Public Health England

Health Protection Report
weekly report

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News

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Antenatal checks for environmental CO exposure: new algorithm for midwives

The latest in a series of tools developed to help healthcare professionals diagnose harmful exposure to carbon monoxide (CO) has been published by Public Health England [1].

The flowchart was developed following NICE's recommendation that midwives test for smoking status in pregnant women using exhaled CO as an indicator [2]. In acknowledging the special significance for pregnant women of the hazard of CO generated by malfunctioning fossil and wood fuelled domestic heating appliances and faulty flues, it was recognised that whilst carrying out this test, midwives could identify cases of CO poisoning from exposure from non-tobacco sources [3,4].

Pregnant women are considered a susceptible group in respect of CO poisoning because fetal blood has a much higher affinity for CO than an adult's. The fetus is therefore susceptible to the harmful effects of CO at lower levels of exposure than the mother. Maternal exposure has been linked to birth defects and other poor pregnancy outcomes including fetal and infant mortality.

Not only is CO more readily taken up by the fetus than by the mother but it is also released more slowly, therefore prolonging exposure of the fetus even after the mother is no longer being exposed. Use of the tool should help identify pregnant women who – although not active or passive smokers – may be being exposed to CO from faulty fossil or wood fuelled appliances and flues in their home.

The tool complements a joint letter on CO for healthcare professionals from the Chief Medical Officer, Chief Nursing Officer and Director of Nursing at the Department of Health and Public Health England (see: www.gov.uk/government/publications/carbon-monoxide-poisoning).

The tool for midwives – produced by PHE in consultation with the Department of Health and supported by the Gas Safety Trust – follows the format of other flowcharts created to assist GPs and emergency physicians, environmental health professionals, and nurses running smoking cessation clinics in diagnosing CO poisoning from both low level, chronic and high level, acute exposures.

As with the other tools, it describes sources of CO, symptoms which might indicate exposure to the gas; provides advice on the interpretation of breath test results; suggests questions pregnant women should be asked to establish whether CO poisoning should be suspected;

recommends actions following diagnosis; and provides telephone numbers for services providing further advice and practical assistance.

A call for research in this area has been launched by the Gas Safety Trust: see: http://www.gassafetytrust.org/news-and-press/2014/gst-calls-for-applications.

References

1. PHE (2014). "Antenatal checks: carbon monoxide (CO)".

2. National Institute for Health and Clinical Excellence (2010)."Quitting smoking in pregnancy and after birth".

3. Leeds NHS Trust (2014). "Leeds Community midwife's carbon monoxide test saves lives of family"

4. Kent NHS Trust (2014)."A new CO test saves life of pregnant mum and family".

Tenth annual review of infections among blood, tissue and organ donors, and transfusion recipients (UK, 2013): summary report

The NHS Blood and Transplant (NHSBT)/PHE surveillance programme is a series of national schemes to monitor infections in blood, tissue and organ donors and transfusion recipients. Data from these schemes are distributed widely throughout the UK blood services and are used to inform donor selection practices and to improve blood and tissue safety. This news report summarises the contents of the tenth annual review of infections in blood/tissue donors that has been published on the PHE website [1].

The NHSBT/PHE Epidemiology Unit tenth annual review, "Safe Supplies: Reflecting on the Population", describes infections among donors and transfusion recipients during 2013.

In addition, the report includes:

- the most recent estimated risk of current donation testing strategies not identifying a potentially infectious HBV, HCV or HIV window period blood donation;
- "horizon scanning" for new and emerging potential infectious threats.

The findings provide assurance that an extremely high level of safety is being maintained within the UK blood supply. The report also provides a solid base on which to build further reviews of donor eligibility to ensure that no donors are unnecessarily declined.

During 2013, over 2.3 million blood donations were tested in the UK, of which 230 were positive on mandatory testing. This is a rate of 10.1 confirmed positive donations per 100,000, which is almost unchanged form 2012. More than four of every five infections detected (84%) were

among new donors, who comprised of approximately 15% of the donor population. Testing in the UK detected blood donations with markers for the following infections: HBV (64), HCV (57), HIV (16), HTLV (5) and treponema (88). As in previous years, the majority of infections in donors were chronic (87%), and previously undiagnosed. For HBV, HTLV and some HCV infections country of birth of the donor – or for HBV and HTLV, the country of birth of their mother –.was invariably found to be the probable source. Four acute and four occult HBV infections were reported.

Not all donors comply with the donor selection criteria and each year a small number of infected donors are found to have been non-compliant. In 2013, 20 donors with markers of infection were classified as non-compliant. The most common reasons such donors subsequently gave were that they thought either that their personal risk was low or that the criteria were not applicable to them. The change to the MSM donor selection criteria in 2011 continues to be monitored; as yet, there has been no increase in the number or proportion of male donors with markers of infection.

All UK blood services screen platelets for the presence of bacteria, although currently only NHSBT and SNBTS report to the surveillance scheme. The positive rates in the platelets screened by NHSBT in 2013 (n=285,292) remained low and similar to 2012 levels, with 0.02% of apheresis and 0.07% of pooled platelets confirmed positive. The majority of isolates were identified as Propionibacterium species; these organisms are rarely associated with transfusion transmitted infection. Bacterial screening also prevented the transfusion of platelet units containing potentially pathogenic organism including Staphylococcus aureus and Streptococcus bovis. SNBTS did not report confirmed growth from any of the 15,555 screened packs.

In 2013, additional testing allowed just 91,000 donations to be released for issue. None of the donations tested positive for T. cruzi or WNV, but Malarial antibodies were detected and confirmed in 0.94% of donations tested. Additional testing for anti-HBc was carried out for those donors with specific risks in the last 4-12 months and included donors with a history of tattoos, body piercing, and acupuncture or endoscopy. These donations numbered 29,331 and 0.07% were found to be anti-HBc positive with insufficient immunity to allow use.

The risk of a contaminated unit entering the UK blood supply continues to decrease and is currently estimated at one HBV every year, one HCV every 17 years and one HIV every three years. The recent decrease in risk for hepatitis B is in part due to a shorter estimated window period used in the calculation.

Transfusion transmitted infections (TTI) in the UK remain rare; in 2013, one probable hepatitis B transfusion transmitted infection (TTI) was reported following a transfusion in 2012 and one

pending 2012 investigation was confirmed as an HEV transmission. The UK blood services do not currently screen for hepatitis E. Bacterial screening of platelets has resulted in potentially harmful contaminated platelet packs being removed from the blood supply. There have been no reported, confirmed bacterial TTIs since 2009, although in 2013 there was a false negative result on bacterial screening where Staphylococcus aureus was not detected in two platelet doses from one apheresis collection. The units were not transfused but had the potential to cause severe morbidity and mortality in a recipient.

