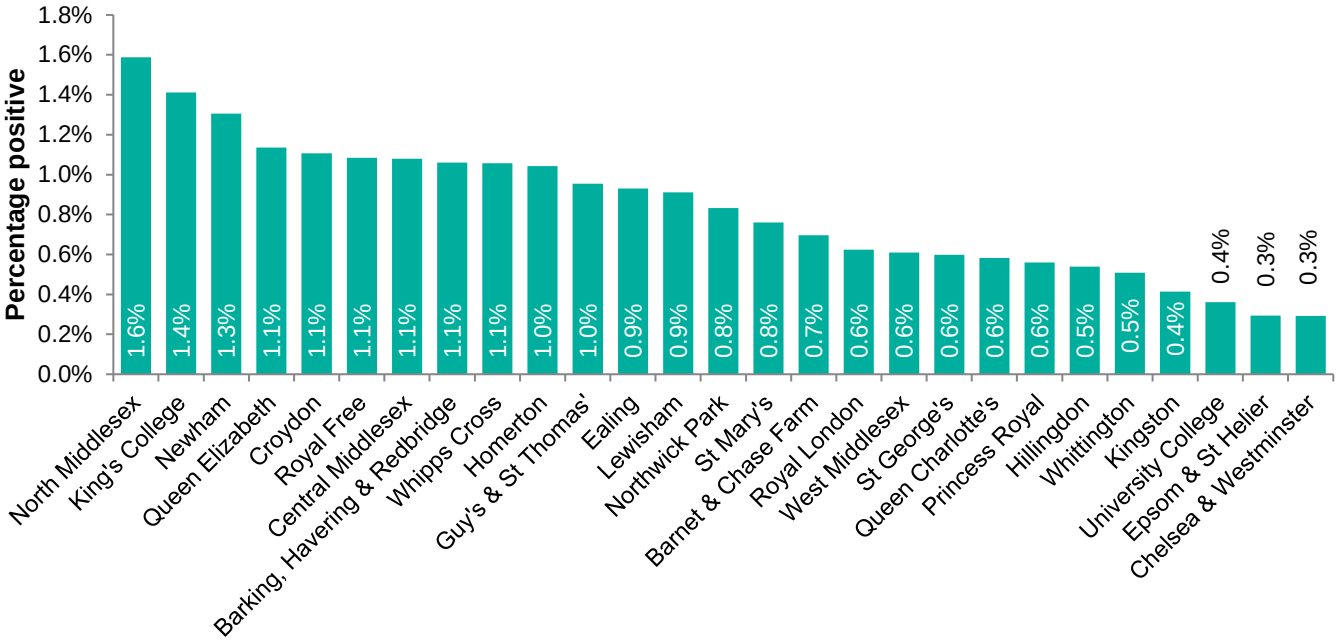
Figure 9: Percentage of women reported to be hepatitis B and HIV positive during antenatal care that are newly diagnosed with hepatitis B and HIV during their current pregnancy, London, 2011 to 2015[5] (regardless of whether they were retested)



Hepatitis B positivity by maternity unit

There was marked variation in the positivity rate (the percentage of those tested who test positive) for hepatitis B in maternity units the London region (Figure 10, Appendix 8). The positivity rate ranged from 0.3% to 1.6% in 2015 across maternity units[5].

Figure 10: The positivity rate (percentage of those tested who test positive, regardless of whether they have tested positive before) for hepatitis B by maternity unit in London, 2015[5]



Demographics of women testing positive for hepatitis B in antenatal care

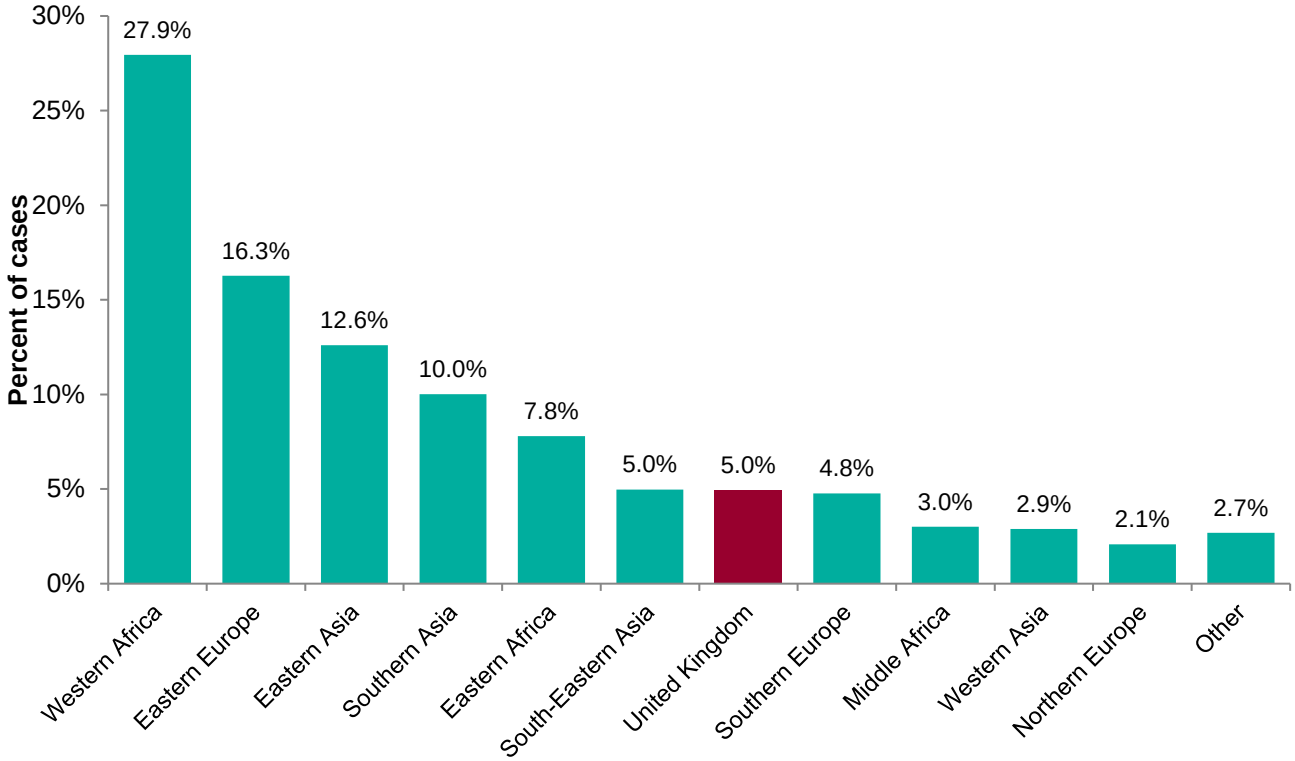
19 out of every 20 antenatal women testing positive for hepatitis B in London were born abroad (95%, 4,241/4,462, missing information 944, 2011 to 2015 inclusive) (Figure 11, women with multiple pregnancies in this time period will be counted more than once)[8].

