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HIV-STIs

Antenatal screening for infectious diseases in England: summary report for 2015

This report presents a summary of the uptake and test results of antenatal screening for hepatitis B, HIV, syphilis and rubella susceptibility in 2015 in England. Uptake of screening for all infections remains high (>97%) and the proportion of women with a positive test result for either hepatitis B, HIV or syphilis has remained stable, whilst the proportion of women with a rubella antibody level <10 IU/ml has continued to increase.

Antenatal screening for rubella susceptibility ceased on 1 April 2016 and is no longer offered to pregnant women.

A new data collection and reporting process has been implemented from April 2016 coordinated by the Infectious Diseases in Pregnancy Screening (IDPS) programme.

Background

Since 2004, Public Health England's National Antenatal Infection Screening Monitoring (NAISM) Programme has had a formal role in centrally collating, analysing and publishing Infectious Diseases in Pregnancy (IDPS) surveillance data for England [1]. This was introduced following the implementation of the 2003 Department of Health standards [2]. The NAISM Programme, in collaboration with the NHS Infectious Diseases in Pregnancy Screening (IDPS) Programme, now both part of Public Health England, monitors the uptake of antenatal screening for hepatitis B, HIV, syphilis and susceptibility to rubella (to March 2016).

The UK National Screening Committee (UK NSC) has responsibility for setting screening policy [3]. It recommends systematic population screening in pregnancy for HIV, hepatitis B and syphilis for all pregnant women in England as part of the NHS IDPS Programme.

Currently all eligible women in England should be offered and recommended screening for:

- HIV
- hepatitis B
- syphilis

This is to enable early detection and treatment for infections in pregnancy that can significantly reduce the risk of vertical transmission from mother to child. Women who decline screening for any of the infections should be formally re-offered screening and counselled about the benefits by a member of the multidisciplinary screening team. Antenatal screening for rubella susceptibility ceased on 1 April 2016 and is no longer offered to pregnant women [5].

Screening programme

Antenatal screening for infectious diseases is a complex programme delivered by a range of different organisations working together. All commissioners and service providers should refer to the service specification, supporting standards and handbooks to ensure a programme is set up correctly, and is meeting the standards set by the national screening programme [4].

New screening standards were introduced in April 2016 to support health professionals and commissioners in providing a high quality screening programme [6]. The format has been revised to include metrics that assess the screening process and enable providers and commissioners to identify where continuous improvements are needed.

Key Performance Indicators (KPIs) are a subset of standards that are collated and usually reported quarterly (unless numbers are small, in which case aggregate data is reported annually) compared to annual reporting for standards [7]. The KPIs focus on areas of particular concern. Once a KPI consistently reaches the achievable level, it will revert to being a standard. Standards 1 and 6 are the current IDPS KPIs: HIV coverage and timely referral of hepatitis B positive women for specialist care. A pilot of two new coverage KPIs for hepatitis B and syphilis was conducted in 2016.

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. The 2010 IDPS Standards retained this 90% uptake target as a reference point for all four infections. Based on interquartile range of 2014/15 HIV KPI data thresholds for coverage data has been revised to ≥95% acceptable and ≥99% achievable from April 2016.

Data collection and methodology

Data are collected at maternity unit or Trust level on the number of pregnant women attending and booking for antenatal care; the number screened for each of the four infections and the results of the screening tests, together with the number of women previously diagnosed with hepatitis B or HIV.

These data are requested and collated by PHE's Field Epidemiology Teams with support from some Regional Antenatal and Newborn Screening Quality Assurance teams and sent to PHE's National Infection Service (NIS), where national figures and trends are generated. The IDPS Programme and NAISM team have worked collaboratively to align future management of the data collection, collation and reporting processes from April 2016 [8].

Data limitations

Data quality has improved significantly since 2004, although data still need to be interpreted cautiously as limitations remain. The data analysis methodology can be found on the NAISM website and limitations to data quality have been detailed in previous reports [1].

Uptake of antenatal screening is calculated as the proportion of women booked for antenatal care who have a screening test, as reported by maternity services. This is not matched cohort data. The number of maternity units able to report booking data has increased steadily and significantly, from less than half in 2010 to 99% in 2015. This may be due to the requirement to collate matched cohort data for screening coverage key performance indicators. As part of the data processing, data exclusions and adjustments were made, mainly when the denominator, numerator, or both were unavailable, or when the screening uptake for a particular infection was over 110%.