During 2013, 1323 deceased solid organ donors were tested across the UK with 4,501 organs donated from 1257 donors. Information is available for initially reactive screening test results among the 1323 proceeding donors: 11 donors with HCV antibodies (0.8%), one donor with HIV antigen/antibodies (0.1%) and one HTLV positive donor (0.1%).

The number of positive markers of infection in deceased and living tissue donors and cord blood donors is low, but because of the small numbers of donors tested the rates of infection are higher than those for blood donations. In 2013 among donations tested by NHSBT, five living surgical bone donors had positive markers for HCV (17 donors reported HCV positive between 2001 and 2013) and nine deceased donors had markers of HBV infection. As in previous years, few cord blood donors have markers of infection; in 2013 there was one donor who was HCV positive and one with HTLV infection; a further 19 had malarial antibodies reflecting past exposure to malaria rather than ongoing infection.

In 2013, MERS-CoV, a respiratory infection similar to SARS, emerged in the Middle East. Currently this appears to be of low risk to the blood supply. Of more concern was the spread of chikungunya virus across the Caribbean and in 2014 to Florida. This spread could have significant impact on donors if additional donor selection measures are required; the situation is being closely monitored. There is continuing surveillance in place for West Nile Virus, dengue and other insect-borne diseases which continue to spread to new areas of the world.

Reference

1. “Safe supplies: reflecting on the population”. Annual review from the NHS Blood and Transplant/Public Health England Epidemiology Unit, 2013 (November 2014). Downloadable at: https://www.gov.uk/government/collections/bloodborne-infections-in-blood-and-tissue-donors-bibd-guidance-data-and-analysis.

Ebola virus disease: international epidemiological summary

Up to the end of 9 November, a total of 14,098 clinically compatible cases (CCC) of Ebola virus disease (EVD), including 5,160 deaths have been reported in the six currently affected countries (Guinea, Liberia, Sierra Leone, Spain, the USA and Mali) and two previously affected countries (Nigeria and Senegal) since December 2013.

There are some early indications that case incidence is no longer increasing nationally in Guinea and Liberia. However, transmission remains intense in Conakry and Macenta in Guinea, and in Montserrado district in Liberia. In Sierra Leone, incidence continues to increase, particularly in the western and northern regions (see PHE map).

To date, a total of 19 cases have been cared for outside of Africa; 14 repatriated cases (treated in USA, Spain, UK, Germany, France and Norway), two imported cases (both diagnosed in USA) and three incidents of local transmission (in Spain and USA).

The table below summarises Ebola virus disease international epidemiological information as at 9 November 2014

Country	Total CCCs	Cases in previous 21 days	Total deaths
Guineau	1878	325	1142
Liberia	6822	466 *	2836
Sierra Leone	5368	1211	1169
Mali	4	3	4
Nigeria	20	0	8
Senegal	1	0	0
Spain	1	0	0
USA	4	0	1
TOTAL	14 098	2005	5160

* Liberia's data is for the previous 18 days only.

Further information on the international epidemiological situation can be found in PHE's weekly Ebola Epidemiological Update.

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Infection Reports

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- Salmonella infections (faecal specimens) England and Wales, reports to the Public Health England (salmonella data set): September 2014
- Suspected and laboratory-confirmed reported norovirus outbreaks in hospitals: weeks 40-44/2014.
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General outbreaks of foodborne illness in humans, England and Wales: weeks 40-44/2014

Preliminary information has been received about the following outbreaks.

PHE Centre/ Health Protection Team	Organism	Location of food prepared or served	Month of outbreak	Cases positive	Number ill	Suspect vehicle	Evidence
Devon, Cornwall and Somerset	Norovirus suspected	Restaurant	October	62	Not known	N/k	N/k
North East	Clostridium perfringens	Restaurant	October	22	Not known	N/k	N/k
Beds, Herts and Northants.	Scombotoxin suspected	Restaurant	October	2	–	Tuna steak	D
Wessex	E coli O157	Other (milk/dairy)	October	2	Not known	Milk	D
North East and Central London	Salmonella Enteritidis	Other	October	26	Not known	N/k	N/k

D = Descriptive epidemiological evidence: suspicion of a food vehicle in an outbreak based on the identification of common food exposures, from the systematic evaluation of cases and their characteristics and food histories over the likely incubation period by standardised means (such as standard questionnaires) from all, or an appropriate subset of, cases.

Salmonella infections (faecal specimens) England and Wales, reports to Public Health England (salmonella data set): September 2014

Details of 888 serotypes of salmonella infections recorded in August are given below.

In October 2014, 426 salmonella infections were recorded.

Organism	Cases: September 2014
S. Enteritidis PT4	23
S. Enteritidis (other PTs)	331
S. Typhimurium	129
S. Virchow	21
Others (typed)	384
Total salmonella (provisional data)	**888**

Common gastrointestinal infections, England and Wales, laboratory reports: weeks 40-44/2014

Laboratory reports	Number of reports received					Total reports	Cumulative total	
	40/14	41/14	42/14	43/14	44/14	40-44/14	1-44/14	1-44/13
Campylobacter	1151	1075	915	978	431	4550	51729	50815
Escherichia coli O157 *	19	22	49	62	55	207	803	672
Salmonella †	198	133	113	45	2	491	5585	6342
Shigella sonnei	20	22	20	19	8	89	901	840
Rotavirus	37	28	25	27	20	137	4133	14570
Norovirus	64	80	71	98	37	350	4045	6013
Cryptosporidium	122	98	92	69	49	430	3004	2951
Giardia	84	96	81	86	57	404	3166	3004

*Vero cytotoxin–producing isolates: data from PHE's Gastrointestinal Bacteria Reference Unit (GBRU).
† Data from GBRU.

Suspected and laboratory-confirmed reported norovirus outbreaks in hospitals, with regional breakdown: outbreaks occurring in weeks 40-44/14

The hospital norovirus outbreak reporting scheme (HNORS) recorded 18 outbreaks occurring between weeks 36 and 39, 2014, 16 (89%) of which led to ward/bay closures or restriction to admissions. Twelve (65%) were recorded as laboratory confirmed due to norovirus.

From week 1 (January 2014) to week 39 (week beginning 22 September 2014) 443 outbreaks have been reported. Ninety-four per cent (414) of reported outbreaks resulted in ward/bay closures or restrictions to admissions and 65% (288) were laboratory confirmed as due to norovirus (see table below).