Two fifths (40%) were born in Africa (1,765/4,462, missing information 944, 2011 to 2015 inclusive)[8]. Just under one in three women were born in Western Africa (27.9%), one in six in Eastern Europe (16.3%), and one in eight women were born in Eastern Asia (12.6%). These rates reflect the infection rates seen in these countries where infection was often acquired at birth or in childhood.

The greatest increases observed from 2011 to 2015 were in women born in Southern Europe (from 28 to 65), and in Eastern Europe (from 112 to 171), with the greatest numbers among those born in Romania, Poland and Albania[8]. Overall, the most common countries of birth were: Nigeria (10.1%), China (9.0%), Ghana (7.9%), Romania (7.9%) and Somalia (4.6%). Between 2011 and 2015 the most common countries of birth has changed slightly. In 2011 the top five were Nigeria (13.2%), China (11.1%), Ghana (9.4%), Romania (7.5%) and the UK (6.3%). In 2015, the top five were Romania (12.2%), China (11.4%), Ghana (9.1%), Nigeria (8.6%) and Albania (5.7%).

Figure 11: Region of birth of antenatal women testing positive for hepatitis B, London 2011 to 2015[8]

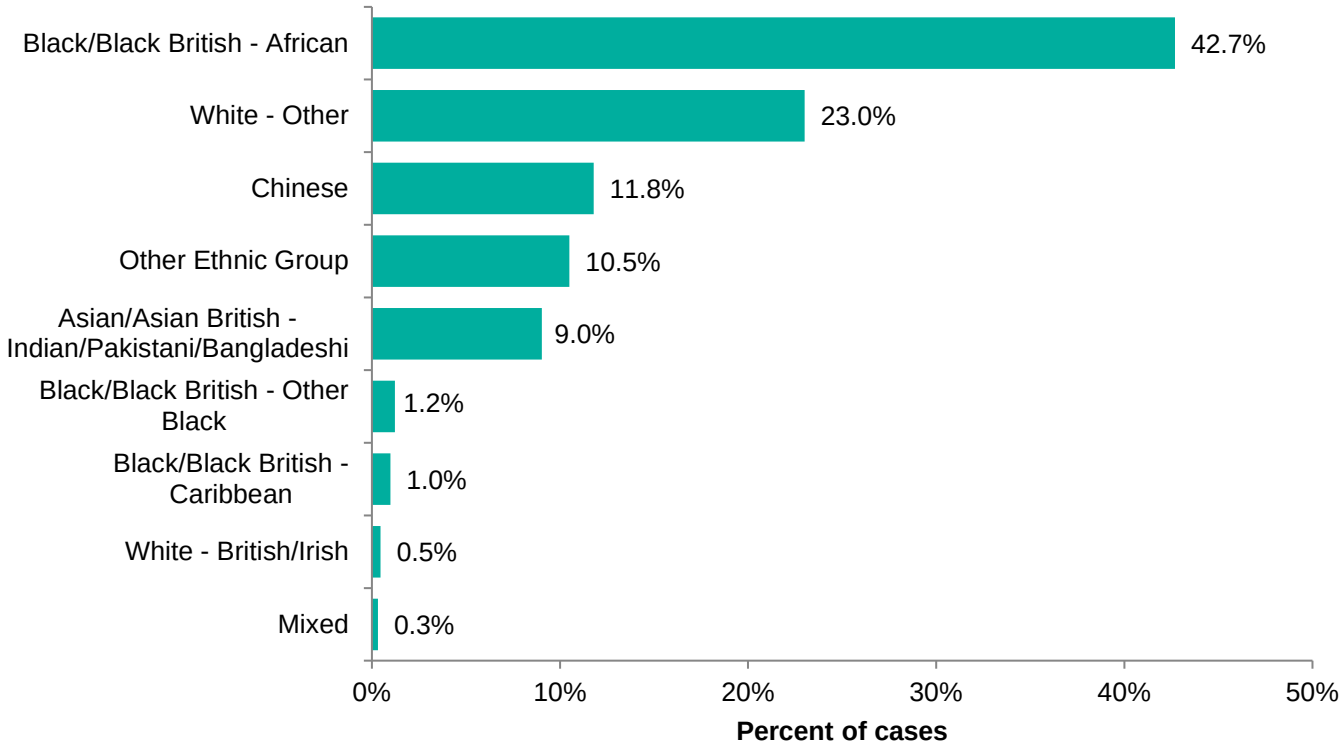
(Source: PHE London Enhanced surveillance of antenatal hepatitis B). Cases where country of birth was unknown have been excluded.



Correspondingly, most of those testing positive were black African (42.7%) and 23.0% were 'white other' (Figure 12)[8].

Figure 12: Ethnicity of antenatal women testing positive for hepatitis B, London 2011-2015[8]

(Source: PHE Enhanced surveillance of antenatal hepatitis B in London) Cases where ethnicity was unknown have been excluded. N=4,990 women



Where known, 65% of those testing positive for hepatitis B from 2011 to 2015 spoke English fluently, while 21% spoke basic English and 14% of them spoke less than basic English[8]. For those who did not have English as a first language, at least 113 different languages were reported with the greatest number of women during this period reported speaking Chinese or Vietnamese (21%), Romanian (14%), or Somali (8%), Albanian (6%) and Polish (5%).