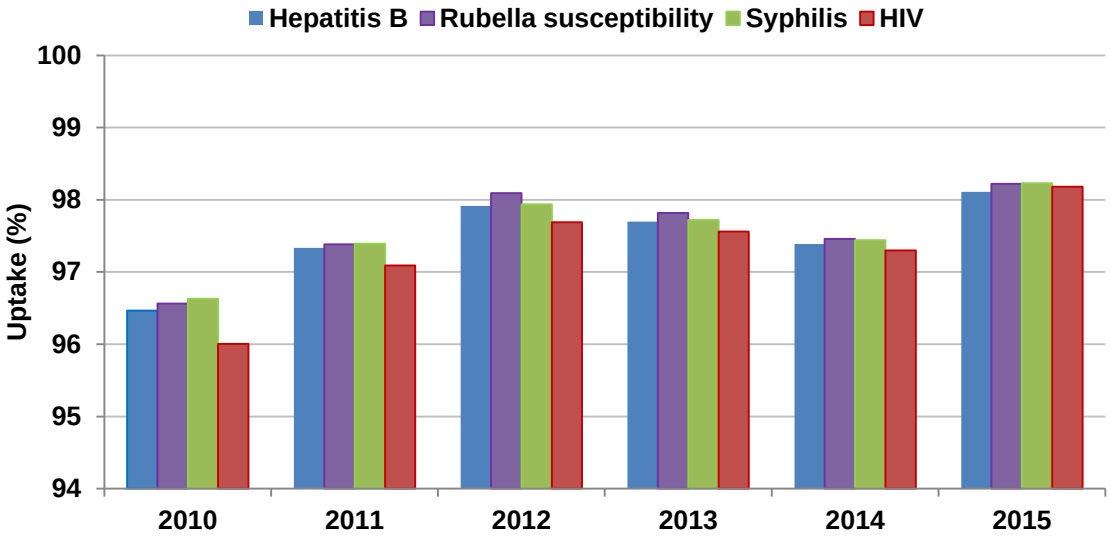
In the minority of cases where maternity unit booking data were not available, a proxy was used such as the number of laboratory tests for syphilis or rubella, under the assumption that most booked women are screened for these infections. Use of these proxy data would lead to an

overestimate of the uptake of screening as not all women who are offered screening choose to accept.

Uptake of antenatal screening

Screening uptake for all four infections in 2015 was greater than 97% and has been consistently high (>95% since 2010), with the highest uptake recorded in 2015 (figure 1). Reported rates of women declining antenatal screening were low. In 2015 in England, 0.38% of women offered testing for hepatitis B and 0.41% of women offered testing for HIV declined the offer of screening (2,858/696,890 and 2,607/690,988 respectively).

Figure 1. National reported uptake of antenatal screening by infection in England: 2010-2015*



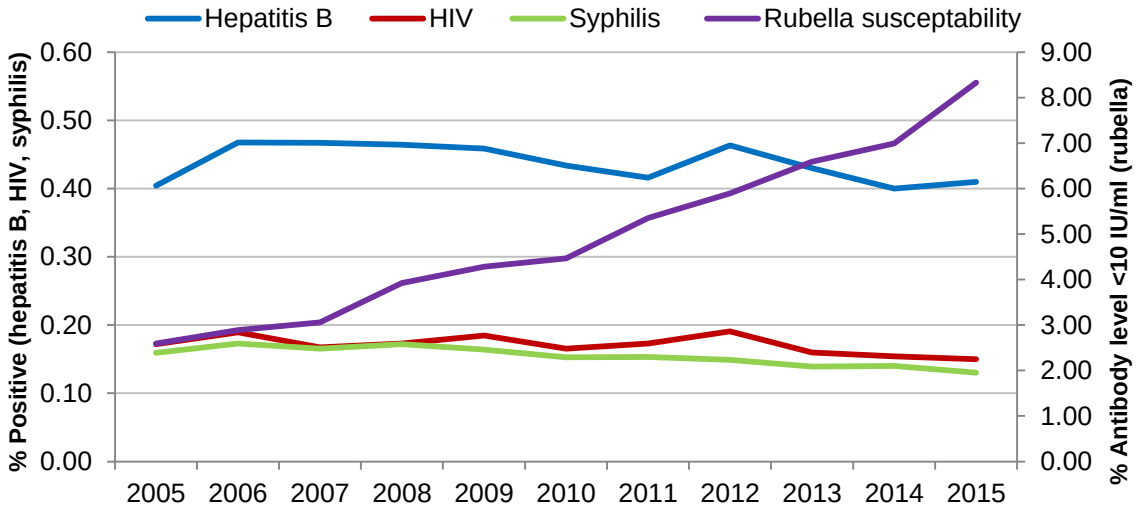
* In 2011 a change in the way denominator data were collected was introduced improving the accuracy and consistency of the estimates from then on.