Seasonal comparison of laboratory reports of norovirus (England and Wales)

In the current season † (from week 27, 2014, to week 39, 2015) to date, there were 785 laboratory reports of norovirus. This is 50% higher than the average number of laboratory reports for the same period in the seasons between 2009/10 and 2013/2014 (523)* (see graphs below). The number of laboratory reports in the most recent weeks will increase as further reports are received.

† The norovirus season runs from July to June (week 27 in year one to week 26 in year two) in order to capture the winter peak in one season.

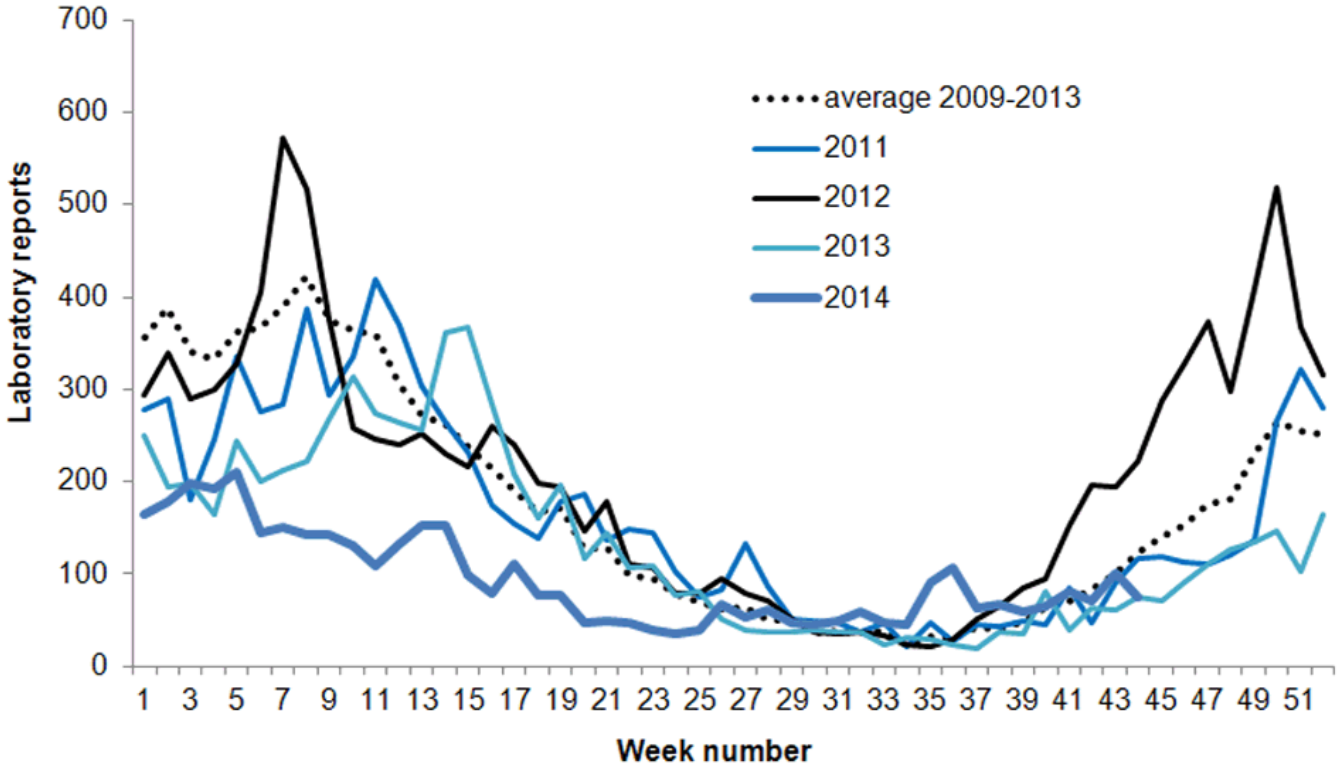
* The 2012/2013 season began earlier than normal so comparisons with that year would not be valid.

Suspected and laboratory-confirmed reported norovirus outbreaks in hospitals, with regional breakdown: outbreaks occurring in weeks 40-44/2014 (and 1-44/2013)

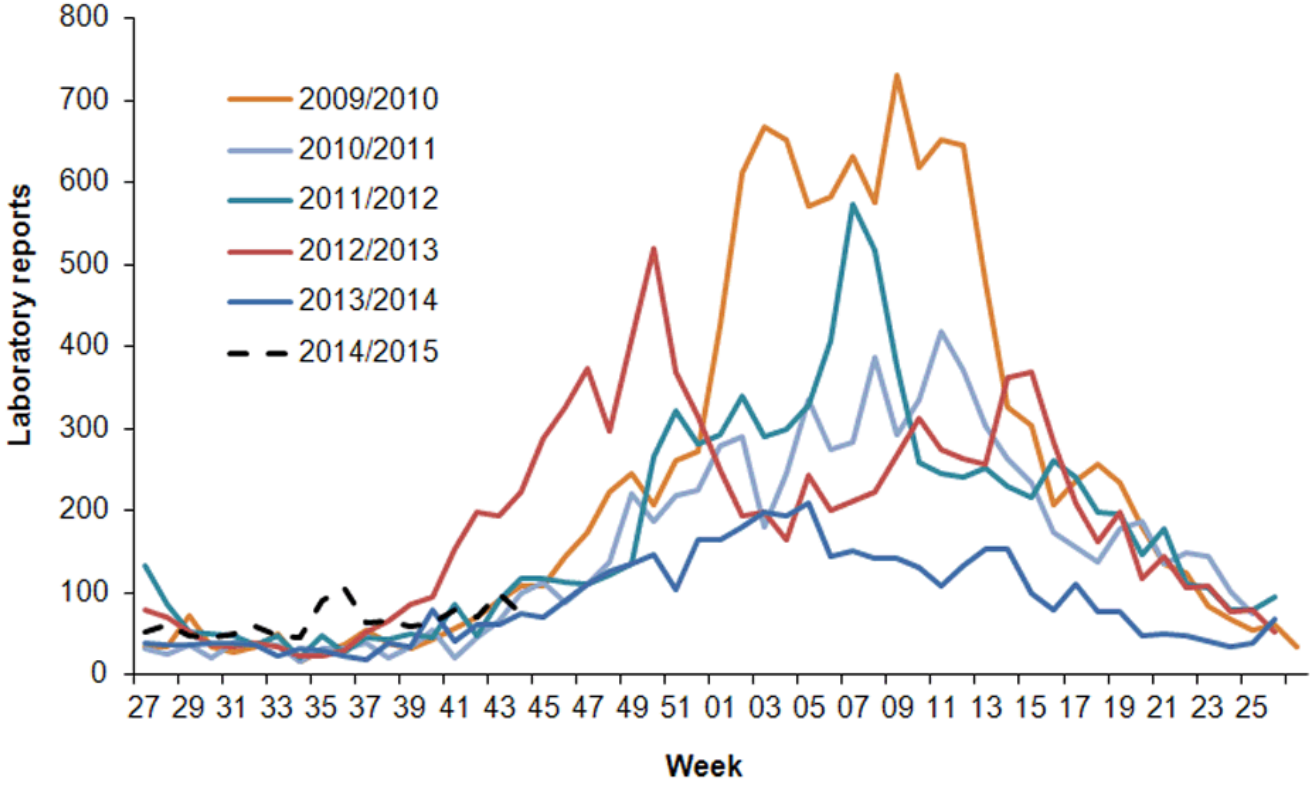
Region/ PHE Centre	Outbreaks between weeks 40-44/2014			Total outbreaks 1-44/2013		
	Outbreaks	Ward/bay closure*	Lab-confirmed	Outbreaks	Ward/bay closure*	Lab-confirmed
Avon, Gloucestershire and Wiltshire	4	4	2	60	60	37
Bedfordshire, Hertfordshire and Northamptonshire	–	–	–	–	–	–
Cheshire and Merseyside	–	–	–	1	1	1
Cumbria and Lancashire	–	–	–	20	20	11
Devon, Cornwall and Somerset	6	6	5	57	56	33
Greater Manchester	–	–	–	15	14	4
Hampshire, Isle of Wight and Dorset	2	2	1	24	24	14
Lincolnshire, Leicestershire, Nottinghamshire and Derbyshire	1	1	1	41	40	32
London	–	–	–	7	7	5
Norfolk, Suffolk, Cambridgeshire and Essex	–	–	–	–	–	–
North east	4	3	1	53	45	35
Sussex, Surrey and Kent	–	–	–	24	24	17
Thames Valley	–	–	–	15	13	5
West Midlands	7	7	3	65	64	35
Yorkshire and the Humber	–	–	–	101	84	85
Total	**24**	**23**	**13**	**483**	**452**	**314**