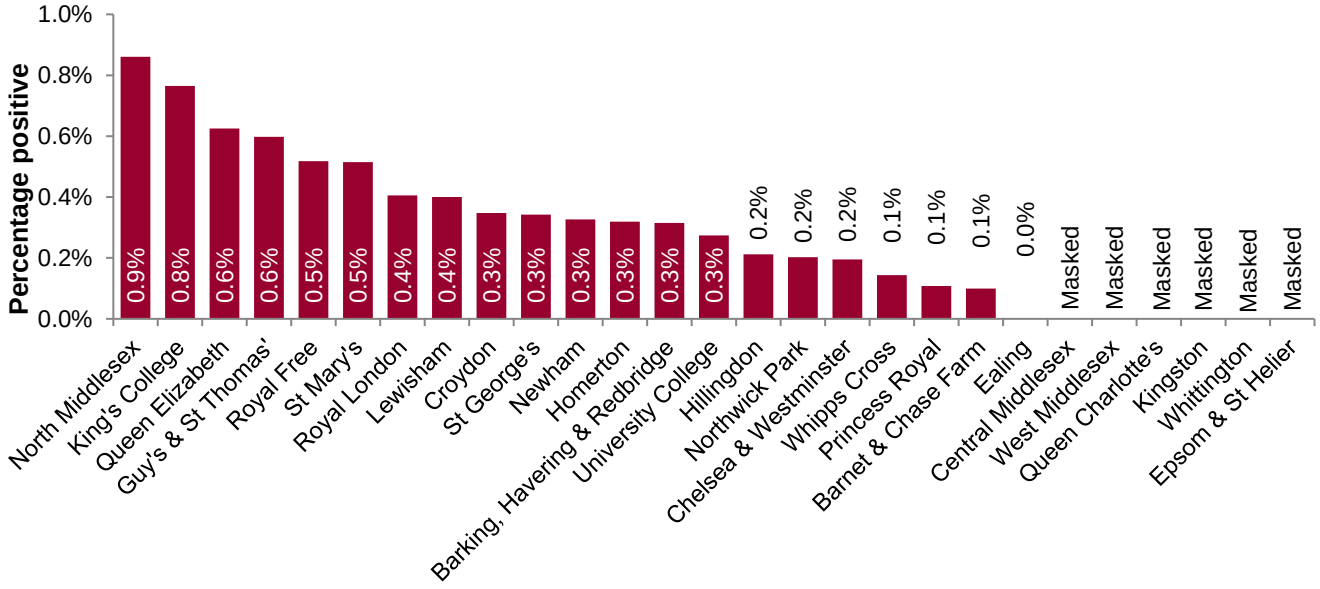
This changed slightly between 2011 and 2015. The top five most common first languages in 2011 were: Chinese or Vietnamese (24%), Romanian (11%), Somali (8%), Akan (5%), Urdu/Hindu (5%). In 2015, the top five were: Chinese or Vietnamese (21%), Romanian (12%), Albanian (8%), Turkish (6%) and Somali (5%).

HIV positivity by maternity unit

The positivity rate (the percentage of those tested who test positive) for HIV also varied by maternity unit (Figure 13). The positivity rate ranged from 0% to 0.9% across London maternity units in 2015 (Appendix 11)[5].

Figure 13: The positivity rate (percentage of those tested who test positive, regardless of whether they have tested positive before) for HIV by maternity unit in London, 2015[5]

Trusts which reported one to four positives are masked because of the risk of deductive disclosure. Please see Appendix 10.

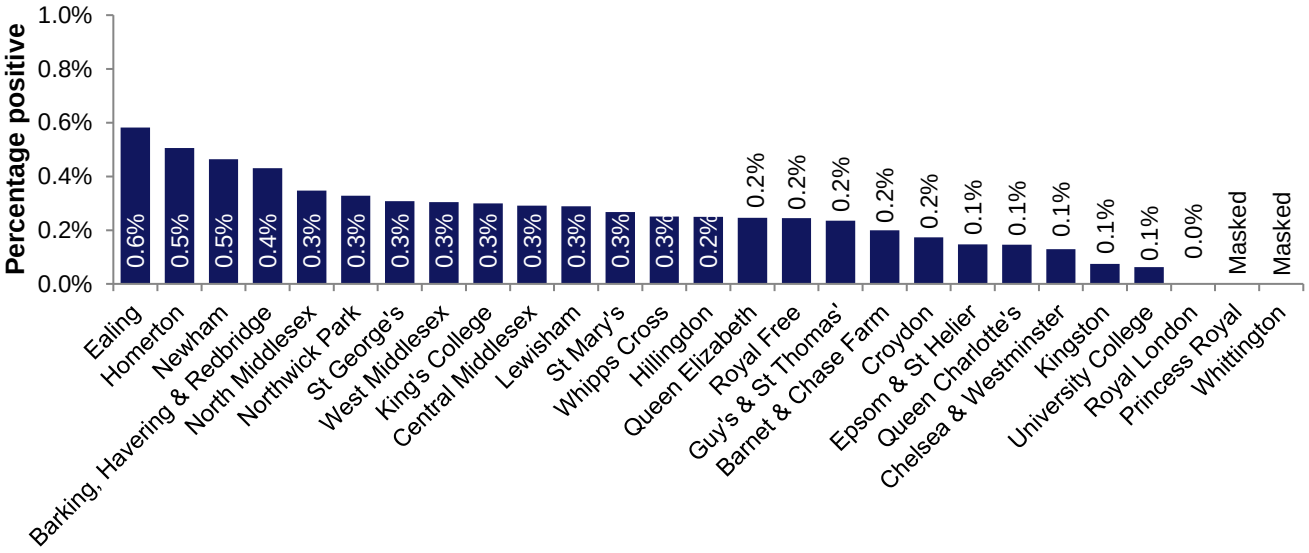


Syphilis positivity by maternity unit

The percentage of women tested positive ranged from 0% to 0.6% in 2015 in London (Figure 14, Appendix 12)[5].

Figure 14: Percentage of women who were tested antenatally who tested positive for syphilis by maternity unit in London, 2015[5]

Trusts which reported one to four positives are masked because of the risk of deductive disclosure. Please see Appendix 12.

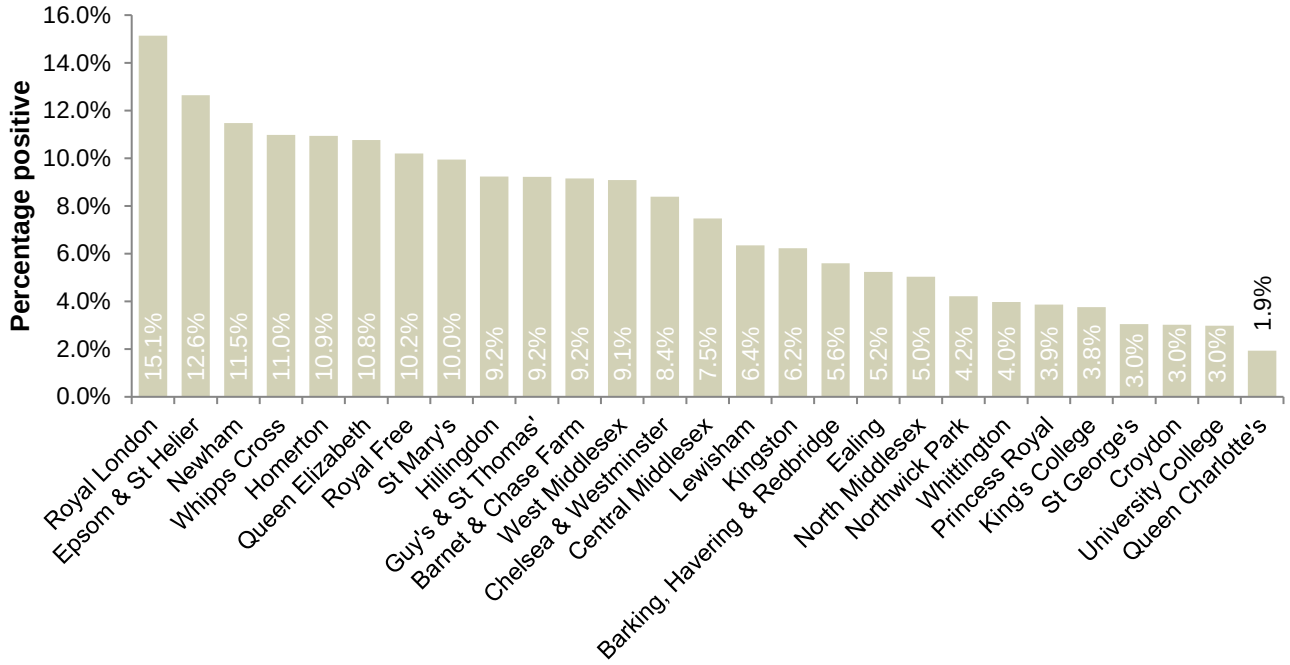


It is important to note that a positive screening test does not always mean that a person has current syphilis infection. A clinical review and confirmatory testing is needed for those who test positive.

