Public Health England

Health Protection Report
weekly report

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News

Volume 9 Number 22 Published on: **26 June 2015**

PHE publishes full annual STIs data for 2014

Public Health England (PHE) has released its annual data on sexually transmitted infections (STIs) in England [1,2] which are covered in depth in this issue of *Health Protection Report*.

The main review report, *Sexually transmitted infections and chlamydia screening in England, 2014* [1,2], provides an overview of trends for the STIs of most concern in England: gonorrhoea, syphilis, genital herpes, chlamydia and genital warts. The latest data show that although the total of new STI diagnoses decreased by 0.3% overall in 2014, compared with 2013 (from 439,243 to 440,707), there were marked year-on-year increases in syphilis and gonorrhoea diagnoses (up 33% and 19%, respectively, compared with 2013) – particularly in men who have sex with men (among whom the new diagnoses increased 42% and 36%, respectively).

Chlamydia was the most commonly diagnosed STI in 2014, accounting for 47% (206,774 cases) of all diagnoses. The main STI report also presents data, covering 2012 to 2014, on genital *Chlamydia trachomatis* tests and diagnoses among those most at risk – sexually active 15-to-24 year-olds. A separate report, *Monitoring rates of chlamydia re-testing within the English National Screening Programme in 2013* [3], comprises a set of baseline data against which hoped-for future improvements in the rate of re-testing can be compared; this represents a new strand of STI reporting from the National Chlamydia Screening Programme (NCSP).

A further new strand of PHE reporting contained in this issue of HPR concerns pelvic inflammatory disease (PID), which can be caused by untreated genital chlamydia and other STIs. *Rates of Pelvic Inflammatory Disease (PID) in England (2000-2013)* [4] indicates declining PID diagnosis rates in GP settings between 2000 and 2008, with rates remaining relatively stable from 2008 to 2011. These declines may reflect reducing risk due to increases in chlamydia screening and testing over the last decade, although further exploration of the contribution chlamydia screening has made is needed.

Also reported in this issue are latest data (to end-2014) on genital warts (GW) trends, providing further evidence of the unexpected moderate protective effect of the bivalent human papillomavirus (HPV) vaccine against genital warts [5]. These data indicate a 30.6% decrease in the GW incidence rate in females aged 15 to 19 years (from 685.8 to 75.7 per 100,000) – and of 9.6% for females aged 20 to 24 years (from 698.8 to 475.7 per 100,000). A decrease of 24.0% (from 274.0 to 208.1 per 100,000) was also seen in 15-to-19 year-old males – and 9.9%

(from 849.6 to 765.3 per 100,000) for 20-to-24 year-old males – over the same time period, the potential causes of which are discussed.

The main STIs report [1] reiterates that health promotion and education to increase risk awareness and encourage safer sexual behaviour remain the cornerstones of STI prevention. The continuing increases in syphilis and gonorrhoea, it is noted, are likely due to ongoing high levels of unsafe sexual practices. This is especially found with MSM, among whom there is an increased incidence of hepatitis B and C, and of sexually transmissible enteric infections, such as Shigella spp.

References

1. PHE (2015). Sexually transmitted infections and chlamydia screening in England, 2014, *HPR* **9**(22) Advance Access report, 23 June.
2. PHE press release: New STI figures show rapid increases among gay men, 23 June 2015.
3. PHE (June 2015). Monitoring rates of chlamydia re-testing within the English National Screening Programme in 2013, *HPR* **9**(22) Advance Access report, 23 June.
4. PHE (June 2015). Rates of Pelvic Inflammatory Disease (PID) in England, 2000–2013, *HPR* **9**(22) Advance Access report, 23 June.
5. PHE (June 2015). Continuing trend of declining genital warts diagnoses in young women in England: update to end 2014, *HPR* **9**(22): news (see below).

Continuing trend of declining genital warts diagnoses in young women in England associated with HPV 16/18 vaccination: update to end-2014

Genital warts (GW) diagnoses in genitourinary medicine (GUM) clinics among 15-to-19 year-old females declined by 33.2% between 2009 and 2014. A smaller reduction of 25.8% has also been seen in 15-to-19 year-old males.

The UK was the first country in the world to introduce a national HPV vaccination programme using the bivalent HPV 16/18 vaccine. The programme began in September 2008 and use of the bivalent vaccine continued until September 2012. At this time it was replaced by the quadrivalent vaccine, which also includes HPV types 6 and 11, providing protection against GW [1]. The target group for the routine vaccination programme is 12-to-13 year-old females and uptake has been high. No reduction in genital warts was expected during the first years of the programme due to the initial choice of a bivalent vaccine.

Data for 2009 to 2014 from the GUM clinic activity dataset (GUMCADv2), submitted by GUM and integrated GUM/sexual and reproductive health clinics in England, were reviewed. There has been a marked decrease of 30.6% (from 685.8 to 475.7 per 100,000) in the rate of GW diagnoses in females aged 15-to-19 years and of 9.6% (from 698.8 to 631.8 per 100,000) for

females aged 20-to-24 years. A decrease of 24.0% (from 274.0 to 208.1 per 100,000) was seen for 15-to-19 year-old males and 9.9% (from 849.6 to 765.3 per 100,000) for 20-to-24 year-old males over the same time period. The greatest declines were seen among 15, 16, 17 and 18 year-old females (50.9%, 46.7%, 37.4% and 29.7% respectively) who would have been eligible for vaccination in school (with reported vaccination coverage >70%) [2,3,4]. The percentage declines lessen with increasing age, as does the estimated vaccine coverage. In females above the age eligible for HPV immunisation, and males of the same age, diagnoses rates showed no similar declines.

Several factors that might be contributing to these declines, such as changing risk behaviours or different patterns of attendance at GUM or integrated GUM/SRH clinics have been explored elsewhere [5]. However, the pattern of declines by age and gender seem to suggest a moderately protective effect of the bivalent vaccine against genital warts [6].

References

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2. DH (2012). Annual HPV vaccine coverage in England in 2010 to 2011.
3. DH (2012). Annual HPV vaccine coverage in England in 2011 to 2012.
4. PHE (2013). Annual HPV vaccine coverage 2012 to 2013: by PCT and SHA.
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6. Howell-Jones R, Soldan K, Wetten S, Mesher D, Williams T, Gill ON, *et al* (2013). Declining genital warts in young women in England associated with HPV 16/18 vaccination: an ecological study. *J Infect Dis.* 1; 208(9): 1397-403.

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Infection reports

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HIV-STIs

Sexually transmitted infections[1] and chlamydia screening in England, 2014

- In 2014, there were approximately 440,000 diagnoses of sexually transmitted infections (STIs) made in England
- The impact of STIs remains greatest in young heterosexuals under the age of 25 years and in men who have sex with men (MSM)
- The most commonly diagnosed STI was chlamydia, with 206,774 diagnoses made in 2014
- The largest proportional increase in diagnoses between 2013 and 2014 were reported for syphilis (33%) and gonorrhoea (19%)
- Large increases in STI diagnoses were seen in MSM, including a 46% increase in syphilis and a 32% increase in gonorrhoea. High levels of condomless sex probably account for most of this rise, although better detection of gonorrhoea may have contributed
- There was a 4% decrease in diagnoses of genital warts (first episode) between 2013 and 2014
- During the year, over 1.6 million chlamydia tests were carried out and almost 138,000 chlamydia diagnoses were made in England among young people aged 15 to 24 years old, the target population for the National Chlamydia Screening Programme (NCSP). This represents a small reduction in overall testing and diagnoses from last year
- Twenty-nine percent of Upper Tier Local Authorities (UTLAs) achieved a chlamydia detection rate of at least 2,300 per 100,000 among 15 to 24 year olds, the recommended level for this Public Health Outcome Framework (PHOF) indicator. There was a strong relationship between chlamydia testing coverage and chlamydia detection rates in UTLAs

Recommendations

- Prevention efforts should include ensuring open access to sexual health services and STI screening and should focus on groups at highest risk
- The NCSP recommends sexually active under-25 year-old men and women should be screened for chlamydia every year, and on change of sexual partner
- MSM should have a full HIV and STI screen at least annually, or every three months if having condomless sex with new or casual partners
- Black African men and women should have a regular full HIV and STI screen if having condomless sex with new or casual partners
- Individuals can significantly reduce their risk of transmitting or being infected with an STI by:
  - Consistently and correctly using condoms until all partners have had a sexual health screen
  - If in a high-risk group, getting screened regularly to ensure early identification and treatment, as these infections are frequently asymptomatic
  - Reducing the number of sexual partners and avoiding overlapping sexual relationships

[1] Please see the *Resources on the PHE website* section for available resources describing trends in HIV and antimicrobial resistance in *Neisseria gonorrhoeae*.

Introduction

This report presents data on the recent trends and epidemiology of STIs in England. It was compiled using data on STI tests and diagnoses made in genitourinary medicine (GUM) clinics, integrated GUM and sexual and reproductive health (SRH) clinics and, for chlamydia, also from other community-based settings [1]. Data are submitted from GUM and integrated GUM/SRH clinics to the GUM Clinic Activity Dataset (GUMCADv2) and from laboratories to the Chlamydia Testing Activity Dataset (CTAD), both of which are managed by Public Health England.

GUM and integrated GUM/SRH clinics offer free, open-access HIV and STI testing, diagnosis and management services to anyone attending. The National Chlamydia Screening Programme (NCSP) offers opportunistic screening of sexually active young people aged 15 to 24 years and is mainly delivered through primary care (general practices and pharmacies), community SRH services (including termination of pregnancy services) and GUM clinics.

Tests performed in community-based settings are assumed to be largely asymptomatic screens; tests performed in GUM and integrated GUM/SRH clinics are assumed to be a combination of symptomatic tests and asymptomatic screens. The term ‘test’ is used herein to signify both asymptomatic screens and symptomatic tests. Local areas should work towards a chlamydia detection rate of at least 2,300 per 100,000 population among 15 to 24 year olds, the recommended level for this Public Health Outcomes Framework (PHOF) indicator [2]. Data from CTAD and GUMCADv2 are used by the NCSP to monitor progress towards the recommended PHOF indicator level.

Overall trends in diagnoses in England

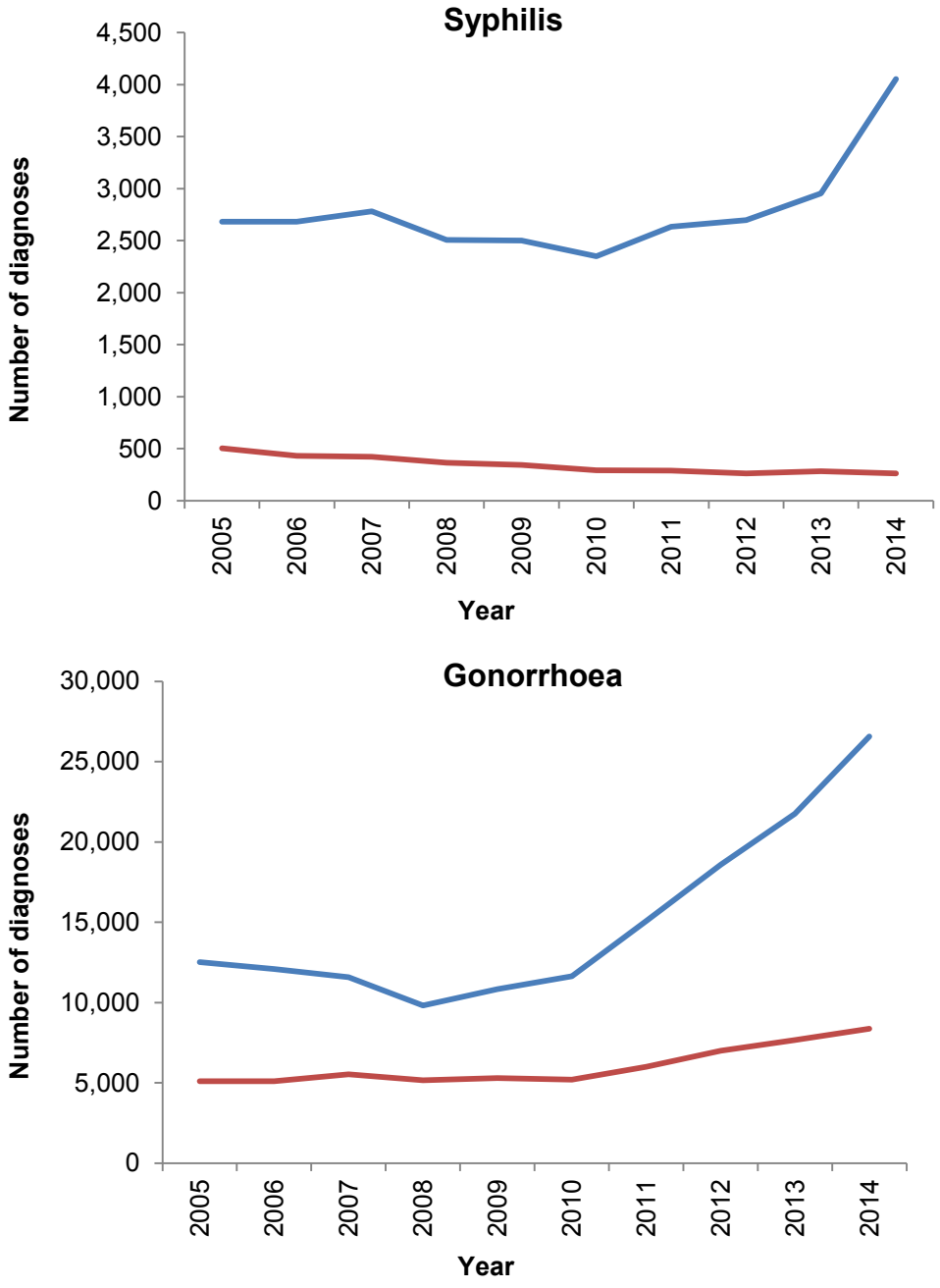
In 2014, the total number of new cases of STIs diagnosed in England decreased by 0.3% when compared to 2013 (439,243 vs. 440,707). Of the 439,243 new STI diagnoses made in 2014, the most commonly diagnosed STIs were chlamydia (206,774; 47%), genital warts (first episode; 70,612; 16%), gonorrhoea (34,958; 8%) and genital herpes (first episode; 31,777; 7%).