* Note: not all outbreaks result in whole wards closures, some closures are restricted to bays only.

Current weekly norovirus laboratory reports compared to weekly average 2006-2010



Seasonal comparison of laboratory reports of norovirus (England and Wales)



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Enteric fever surveillance quarterly report (England, Wales and Northern Ireland): third quarter 2014

This quarterly report summarises the epidemiology of laboratory confirmed cases of typhoid and paratyphoid reported in England, Wales and Northern Ireland between July and September 2014. It includes both reference laboratory and enhanced enteric fever surveillance data. All data for 2014 presented below are provisional; more detailed reports will be produced on an annual basis. More information about enteric fever surveillance, including previous reports, is available on the PHE website [1].

National summary

In the third quarter (Q3) of 2014, 106 laboratory confirmed cases of enteric fever were reported in England, Wales, and Northern Ireland (Table 1), 19.1% higher than the third quarter of 2013 and 6.19% below the rolling mean (113) for Q3 2009 to 2014 (figure 1). An increase in case numbers has been seen for *S*. Typhi and *S*. Paratyphi B (*S*. Typhi; 67 in Q3 2014 compared to 53 in Q3 2013, 26.4% higher. *S*. Paratyphi B; 8 in Q3 2014 compared to 2 in Q3 2013) (table 1).

Figure 1. Laboratory confirmed cases of enteric fever by organism, England, Wales and Northern Ireland: third quarter 2009-2014

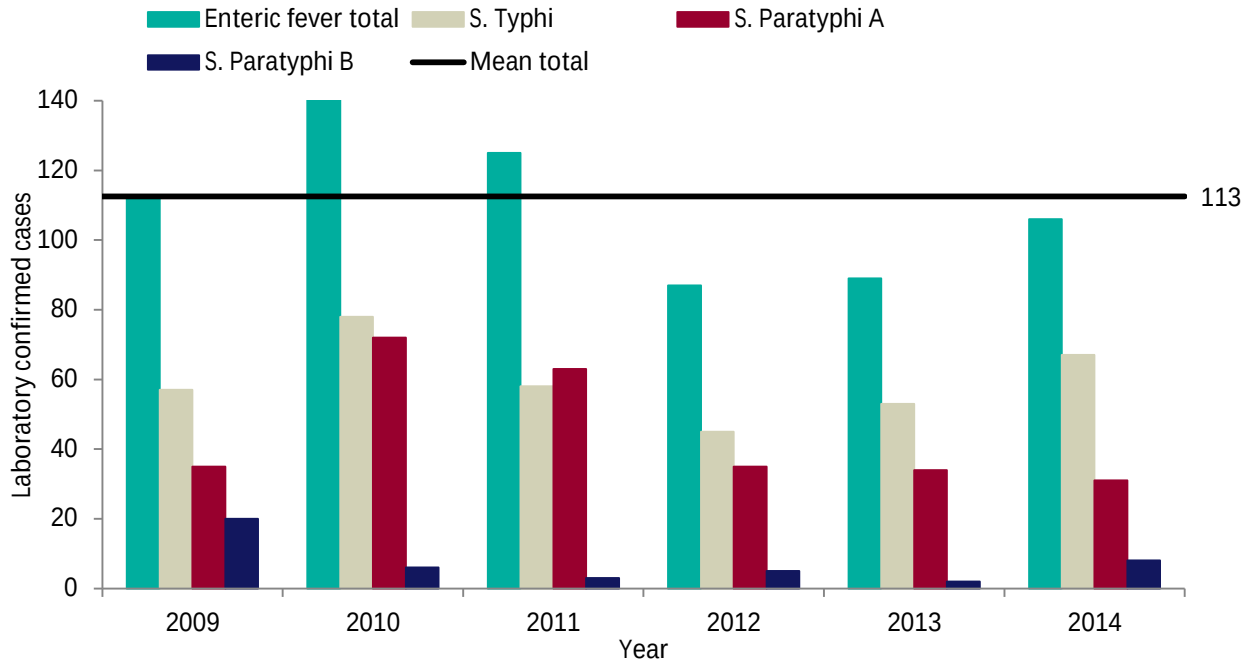


Table 1. Laboratory confirmed cases of enteric fever, England, Wales and Northern Ireland: third quarter 2009-2014

Organism	Laboratory confirmed cases					
	2014	2013	2012	2011	2010	2009
Salmonella Typhi	67	53	45	58	78	57
Salmonella Paratyphi A	31	34	35	63	72	35
Salmonella Paratyphi B	8	2	5	3	6	20
Salmonella Paratyphi C	–	–	2	–	–	–
Salmonella Typhi and Paratyphi A	–	–	–	1	–	–
Enteric fever total	**106**	**89**	**87**	**125**	**156**	**112**