Rubella antibody negativity by maternity unit

In London in 2015, 11,287 women were identified as not having demonstrable antibodies to rubella through antenatal screening[8]. The negativity rate for rubella antibodies in London (7.6%) in 2015 was higher than observed in 2011 (4.9%) but lower than that in England in 2015 (8.3%). The negativity rate in 2015 varied from 1.9 to 15.1% across London maternity units (Figure 15, Appendix 13).

Figure 15: Percentage of women who screened negative for rubella by maternity unit in London, 2015[5]



Discussion

Reporting of antenatal screening data by London maternity units is good and the uptake of infectious disease screening is very high with only one clinic screening less than 95% of antenatal women for a specific infection.

The higher burden of infection observed among women in London reflects the larger numbers of those in risk groups living in the capital, particularly those born abroad in countries with a higher burden of these infections.

To improve maternity services and maintain a high uptake of screening, providers should use trends in ESAHB data to determine changes in their client populations and ensure that they have appropriate resources such as information materials in the most common languages spoken. Ensuring high quality information is included in ESAHB surveillance will in turn provide clinics with the best evidence to develop their service.

In light of the increased burden in London, it remains particularly important to ensure that patient pathways for further diagnostic tests and interventions are robust so that women get the best care, and transmission of infection to their babies can be prevented. This should include reviewing how many babies of mothers identified as hepatitis B are subsequently reported by child health teams as having completed vaccination.

There has been a notable increase over time in the proportion of women screening negative for rubella antibodies, which is in line with the national trend. The explanation for this is probably multi-factorial but the following factors may contribute:

- variation in laboratory testing assays and cut-off values used and the difficulty in defining susceptibility. The current serological method of testing is not thought to provide an accurate reflection of women's ability to mount an immune response to rubella if exposed[6]
- an increase in the relative number of women in the antenatal screening cohort who spent their childhood in low prevalence countries where they have been neither exposed to infection with rubella or immunised against rubella

Following a review of evidence by the UK National Screening Committee (UK NSC) in 2003 and 2012, it was decided to stop rubella susceptibility screening in pregnancy in England on 1 April 2016[3, 4] (see appendix 1 for further information).

Glossary

ESAHB	Enhanced Surveillance of Antenatal Hepatitis B
FES	Field Epidemiology Service
FES SEaL	Field Epidemiology Service South East and London
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
LIMS	Laboratory Information Management System
NHS IDPS	NHS Infectious Diseases in Pregnancy Screening Programme
MMR	Measles, mumps and rubella vaccine
NAISM	National Antenatal Infections Screening Monitoring
NHS	National Health Service
UK NSC	UK National Screening Committee
PHE	Public Health England
PHEC	Public Health England Centre
RACHSM	Regional Antenatal/Child Health Screening Manager

About Field Epidemiology Services

The Field Epidemiology Service (FES) supports Public Health England Centres and partner organisations through the application of epidemiological methods to inform public health action.

FES does this in two main ways. Firstly, by providing a flexible expert resource, available as and when needed, to undertake epidemiological investigations for key health protection work. Secondly, through the expert analysis, interpretation and dissemination of surveillance information to PHE Centres, local health partners, service providers and commissioners of services.

Within the FES network, excellence and innovation is encouraged. We foster academic collaborations and take active part and lead in research, development and training.

You can contact your local FES team at: fes.seal@phe.gov.uk

If you have any comments or feedback regarding this report or the FES service, please contact: fes.seal@phe.gov.uk

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- Clare Sawyer (PHE Field Epidemiology Services) for checking the data and ESAHB data entry

Appendix 1: Rationale for screening

Hepatitis B

Hepatitis B is a viral infection of the cells of the liver. Hepatitis B may cause persistent infections of the liver. Perinatal transmission from mother to baby is a very effective route of transmission of hepatitis B. Infants infected at birth by contact with the virus in their mothers' blood and body fluids are at high risk of developing a persistent (long-term) infection; 90% of those infected as neonates become persistently infected. In adults, only 10% of those infected become persistently infected (chronic carriers). Long-term infection can be associated with liver inflammation, which can lead to liver cirrhosis, which progresses to liver cancer and death.

The risk of infection to the new-born is dependent on the mother's infectivity. Between 70 to 90% of mothers who are hepatitis B e-antigen (HBeAg) positive will transmit hepatitis B to their infants. Transmission is much lower (approximately 10%) in cases when there is maternal antibody to e-antigen.

Vaccination of the new-born at birth (within 48 hours) and at one, two and 12 months of age from mothers found positive for surface antigen (HBsAg) can prevent perinatal transmission of the infection at birth. Vaccination alone will reduce the risk of infection by 70% and the addition of Hepatitis B Immune Globulin (HBIG) for those at higher risk further reduces the risk of infection by 90%.

HIV

Human Immunodeficiency Virus (HIV) attacks cells of the immune system, particularly the white blood cells called CD4 cells. At the stage where the individual's immune system has broken down, the person is diagnosed as having Acquired Immunodeficiency Syndrome (AIDS). HIV is an important public health issue in the UK. It is an infection associated with serious morbidity, high costs of treatment and care, significant mortality and high number of potential years of life lost.

HIV can be transmitted via the blood, semen, vaginal fluids, and breast milk of an infected person. Most infections are acquired through unprotected sex, including sex between men and heterosexual sex. Mother to baby transmission during pregnancy and perinatally is important, as the prognosis in infected babies is poor and there is a high mortality in the first two years of life. Without interventions the risk of transmission from mother to baby is of the order of 25%, with breast-feeding increasing the risk by a further 15%. If diagnosed early, interventions can reduce mother to baby transmission of HIV from 25 to 40% to less than 2%.

Syphilis

Syphilis is caused by a ‘bacteria-like’ spirochete called *Treponema pallidum*. This organism can be transmitted between partners during sexual intercourse or from an infected pregnant woman across the placenta to her developing foetus.