Pregnant women screening positive for HIV and hepatitis B

In England in 2015, 0.15% (1,082/720,590) of pregnant women screened positive for HIV a rate that has remained stable over the last five years (figure 2/table 1).

The proportion of women screening positive for hepatitis B was 0.41% (2,982/723,895) in 2015. Similar to HIV, the rate of women screening positive for hepatitis B has remained relatively stable over the last five years. For both infections, regional variation was apparent, with women in London presenting the highest positivity rates.

Figure 2: Percentage of pregnant women positive for hepatitis B, HIV or syphilis or with a rubella antibody level <10 IU/ml, in England: 2010-2015



In 2014, the IDPS Programme commissioned a national audit of practice regarding management of hepatitis B in pregnancy over a 12 month period to highlight aspects of service provision requiring improvement, in order to optimise current strategies for the prevention of vertically-acquired hepatitis B and to inform future service planning [9]. The audit is currently collating pregnancy outcome data and is also collaborating with the PHE Immunisation and Blood Borne Virus teams to establish a follow on study on the neonatal hepatitis B Immunisation schedule and one year serology outcomes. The audits will report to the IDPS Programme and support the ongoing review of the screening and immunisation programmes.

Overall diagnosed prevalence of HIV and hepatitis B

Screening for hepatitis B or HIV is not required where a prior positive diagnosis of HIV or hepatitis B is reported to the healthcare professional. Women who disclose that they are positive for HIV or hepatitis B should be referred directly to the Multidisciplinary Team (MDT) as per locally agreed protocols [10]. Some Trusts may have an agreed local protocol to retest all known positive women as a failsafe process. Both newly and previously diagnosed women should be promptly referred for specialist care and clinical evaluation.

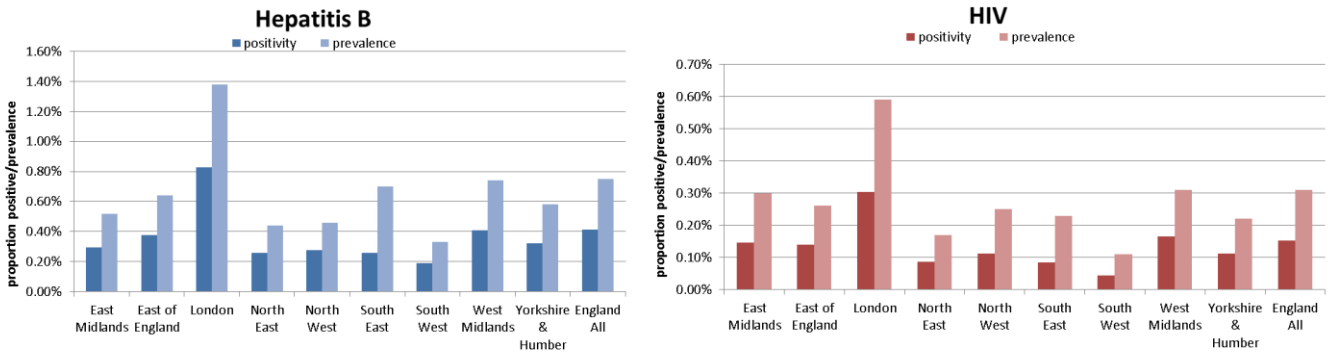
In 2011, in line with the new standards, a new data collection form was introduced which requested the number of women not screened as a result of prior diagnosis. Some maternity units could not supply information on previously diagnosed women, and therefore, data from these units were excluded from the newly diagnosed calculations.

In 2015, all maternity units provided data on women who were newly diagnosed, those previously diagnosed but rescreened, and those not screened because they were previously diagnosed. For details on how positivity rates are calculated (see appendix).

Overall diagnosed prevalence is the rate of diagnosed infection among women attending antenatal care and includes women who were previously diagnosed and not re-tested, previously diagnosed and re-tested, and newly diagnosed women. This is a measure of the rate of infection within the population of pregnant women in England.

Prevalence of hepatitis B and HIV were 0.75% (5311/709,255) and 0.31% (2216/712,291) in 2015, respectively. Similar patterns of geographical distribution were observed for both infections, with prevalence being highest in London, West Midlands, Yorkshire and Humber and East Midlands (see figure 3).

Figure 3. Positivity and prevalence of hepatitis B and HIV in women in antenatal care by region: 2015.