Table 2 Laboratory confirmed cases of enteric fever by organism and phage type, England, Wales and Northern Ireland: third quarter 2014

Phage type	*S*. Typhi
PT E1	25
Untyp.VI	11
PT E9 Var.	10
Untyp.VI 2	5
Degr.VI	4
VI Neg.	3
PT 28	2
Untyp.VI 1	2
PT B2	1
PT D1	1
PT D2	1
PT M1	1
PT O	1
Total	67

Phage type	*S*. Paratyphi A
PT 1	11
PT 13	9
PT 1a	3
PT 4	3
PT 6a	2
PT 14	1
PT 2	1
PT 3	1
Total	31

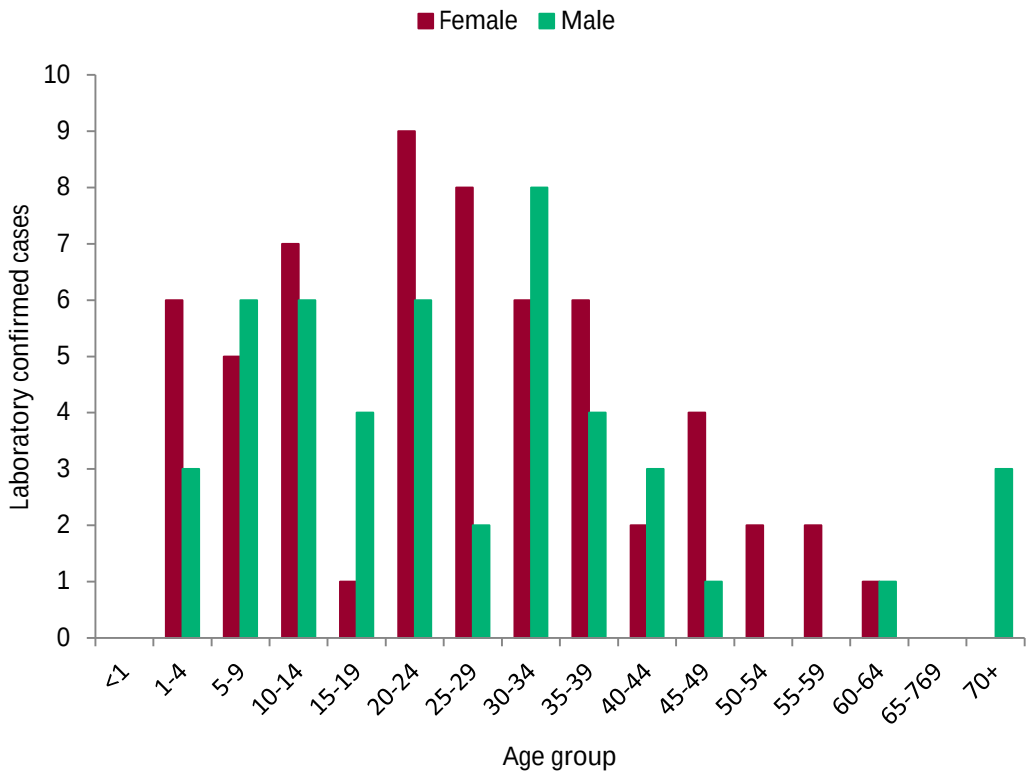
Phage type	*S*. Paratyphi B
Taunton	5
Dundee V2	1
PT1 Var 10	1
RDNC	1
Total	8

In general, *S.* Typhi phage types E1, Untyp. VI and E9 and *S*. Paratyphi A phage types 1, and 13 occur most frequently (table 2) [2].

Age/sex distribution

In the third quarter of 2014, the median age of cases was 24.5 years and 33% (36% for males and 31% for females) were aged 16 years and under. Females represented 56% of all cases and males 44%, which is unusual as typically there are slightly more males with typhoid consistent with the proportion who travel (figure 2).

Figure 2. Laboratory confirmed cases of enteric fever by age and sex (N=106): third quarter 2014



Geographical distribution

London PHE Region reported 38% of the total cases during the third quarter of 2014 (table 3). Only regions are shown in this report as the numbers are too small to disaggregate by PHE Centre; between one and twenty cases were reported by each of 13 PHE Centres during the third quarter in 2014. PHE Centre data is available for local PHE teams on request.

Table 3. Laboratory confirmed cases of enteric fever by region: third quarter 2014

Region	Q3 2014	Q3 2013	**% change**
London	40	32	25.0%
North of England	28	14	100%
South of England	20	19	5.00%
Midlands and East of England	16	22	-27.3%
Wales	1	2	50.0%
Northern Ireland	1	–	N/A
Grand Total	106	89	**19.1%**