There are three stages of infection; primary, secondary, and late syphilis. The primary infection may present with a genital sore; secondary symptoms occurring six weeks to six months later can include a non-specific rash. Late sequelae in untreated cases can include a variety of systems including the central nervous system. Infectious syphilis in a pregnant woman can result in miscarriage, stillbirth, or a congenitally infected baby. The risk of mother to baby transmission depends on the stage of the maternal disease with higher risk of transmission during the first four years of infection (70 to 100%). Treatment of maternal infection will reduce the risk of transmission to the baby by 80 to 90%.

Rubella antibodies

Rubella is a virus of the Togaviridae group. Once an individual has become infected with the rubella virus it can cause a systemic infection that may be characterised by a rash or fever. The virus is spread from person to person by inhalation of respiratory droplets from an infected individual.

Rubella immunisation was introduced in the UK in 1970 for pre-adolescent girls and non-immune women of childbearing age, to protect them from acquiring rubella in pregnancy. In 1988, Measles Mumps and Rubella vaccine (MMR) was introduced for all children. Due to the success of the vaccination programme there are now very few cases of rubella infection in the UK.

The most critical time for rubella infection for the foetus is during the first trimester, with the risk of affecting the baby declining for infections caught later in pregnancy. The most common-features of congenital rubella include: intrauterine growth restriction, central nervous system defects, heart defects, deafness, or retinopathy/cataracts.

Pregnant women must not be given MMR vaccine as it is a live vaccine. The intervention for a non-immune mother who is screened in pregnancy is to offer immunisation after she has delivered her baby, to prevent infection in future pregnancies. There is no benefit in the current pregnancy, and antenatal testing cannot prevent rubella infection in the woman’s first pregnancy.

Following a review of evidence by the UK National Screening Committee (UK NSC) in 2003 and 2012[3, 4], it was decided to stop rubella susceptibility screening in pregnancy in England on 1 April 2016[2].

On both occasions the Committee found that screening for rubella susceptibility during pregnancy no longer met the criteria for a screening programme and should be discontinued because:

- rubella infection levels in the UK are so low they are defined as eliminated by the World Health Organization
- rubella infection in pregnancy is very rare
- being fully immunised with the MMR vaccine before becoming pregnant is more effective in protecting women against rubella in pregnancy
- the screening test used can potentially give inaccurate results and cause unnecessary stress among women

PHE's advice regarding rubella for women who are planning a pregnancy is that:

- their medical records should be checked at appropriate opportunities to ensure that they have had two doses of MMR, and vaccine offered if they have not. This may occur, for example, when they register with a new GP, attend a family planning clinic or travel abroad
- they should receive the vaccine before trying for a baby; two doses will also give protection against mumps and measles

Appendix 2: Standards in place for the screening programme

The 2003 Department of Health's Screening for Infectious Diseases in Pregnancy Standards set a target of 90% for the uptake of antenatal screening for HIV[9]. This was the only infection with such a target until the 2010 revised Standards retained this 90% uptake target as a reference point for all four infections[10].

In 2009, the UK National Screening Committee agreed on a set of Key Performance Indicators (KPIs) as part of a strategy for the collation and return of Quality Assurance and performance data[10]. Two of these indicators are related to infectious diseases screening in pregnancy: HIV coverage and the timely referral of hepatitis B positive women for specialist assessment.

Quality assurance for the infectious disease in pregnancy screening programme includes the quality standards and Key Performance Indicators. Quality standards for IDPS were updated in 2016 with the aim to facilitate further improvements in screening for antenatal infections. These standards can be found at: www.gov.uk/government/publications/infectious-diseases-in-pregnancy-screening-programme-standards

Since the introduction of KPI reporting, data collection processes have been actively reviewed by London region NHS Trusts and the regional coordinator to ensure data is as robust as possible. As a result, the quality of screening monitoring data is expected to improve over the coming years.

Appendix 3: Data sources and limitations

National Antenatal Infections Screening Monitoring (NAISM)

Since 2004, the National Antenatal Infections Screening Monitoring (NAISM) has been monitoring the uptake and test results of antenatal screening, which is offered to all pregnant women in England as part of the NHS Infectious Diseases in Pregnancy Screening Programme.

PHE collected and collated data on screening uptake and screening test results. A proforma was sent out by the Field Epidemiology Service South East and London (FES SEaL) team to each Antenatal Screening Coordinator or identified lead in each maternity unit on a quarterly basis requesting data on:

- number of pregnant women booked for antenatal care
- number offered testing for infections
- number of women declining testing
- number of pregnant women tested
- reasons for differences between number booked and number tested, where relevant
- number of newly diagnosed women (hepatitis B and HIV)
- number of previously diagnosed women rescreened this pregnancy (hepatitis B and HIV)
- number of previously diagnosed women not rescreened (hepatitis B and HIV)
- number of women with positive syphilis test results
- number of women negative for rubella antibodies (susceptible to rubella infection)

The data was then checked for completeness, entered, and held in a secure Microsoft Access database by the FES SEaL team.

Enhanced Surveillance of Antenatal Hepatitis B (ESAHB)

In London, a special surveillance system called Enhanced Surveillance of Antenatal Hepatitis B (ESAHB) operates[8]. Antenatal clinics provide information on every case of hepatitis B diagnosed during antenatal care in London to the FES SEaL team with basic demographic information. The data is then checked for completeness, entered, and held in a secure Microsoft Access database by the FES SEaL team.

Local data sources

Maternity clinics in London derive data on the number of women using the antenatal service (bookings) and those accepting screening from a centralised hospital electronic database (HMIS). Laboratory test results may now be integrated into the HMIS system but historically were derived from a separate laboratory database (LIMS).

Calculation

The uptake of screening is calculated as the number of women tested divided by the number of women booked for antenatal screening multiplied by 100. Where information was available, the number of women transferred or not offered a test with a valid reason, were removed from the numbers of women booked. Where the number of women booked for screening was not stated explicitly, this figure was substituted with the number offered screening or derived from the sum of those declining screening and those tested.

$$Screening\ Uptake\ (\%) = \frac{Number\ of\ women\ tested}{Number\ of\ women\ booked} \times 100$$

The positivity rate for hepatitis B and HIV is calculated as the number of women newly diagnosed plus previously diagnosed but retested at this pregnancy divided by the number of women tested multiplied by 100.

$$Positivity\ rate\ for\ Hep\ B\ or\ HIV\ (\%) = \frac{No.of\ newly\ diagnosed\ + previously\ diagnosed\ but\ retested}{Number\ of\ women\ tested} \times 100$$

The percentage of hepatitis B and HIV that is newly diagnosed is calculated as the number of women newly diagnosed divided by the total number who were reported as being positive regardless of whether they were retested.

$$Newly\ diagnosed\ Hep\ B\ or\ HIV\ (\%) = \frac{Number\ of\ women\ newly\ diagnosed}{Number\ of\ women\ tested} \times 100$$

The proportion of women susceptible to rubella infection is calculated as number of women negative for rubella antibodies divided by number of women tested multiplied by 100.

$$Rubella\ susceptible\ (\%) = \frac{Number\ of\ women\ negative\ for\ rubella\ antibodies}{Number\ of\ women\ tested} \times 100$$

Data limitations

Capping

Most of the information is now held on electronic databases but a small number of clinics collect the data from paper records. An automated data extraction system for the collection of data for Key Performance Indicators (KPI) has been developed by the Maternity and Child Health Services department and is currently being rolled out across England, with the caveat that all clinics present their source data in electronic form.