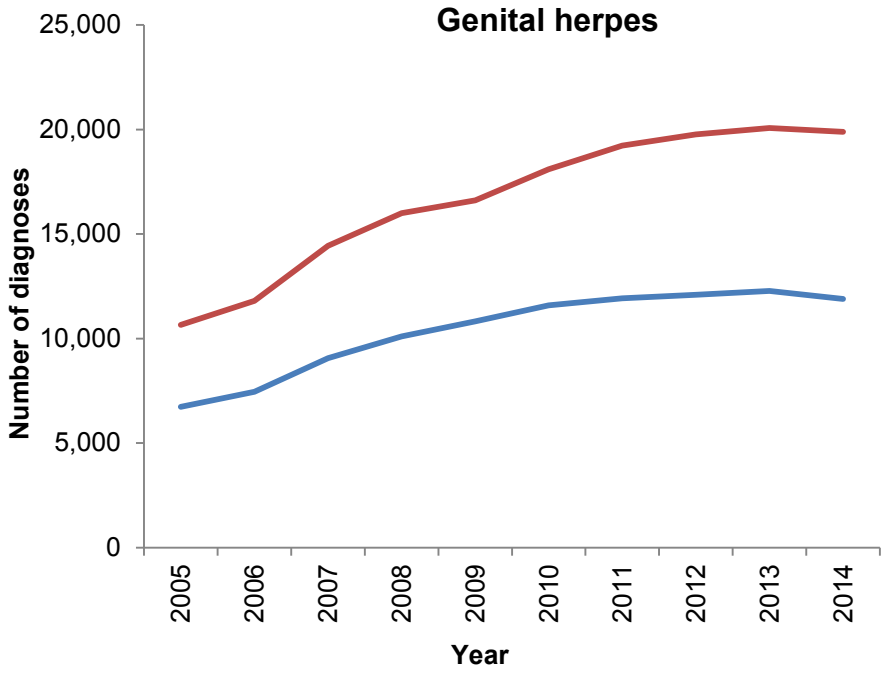
Between 2013 and 2014, there was an increase in diagnoses of infectious syphilis (33%; 3,236 to 4,317) and gonorrhoea (19%; 29,419 to 34,958). During the same period, diagnoses of non-specific genital infection (NSGI) fell by 5% (48,612 to 46,249), consistent with the decline reported since 2012.

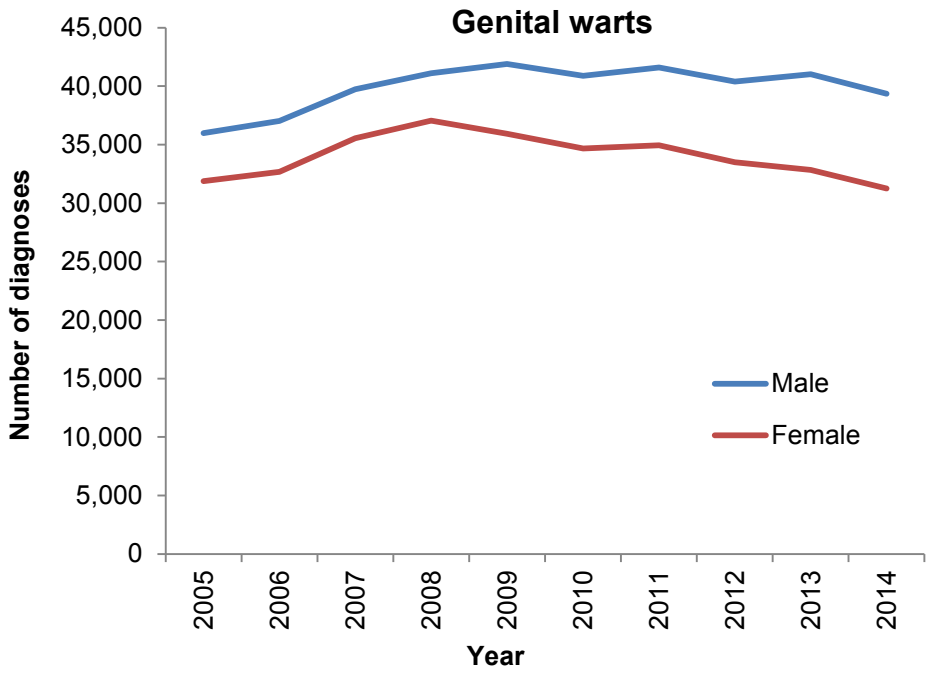
Over the past decade, diagnoses of gonorrhoea, syphilis, genital warts and genital herpes have increased considerably, most notably in males [3] (figure 1; chlamydia is discussed in a later section). More STI testing in GUM and integrated GUM/SRH clinics and through the NCSP [4] and routine use of more sensitive diagnostic tests, such as nucleic acid amplification tests (NAATs), will partly explain these increases, although ongoing unsafe sexual behaviour will have played a role. The use of NAATs to detect chlamydia and gonorrhoea may also have contributed to the decreasing number of NSGI diagnoses.

Reliable data on the sexual orientation of patients is available from GUM and integrated GUM/SRH clinics’ GUMCADv2 data returns. Among diagnoses made in these settings, there is substantial variation in the distribution of the most commonly diagnosed STIs by gender and sexual orientation. Men who have sex with men (MSM) accounted for 81% of syphilis and 52% of gonorrhoea diagnoses, while heterosexual men and women accounted for 92% of genital warts, 92% of genital herpes and 86% of chlamydia diagnoses. Almost twice as many heterosexual women as men were diagnosed with genital herpes.

Figure 1. New diagnoses of syphilis (primary, secondary and early latent), gonorrhoea, genital herpes (first episode) and genital warts (first episode) at genitourinary medicine (GUM) and integrated GUM/sexual and reproductive health clinics by gender, 2005–2014, England




Genital herpes
25,000
20,000
15,000
10,000
5,000
0
Number of diagnoses
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Year


Genital warts
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Number of diagnoses
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Year
Male
Female

Epidemiology of STIs in England

Men who have sex with men

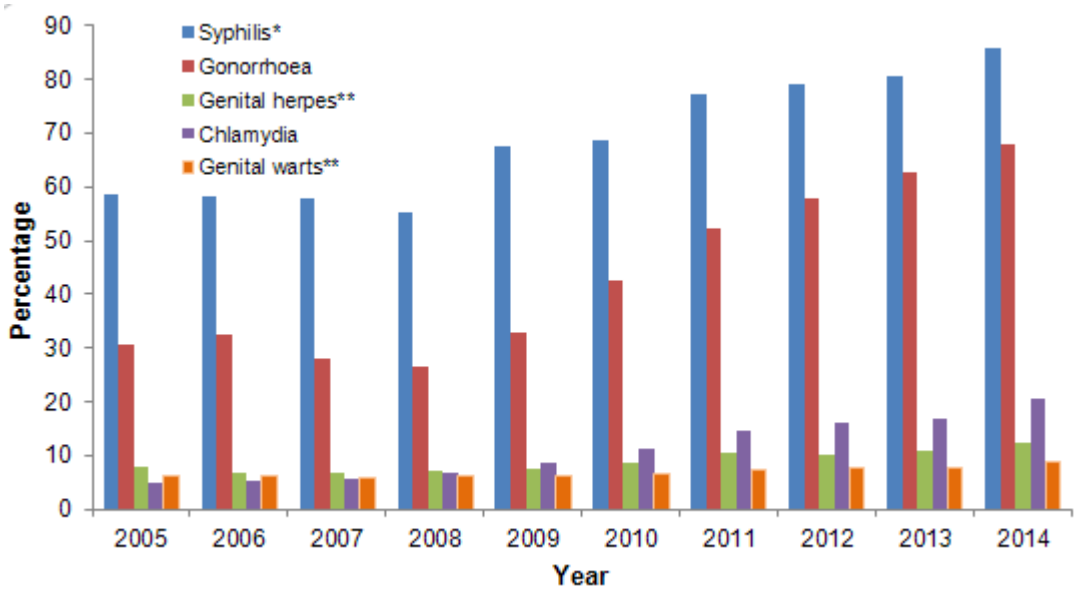
In England in 2014, among male GUM and integrated GUM/SRH clinic attendees, 86% (3,477/ 4,054) of syphilis diagnoses, 68% (18,029/ 26,575) of gonorrhoea diagnoses, 21% (11,468/ 55,807) of chlamydia diagnoses, 12% (1,474/ 11,889) of genital herpes diagnoses and 9% (3,456/ 39,349) of genital warts diagnoses were among MSM (figure 2a).

The number of diagnoses of STIs reported in MSM has risen sharply in recent years and accounts for the majority of increased diagnoses seen among men. Syphilis diagnoses increased by 46% in the past year (2,375 to 3,477), gonorrhoea diagnoses by 32% (13,629 to 18,029), chlamydia diagnoses (from GUM and integrated GUM/SRH clinics) by 26% (9,118 to 11,468), genital herpes diagnoses by 10% (1,339 to 1,474) and genital warts diagnoses by 10% (3,156 to 3,456) (figure 2b). Gonorrhoea was the most commonly diagnosed STI among MSM in 2014, and 27% (4,891) presented with rectal infections. High levels of gonorrhoea transmission are of particular concern, as data from the Gonoccocal Resistance to Antimicrobials Surveillance Programme (GRASP) show the emergence of gonococcal isolates with resistance or decreased susceptibility to antimicrobials used for treatment [5].

Several factors are likely to have contributed to the sharp rise in diagnoses among MSM. It is likely that condomless sex associated with HIV seroadaptive behaviours, as has been reported in ongoing epidemics and outbreaks of LGV, *Shigella* spp. and syphilis, is leading to more STI transmission in this population [6,7]. There has been a steady increase in diagnoses of STIs in HIV-positive MSM since 2009, with a population rate of acute bacterial STIs up to four times that of MSM who were HIV-negative or of unknown HIV status. This suggests that rapid STI transmission is occurring in dense sexual networks of HIV-positive MSM [8]. More screening of extra-genital (rectal and pharyngeal) sites in MSM using NAATs [9], in response to current gonorrhoea testing guidance [10] and the Lymphogranuloma venereum (LGV) epidemic [6,11], will also have improved detection of gonococcal and chlamydial infections in recent years.

Men who have sex with men continue to experience high rates of STIs and remain a priority for targeted HIV and STI prevention and health promotion work. In June 2014, PHE published an action plan to promote the health and wellbeing of gay, bisexual and other MSM with the vision of all MSM enjoying long healthy lives, and creating and sustaining respectful and fulfilling social and sexual relationships [12]. An advisory group has also been convened to develop interventions to address the public health disparities faced by black and minority ethnic gay, bisexual and other MSM [13].

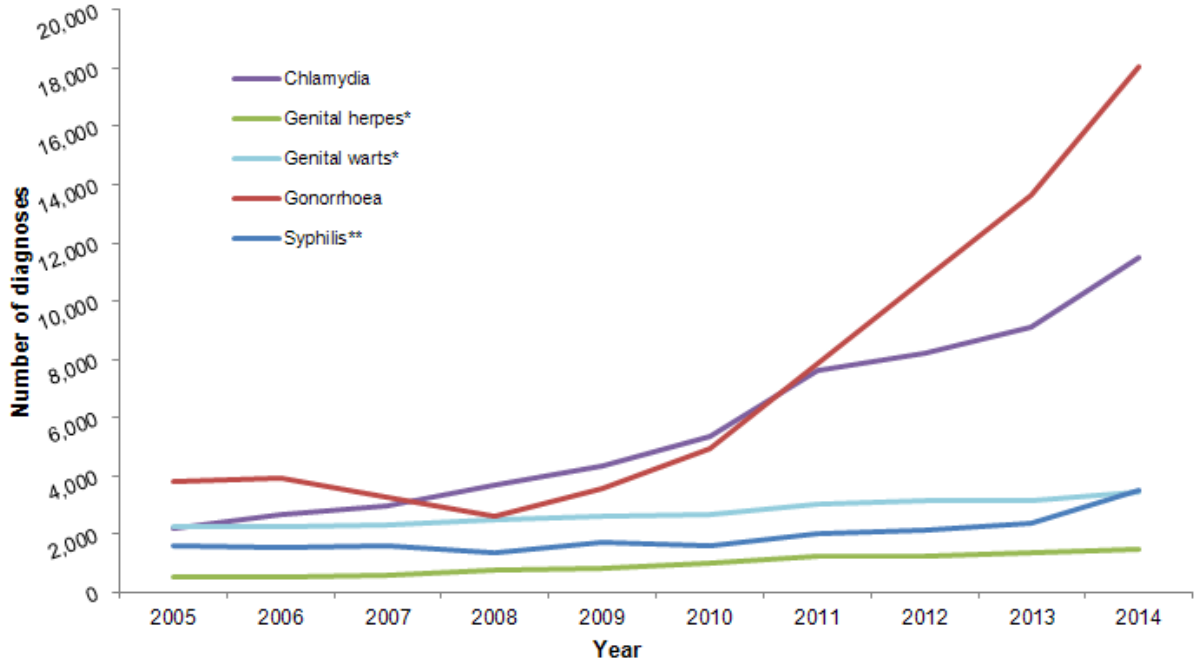
Figure 2a. Proportion of all male STI diagnoses which are among men who have sex with men, genitourinary medicine (GUM) and integrated GUM/sexual and reproductive health clinics, 2005–2014, England



* Primary, secondary and early latent

** First episode

Figure 2b. Number of new diagnoses of selected STIs in men who have sex with men, genitourinary medicine (GUM) and integrated GUM/sexual and reproductive health clinics, 2005–2014, England



* First episode

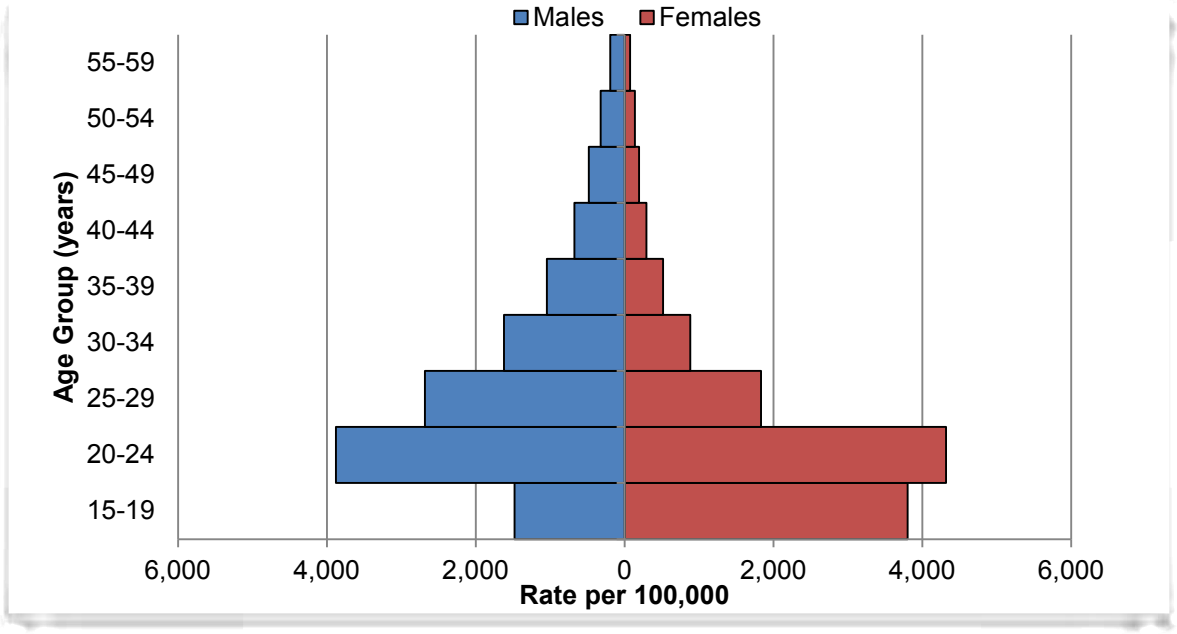
** Primary, secondary and early latent

Young heterosexuals and STIs

Data from Natsal-3 suggest that people aged 16-24 years were most likely to report at least one new sex partner of the opposite sex in the past year and at least two sex partners of the opposite sex (new or current) in the past year [14]. People of this age group continue to experience the highest rates of STIs (figures 3, 4a and 4b). In 2014, among heterosexuals diagnosed in GUM and integrated GUM/SRH clinics, 63% (57,558/91,901) with chlamydia, 55% (8,722/15,814) with gonorrhoea, 52% (33,862/64,666) with genital warts, and 42% (12,223/29,240) with genital herpes were aged 15 to 24 years. Chlamydial infection in young people is discussed further in a following section.