Women newly diagnosed through antenatal screening

Figures 4a and 4b present the percentage of screened women who were newly diagnosed with hepatitis B and HIV during the five years for which we have complete data. In 2015, 25% (577/2,268) of diagnosed hepatitis B positive women and 27% (543/2,003) of diagnosed HIV-positive women were reported to have been identified as a result of antenatal screening in their current pregnancy. Unpublished data from the National Study of HIV in Pregnancy and Childhood suggest that in 2015, 13.4% (150/1122) of pregnancies in women diagnosed with HIV prior to delivery, were diagnosed through antenatal screening [11].

With the success of antenatal screening programmes, more women are diagnosed and on antiretroviral therapy earlier in pregnancy. This may be largely explained by the fact that the number of positive women having repeat pregnancies has increased and the prevalence of HIV in pregnant women overall has stabilised [12,13].These data demonstrate that despite the majority of women now being diagnosed prior to their pregnancy, antenatal screening remains crucial in protecting the health of women and their infants. In 2014, the National Study of HIV in Pregnancy and Childhood (NSHPC) reported that the national maternal-to-child-transmission (MTCT) rate had reached an all-time low of 0.46% during 2010 to 2011. Between 2012 and 2014 there were just 7 MTCTs among nearly 3,300 babies born to diagnosed women living with HIV, corresponding to an MTCT rate of 0.27% [14].

Figure 4a. Percentage of pregnant women newly and previously diagnosed with Hepatitis B, England.

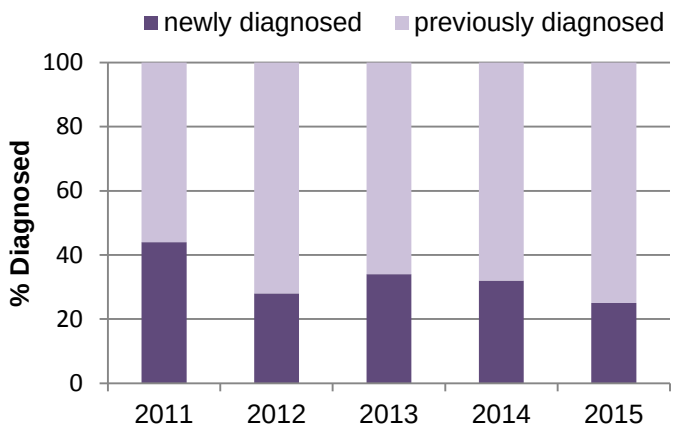
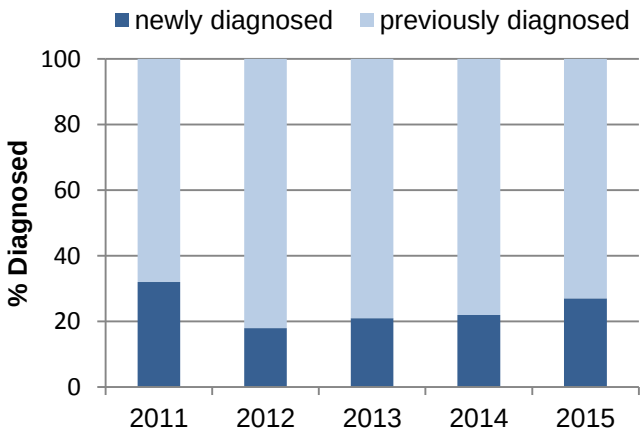


Figure 4b. Percentage of pregnant women newly and previously diagnosed with HIV England.



Syphilis Positivity/Prevalence

In 2015, 0.13% (951/725,940) of women were reported screening positive for syphilis (table 1) a rate that has remained stable since 2010 (figure 2). The Antenatal Syphilis Screening Study (SASS) was funded by the IDPS Programme to provide evidence to improve current screening practice, by establishing what proportion of women identified at antenatal screening in 2010-2011 required treatment to reduce the risk of transmitting syphilis to their babies, how they were managed, and what happened to their babies [15]. The study showed that 20% of the women with screen positive results were subsequently classified as other treponemal infections or false positive results [16]. The report has informed the new IDPS screening pathway and programme standards and data collection for 2016/17 which will result in more accurate ascertainment of syphilis infectivity status. Data will differentiate positivity by active and past syphilis infection.

Rubella susceptibility

The percentage of women with a rubella antibody level <10 IU/ml continued to increase reaching 8.33% (60,218/722,599) in 2015 (figure 2). However, this trend is unlikely to represent a true increase in susceptibility due to variation in laboratory testing assays and cut-off values used and the difficulty in defining susceptibility.