Where screening test results were historically derived from a separate laboratory database, difficulties were encountered in accurately determining which results pertained to the women who had attended antenatal care appointments. This affects data collected prior to 2012.

In addition, laboratory screening tests are not always performed in the same quarter as the date of booking. In London, this has resulted in a surfeit in the number screened compared to those booked in the affected quarter for 9% of returns in the last five years, affecting the calculation of screening uptake. This issue has improved over time due to better integration of booking and laboratory data sources.

Appendix 4

Table A4: Uptake of hepatitis B screening tests by maternity unit in the London region, 2015

Clinic/trust	Quarters received	Bookings	Tests (n)	Qs inc	Qs capped	Uptake (%)
Barking, Havering & Redbridge	4	9,844	9,531	4	*0*	96.8%
Barnet & Chase Farm	4	6,045	6,029	4	*0*	99.7%
Central Middlesex	4	2,407	2,407	4	*0*	100.0%
Chelsea & Westminster	4	6,322	6,174	4	*0*	97.7%
Croydon	4	4,754	4,607	4	*0*	96.9%
Ealing**	2	863	860	2	*0*	99.7%
Epsom & St Helier	4	5,464	5,462	4	*0*	100.0%
Guy's & St Thomas'	4	7,421	7,225	4	*0*	97.4%
Hillingdon	4	5,201	5,200	4	*0*	100.0%
Homerton	4	6,963	6,909	4	*0*	99.2%
King's College	4	6,066	6,019	4	*0*	99.2%
Kingston	4	6,760	6,756	4	*0*	99.9%
Lewisham	4	4,619	4,503	4	*0*	97.5%
Newham	4	8,047	7,969	4	*0*	99.0%
North Middlesex	4	6,062	6,044	4	*0*	99.7%
Northwick Park	4	3,962	3,960	4	*0*	99.9%
Princess Royal	4	5,594	5,539	4	*0*	99.0%
Queen Charlotte's	4	6,201	6,188	4	*0*	99.8%
Queen Elizabeth	4	5,293	5,281	4	*0*	99.8%
Royal Free	4	3,692	3,687	4	*0*	99.9%
Royal London	4	6,407	6,407	4	*0*	100.0%
St George's	4	5,886	5,844	4	*0*	99.3%
St Mary's	4	4,871	4,861	4	*0*	99.8%
University College	4	8,132	8,023	4	*0*	98.7%
West Middlesex	4	6,234	6,233	4	*0*	100.0%
Whipps Cross	4	5,599	5,578	4	*0*	99.6%
Whittington	4	4,533	4,528	4	*0*	99.9%
LONDON	**106**	**153,242**	**151,824**	**106**	***0***	**99.1%**

**Maternity unit closed at the end of quarter 2.

Appendix 5

Table A5: Uptake of HIV screening tests by maternity unit in the London region, 2015

Clinic/trust	Quarters received	Bookings	Tests (n)	Qs inc	Qs capped	Uptake (%)
Barking, Havering & Redbridge	4	9,844	9,527	4	*0*	96.8%
Barnet & Chase Farm	4	6,045	6,028	4	*0*	99.7%
Central Middlesex	4	2,407	2,407	4	*0*	100.0%
Chelsea & Westminster	4	6,322	6,156	4	*0*	97.4%
Croydon	4	4,754	4,607	4	*0*	96.9%
Ealing**	2	863	860	2	*0*	99.7%
Epsom & St Helier	4	5,464	5,459	4	*0*	99.9%
Guy's & St Thomas'	4	7,421	7,198	4	*0*	97.0%
Hillingdon	4	5,201	5,195	4	*0*	99.9%
Homerton	4	6,963	6,888	4	*0*	98.9%
King's College	4	6,066	6,017	4	*0*	99.2%
Kingston	4	6,760	6,753	4	*0*	99.9%
Lewisham	4	4,619	4,504	4	*0*	97.5%
Newham	4	8,047	7,967	4	*0*	99.0%
North Middlesex	4	6,062	6,043	4	*0*	99.7%
Northwick Park	4	3,962	3,959	4	*0*	99.9%
Princess Royal	4	5,594	5,540	4	*0*	99.0%
Queen Charlotte's	4	6,201	6,188	4	*0*	99.8%
Queen Elizabeth	4	5,293	5,281	4	*0*	99.8%
Royal Free	4	3,692	3,666	4	*0*	99.3%
Royal London	4	6,407	6,407	4	*0*	100.0%
St George's	4	5,886	5,840	4	*0*	99.2%
St Mary's	4	4,871	4,860	4	*0*	99.8%
University College	4	8,132	8,023	4	*0*	98.7%
West Middlesex	4	6,234	6,227	4	*0*	99.9%
Whipps Cross	4	5,599	5,578	4	*0*	99.6%
Whittington	4	4,533	4,525	4	*0*	99.8%
LONDON	**106**	**153,242**	**151,703**	**106**	***0***	**99.0%**

**Maternity unit closed at the end of quarter 2.

Appendix 6

Table A6: Uptake of syphilis screening tests by maternity unit in the London region, 2015

Clinic/trust	Quarters received	Bookings	Tests (n)	Qs inc	Qs capped	Uptake (%)
Barking, Havering & Redbridge	4	9,844	9,522	4	*0*	96.7%
Barnet & Chase Farm	4	6,045	6,029	4	*0*	99.7%
Central Middlesex	4	2,407	2,407	4	*0*	100.0%
Chelsea & Westminster	4	6,322	6,174	4	*0*	97.7%
Croydon	4	4,754	4,607	4	*0*	96.9%
Ealing**	2	863	860	2	*0*	99.7%
Epsom & St Helier	4	5,464	5,462	4	*0*	100.0%
Guy's & St Thomas'	4	7,421	7,225	4	*0*	97.4%
Hillingdon	4	5,201	5,200	4	*0*	100.0%
Homerton	4	6,963	6,915	4	*0*	99.3%
King's College	4	6,066	6,019	4	*0*	99.2%
Kingston	4	6,760	6,756	4	*0*	99.9%
Lewisham	4	4,619	4,501	4	*0*	97.4%
Newham	4	8,047	7,969	4	*0*	99.0%
North Middlesex	4	6,062	6,043	4	*0*	99.7%
Northwick Park	4	3,962	3,960	4	*0*	99.9%
Princess Royal	4	5,594	5,539	4	*0*	99.0%
Queen Charlotte's	4	6,201	6,188	4	*0*	99.8%
Queen Elizabeth	4	5,293	5,277	4	*0*	99.7%
Royal Free	4	3,692	3,686	4	*0*	99.8%
Royal London	4	6,407	6,407	4	*0*	100.0%
St George's	4	5,886	5,844	4	*0*	99.3%
St Mary's	4	4,871	4,861	4	*0*	99.8%
University College	4	8,132	8,023	4	*0*	98.7%
West Middlesex	4	6,234	6,233	4	*0*	100.0%
Whipps Cross	4	5,599	5,578	4	*0*	99.6%
Whittington	4	4,533	4,528	4	*0*	99.9%
LONDON	**106**	**153,242**	**151,813**	**106**	***0***	**99.1%**