Although overall numbers of diagnoses in those aged 15 to 24 years have risen considerably in the last ten years, there has been some decline recently in cases of genital warts in young females (figure 4b). This decreasing trend is discussed in an accompanying article in this issue of the HPR [15].

Figure 3. Rates of new* STI diagnoses by age group and gender***, 2014, England**

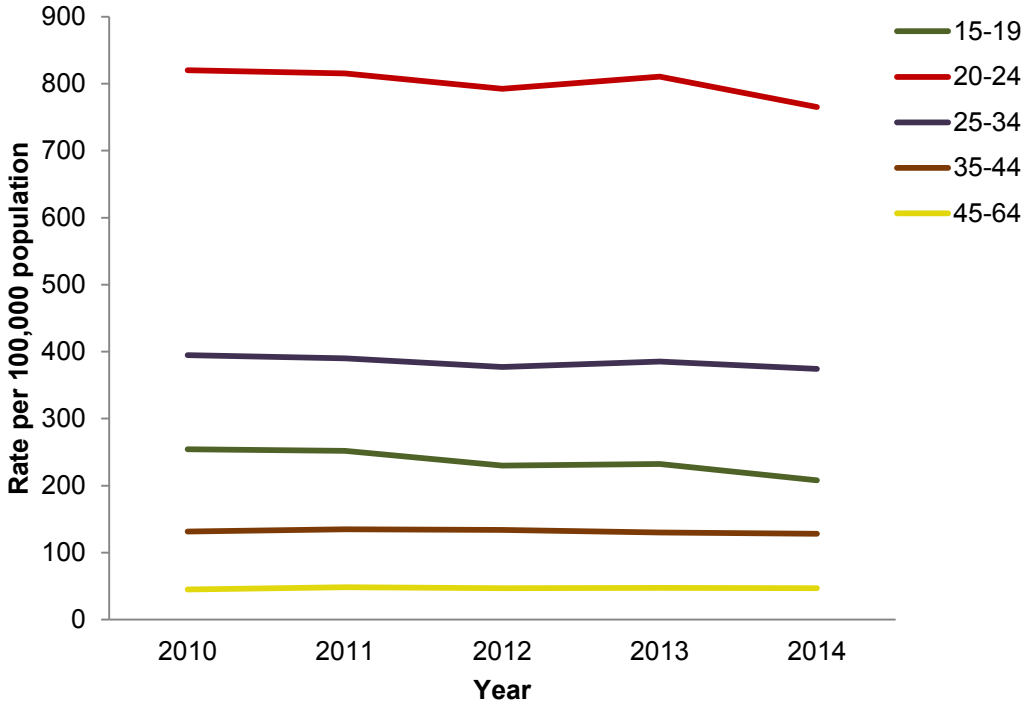


* New STIs include Chlamydia, Anogenital Warts (first episode), Non-Specific Genital Infection, Anogenital Herpes (first episode), Gonorrhoea, Syphilis (primary, secondary & early latent), new HIV diagnoses (acute infection and AIDS-defining illness), as well as Chancroid/LGV/Donovanosis, Molluscum contagiosum, Pelvic Inflammatory Disease & Epididymitis, Scabies/Pediculosis pubis, and Trichomoniasis

** Data from routine GUM and integrated GUM/SRH clinic returns; data from community services included for chlamydia only

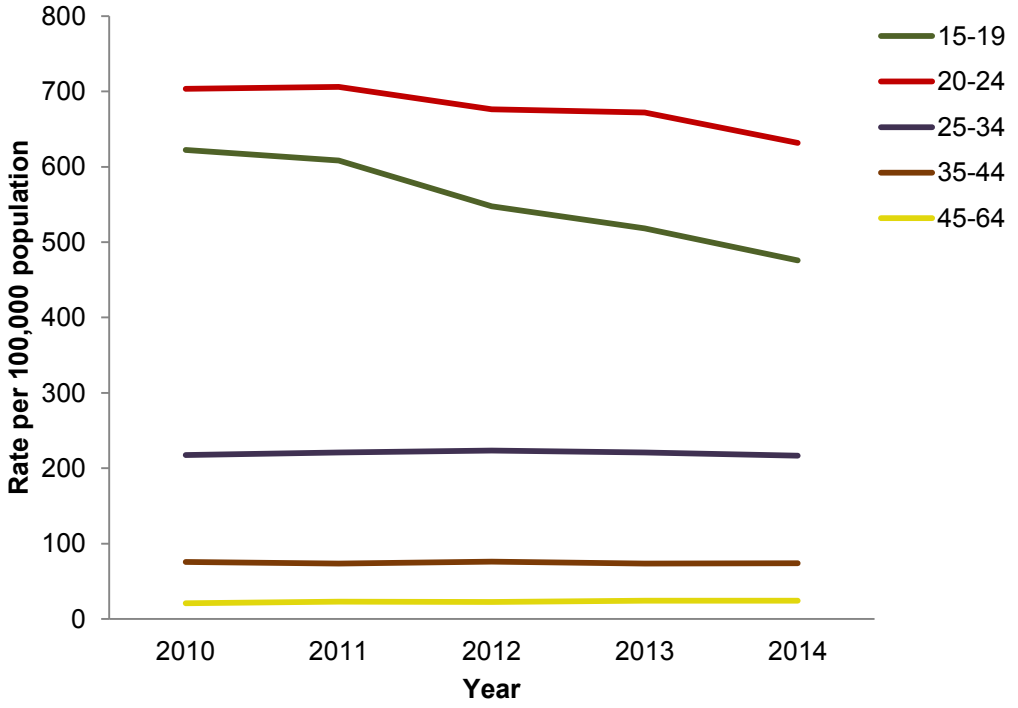
*** Excludes diagnoses where gender was reported as 'unknown'

Figure 4a. Rates of genital warts (first episode) diagnoses* in males by age group, 2010–2014, England**



* Data from routine GUM and integrated GUM/SRH clinic returns; ** Years

Figure 4b. Rates of genital warts (first episode) diagnoses* in females by age group, 2010–2014, England**



* Data from routine GUM and integrated GUM/SRH clinic returns; ** Years

STI distribution by local area of residence

There is considerable geographic variation in the distribution of STIs both nationally and within local areas. Rates of diagnosis are higher in urban areas, especially London, largely reflecting the distribution of core groups of the population who are at greatest risk but also access to diagnosis and treatment services. Geographic variations are most pronounced for less common STIs. For instance, the results of a recent national probability survey highlight the relatively low prevalence of gonorrhoea (<0.1% in women and men aged 16-44 years) [16], but there is a high degree of geographical clustering of this infection [17,18]. In 2014, the rate of gonorrhoea diagnoses by lower tier Local Authority (LA) ranged from 0 (Isles of Scilly) to 634 (Lambeth) per 100,000 population. Rates were highest in residents of urban areas, especially in London, reflecting, to a large extent, the distribution of core groups of the population who are at greatest risk of infection and living in areas of higher deprivation [19-21] (figures 5a and 5b).

To allow LAs and public heath leads to monitor the sexual and reproductive health of their population, PHE regularly updates the Sexual and Reproductive Health Profiles. These profiles include interactive maps, charts and tables that provide a snapshot of sexual and reproductive health across a range of topics including teenage pregnancy, abortions, contraception, HIV, STIs and sexual offences. Wider influences on sexual health such as alcohol use, and other topics particularly relating to teenage conceptions such as education and deprivation level, are also included.

Figure 5a. Rates of gonorrhoea diagnoses* by lower tier Local Authority of residence, 2014, England

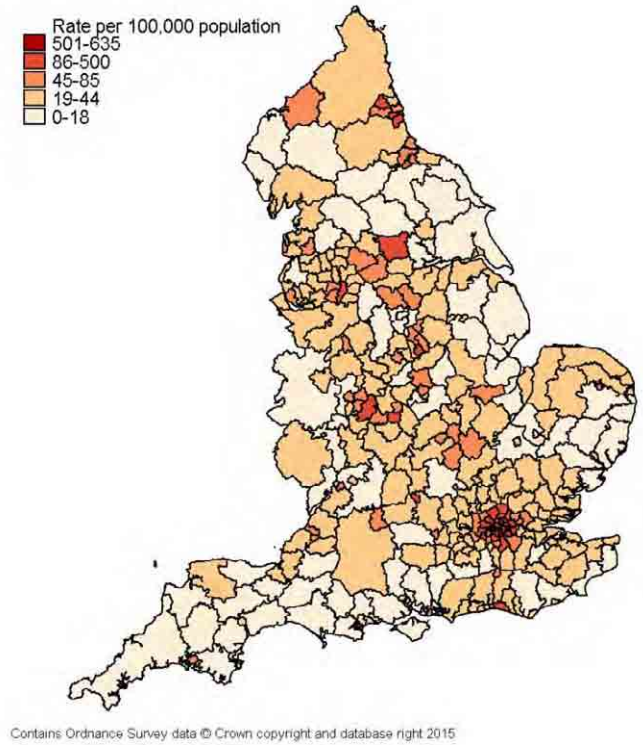
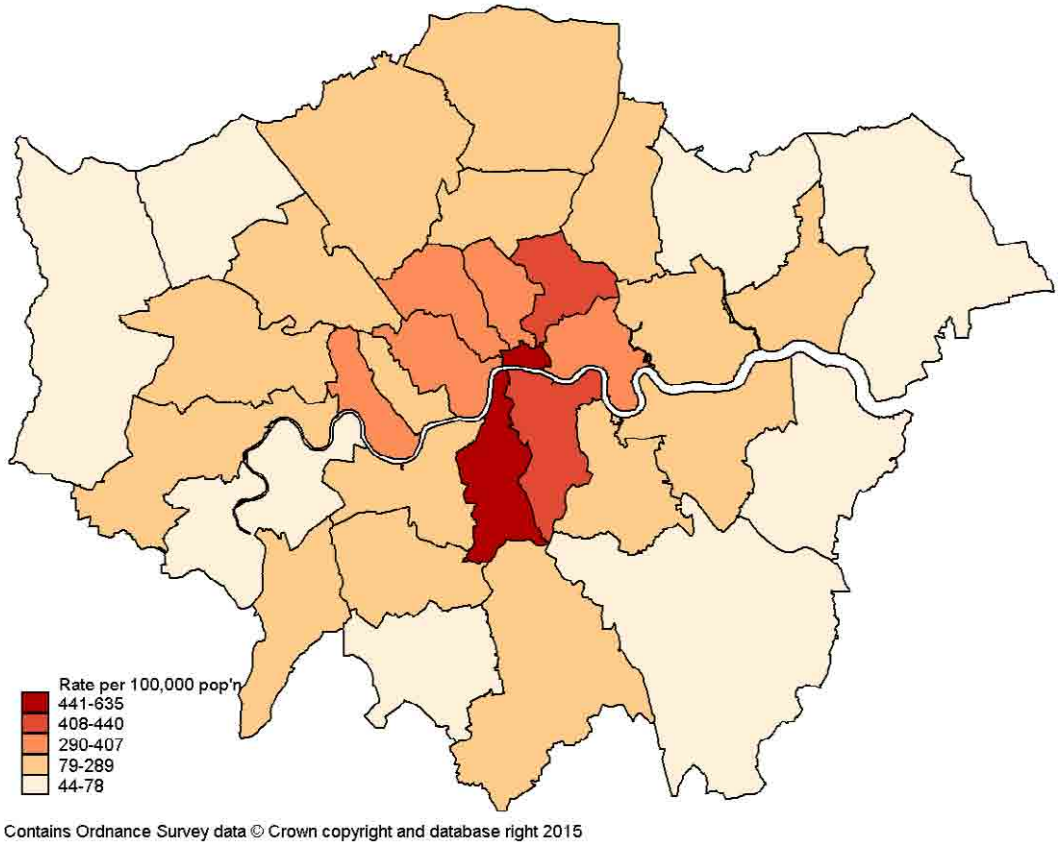


Figure 5b. Rates of gonorrhoea diagnoses* by lower-tier Local Authority of residence, 2014, London



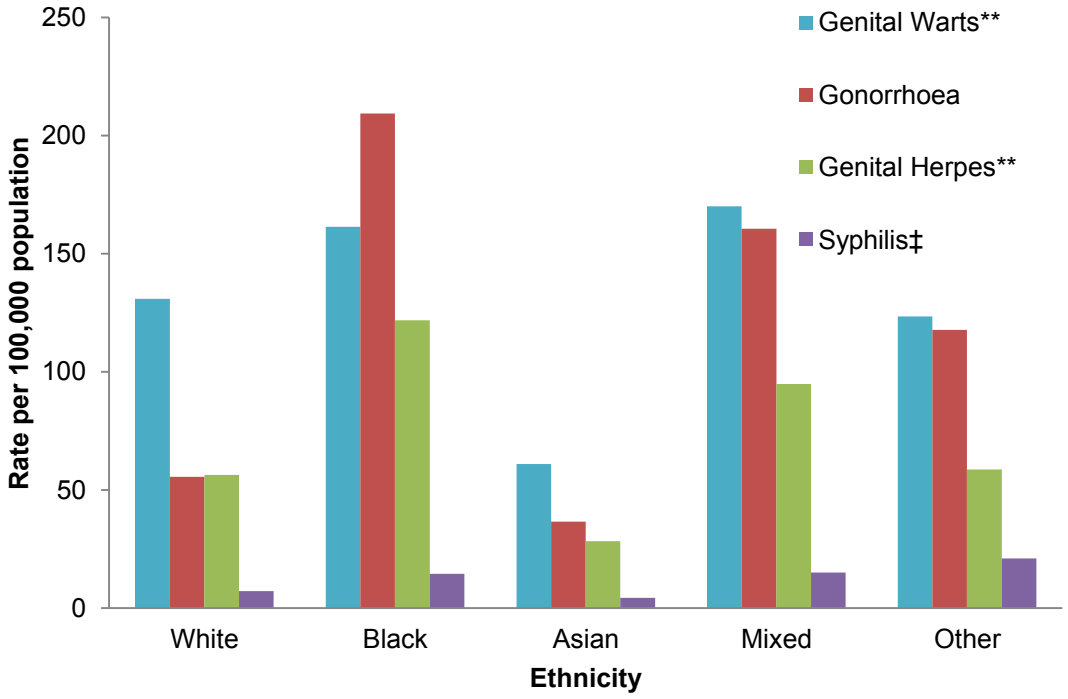
* Data from routine GUM and integrated GUM/SRH clinic returns

STI distribution by ethnicity

The highest rates of STI diagnoses were found among people of black ethnicity (figure 6), and the majority of these cases were among people living in areas of high deprivation, especially in urban areas (figures 5a and 5b) [21]. This high rate of STI diagnoses among black ethnic communities is most likely the consequence of a complex interplay of cultural, economic and behavioural factors [22]. Additionally, risk behaviours and STI epidemiology vary between black African and Caribbean ethnic groups [22,23].