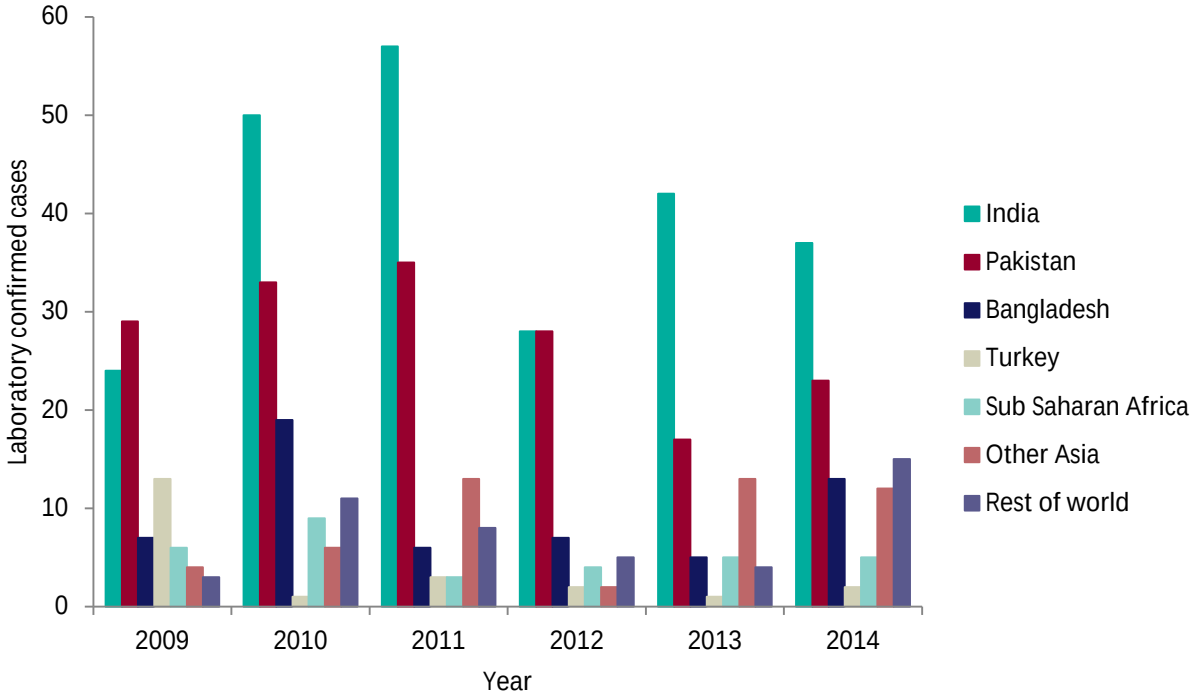
Travel history

In the third quarter, travel history was known for 104 (98.1%) cases; of which 100 cases were presumed to be acquired abroad and four had not travelled outside the UK in the 28 days prior to symptoms. Three of the travel-associated cases had travelled to countries that are not typical risk countries as defined by NaTHNaC (one to Spain, Croatia, Italy and France; one to Greece; and one to Hong Kong); these were designated as travel-associated in the absence of any other identified source of infection within the UK.

Travel-associated cases

Travel-associated cases were likely to have acquired their infection in: India (37); Pakistan (23); Bangladesh (13); Iraq, Bolivia and Nepal (three each); Afghanistan, Indonesia, Peru, Turkey, Zimbabwe and Sri Lanka (two each); Cambodia, Croatia, France, Greece, Hong Kong, Italy, Ivory Coast, Myanmar, Nigeria, Philippines, Spain, Tanzania, Thailand and Uganda (one each). For one case, country of travel was not stated. Some cases travelled to more than one country so totals will not equal the number of total cases that travelled. Where multiple countries of travel have been stated by the case, only risk countries, as identified by the National Travel Health Network and Centre [3], were included for analysis. If a case travelled to multiple risk countries each country was counted individually. India and Pakistan continue to be the most frequently reported countries of travel for the third quarter (figure 3).

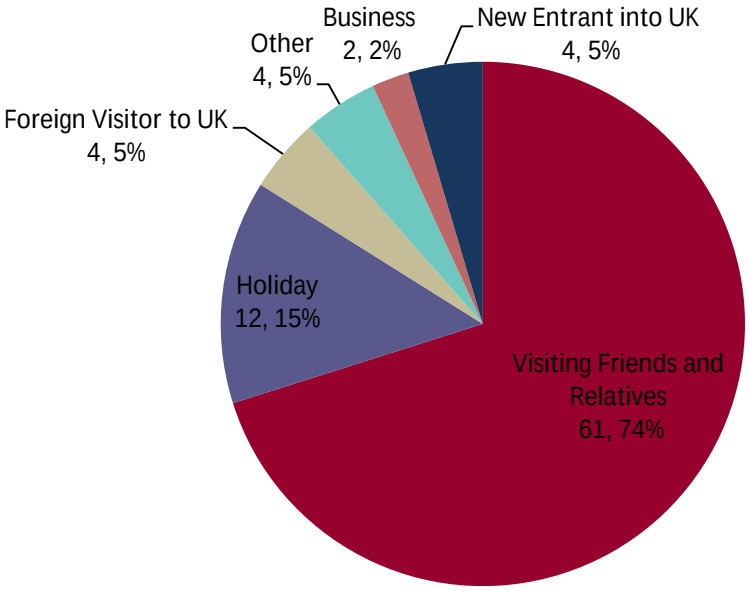
Figure 3. Laboratory-confirmed cases of enteric fever, England, Wales and Northern Ireland by country of travel: third quarter 2009-2014



Reason for travel

Of the 100 cases that had travelled abroad, reason for travel was known for 87. Among those, 74% of cases travelled to visit friends and relatives, 15% travelled abroad for a holiday and 4 were foreign visitors to the UK (figure 4).

Figure 4. Laboratory-confirmed cases of enteric fever that have travelled abroad (N=87) by reason for travel: third quarter 2014



Non-travel-associated cases

Three cases in the third quarter had enhanced information available stating they had not travelled abroad within 28 days of developing symptoms. One case had family visiting from Nigeria who brought sweets, but all visitors were asymptomatic. Neither of the other two cases had links to known cases or travellers from endemic countries and no other possible sources have been identified. There was a fourth case who did not travel abroad, but additional details were not available.

Data sources and acknowledgements

Data were collated and analysed by the Travel and Migrant Health Section, Centre for Infectious Disease Surveillance and Control, Colindale. Laboratory data were provided by Gastrointestinal Bacterial Reference Unit, Microbiology Services, Colindale. Other surveillance data were provided by Environmental Health Officers and local health protection colleagues in PHE through enteric fever enhanced surveillance.

References

1. GOV.UK website. Enhanced surveillance of enteric fever [online]. Accessed 4 November 2014. Available at: https://www.gov.uk/government/collections/typhoid-and-paratyphoid-guidance-data-and-analysis
2. GOV.UK. Typhoid and paratyphoid: laboratory confirmed cases in England, Wales and Northern Ireland. Available online at: https://www.gov.uk/government/publications/typhoid-and-paratyphoid-laboratory-confirmed-cases-in-england-wales-and-northern-ireland
3. National Travel Health Network and Centre (NaTHNaC) website [online] [accessed 4 November 2014]. Available at: http://www.nathnac.org/.

HIV-STIs

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Antenatal screening for infectious diseases in England: summary report for 2013

This report presents a summary of the uptake and test results of antenatal screening for hepatitis B, HIV, syphilis and rubella susceptibility in 2013 in England, updating the previous HPR report that included data to the end of 2012 [1]. Uptake of screening for all infections remains high (>95%) and the proportion of women with a positive test result for either HIV or, syphilis remains stable, whilst the proportion of women with hepatitis B and a rubella antibody level <10 IU/ml increased.

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 Screening Programmes, now both part of Public Health England, monitors the uptake of antenatal screening for hepatitis B, HIV, syphilis and susceptibility to rubella.

Screening is offered and recommended to all pregnant women in England as part of the UK National Screening Committee's NHS Infectious Diseases in Pregnancy Screening (IDPS) Programme [3]. The screening aims to identify women with hepatitis B, HIV and syphilis early in pregnancy so that strategies can be offered which prevent mother-to-child transmission and benefit the woman's health. Currently, women identified as susceptible to rubella are offered postnatal MMR vaccination to protect future pregnancies.