**Maternity unit closed at the end of quarter 2.

Appendix 7

Table A7: Uptake of rubella screening tests by maternity unit in the London region, 2015

Clinic/trust	Quarters received	Bookings	Tests (n)	Qs inc	Qs capped	Uptake (%)
Barking, Havering & Redbridge	4	9,844	9,207	4	*0*	93.5%
Barnet & Chase Farm	4	6,045	6,029	4	*0*	99.7%
Central Middlesex	4	2,407	2,407	4	*0*	100.0%
Chelsea & Westminster	4	6,322	6,174	4	*0*	97.7%
Croydon	4	4,754	4,607	4	*0*	96.9%
Ealing**	2	863	860	2	*0*	99.7%
Epsom & St Helier	4	5,464	5,463	4	*0*	100.0%
Guy's & St Thomas'	4	7,421	7,270	4	*1*	98.0%
Hillingdon	4	5,201	5,201	4	*0*	100.0%
Homerton	4	6,963	6,910	4	*0*	99.2%
King's College	4	6,066	6,019	4	*0*	99.2%
Kingston	4	6,760	6,756	4	*0*	99.9%
Lewisham	4	4,619	4,503	4	*0*	97.5%
Newham	4	8,047	7,969	4	*0*	99.0%
North Middlesex	4	6,062	6,044	4	*0*	99.7%
Northwick Park	4	3,962	3,960	4	*0*	99.9%
Princess Royal	4	5,594	5,540	4	*0*	99.0%
Queen Charlotte's	4	6,201	6,188	4	*0*	99.8%
Queen Elizabeth	4	5,293	5,280	4	*0*	99.8%
Royal Free	4	3,692	3,687	4	*0*	99.9%
Royal London	4	6,407	6,407	4	*0*	100.0%
St George's	4	5,886	5,844	4	*0*	99.3%
St Mary's	4	4,871	4,733	4	*0*	97.2%
University College	4	8,132	8,023	4	*0*	98.7%
West Middlesex	4	6,234	6,233	4	*0*	100.0%
Whipps Cross	4	5,599	5,578	4	*0*	99.6%
Whittington	4	4,533	4,528	4	*0*	99.9%
LONDON	**106**	**153,242**	**151,420**	**106**	***1***	**98.8%**

**Maternity unit closed at the end of quarter 2.

Appendix 8

Table A8: Antenatal screening Hepatitis B test positivity rate by maternity unit in the London region, 2015

Clinic/trust	Quarters received	Tested	Pos. (n)	Qs inc	Pos. (%)
Barking, Havering & Redbridge	4	9,531	101	4	1.1%
Barnet & Chase Farm	4	6,029	42	4	0.7%
Central Middlesex	4	2,407	26	4	1.1%
Chelsea & Westminster	4	6,174	18	4	0.3%
Croydon	4	4,607	51	4	1.1%
Ealing**	2	860	8	2	0.9%
Epsom & St Helier	4	5,462	16	4	0.3%
Guy's & St Thomas'	4	7,225	69	4	1.0%
Hillingdon	4	5,200	28	4	0.5%
Homerton	4	6,909	72	4	1.0%
King's College	4	6,019	85	4	1.4%
Kingston	4	6,756	28	4	0.4%
Lewisham	4	4,503	41	4	0.9%
Newham	4	7,969	104	4	1.3%
North Middlesex	4	6,044	96	4	1.6%
Northwick Park	4	3,960	33	4	0.8%
Princess Royal	4	5,539	31	4	0.6%
Queen Charlotte's	4	6,188	36	4	0.6%
Queen Elizabeth	4	5,281	60	4	1.1%
Royal Free	4	3,687	40	4	1.1%
Royal London	4	6,407	40	4	0.6%
St George's	4	5,844	35	4	0.6%
St Mary's	4	4,861	37	4	0.8%
University College	4	8,023	29	4	0.4%
West Middlesex	4	6,233	38	4	0.6%
Whipps Cross	4	5,578	59	4	1.1%
Whittington	4	4,528	23	4	0.5%
LONDON	**106**	**151,824**	**1246**	**106**	**0.8%**

**Maternity unit closed at the end of quarter 2.

Appendix 9

Table A9: Hepatitis B positives by type of positive and London maternity unit. Ordered by percentage of positives that were new, 2015

Clinic/trust	New positive	Prior known positive and retested	Prior known positive and not retested	Percentage newly positive
Barking, Havering & Redbridge	97	4	1	95%
North Middlesex	51	45	0	53%
Croydon	20	31	0	39%
Guy's & St Thomas'	26	43	0	38%
Ealing**	3	5	0	38%
Kingston	10	18	0	36%
Hillingdon	9	19	0	32%
Royal Free	12	28	0	30%
King's College	25	60	0	29%
Lewisham	12	29	0	29%
Royal London	11	29	0	28%
Northwick Park	9	24	0	27%
Whipps Cross	16	43	0	27%
Central Middlesex	7	19	0	27%
Newham	27	77	0	26%
Princess Royal	7	24	0	23%
St Mary's	8	29	0	22%
Barnet & Chase Farm	13	29	19	21%
West Middlesex	8	30	0	21%
Homerton	14	58	0	19%
Queen Elizabeth	8	52	0	13%
Queen Charlotte's	5	31	3	13%
Epsom & St Helier	2	14	0	13%
Chelsea & Westminster	2	16	0	11%
St George's	3	32	0	9%
University College	2	27	0	7%
Whittington	1	22	0	4%
LONDON	**408**	**838**	**23**	**32%**

**Maternity unit closed at the end of quarter 2.

Appendix 10

Table A10: Antenatal screening HIV test positivity by maternity unit in the London region, 2015