To better understand these behavioural factors and address this disparity, Public Heath England is collaborating with University College London and the London School of Hygiene and Tropical Medicine as part of the National Institute for Health Research (NIHR) Health Protection Research Unit (HPRU) on blood-borne and sexually transmitted infections. The research aims to improve understanding of the behaviours, attitudes, and other factors influencing STI risk and support the delivery of timely interventions which maximise patient and public health benefit.

Figure 6. Rates of selected STI diagnoses* by ethnicity and STI, 2014, England



* Data from routine GUM and integrated GUM/SRH clinic returns

** First episode

‡ Primary, secondary and early latent

Genital Chlamydia trachomatis *tests and diagnoses in young people*

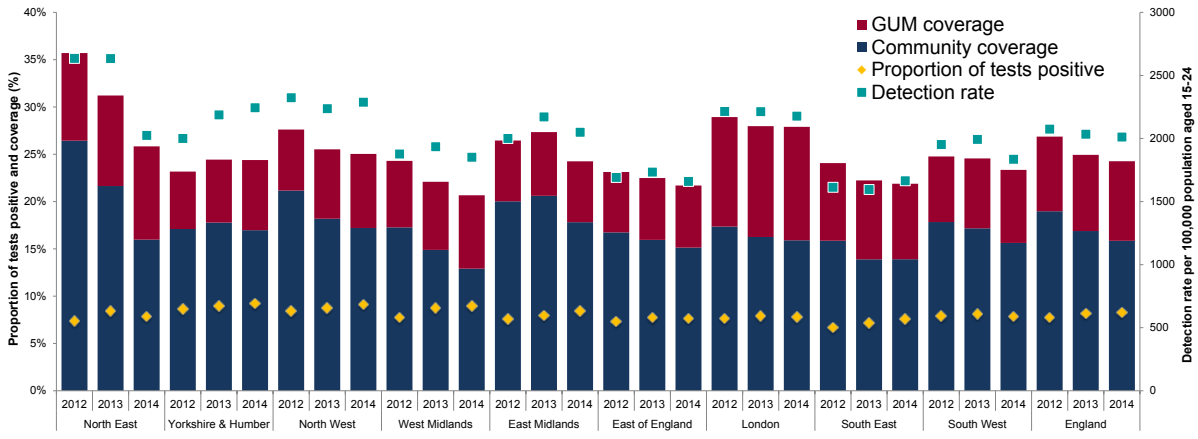
In 2014, over 1.6 million chlamydia tests were carried out in England among young people aged 15 to 24 years. A total of 137,993 chlamydia diagnoses were made among this age group, equivalent to a detection rate of 2,012 per 100,000 population. Assuming one test per person, an estimated 35% of young females and 14% of young males were tested for chlamydia.

Chlamydia testing coverage, detection rate and proportion testing positive varied by Public Health England (PHE) Centre area of residence (figure 7). The percentage of young people tested for chlamydia ranged from 21% in West Midlands to 28% in London. North West had the highest detection rate per 100,000 population (2,288) while East of England had the lowest (1,660). The proportion testing positive was relatively stable (range from 7.6% to 9.2%). Thus the variation in detection rates between the areas mainly reflects the different testing rates. For all areas the majority of tests were carried out in community-based settings (including primary care) (57% to 73% of tests from all sources).

Three years of data are now available and trends show a decline in testing coverage, a small increase in positivity and a small decline in the detection rate (Figure 7). It is likely that the trends seen at the PHE centre area and national levels are as a result of a combination of the following:

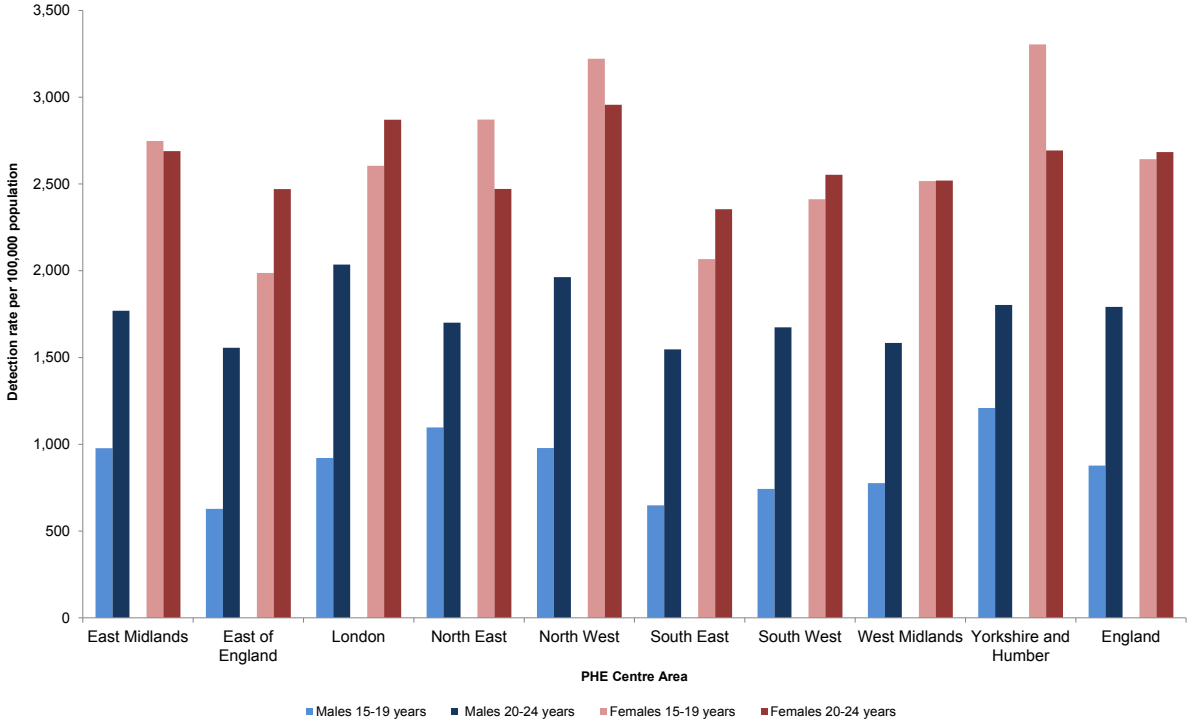
I. Improvements in data quality: There has been a reduction in double counting of tests corresponding to improvements in coding of data by providers and laboratories prior to submission. Data for 2014 are more representative of true chlamydia testing activity when compared to previous years.
II. A true decline in testing coverage: The decline in coverage shown in figure 4 is mostly attributable to fewer tests in community venues which may be, in part, a result of the integration of sexual health services in a number of programme areas.
III. Targeted testing of populations at highest risk of infection: Sexual health services have focused testing efforts on core services where positivity rates are highest.

Figure 7. Chlamydia testing coverage, detection rates and proportion of tests positive among 15 to 24 year olds by testing venue and PHE Centre area, 2012 - 2014, England



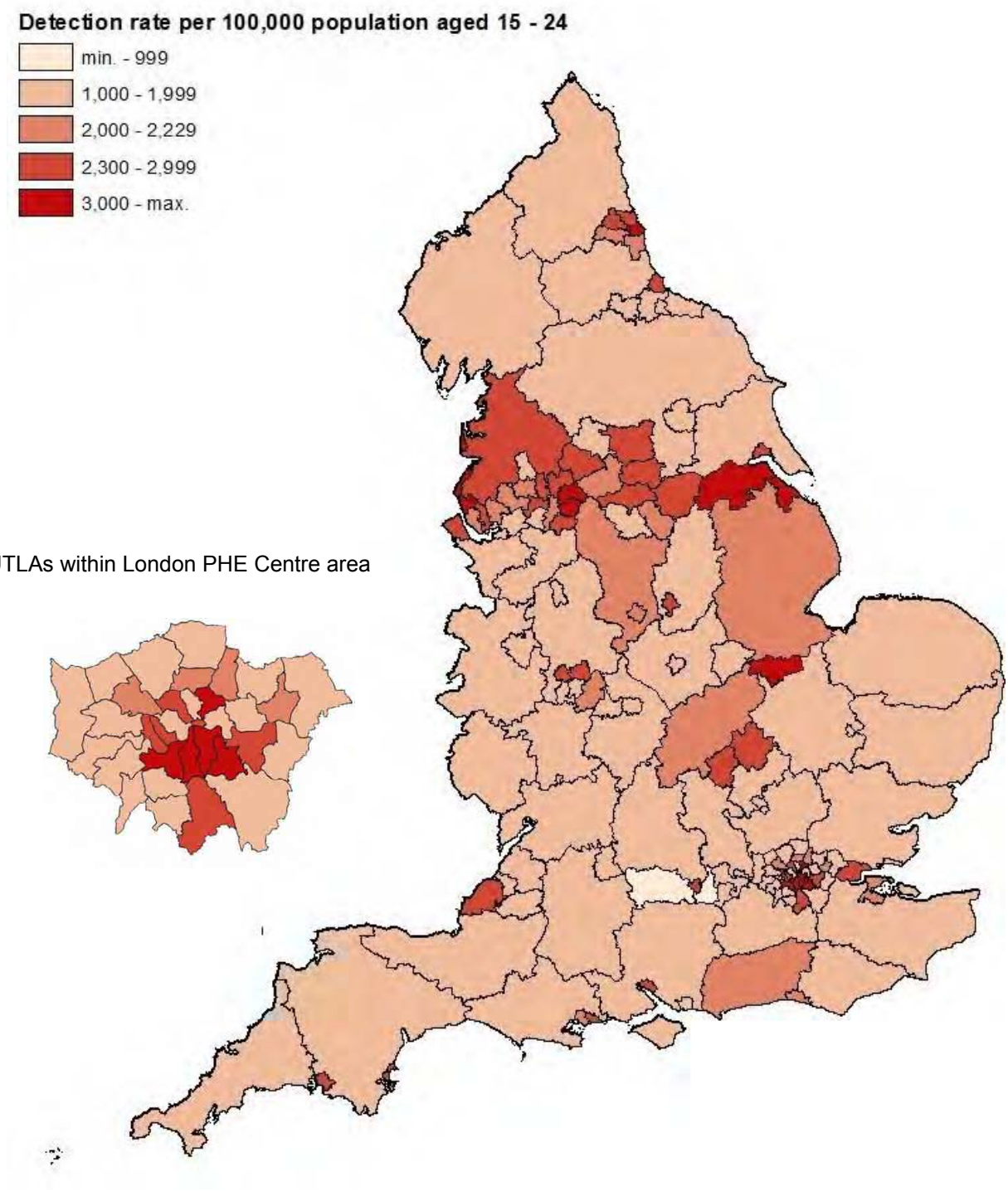
Chlamydia detection rates were higher in females than males across all areas (1.8 to 2.1 times higher), reflecting higher testing rates in females (figure 8). Chlamydia detection rates among young females did not vary greatly between those aged 15 to 19 years and those aged 20 to 24 years. However, detection rates among males aged 20 to 24 years were 1.5 to 2.5 times higher than among males aged 15 to 19 years.

Figure 8. Chlamydia detection rates among 15 to 24 year olds by gender, age-group and PHE Centre area, 2014, England



Chlamydia detection rates exhibit considerable geographic variation (figures 8 and 9) and in 2014 29% of Upper Tier Local Authorities (UTLAs) achieved a detection rate of 2,300 or above (table 1). In 2014, the rates by UTLA ranged from <530 (Isles of Scilly) to 4,270 (Hackney) per 100,000 population aged 15-24. Differences in detection rate could be due to differences in testing coverage (table 1), data quality variation, or heterogeneity in behavioural risk for chlamydia. In 2014 the range of detection rate by UTLA shows fewer outliers - with either very low or very high detection rates - indicating that data at the local level are a more accurate representation than in previous years. Public Health England works to support local authority's data quality improvement initiatives.

Figure 9. Chlamydia detection* rates among 15 to 24 year olds by Upper Tier Local Authority of residence, 2014, England and London PHE Centre area



* Data from routine GUM and integrated GUM/SRH clinic returns and community services

Table 1. Chlamydia testing coverage, and number and proportion of Upper Tier Local Authorities (UTLAs) achieving a chlamydia detection rate among 15 to 24 year olds of at least 2,300 per 100,000 population by PHE Centre (PHEC) Area, 2014, England*

PHEC Area	Testing coverage (%)	Chlamydia detection rate/100,000 population					
		≥ 2,300		2,000-2,299		< 2,000	
		No. of UTLAs	% of UTLAs	No. of UTLAs	% of UTLAs	No. of UTLAs	% of UTLAs
North East	26	4	33	2	17	6	50
Yorkshire and Humber	24	7	47	3	20	5	33
North West	25	11	48	5	22	7	30
West Midlands	21	2	14	1	7	11	79
East Midlands	24	1	11	4	44	4	44
East of England	22	3	25	1	8	8	67
London	28	11	33	4	12	18	55
South East	22	2	11	3	17	13	72
South West	23	3	19	2	13	11	69
England	**24**	**44**	**29**	**25**	**16**	**83**	**55**

* Data from routine GUM and integrated GUM/SRH clinic returns and community services

When considered by testing venue, the majority of chlamydia tests and diagnoses in England in 2014 were in GUM clinics (table 2). Large numbers of tests and diagnoses also took place in Sexual and Reproductive Health venues (SRH) and primary care (GP). Only small numbers of tests were reported from pharmacy and termination of pregnancy (ToP) venues. This is considered to be an underestimate of the true figures, and tests from these venues have likely been reported with a venue of “other” or “unknown” due to difficulties in identification of testing venue type (GUM, SRH, GP etc.) when the tests are processed by laboratories. Positivity was highest in GUM which is expected as patients attending these services are more likely to be diagnosed with an STI than those attending community venues.