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 revised Standards retained this 90% uptake target as a reference point for all four infections [4]. In 2009, the UK National Screening Committee agreed on a set of Key Performance Indicators (KPIs) as part of a Quality Assurance strategy for the collation and return of performance data. Two of these indicators are related to infectious disease screening in pregnancy: HIV coverage and timely referral of hepatitis B positive women for specialist care [5].

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 Centre for Infectious Disease Surveillance and Control, where national figures and trends are generated. The IDPS Programme and NAISM team continue to work collaboratively to align future management of the data collation and reporting processes.

Data limitations

Data quality has improved significantly since 2004, though 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 [6].

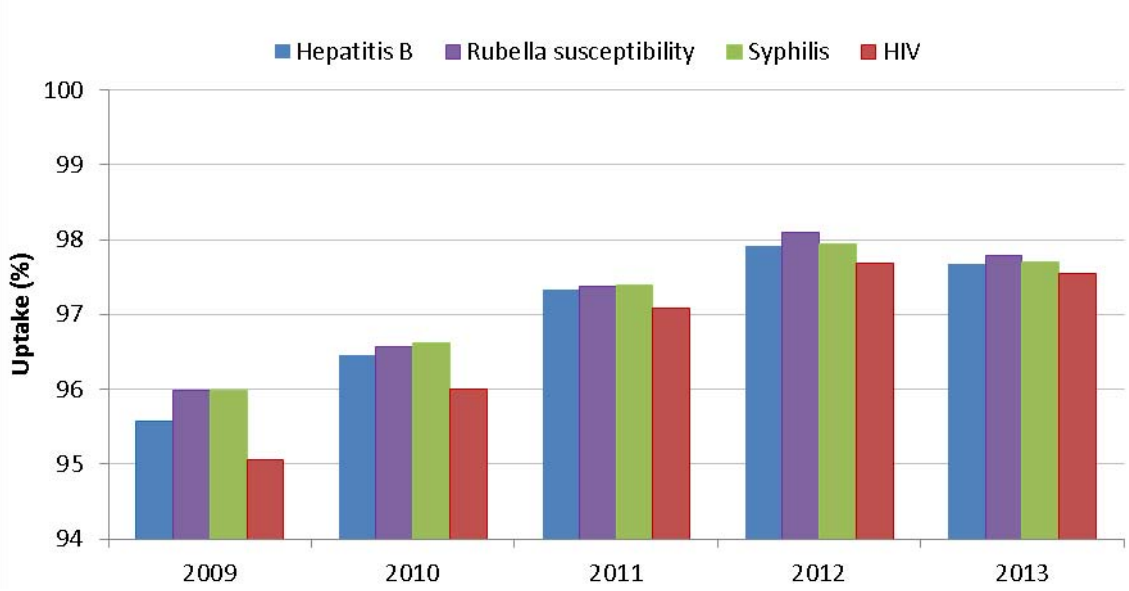
Uptake of antenatal screening is calculated as the proportion of women booked for antenatal care who have a screening test, as reported by maternity services. The number of maternity units able to report booking data has increased steadily and significantly from less than half in 2009 to 96% in 2013. 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 100%.

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 this 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 remain high in the period from 2009 to 2013 with values >95% (figure 1).

Figure 1. National reported uptake of antenatal screening by infection in England: 2009-2013*.



* 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 positive for HIV and hepatitis B

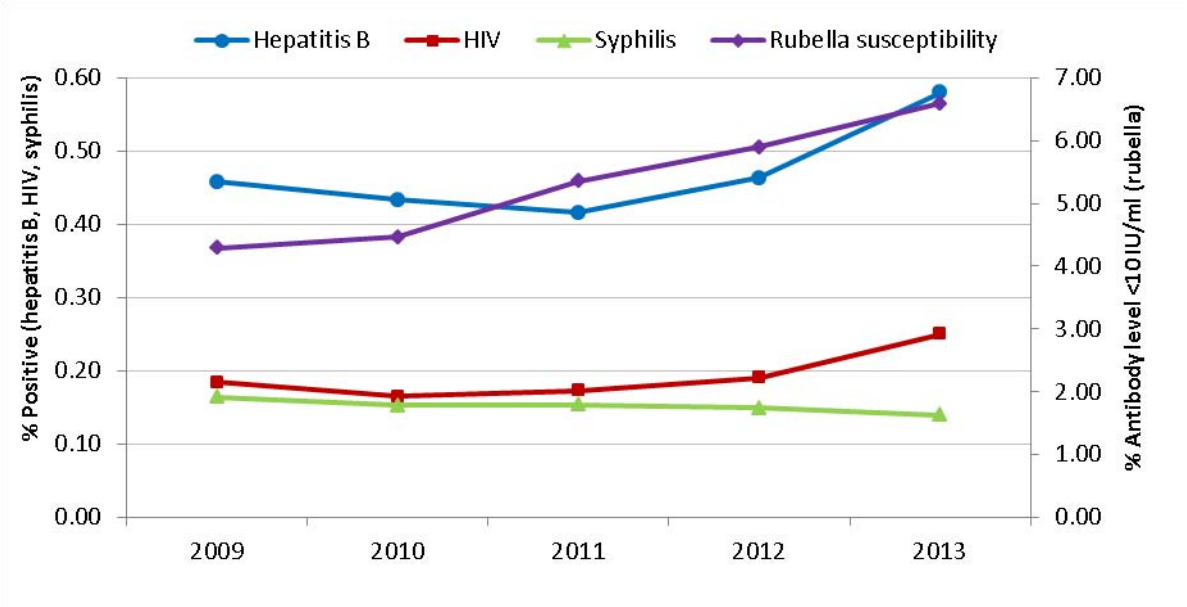
The UK NSC Infectious Diseases in Pregnancy Screening Programme Standards (2010) [4], which came into effect in April 2011, state that screening for hepatitis B or HIV is not required where a prior positive diagnosis of HIV or hepatitis B is documented and known to the healthcare professional. Both newly 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 2013, 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.

The IDPS Programme has recently conducted a study utilising the 2012 NAISM data to ascertain the reasons why the majority of trusts are retesting the cohort of known positive women for HIV and hepatitis B. The findings will further inform the revision of the IDPS programme standards.

Figure 2: Percentage of pregnant women positive for hepatitis B, HIV or syphilis or with a rubella antibody level <10 IU/ml, in England: 2009-2013.



In England in 2013 0.25% (1,749/688,755) of pregnant women screened positive or were reported already known to have HIV (figure 2/table 1). This has increased from 0.18% (1,275/690,695) in 2009.