Clinic/trust	Quarters received	Tested	Pos. (n)	Qs inc	Pos. (%)
Barking, Havering & Redbridge	4	9,527	30	4	0.3%
Barnet & Chase Farm	4	6,028	6	4	0.1%
Central Middlesex	4	2,407	<5*	4	<0.3%
Chelsea & Westminster	4	6,156	12	4	0.2%
Croydon	4	4,607	16	4	0.3%
Ealing**	2	860	0	2	0.0%
Epsom & St Helier	4	5,459	<5*	4	<0.1%
Guy's & St Thomas'	4	7,198	43	4	0.6%
Hillingdon	4	5,195	11	4	0.2%
Homerton	4	6,888	22	4	0.3%
King's College	4	6,017	46	4	0.8%
Kingston	4	6,753	<5*	4	<0.1%
Lewisham	4	4,504	18	4	0.4%
Newham	4	7,967	26	4	0.3%
North Middlesex	4	6,043	52	4	0.9%
Northwick Park	4	3,959	8	4	0.2%
Princess Royal	4	5,540	6	4	0.1%
Queen Charlotte's	4	6,188	<5*	4	<0.1%
Queen Elizabeth	4	5,281	33	4	0.6%
Royal Free	4	3,666	19	4	0.5%
Royal London	4	6,407	26	4	0.4%
St George's	4	5,840	20	4	0.3%
St Mary's	4	4,860	25	4	0.5%
University College	4	8,023	22	4	0.3%
West Middlesex	4	6,227	<5*	4	<0.1%
Whipps Cross	4	5,578	8	4	0.1%
Whittington	4	4,525	<5*	4	<0.2%
LONDON	**106**	**151,703**	**463**	**106**	**0.3%**

*To prevent deductive disclosure numbers between 1 to 4 have been masked.
**Maternity unit closed at the end of quarter 2.

Appendix 11

Table A11: HIV positives by type of positive and London maternity unit. Ordered by percentage of positives that were new, 2015

Clinic/trust	New positives	Prior known positive and retested	Prior known positive and not retested	Percentage newly positive
North Middlesex	33	19	0	63%
Barking, Havering & Redbridge	15	15	0	50%
Hillingdon	4	7	0	36%
Barnet & Chase Farm	2	4	0	33%
Queen Elizabeth	9	24	0	27%
Northwick Park	2	6	0	25%
Whipps Cross	2	6	0	25%
St Mary's	5	20	0	20%
Croydon	3	13	0	19%
Lewisham	3	15	0	17%
King's College	7	39	0	15%
Newham	3	23	0	12%
Royal London	3	23	0	12%
University College	2	20	0	9%
Homerton	3	19	14	8%
Royal Free	2	17	14	6%
Guy's & St Thomas'	3	40	26	4%
Chelsea & Westminster	0	12	21	0%
Ealing**	0	0	0	0%
Princess Royal	0	6	0	0%
St George's	0	20	5	0%
Central Middlesex	0	<5*	0	0%
Epsom & St Helier	0	<5*	0	0%
Queen Charlotte's	<5*	<5*	0	n/a
West Middlesex	<5*	<5*	<5*	n/a
Whittington	<5*	0	<5*	n/a
Kingston	<5*	<5*	<5*	n/a
LONDON	**106**	**357**	**88**	**19%**

*To prevent deductive disclosure numbers between 1 to 4 have been masked.
n/a - % not available due to masking
**Maternity unit closed at the end of quarter 2.

Appendix 12

Table A12: Antenatal screening syphilis test positivity by maternity unit in the London region, 2015

Clinic/trust	Quarters received	Tested	Positives (n)	Quarters included	Positivity (%)
Barking, Havering & Redbridge	4	9522	41	4	0.4%
Barnet & Chase Farm	4	6029	12	4	0.2%
Central Middlesex	4	2407	7	4	0.3%
Chelsea & Westminster	4	6174	8	4	0.1%
Croydon	4	4607	8	4	0.2%
Ealing**	2	860	5	2	0.6%
Epsom & St Helier	4	5462	8	4	0.1%
Guy's & St Thomas'	4	7225	17	4	0.2%
Hillingdon	4	5200	13	4	0.2%
Homerton	4	6915	35	4	0.5%
King's College	4	6019	18	4	0.3%
Kingston	4	6756	5	4	0.1%
Lewisham	4	4501	13	4	0.3%
Newham	4	7969	37	4	0.5%
North Middlesex	4	6043	21	4	0.3%
Northwick Park	4	3960	13	4	0.3%
Princess Royal	4	5539	<5*	4	<0.1%
Queen Charlotte's	4	6188	9	4	0.1%
Queen Elizabeth	4	5277	13	4	0.2%
Royal Free	4	3686	9	4	0.2%
Royal London	4	6407	0	4	0.0%
St George's	4	5844	18	4	0.3%
St Mary's	4	4861	13	4	0.3%
University College	4	8023	5	4	0.1%
West Middlesex	4	6233	19	4	0.3%
Whipps Cross	4	5578	14	4	0.3%
Whittington	4	4528	<5*	4	<0.2%
LONDON	**106**	**151813**	**367**	**106**	**0.2%**

*To prevent deductive disclosure numbers between 1 to 4 have been masked.
**Maternity unit closed at the end of quarter 2.

Appendix 13

Table A13: Antenatal screening rubella antibody test negativity by maternity unit in the London region, 2015

Clinic/trust	Quarters received	Tested	Susceptible (n)	Quarters included	Susceptible (%)
Barking, Havering & Redbridge	4	9,207	515	4	5.6%
Barnet & Chase Farm	4	6,029	552	4	9.2%
Central Middlesex	4	2,407	180	4	7.5%
Chelsea & Westminster	4	6,174	518	4	8.4%
Croydon	4	2,089	63	2	3.0%
Ealing**	2	860	45	2	5.2%
Epsom & St Helier	4	5,463	691	4	12.6%
Guy's & St Thomas'	4	7,325	675	4	9.2%
Hillingdon	4	5,201	480	4	9.2%
Homerton	4	6,910	756	4	10.9%
King's College	4	6,019	226	4	3.8%
Kingston	4	6,756	421	4	6.2%
Lewisham	4	4,503	286	4	6.4%
Newham	4	7,969	914	4	11.5%
North Middlesex	4	6,044	304	4	5.0%
Northwick Park	4	3,960	167	4	4.2%
Princess Royal	4	5,540	214	4	3.9%
Queen Charlotte's	4	6,188	120	4	1.9%
Queen Elizabeth	4	5,280	568	4	10.8%
Royal Free	4	3,687	376	4	10.2%
Royal London	4	6,407	970	4	15.1%
St George's	4	5,844	178	4	3.0%
St Mary's	4	4,733	471	4	10.0%
University College	4	8,023	239	4	3.0%
West Middlesex	4	6,233	566	4	9.1%
Whipps Cross	4	5,578	612	4	11.0%
Whittington	4	4,528	180	4	4.0%
LONDON	**106**	**148,957**	**11,287**	**104**	**7.6%**

**Maternity unit closed at the end of quarter 2.

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