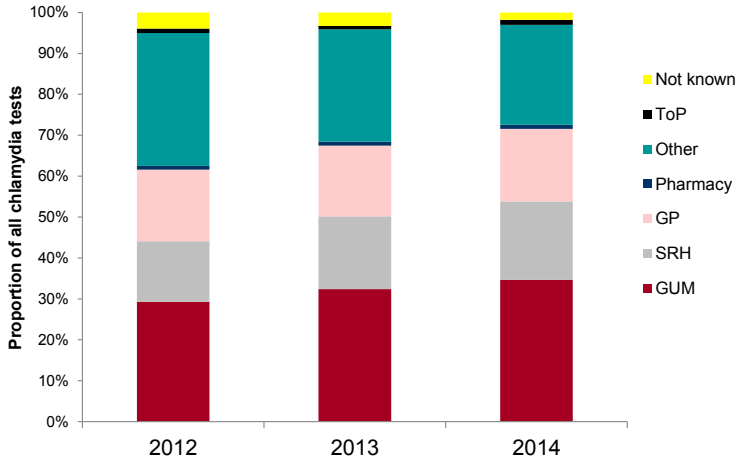
Table 2 Chlamydia tests, diagnoses, and percentage tests positive by testing venue, 15-24 year olds, 2014, England*

Testing venue	Tests	Diagnoses	Proportion of tests positive (%)
GUM	576,808	61,508	10.7
SRH	318,453	27,979	8.8
GP	295,447	17,334	5.9
Pharmacy	16,723	1,382	8.3
ToP	20,819	1,349	6.5
Other	406,425	26,423	6.5
Unknown	29,335	2,018	6.9
Total	**1,664,010**	**137,993**	**8.3**

* Data from routine GUM and integrated GUM/SRH clinic returns and community services

Since 2012, the proportion of tests from GUM venues has increased (figure 10). This change is partly attributable to the increased accuracy in coding of testing venue in data reported to CTAD; as well as to a true increase in the number of tests reported from these clinics (6% increase). Since 2012, there has been a 16% increase in the number of tests reported from SRH venues. Overall testing reported from GPs has shown a 9% decline from 2012 to 2014.

Figure 10. Chlamydia tests among 15 to 24 year olds by testing venue, 2012 - 2014, England*



* Data from routine GUM and integrated GUM/SRH clinic returns and community services

Discussion and conclusions

Despite a small decrease compared to 2013, there were approximately 440,000 STI diagnoses made in England in 2014. Genital chlamydial infection was the most commonly diagnosed STI, accounting for 47% of diagnoses. New diagnoses of gonorrhoea continued the sharp rise seen in recent years, exceeding 34,000 cases in 2014. This increase may be partially explained by increased levels of testing with more sensitive NAATs. Notwithstanding this improvement in testing, the rise in diagnoses suggests high levels of gonorrhoea transmission. This is a cause for concern given the emergence of decreased susceptibility to frontline antimicrobials used for treating gonorrhoea and the depletion of effective treatment options [24].

Of particular concern is the continuing rise in STI diagnoses, especially of syphilis and gonorrhoea, among MSM, which may be due to ongoing high levels of unsafe sex. Furthermore, serosorting, the practice of engaging in condomless sex with partners believed to be of the same HIV status, increases the risk of infection with STIs, hepatitis B and C, and sexually transmissible enteric infections like *Shigella* spp. [6,7,8] For those who are HIV negative, serosorting increases the risk of HIV seroconversion as 16% of MSM are unaware of their infection [25].

There was notable variation in the chlamydia detection rate among 15 to 24 year-olds by geographic area, largely reflecting rates of testing. Areas with detection rates below the PHOF recommended indicator of 2,300 per 100,000 population should consider means to promote chlamydia screening to most effectively detect and control chlamydia infections. Local areas should focus on embedding chlamydia screening for 15 to 24 year-olds into a variety of community settings including primary care and sexual and reproductive health services. They should also emphasise the need for repeat screening annually and on change of sexual partner, as well as the need for re-testing after a positive diagnosis within three months of initial diagnosis [26]; and ensure treatment and partner notification standards are met [27].

There is considerable inequality in the distribution of STIs across the population. Health promotion and education remain the cornerstones of STI prevention, through improving risk awareness and encouraging safer sexual behaviour. Prevention efforts should include ensuring open access to sexual health services and STI screening and should focus on groups at highest risk such as young people, black ethnic minorities and MSM. Men who have sex with men should have an HIV and STI screen at least annually, or every three months if having condomless sex with new or casual or partners. Consistent and correct condom use, reducing the number of sexual partners and the avoidance of overlapping sexual relationships all reduce the risk of being infected with an STI. Effective commissioning of high quality sexual health services, as highlighted in the recently published Framework for Sexual Health Improvement in England [28], will promote delivery of these key messages.

Resources on the PHE website

Further STI data are available on the PHE website in tables (www.hpa.org.uk/stiannualdatatables, http://www.chlamydiascreening.nhs.uk/ps/data.asp) and in interactive maps on the recently launched *Sexual and Reproductive Health Profiles* (http://fingertips.phe.org.uk/profile/sexualhealth). The *Sexual and Reproductive Health Profiles* are presented using the Fingertips web tool.

Further information on the GUMCADv2 and CTAD surveillance systems is available at https://www.gov.uk/genitourinary-medicine-clinic-activity-dataset-gumcadv2 and http://www.chlamydiascreening.nhs.uk/ps/info-management.asp, respectively.

Further information on the Gonoccocal Resistance to Antimicrobials Surveillance Programme (GRASP) Action Plan for England and Wales is available at http://webarchive.nationalarchives.gov.uk/20140714084352/http:/www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317138215954.

Further information on trends in HIV diagnoses in the UK is available at: https://www.gov.uk/government/statistics/hiv-in-the-united-kingdom.

Statistical notes on the data analysis

1. GUM clinic data covering diagnoses since 2009 and Level 3 integrated GUM/SRH clinic data since 2014 were collected through a new electronic surveillance system, the Genitourinary Medicine Clinic Activity Dataset (GUMCADv2). During years prior to this, data were collected on an aggregated, paper-based form, the KC60 statistical return. Unlike KC60 surveillance, GUMCADv2 enables errors in data coding submitted by clinics to be identified and corrected. The net effect has been to reduce slightly the number of diagnoses reported, as duplicates can be removed. To enable fair comparisons of trends in STI diagnoses reported over time using these two surveillance systems, numbers of diagnoses reported through KC60-based surveillance in years prior to 2009 were adjusted down. The adjustment was calculated using the estimated percentage difference in diagnoses reported through GUMCADv2 and KC60 for the same calendar quarters in 2008 and 2009. This was possible as both systems were run in parallel during these years.

2. Males reported with an unknown sexual orientation have been excluded from the heterosexual and MSM analyses. Females reported with an unknown sexual orientation have also been excluded from heterosexual analyses.

3. Several changes were made in 2012 to the way chlamydia data are reported. The Chlamydia Testing Activity Dataset (CTAD) is a universal disaggregate dataset that comprises data on all NHS and LA or NHS-commissioned chlamydia testing carried out in England. CTAD replaced the NCSP core data return and the non-NCSP non-GUM aggregate data return. Statistical notes specific for chlamydia data are summarised below:

- From 2012, total chlamydia diagnoses reported include community chlamydia data from all age-groups, and not solely the NCSP target age group of 15 to 24 year olds (as in previous years).
- From 2012, all chlamydia cases presenting to GUM clinics that were previously diagnosed at other services are no longer included in the chlamydia diagnosis totals, in order to decrease double counting in the data. As a result of this, the recommended level for the PHOF indicator chlamydia detection rate was revised down from 2,400 to 2,300 per 100,000 population in 15 to 24 year olds.
- Data include chlamydia tests and diagnoses among people accessing services located in England who are also resident in England.
- Data include tests where sex is reported as male, female, and unknown/unspecified.
- Data includes all screening tests, diagnostic tests and tests on contacts
- Where data on chlamydia are presented by testing venue ‘GUM’ includes integrated GUM/SRH clinics also.

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Infection reports

Volume 9 Number 22 Advance Access report published on: 23 June 2015

HIV-STIs

Monitoring rates of chlamydia re-testing within the English National Screening Programme in 2013

Introduction

The English National Chlamydia Screening Programme (NCSP) recommends that sexually active 15 to 24 year-olds are tested for chlamydia annually and on change of sexual partner. Young adults who test positive for chlamydia are at increased risk of subsequently testing positive compared to those who initially test negative [1-8]. Possible reasons for such repeat infections include non-compliance with treatment, incomplete or unsuccessful partner notification, unsafe sexual behaviours and treatment failure [9]. In 2012-13 the NCSP carried out a consultation on whether individuals diagnosed with chlamydia should be routinely offered re-testing following a chlamydia diagnosis. The consultation found that both health professionals and young adults supported a recommendation for routine re-testing. Both groups emphasised that the offer of a re-test should be part of case management and should not replace the need for partner notification or advice on safer sex [10].

Following the consultation, the NCSP updated their recommendations for case management in August 2013, to include a routine offer of a re-test around three months after treatment completion [11]. This report accompanies the newly-available data tables on chlamydia re-testing rates by PHE Centre area (PHE-C) and local authority (LA). These data tables will be made available on a quarterly basis to aid local monitoring and decision making.

Data collection and methodology

Routine surveillance data on chlamydia testing from the Chlamydia Testing Activity Dataset (CTAD) and Genitourinary Medicine Clinic Activity Dataset (GUMCADv2), collected by Public Health England [12], were used for this analysis. Quarterly re-testing rates (defined as the proportion of individuals with a chlamydia diagnosis for whom another test was recorded within the subsequent 7-14 weeks) among 15 to 24 year-olds were calculated for each LA and PHE Centre for January to December 2013. Positivity at re-test was calculated for England and PHE Centre areas.

Re-testing rates in non-GUM testing settings (contraceptive and sexual health clinics, general practices (GPs), pharmacies and outreach services), and in genitourinary medicine (GUM) clinics, were calculated separately, since due to differences in patient data collected between data systems, movement of individuals between GUM and non-GUM settings cannot be tracked. Non-GUM data were derived from CTAD and used a combination of data items to enable matching of individuals between different non-GUM settings. GUM clinic data were derived from GUMCADv2 and use a clinic-specific patient number

to link unique patient records. Thus, for GUM, re-testing rates can be calculated only within (and not between) clinics.

The England and PHE-C totals for non-GUM settings excluded data from LAs where >20% of records were missing the required combination of data items. GUM and non-GUM data presented by LA also excluded any local authority with fewer than 10 diagnoses per quarter (see table).

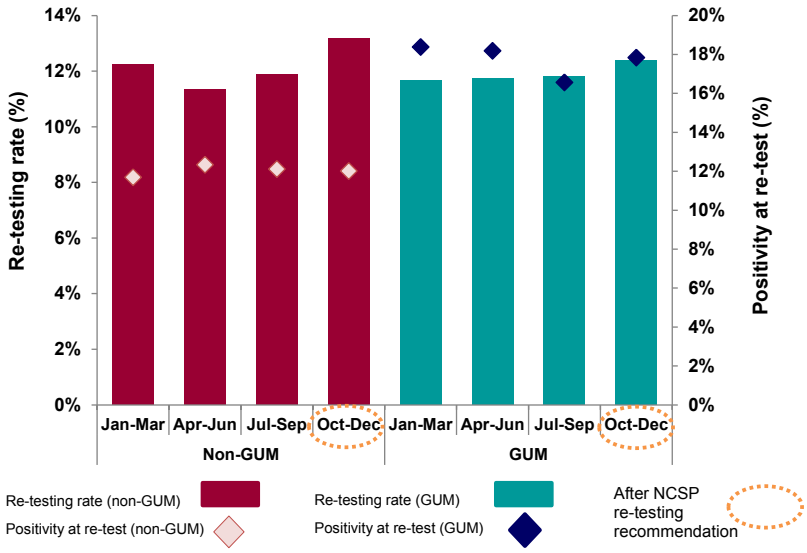
LA data included in PHE-C and England totals, non-GUM settings by quarter, 2013.

2013	LAs included
Jan-Mar	243/326
Apr-Jun	233/326
Jul-Sep	239/326
Oct-Dec	246/326

National rates of re-testing

In 2013, quarterly re-testing rates for England ranged between 11.3% and 13.2% for non-GUM settings and between 11.7% and 12.4% in GUM settings. Positivity at re-test was consistently higher in GUM (16.6% - 18.4%) compared to non-GUM settings (11.7 - 12.3%) (figure 1).

Figure 1. Chlamydia re-testing rates within 7-14 weeks following a positive diagnosis and positivity at re-test by quarter, non-GUM and GUM settings, January – December 2013, 15-24 year-olds, England *

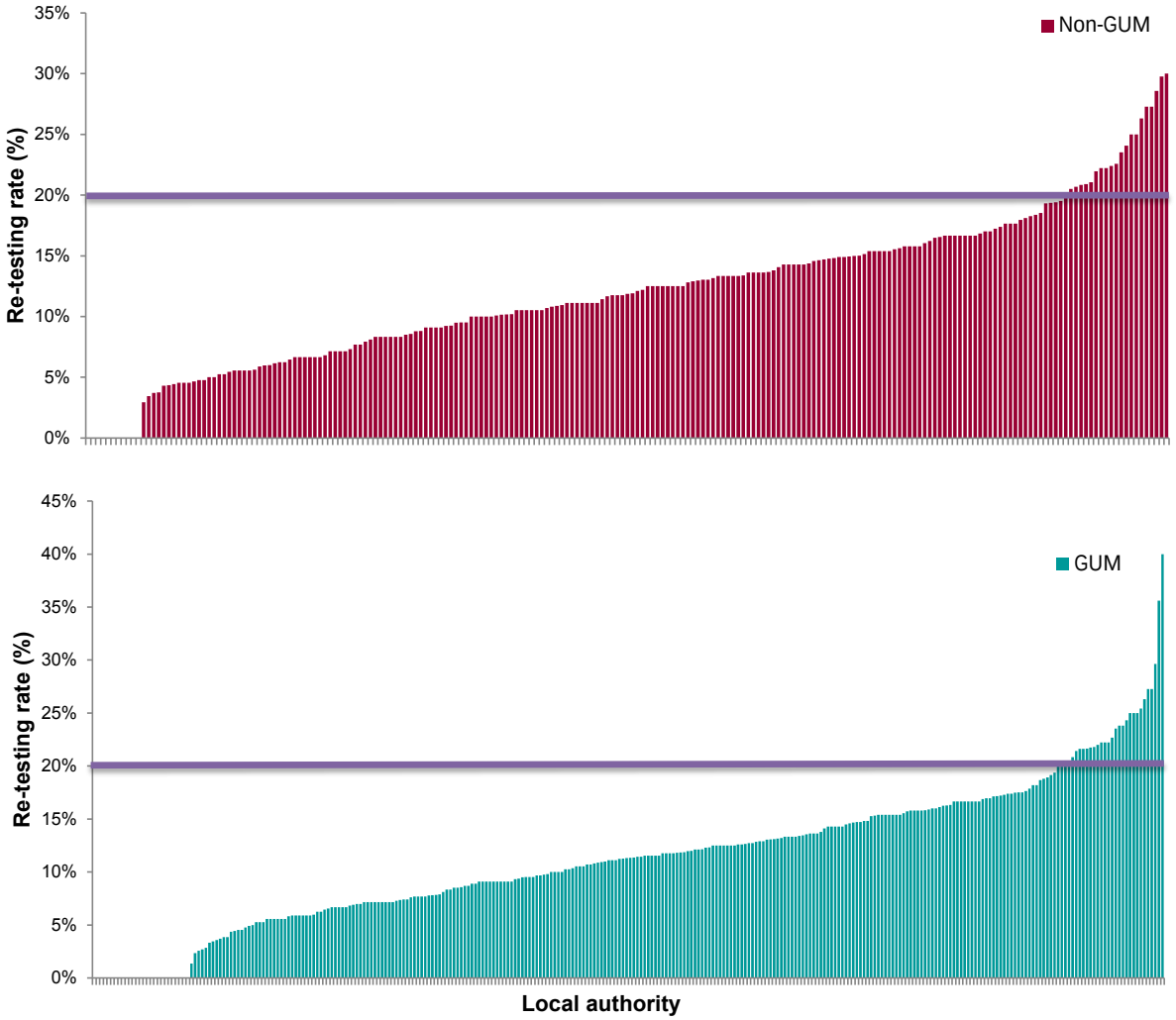


* Non-GUM rates exclude data from LAs where >20% of records were missing required data items

Local rates of re-testing

Rates of re-testing varied considerably by LA. Rates were consistently below 20% in non-GUM and GUM settings for the majority of LAs across all quarters. Re-testing rates ranged from 0-30% (median 11.9% IQR: 7.7-15.6%) in non-GUM settings and from 0-40% in GUM settings (median 11.3% IQR: 7.0-15.4%) (figure 2). Positivity at re-test is not presented by LA as the numbers are too low in many for meaningful interpretation.