Since 1 April 2016, pregnant women in England have no longer been offered screening for rubella susceptibility. The move followed reviews of the evidence by the UK National Screening Committee (UK NSC) in 2003 and 2012. On both occasions the evidence showed that screening for rubella susceptibility during pregnancy did not meet the UK NSC criteria for a screening programme.

Rubella is a viral infection that causes a rash and fever. Infection during pregnancy can lead to serious health problems for the unborn baby. However, the success of the measles, mumps and rubella (MMR) vaccination means the disease is now very rare. The best way to protect pregnant women from rubella infection is to ensure they have two measles, mumps and rubella (MMR) vaccinations before they are pregnant.

The NHS Infectious Diseases in Pregnancy Screening Programme team has worked closely with PHE Immunisation team and colleagues from the National Infections Service at Colindale to manage the cessation process [17].

Table 1. Percentage of pregnant women screening positive for hepatitis B, HIV, syphilis, or with a rubella antibody level <10 IU/ml, in England: 2015.

	Hepatitis B			HIV			Syphilis		Rubella antibody level <10 IU/ml	
	% positive	Number screened positive & newly diagnosed/ number screened	% newly diagnosed	% positive	Number screened positive & newly diagnosed/ number screened	% newly diagnosed	% positive	Number screened positive & newly diagnosed/ number screened	% antibody level <10 IU/ml	Number screened positive & newly diagnosed/ number screened
East Midlands	0.30	137/46,265	0.10	0.15	62/42,623	0.02	0.18	80/45,515	6.36	3,068/48,230
East of England	0.38	342/90,301	0.13	0.14	125/90,200	0.05	0.12	105/90,348	5.21	4,691/90,032
London	0.83	1,258/151,824	0.27	0.30	461/151,703	0.07	0.24	363/150,688	7.58	11,287/148,857
North East	0.26	83/32,234	0.09	0.09	28/32,154	0.03	0.15	47/32,050	7.26	2,317/31,914
North West	0.28	254/89,870	0.10	0.11	104/90,455	0.03	0.11	100/94,212	8.32	7,829/94,133
South East	0.26	276/106,738	0.07	0.08	90/106,695	0.02	0.06	61/106,764	11.69	12,317/105,380
South West	0.19	121/63,583	0.06	0.04	28/63,519	0.00	0.05	34/63,115	9.53	5,963/62,573
West Midlands	0.39	290/73,970	0.07	0.15	111/74,007	0.03	0.13	94/74,151	8.08	5,840/72,244
Yorkshire & the Humber	0.32	221/69,110	0.06	0.11	73/69,234	0.01	0.10	67/69,097	9.97	6,906/69,236
National	**0.41**	**2,982/723,895**	**0.12**	**0.15**	**1,082/720,590**	**0.03**	**0.13**	**951/725940**	**8.33**	**60,218/722,599**

Conclusion

Uptake of antenatal screening for hepatitis B, HIV, syphilis, and susceptibility to rubella infection in England remains high, well above the original 90% target.

The proportion of screened women who tested positive for hepatitis B, HIV, and syphilis has been stable over the past five years, whilst there has been an increase in the rate of pregnant women with a rubella antibody level <10 IU/ml. Screening for infectious diseases in pregnancy remains a vital component of antenatal care and continues to play a key role in preventing mother to child transmission of HIV, hepatitis B, and syphilis.

The IDPS and NAISM programmes continue to work collaboratively as part of Public Health England to improve future data quality, and streamlining collection and reporting for all stakeholders.

Acknowledgements

We would like to thank the maternity units and Trusts, particularly the Antenatal & Newborn Screening Coordinators and Field Epidemiology Teams for their contributions to data collection, and the Infectious Diseases in Screening Programme for the on-going collaboration.

Further information on the IDPS Programme can be found at: https://www.gov.uk/topic/population-screening-programmes/infectious-diseases-in-pregnancy or by signing up for screening updates via the PHE blog: https://phescreening.blog.gov.uk/

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Appendix

The positivity rate is calculated using the following equation:

$$\%\ \text{positive} = \frac{\#\ \text{newly diagnosed} + \#\ \text{previously diagnosed (rescreened)}}{\#\ \text{screened}} * 100$$

The positivity is therefore measuring the proportion of pregnant women who tested positive on screening during this pregnancy.

The percentage of women newly diagnosed is presented separately, and only takes into account women who are screened during this pregnancy, as presented in the following equation:

$$\%\ \text{newly diagnosed} = \frac{\#\ \text{newly diagnosed}}{\#\ \text{screened} - \text{previously diagnosed}} * 100$$

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