The proportion of women screening positive for Hepatitis B was 0.58% (3,982/690,760) in 2013. There is an increasing upward trend in the reported cases of hepatitis B. The cause of this is not apparent from the data provided. For both infections regional variation was apparent, with women in London presenting the highest positivity rates.

The UK National Screening Committee (UK NSC) has commissioned a national audit of practice regarding management of hepatitis B in pregnancy over a 12 month period. It will highlight aspects of service provision requiring improvement, in order to optimise current strategies for prevention of vertically-acquired hepatitis B and to inform future service planning [7].

Women newly diagnosed through antenatal screening

Figures 3a and 3b present the percentage of screened women who were newly diagnosed with hepatitis B and HIV during the three years for which we have complete data. In 2013, 28% (1,073/3,886) of diagnosed hepatitis B infected women and 16% (276/1,758) of diagnosed HIV-positive women were identified as a result of antenatal screening in their current pregnancy. Overall the proportion of women being newly diagnosed with either hepatitis B or HIV has declined. In the case of HIV this may be partially 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 [8,9].

Figure 3a. Percentage of pregnant women newly and previously diagnosed with Hep

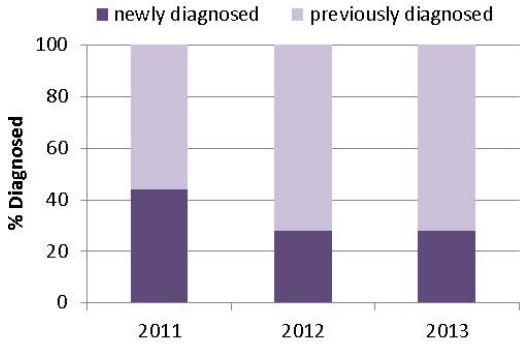
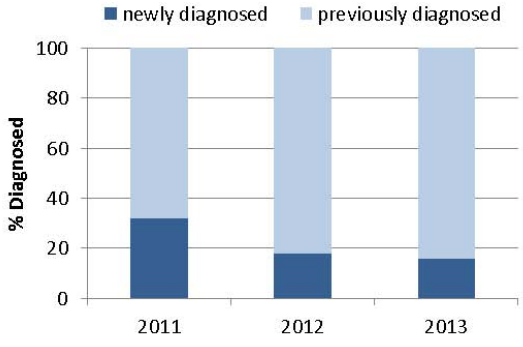


Figure 3b. Percentage of pregnant women newly and previously diagnosed with HIV,



Syphilis positivity

In 2013 0.14% (944/678,611) of woman were reported screen positive for syphilis (table 1) a rate that has remained stable since 2009 (figure 2). The Antenatal Syphilis Screening Study (SASS) was funded by the UK NSC 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. The study (final report pending) showed that 20% of the screen positive were subsequently classified as other treponemal infections or false positive results. This report will inform the planned revision of the IDPS Programme standards and clinical pathways.

Rubella susceptibility

The percentage of women with a rubella antibody level <10 IU/ml continues to increase reaching 6.59% (44,650/677,479) in 2013 (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 [11].

Screening for rubella susceptibility does not meet the UK NSC criteria for a screening programme. The IDPS programme is currently working collaboratively with the PHE Immunisation team and plan to cease antenatal screening for rubella susceptibility. The present arrangements for antenatal screening and post-partum immunisation will continue until other arrangements are in place.

Conclusion

Uptake of antenatal screening for hepatitis B, HIV, syphilis, and susceptibility to rubella infection in England remains high, well above the 90% set by the Department of Health's Screening for Infectious Diseases in Pregnancy Standards.

The proportion of screened women who tested positive for HIV and syphilis has been stable over the past five years whilst there has been an increase in positivity rates for hepatitis B and a significant increase in pregnant women with a rubella antibody level <10 IU/ml. The proportion of women newly diagnosed with either hepatitis B or HIV has declined. Data limitations exist; however, there continues to be great improvement in data quality submission since monitoring began in 2004.

The IDPS and NAISM programme continues to work collaboratively as part of Public Health England to improve future data quality.

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.

Table 1. Percentage of pregnant women screening positive for hepatitis B, HIV, syphilis or with a rubella antibody level <10 IU/ml, in England: 2013.

	Hepatitis B			HIV			Syphilis		Rubella antibody level <10 IU/ml	
	% positive	# screened positive & newly diagnosed/ number screened	% newly diagnosed	% positive	# screened positive & newly diagnosed/ number screened	% newly diagnosed	% positive	# screened positive & newly diagnosed/ number screened	% antibody level <10 IU/ml	# screened positive & newly diagnosed/ number screened
East Midlands	0.26	106 / 40,315	0.06	0.14	56 / 40,257	0.01	0.17	67 / 40,330	5.13	2,084 / 40,589
East of England	0.44	354 / 80,770	0.23	0.15	124 / 80,596	0.07	0.09	75 / 79,914	4.23	3,432 / 81,066
London	1.46	2,174 / 148,684	0.34	0.67	998 / 148,105	0.09	0.29	404 / 138,470	5.92	8,265 / 139,595
North East	0.17	53 / 30,702	0.07	0.07	20 / 30,688	0.02	0.14	44 / 30,746	7.84	2,411 / 30,746
North West	0.34	315 / 91,970	0.13	0.14	124 / 91,582	0.03	0.09	78 / 91,485	6.19	5,649 / 91,192
South East	0.29	303 / 105,810	0.10	0.10	106 / 105,248	0.02	0.06	67 / 105,335	7.57	7,843 / 103,564
South West	0.16	91 / 57,286	0.05	0.09	54 / 57,206	0.02	0.05	31 / 57,301	5.62	3,234 / 57,508
West Midlands	0.55	366 / 66,922	0.08	0.27	180 / 66,727	0.03	0.18	118 / 66,760	8.19	5,304 / 64,744
Yorkshire & the Humber	0.32	220 / 68,301	0.11	0.13	87 / 68,346	0.01	0.09	60 / 68,270	9.39	6,428 / 68,475
National	**0.58**	**3,982 / 690,760**	**0.16**	**0.25**	**1,749 / 688,755**	**0.04**	**0.14**	**944 / 678,611**	**6.59**	**44,650 / 677,479**

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Appendix

The positivity rate is calculated using the following equation:

$$\%\ \text{positive} = \frac{\#\ \text{newly diagnosed} + \#\ \text{previously diagnosed (not rescreened and rescreened)}}{\#\ \text{screened} + \#\ \text{previously diagnosed, not rescreened}} * 100$$

The positivity is therefore measuring how many pregnant women who accept screening are found positive during this pregnancy or were diagnosed previously.

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:

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