Figure 2: Chlamydia re-testing rates within 7-14 weeks following a positive diagnosis by local authority, October – December 2013, 15-24 year-olds, England *



* Local authorities excluded where < 10 diagnoses. LAs also excluded from non-GUM analyses where >20% of records were missing required data items.

Data limitations

The data presented here systematically underestimate true re-testing rates due to the following limitations in the data available from the CTAD and GUMCADv2 national surveillance systems:

- individuals cannot be matched across non-GUM and GUM settings in CTAD and GUMCADv2;
- individuals cannot be matched between GUM clinics in GUMCADv2 because numbers linking patient records are unique only within a clinic;
- In 2013, 23% of non-GUM records were reported to CTAD without the data items required to monitor re-testing.

Discussion

This report provides a baseline for monitoring rates of chlamydia re-testing using the two national STI surveillance systems. Despite the limitations of these data, our findings suggest that in 2013, prior to the introduction of the NCSP re-testing recommendation, as few as one in five chlamydia diagnoses among young adults were followed by a re-test within seven to 14 weeks.

It should be noted that October to December 2013 was the first quarter of data available after the NCSP recommendation for offer of re-test was incorporated into case management guidance. These data show a small but encouraging increase in re-testing rates at the national level in both non-GUM and GUM settings. Continued quarterly monitoring is required to confirm this trend.

Re-testing rates by local authority show large variation. The majority of local authorities have re-testing rates below 20% in both non-GUM and GUM settings. PHE has produced a re-testing monitoring tool [13] to allow commissioners to explore their local re-testing figures in more detail.

Positivity at re-test is higher than the positivity seen overall. In the 2013 annual testing data positivity was 6.9% in non-GUM and 10.7% in GUM settings [14]. The proportion of patients who re-tested positive in GUM settings was consistently higher than those re-tested in non-GUM settings. These findings support the inclusion of offer of re-test at around three months within the NCSP case management guidance.

There are several approaches that can be taken to incorporate re-testing into the patient care pathway and different methods that could be used to recall patients [15]. Local examples are discussed in the document “Chlamydia re-testing of positive cases: models of existing practice” [16] . The relative cost of implementing different methods of recall for re-testing is dependent upon existing local practices.

Accuracy and reliability of monitoring re-testing rates using surveillance data could be improved by:

- Increased completion of data items submitted to CTAD;
- accounting for the proportion of patients who are likely to have their initial test in a GUM service and re-test in a non-GUM service or a different GUM clinic, or visa-versa;
- widening the window for re-test to include re-tests identified up to 16 weeks after the initial test to account for the time taken for the patient to receive the result and complete treatment prior to re-testing.

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Infection reports

Volume 9 Number 22 Advance Access report published on: 23 June 2015

HIV-STIs

Rates of Pelvic Inflammatory Disease (PID) in England (2000-2013)

This report presents data on diagnoses of pelvic inflammatory disease (PID) in general practice (GP) and hospital inpatient admissions in England. Key conclusions of the analysis are that:

- in 2011 (most recent data-comparable year), rates of PID diagnoses recorded in hospital inpatient settings were higher than those in GP settings;
- rates of PID diagnoses were highest in 20 to 24 year-olds in GP settings and among 35 to 44 year-olds in hospital settings;
- rates of PID diagnoses showed a declining trend in GP settings between 2000 and 2011 and an overall relatively stable trend in hospital inpatient settings between 2000 and 2013;
- further exploration of coding practices and interpretation in regards to chlamydia testing practices is needed.

Background

Pelvic inflammatory disease comprises a range of upper genital tract inflammatory disorders in women that result from the spread of microorganisms from the lower to the upper genital tract [1]. Untreated genital infection with *Chlamydia trachomatis* ('chlamydia') is one of the main causes of PID [2, 3]. The National Chlamydia Screening Programme (NCSP) was established in 2003 and nationally implemented by 2008 with the aim of controlling chlamydia and the adverse consequences of infection. Thus PID is a potentially important outcome measure for the evaluation of the NCSP. Other sexually transmitted infections (STI) including *Neisseria gonorrhoeae* [1] and *Mycoplasma genitalium* [4] have also been implicated as causative agents of PID.

PID diagnoses made in GP settings for 2000 to 2011 were collated from the Clinical Practice Research Datalink (CPRD), which comprises anonymised, patient-level medical records of a representative sample of patients (approximately 10% of the UK population) [5, 6] registered in GPs in England [7]. Hospital inpatient admissions from 2000 to 2013 with a diagnosis of PID recorded were extracted from the hospital episode statistics (HES) dataset [8].

Methodological notes

- PID diagnoses of chlamydial, gonococcal, other or non-specified aetiology were included;
- diagnoses are recorded in CPRD using 'Read' codes, which are assigned during clinical consultations.
- Read codes that denoted PID diagnosis or symptoms indicative of acute or chronic PID were used to identify a PID diagnosis in CPRD. Codes were sub-classified as 'definite', 'probable' and 'possible' PID (see French *et al.* for details) [7]. Only those classed as 'definite' or 'probable' are presented in this report, hereafter referred to as definite/probable PID;
- PID diagnoses recorded in HES were identified using international classification of diseases (ICD-10) codes*;
- records were de-duplicated to allow only one case of PID per 42-day period within each dataset, reflecting a standard episode of care for STI-related conditions at sexual health services [9];
- PID diagnoses are presented as diagnoses per 100,000 population for hospital inpatient episodes and diagnoses per 100,000 person-years for diagnoses in GP settings.

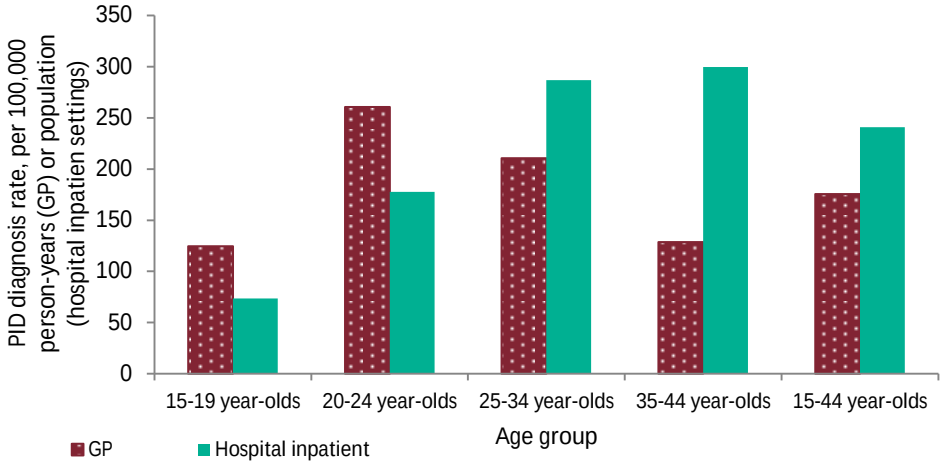
* PID: ICD-10 codes: N70 (salpingitis and oophoritis); N71 (inflammatory disease of uterus, except cervix); N72 (inflammatory disease of cervix uteri); N73 (other female pelvic inflammatory diseases); and, N74 (female pelvic inflammatory disorder in diseases classified elsewhere. The same code groups are used in data presented in the sexual and reproductive health profiles: (http://fingertips.phe.org.uk/profile/sexualhealth). In HES, diagnostic codes are reported as either primary or non-primary diagnoses (secondary, tertiary etc.). Codes that were recorded as either a primary or non-primary diagnosis were used to identify cases.

PID diagnosis rates in 2011

In 2011 (the most recent year when data were available for both sources), the overall rate of definite/probable PID diagnoses among women aged 15 to 44 years was 176 diagnoses per 100,000 person-years in GP settings. The rate of PID diagnoses among 15 to 44 year-olds in hospital settings was 241 per 100,000 population.

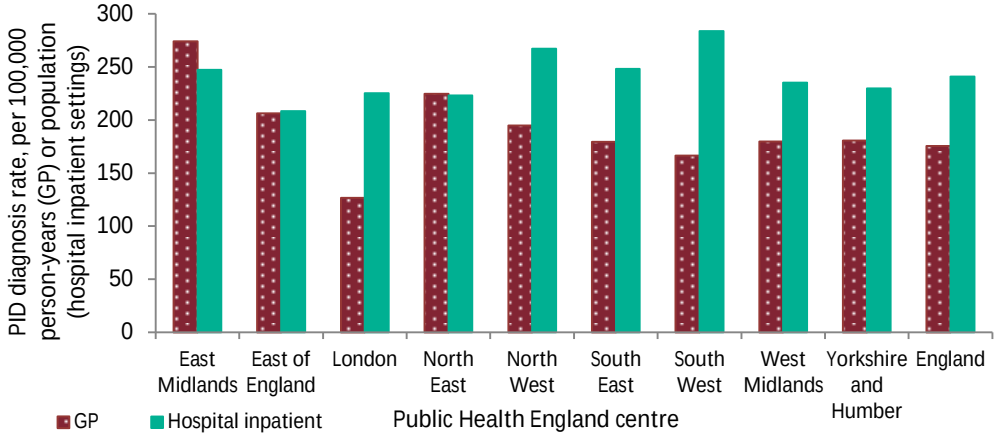
In GP settings rates of definite/probable PID diagnoses peaked in those aged 20 to 24 years. In hospital inpatient settings, PID diagnosis rates increased with age and peaked among 35 to 44 year-old women (figure 1). In the two younger age groups, PID diagnosis rates in GP settings were higher than those in hospital settings, whereas in the two older age groups, PID diagnosis rates were higher in hospital inpatient settings.

Figure 1. Pelvic inflammatory disease (PID) diagnosis rate by age group recorded in general practices (GP) and hospital inpatient settings, (15 to 44 year-old women, 2011)



By PHE Centre, rates of definite/probable PID diagnoses in GP settings ranged from 225 (London) to 274 (East Midlands) per 100,000 person-years. Rates of PID diagnoses in hospital inpatient settings ranged from 208 (East of England) to 284 (South West) per 100,000 person-years (figure 2).

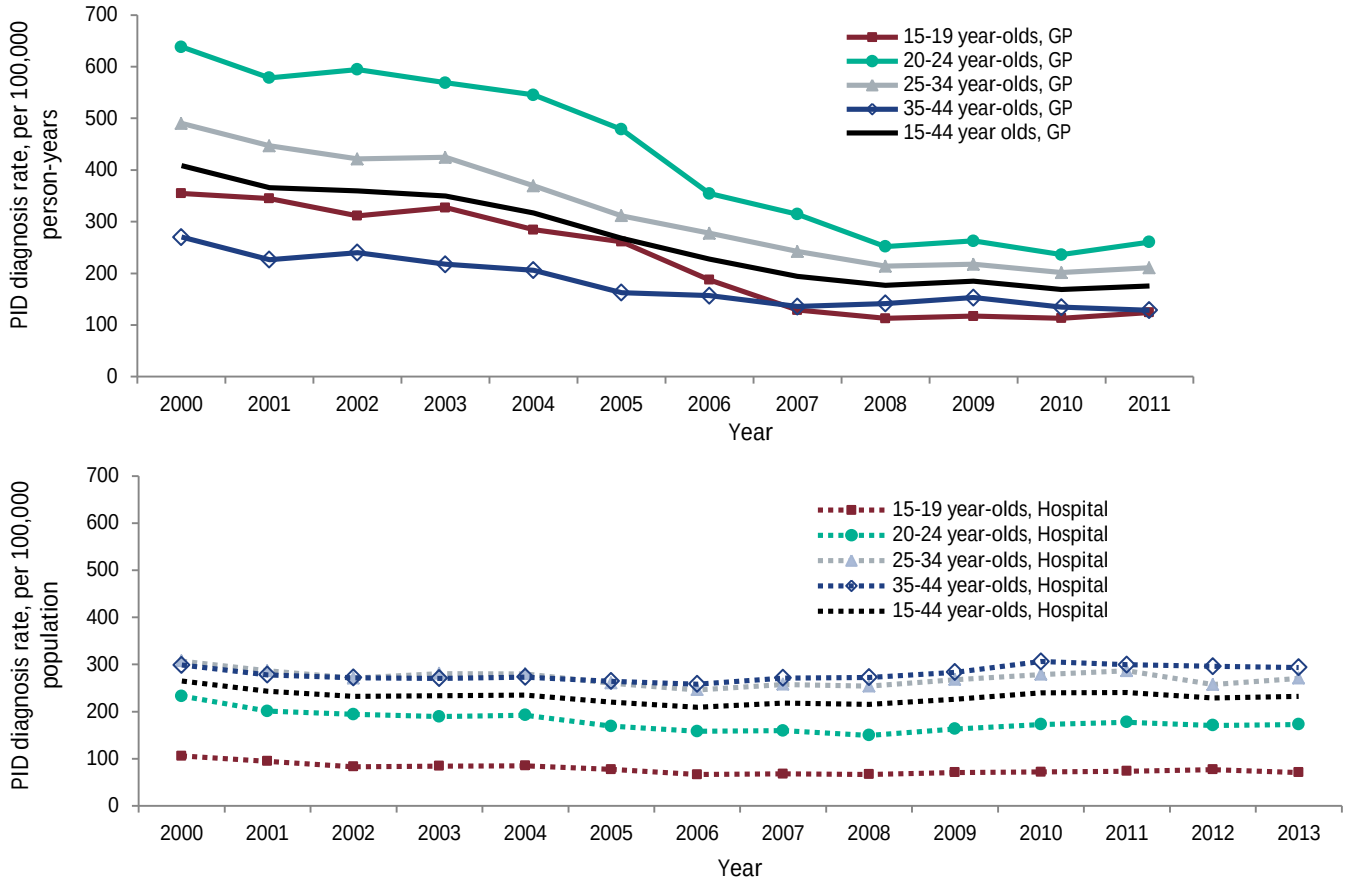
Figure 2. Pelvic inflammatory disease (PID) diagnosis rate by Public Health England centre recorded in general practices (GP) and hospital inpatient settings (15 to 44 year-old women, 2011)



Trends in PID diagnosis rates over time, 2000 to 2013

Trends in PID diagnosis rates over time varied by setting (figure 3). In GP settings, there were notable decreases in definite/probable PID diagnosis rates in all age groups from 2000 up to 2007/2008, with age-specific rates remaining relatively stable from 2007/2008 to 2011. There were more moderate decreases in PID diagnosis rates in hospital inpatient settings from 2000 up to around 2006, with stable or increasing rates in all age groups up to around 2010, after which time rates remained stable.

Figure 2. Pelvic inflammatory disease (PID) diagnosis rate by Public Health England centre recorded in general practices (GP) and hospital inpatient settings (15 to 44 year-old women, 2011)



Discussion

Reasons for the observed difference in age distribution of cases between healthcare settings are not fully understood but likely reflect differences in attendance patterns, diagnostic coding practices and possibly in aetiologies.

Coding practices complicate interpretation of PID diagnosis rates, as diagnosis of PID is not based on standard diagnostic criteria. Clinical coding practices for PID have been found to vary by clinician [10] and likely vary by setting and over time. Also, it is not possible to uniquely identify patients between services. Differences between settings warrant further investigation to ensure the optimum use of PID diagnoses as an indicator of sexual health or reproductive morbidity.

The declines in PID diagnosis rates may reflect reducing risk of PID in age groups eligible for chlamydia screening following the implementation of the NCSP in 2003 and increases in chlamydia testing in genitourinary medicine (GUM) clinics and other settings [11]. However, further work is needed to explore PID patterns in respect of the changing chlamydia testing patterns over the last decade. Additional data on PID cases diagnosed in other services, including GUM clinics, should also be incorporated into future analyses.

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Public Health England

Health Protection Report
weekly report

Volume 9 Numbers 22 Published on: **26 June 2015**

Infection Reports

Vaccine preventable infections

- **Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during January to March 2015**
- **Laboratory confirmed invasive meningococcal infections (England): January to March 2015**

Vaccine coverage

- **Quarterly vaccination coverage statistics for children aged up to five years in the UK (COVER programme): January to March 2015**

Infection reports

Volume 9 Number 22 Published on: 26 June 2015

Vaccine preventable infections

Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during January to March 2015 (Q1/2015)

In England there were 785 laboratory confirmed cases of pertussis (culture, PCR, serology or oral fluid) reported to the Public Health England (PHE) pertussis enhanced surveillance programme in the first quarter of 2015, from January to March (table 1). Total cases were 30% higher than those reported in the same quarter of 2014 (602 cases between January and March 2014).

Typically pertussis activity peaks in quarter 3 and then declines (figure 1). The continued increase observed in each successive quarter between the first quarter of 2011 and third quarter of 2012 was unusual. The HPA declared a national outbreak of pertussis (level 3 incident [1]) in April 2012 and, as a response to the ongoing outbreak and a high number of infant deaths, the Department of Health announced the introduction of a temporary immunisation programme for pregnant women on 28 September 2012 [2]. The most recent PHE figures reported that 62.3% of mothers due to give birth in December 2014 had been immunised with a pertussis containing vaccine in pregnancy in England, the highest recorded coverage since the programme started [3]. From April 2014 the collection of vaccine coverage data has change from a manual to an automated system [4] and data for January to March 2015 will be published in July 2015.

Following the high levels of activity in 2012, an overall decrease has been observed with slight increases in the third quarters of 2013 and 2014, in line with the usual seasonal pattern. The highest number of laboratory confirmed cases in England has persisted in individuals aged 15 years and over whilst disease incidence continues to be highest in infants <3 months. The number of confirmed cases in infants less than 3 months in the first quarter of 2015 (16 cases) was 33% higher than the same quarter in 2014 (12 cases). One infant with laboratory confirmed pertussis tested between January and March was reported to have died.

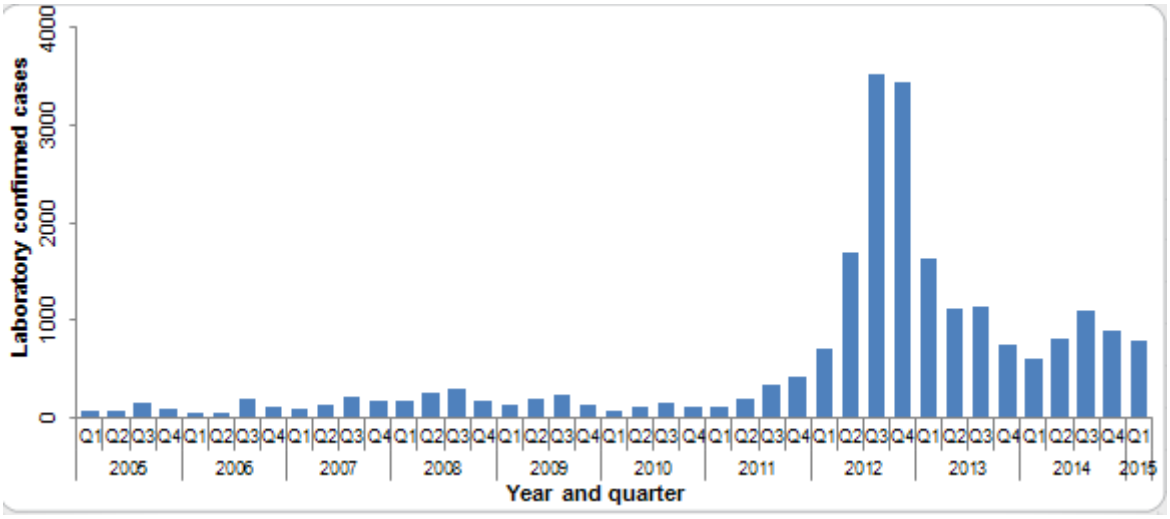
Surveillance data in young infants following the introduction of a programme to immunise pregnant women are encouraging as a relatively low incidence has been maintained, with expected seasonal increases. It is important to be aware, however, that raised levels of pertussis persist in older age groups and women should therefore continue to be encouraged to be immunised against pertussis during pregnancy in order to protect their babies from birth. The pertussis immunisation in pregnancy programme in England has shown high levels of protection against pertussis in babies born to vaccinated mothers [5,6]. The Medicines and Healthcare Products Regulatory Agency also found no safety concerns relating to pertussis vaccination in pregnancy based on a large study of nearly 18,000 vaccinated women with similar rates of normal, healthy births in vaccinated and in unvaccinated women [7].

Please see previous reports for details of appropriate laboratory investigation of suspected cases of pertussis which may be affected by the age of the suspect case and time since onset of their symptoms.

Laboratory-confirmed cases of pertussis by age and testing method in England, Jan - March 2015

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	1	14	1	–	16
3-5 months	2	3	1	–	6
6-11 months	1	1	–	–	2
1-4 years	2	2	11	–	15
5-9 years	–	–	29	10	39
10-14 years	–	1	69	12	82
15+ years	5	–	617	3	625
Total	11	21	728	25	785

Total number of laboratory-confirmed pertussis cases per quarter in England, 2005 to 2015 (Q1)



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Infection reports

Volume 9 Number 22 Published on: 26 June 2015

Vaccine preventable infections

Invasive meningococcal disease (laboratory confirmed reports in England): January to March 2015

In England, the national Public Health England (PHE) Meningococcal Reference Unit (MRU) confirmed 279 cases of invasive meningococcal disease (IMD) between January and March 2015 [1]. IMD cases were 32% higher in the quarter than the 211 cases confirmed in the equivalent quarter in 2014 (table 1). There were 178 cases confirmed in the October to December 2014 period [2].

The distribution of meningococcal capsular groups causing IMD by age is summarised in table 2, with capsular group B (MenB) accounting for 54% (151/279) of all cases, followed by MenW (n=69, 25%), MenY (n=46, 16%) and MenC (n=10, 4%). The number of MenW cases reported in the first quarter of 2015 (n=69) was two-fold higher than the 33 cases confirmed during the same period in 2014 , whilst MenY increased by 39% from 33 to 46 cases. MenB cases increased from 132 in the first quarter of 2014 to 151 cases (14% increase) in the same quarter of 2015 and the number of MenC cases remained stable at 10 cases. During the first quarter of 2015, there were no reported cases for capsular groups A, X and Z/E (table 1) in England.

MenB was responsible for the majority of IMD cases in infants (76%) and toddlers (85%) but contributed to a lower proportion of cases in older age groups (table 2). The introduction of a routine national MenB immunisation programme for infants was announced earlier this week [3].

Capsular groups other than MenB were more prevalent in older age groups (table 2). Thirty-three percent of MenW cases were in older adults aged 65+ years, 20% in children younger than five years and 13% in 15-24 year-olds. The previously reported increase in MenW cases [4,5] has continued and has led to the introduction of MenACWY conjugate vaccine to the national immunisation programme in England [6]. MenACWY vaccine will directly substitute MenC vaccine in the routine adolescent schools programme (school year 9 or 10) from Autumn 2015 and in the existing time-limited ‘freshers’ programme from August 2015. In addition a catch-up campaign will be implemented offering MenACWY vaccine to all adolescents currently aged 14 to 18 years.

Table 1. Invasive meningococcal disease in England by capsular group and laboratory testing method: January – March (Q1): 2015

Capsular groups ~	Laboratory method						Total	
	CULTURE AND PCR		CULTURE ONLY		PCR ONLY			
	2014 (Q1)	2015 (Q1)	2014 (Q1)	2015 (Q1)	2014 (Q1)	2015 (Q1)	**2014 (Q1)**	**2015 (Q1)**
B	21	41	32	42	79	68	132	151
C	2	3	5	4	3	3	10	10
W	5	7	27	49	1	13	33	69
Y	3	5	24	36	6	5	33	46
Ungrouped	–	–	–	–	3	1	3	1
Ungroupable*	–	–	–	2	-	-	-	2
Total	**31**	**56**	**88**	**133**	**92**	**90**	**211**	**279**

~ Note: No cases capsulargroups A, X or Z/E were confirmed during any of the periods summarised in the table.

* Ungroupable refers to invasive clinical meningococcal isolates that were non-groupable, while ungrouped cases refers to culture-negative but PCR screen (*ctrA*) positive and negative for the four genogroups [B, C, W and Y] routinely tested for.

Table 2. Invasive meningococcal disease in England by capsular group and age group at diagnosis: January – March (Q1): 2015

Age groups	Capsular Group~										Total	
	B		C		W		Y		Other*		Q1	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
<1 year	29	(19)	0	–	7	(10)	2	(4)	0	–	38	(14)
1-4 years	52	(34)	0	–	7	(10)	2	(4)	0	–	61	(22)
5-9 years	13	(9)	3	(30)	1	(1)	0	–	0	–	17	(6)
10-14 years	5	(3)	0	–	1	(1)	1	(2)	0	–	7	(3)
15-19 years	8	(5)	1	(10)	6	(9)	6	(13)	0	–	21	(8)
20-24 years	12	(8)	0	–	3	(4)	1	(2)	1	(33)	17	(6)
25-44 years	6	(4)	2	(20)	3	(4)	5	(11)	0	–	16	(6)
45-64 years	15	(10)	4	(40)	18	(26)	14	(30)	0	–	51	(18)
>=65 years	11	(7)	0	–	23	(33)	15	(33)	2	(67)	51	(18)
Total	**151**		**10**		**69**		**46**		**3**		**279**	

~ Note: No cases capsulargroups A, X or Z/E were confirmed during any of the periods summarised in the table.

* Other includes Ungroupable and Ungrouped.

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Infection reports

Volume 9 Number 22 Published on: 26 June 2015

Vaccine coverage

Quarterly vaccination coverage statistics for children aged up to five years in the UK (COVER programme): January to March 2015

Commentary on the fourth quarterly report for 2014/15

One year old children evaluated in the current quarter (born October to December 2013), are the third cohort to have been routinely offered rotavirus vaccine at two and three months, and the fourth quarterly cohort offered only one primary MenC dose at three months of age [1].

In Scotland, Northern Ireland and Wales the programmes extracting COVER data from Child Health Information Systems (CHISs) have been modified to reflect these changes. Data presented in this report shows that coverage of one dose of MenC is higher than the other vaccines evaluated at one year in those countries (98.0% in Scotland, 98.5% in Northern Ireland, and 97.8% in Wales). Coverage of two doses of rotavirus vaccine evaluated at one year is also high – in Scotland rotavirus coverage is 93.4%, in Northern Ireland 94.8%, and in Wales 92.7% (table 1a).

In England a new *Information Standards Notice* (ISN) for the COVER programme was approved by the Standardisation Committee for Care Information (SCCI) in September and published in November 2014 [2]. Some CHIS IT suppliers are still making the necessary changes to their systems in order to become compliant with the ISN and currently only seven Area Teams (ATs) are able to supply one dose MenC vaccine coverage data for their area, although in all of these areas coverage was similar to or exceeded that of other vaccines evaluated at one year. As a consequence we are not able to produce MenC vaccine coverage at one year for England or the UK (table 1a). This is a technical rather than a delivery issue which should resolve once all CHIS IT suppliers comply with the ISN, by the end of September 2015 at the latest.

England is the only country in the UK unable to provide robust estimates rotavirus coverage at this age from CHIS despite the request to prioritise the inclusion of the new requirements for immunisations evaluated at 12 months in the COVER ISN, with data flowing for only around a quarter of Local Authorities and complete reporting available for only one Area Team. However, PHE introduced a temporary sentinel collection via ImmForm to extract monthly coverage data directly from GP practices in England for children who had just reached the upper age for receiving the vaccine (25 weeks) in order to rapidly assess rotavirus vaccine coverage [3]. This early evaluation of vaccine coverage has provided assurance that the vaccine has been well

accepted in England. Monthly coverage estimates at the national and AT levels have been published [4]. Those children born between January and March 2014, ie the cohort evaluated this quarter at 12 months, were assessed at aged 25 weeks in July, August and September 2014, and two-dose rotavirus coverage was estimated at 88% nationally during these months [4]. UK coverage for DTaP/IPV/Hib3 and PCV2 evaluated at 12 months remained at 94.5% and 94.4% respectively compared to the previous quarter (table 1a).

UK coverage at two years increased marginally by 0.2% for MMR to 92.5%, and for PCV and Hib/MenC boosters to 92.6% and 92.5% respectively when compared to the previous quarter [5]. DTaP/IPV/Hib3 decreased by 0.1% to 95.9% [5]. At country level Scotland and Wales achieved at least 95% coverage for all antigens evaluated at two years of age, as did five of the 25 ATs in England (table 2a).

At five years coverage was at least 95% for the primary course of DTaP/IPV/Hib in all countries and all but three English ATs (Kent and Medway, Surrey and Sussex, and London). UK coverage of MMR1 at five years remained close to the WHO target at 94.9%, with all countries and all but four English ATs achieving at least 95%. Scotland, Northern Ireland, Wales and 18 English ATs achieved at least 90% coverage for MMR2 at five years (table 3a).

Selective neonatal hepatitis B coverage remained very similar to the previous quarter with 84% of at risk children completing three doses by 12 months of age and 72% receiving four doses by 24 months (table 4a).

COVER data in England from April 2013

From April 2013, the responsibility for commissioning and coordinating immunisation programmes transferred to NHS England [6]. Population vaccination coverage is a key indicator included in the Public Health Outcomes Framework (PHOF) (Indicator 3.3) [7] with reporting expected for the Local Authority (LA) resident population.

COVER reports present data by English Area Teams (AT) (tables 1a-4a) while former Strategic Health Authority tabulations are provided for historical comparisons (tables 1b-4b). From April 2014 England COVER data became Official Statistics and is subject to the code of practice associated with such data [8].

New COVER Information Standards Notice and COVER user guide

A new *Information Standards Notice* (ISN) for the COVER programme was approved by the Standardisation Committee for Care Information (SCCI) in September and published by the Health and Social Care Information Centre (HSCIC) in November 2014 [2]. Some CHIS IT suppliers have yet to implement the changes outlined below despite the request to prioritise the inclusion of the new requirements for immunisations evaluated at 12 months and as a result England is the only country in the UK unable to provide robust estimates of MenC and rotavirus coverage at this age. PHE published a new COVER User Guide, aimed at all those submitting COVER data, to support the implementation of the ISN. All these documents are available via the COVER Programme Information Standards webpage.

The ISN provides detailed instruction for CHIS IT suppliers and all data providers on the:

- geographies required for data output (new LA resident output, continuation of PCT responsible population output for trend). This will bring COVER in line with expectations of reporting of population vaccination coverage for the PHOF [7];
- changes to the routine childhood immunisation schedule (primary MenC reduced from two to one dose, the introduction of Rotavirus immunisation at two and three months). The final sentence in the description section of the ISN states, '…*the implementation completion date of 01/10/15 is the full conformance date. Care providers and suppliers should aim on a best endeavours basis to achieve earlier implementation, in particular in respect of rotavirus and Meningitis C, to enable the commencement of national surveillance*.'
- inclusion of neonatal BCG coverage to be evaluated at 12 months for those areas offering a universal programme;
- inclusion of a field for MenB vaccine reporting – this will only become active should the vaccine be procured at a cost-effective price and a national programme implemented;
- need to refine the definition of completed doses for age-dependent vaccines in the COVER request parameters to ensure information on children who were immunised outside the UK is captured accurately.

The HSCIC alerted IT system suppliers of the publication of the new COVER ISN in November 2014. The PHE national COVER team has raised awareness of the new ISN via PHE's *Vaccine Update*, DH's *Children, Families and Maternity e-bulletin* and the NHS England Area Team Bulletin. COVER data providers and NHS England Screening and Immunisation Teams have been contacted directly to keep them informed with developments. Area Teams have been asked to contact local CHIS suppliers and other stakeholders to alert them to the new ISN and engage with them to ensure compliance is achieved for all aspects.

Results for January to March 2015

This report presents quarterly coverage data for children in the UK who reached their first, second, or fifth birthday during the evaluation quarter (January to March 2015). Those reaching one year of age in the quarter are the third quarterly cohort to be offered rotavirus vaccine routinely at two and three months of age.

Children who reached their first birthday in the quarter (born January to March 2014) were scheduled for three doses of diphtheria, tetanus, acellular pertussis, polio, and *Haemophilus influenzae* type b vaccine (DTaP/IPV/Hib vaccine), two doses of pneumococcal conjugate vaccine (PCV), one dose of meningococcal serogroup C conjugate vaccine (MenC vaccine) at three months of age and two doses of rotavirus vaccine at two and three months of age [1].

Children who reached their second birthday in the quarter (born January to March 2013) were scheduled to receive their third DTaP/IPV/Hib, second MenC and PCV vaccinations between May and July 2013, and their first measles, mumps, and rubella (MMR) vaccination, a booster dose of Hib and MenC vaccine (given as a combined Hib/MenC vaccine) and PCV vaccine at the same visit at 12 months of age, between February and April 2014 [9].

Children who reached their fifth birthday in the quarter (born January to March 2010) were scheduled to receive their third dose DTaP/IPV/Hib and second MenC and PCV vaccinations between May and July 2011. They were also scheduled to receive their first MMR between February and April 2011 and their pre-school diphtheria, tetanus, acellular pertussis, inactivated polio booster and second dose MMR from April 2013. Children born between January and March 2010 were scheduled to receive Hib/MenC booster vaccine at 12 months and PCV booster vaccine at 13 months.

Participation and data quality

Data were received from all Health Boards (HBs) in Scotland, Northern Ireland and Wales. In England, ATs and Child Health Record Departments (CHRDs) submitted data for all former PCTs. Four former PCTs reported data quality issues this quarter which were related to changes in information flows or incomplete data for unregistered children.

Across England there are some challenges with maintaining data flows for the PCT level collection as these organisations formally ceased to exist on 1 April 2013. Some CHISs have moved to extracting data at the Clinical Commission Group (CCG) level and we have aggregated these returns to produce a PCT report, based on postcode. Many CHISs are still not able to provide accurate LA resident population coverage data, however, where LAs are

coterminous with a former PCT boundary, coverage data for the PCT responsible population will approximate to the LA responsible population. Twenty-four of the 41 LAs that are not coterminous with PCT boundaries are currently not able to provide LA responsible population data.

Children evaluated in the current quarter (born January to March 2014), are the third cohort to have been routinely offered two doses of rotavirus vaccine at two and three months of age, and the fourth to be exclusively offered one dose of MenC at three months of age. In Scotland, Wales and Northern Ireland the programmes extracting COVER data from CHISs have already been modified to reflect these changes and coverage is presented in table 1a.

Only seven ATs are currently able to supply one dose MenC vaccine coverage data for most former PCTs in their area and so MenC vaccine coverage at one year is not published for England or the UK (table 1a). This is a technical rather than a delivery issue and, as evidenced by the areas that have made the change, MenC coverage is expected to be similar to DTaP/IPV/Hib3 and PCV2 coverage at one year (table 1a).

No AT is able to produce rotavirus vaccine coverage data for all former PCTs in their area from CHIS. However, in order to rapidly assess rotavirus vaccine coverage PHE, introduced a temporary sentinel collection via ImmForm to extract monthly coverage data directly from GP practices in England for children who had just reached the upper age for receiving the vaccine (25 weeks) [3]. This early evaluation of vaccine coverage has provided assurance that the vaccine has been well accepted in England. This collection will remain in place until routine COVER rotavirus data are available for all areas.

Coverage at 12 months

UK coverage at 12 months for DTaP/IPV/Hib3 remained at 94.5% and PCV2 remained at 94.4% (table 1a) when compared to the previous quarter [5]. Country-specific minimum coverage levels achieved for DTaP/IPV/Hib3 and PCV2 evaluated at 12 months show that Scotland and Northern Ireland achieved at least 97% coverage, Wales at least 96%, and England at least 94%. Within England 17 out of 25 ATs achieved at least 95% coverage at 12 months (table 1a).

UK coverage of one dose of MenC at 12 months cannot be calculated this quarter (see commentary above), however, accurate data were provided by all HBs in Scotland, Wales, Northern Ireland and from seven English ATs (Q44, Q53, Q60, Q64 Q65, Q66 and Q69). In the devolved administrations MenC coverage exceeded 97% and English AT level (where data

available) coverage ranged from 96.3% in Thames Valley (Q69) to 98.5% in Shropshire and Staffordshire (Q60). Where available, MenC coverage at the national or AT level always exceeded coverage of other vaccines evaluated at 12 months (table 1a).

Quarterly coverage of two doses of rotavirus vaccine, evaluated at 12 months, was available for all the devolved administrations. Northern Ireland reported the highest coverage at 94.8%, Scotland achieved 93.4% and Wales achieved 92.7%. Rotavirus data was available for only around a quarter of Local Authorities and Thames Valley (Q69) was the only AT with full data (table 1a). Although complete English data were not available through COVER, rotavirus coverage estimates have been published at the national and AT levels using data from the ImmForm GP practice-based sentinel collection. Monthly coverage data for children in England born in January to March 2014 (the 12 month cohort in this COVER report) were evaluated when they had just reached the upper age for receiving the vaccine (25 weeks) between July and September 2014. Monthly vaccine coverage at this age ranged between 88.1% and 88.4% [4].

Table 1a. Completed primary immunisations at 12 months by country and English Area Team: January to March 2015 (*October to December 2014*)

Country and English Area Team (AT code)	Number of PCTs/HBs†	DTaP/IPV/Hib3 %	MenC%	PCV2%	Rota2%
United Kingdom	**176**	**94.5** *(94.5)*	**n/a** *(n/a)*	**94.4** (*94.4*)	**n/a** *(n/a)*
Wales	**7**	**96.9** (*95.1*)	**97.8** (*96.2*)	**96.9** (*95.0*)	**92.7** *(90.2)*
Northern Ireland	**4**	**97.5** (*97.9*)	**98.5** (*98.6*)	**97.5** (*97.8*)	**94.8** *(94.9)*
Scotland	**14**	**97.3** (*97.7*)	**98.0** (*98.2*)	**97.4** (*97.7*)	**93.4** *(93.7)*
England (Total)	**151**	**94.1** (*94.1*)	n/a (*n/a*)	**93.9** (*94.0*)	**See commentary**
English Area Teams					
Cheshire, Warrington and Wirral (Q44)	4	96.6 (*96.5*)	97.7 (*97.8*)	96.4 *(96.3*)	n/a
Durham, Darlington and Tees (Q45)	6	95.6 (*97.1*)	n/a (*n/a*)	95.6 (*97.0*)	n/a
Greater Manchester (Q46)	10	94.8 (*95.7*)	n/a (*n/a*)	94.6 (*95.3*)	n/a
Lancashire (Q47)	5	93.1 (*91.5*)	n/a (*93.1*)	90.6 (*89.5*)	n/a
Merseyside (Q48)	4	93.3 (*94.9*)	n/a (*n/a*)	93.1 (*95.2*)	n/a
Cumbria, Northumberland, Tyne & Wear (Q49)	7	96.9 (*96.9*)	n/a (*n/a*)	96.8 (*96.7*)	n/a
N Yorkshire and Humber (Q50)	5	95.3 (*94.9*)	n/a (*n/a*)	96.1 (*95.1*)	n/a
S Yorkshire and Bassetlaw (Q51)	5	95.4 (*95.6*)	n/a (*n/a*)	95.0 (*95.4*)	n/a
W Yorkshire (Q52)	5	95.9 (*96.0*)	n/a (*n/a*)	95.7 (*95.8*)	n/a
Arden, Herefordshire and Worcestershire (Q53)	4	95.9 (*96.5*)	96.6 (*96.5*)	95.7 (*96.2*)	n/a
Birmingham and the Black Country (Q54)	8	93.1 (*93.1*)	n/a (*n/a*)	93.0 (*92.9*)	n/a
Derbyshire and Nottinghamshire (Q55)	4	96.3 (*95.4*)	n/a (*n/a*)	95.8 (*94.9*)	n/a
East Anglia (Q56)	5	95.6 (*95.8*)	n/a (*n/a*)	95.3 (*95.8*)	n/a
Essex (Q57)	5	96.4 (*96.0*)	n/a (*n/a*)	96.2 (*95.7*)	n/a
Hertfordshire and the S Midlands (Q58)	5	96.6 (*96.9*)	n/a (*n/a*)	96.4 (*96.8*)	n/a
Leicestershire and Lincolnshire (Q59)	3	96.2 (*96.1*)	n/a (*n/a*)	95.9 (*95.9*)	n/a
Shropshire and Staffordshire (Q60)	5	97.1 (*96.5*)	98.5 (*98.1*)	97.0 (*96.4*)	n/a
Bath, Gloucestershire, Swindon and Wiltshire (Q64)	4	95.6 (*95.36*)	97.9[1] (*98.0*)	95.6 (*96.5*)	n/a
Bristol, N Somerset, Somerset and S Gloucestershire (Q65)	4	95.7 (*96.1*)	96.9 (*97.8*)	95.5 (*96.1*)	n/a
Devon, Cornwall, Isles of Scilly (Q66)	4	94.7 (*95.7*)	96.4 (*97.4*)	94.7 (*95.5*)	n/a
Kent and Medway (Q67)	3	90.1 (*89.5*)	n/a (*n/a*)	90.0 (*89.2*)	n/a
Surrey and Sussex (Q68)	5	89.8 (89.7)	n/a (*n/a*)	89.8 (*89.7*)	n/a
Thames Valley (Q69)	4	95.5 (*95.4*)	96.3 (*95.9*)	95.1 (*95.1*)	90.5
Wessex (Q70)	6	95.9 (*95.7*)	n/a (*n/a*)	95.7 (*95.8*)	n/a
London (Q71)	31	90.3 (*90.0*)	n/a (*n/a*)	90.2 (*90.3*)	n/a

† Primary Care Trusts/health boards.
n/a = accurate estimate not available (see commentary above)
1 Based on coverage data from thee of four PCTs

Table 1b. UK completed primary immunisations at 12 months by former Strategic Health Authority, England: January to March 2015 (*October to December 2014*)

Former English Strategic Health Authorities (SHAs)	PCT/HB†	DTaP/IPV /Hib3 %	MenC%	PCV2%
North East	12	96.3 (*97.0*)	n/a (*n/a*)	96.2 (*96.9*)
North West	24	94.7 (*94.9*)	n/a (*n/a*)	94.0 (*94.4*)
Yorkshire and Humber	14	95.6 (*95.6*)	n/a (*n/a*)	95.6 (*95.5*)
East Midlands	9	96.4 (*96.1*)	n/a (*n/a*)	96.1 (*95.8*)
West Midlands	17	94.8 (*94.8*)	n/a (*n/a*)	94.7 (*94.6*)
East of England	13	96.0 (*96.2*)	n/a (*n/a*)	95.8 (*96.0*)
London	31	90.3 (90.0)	n/a (*n/a*)	90.2 (*90.3*)
South Central	9	95.8 (*95.6*)	n/a (*n/a*)	95.4 (*95.5*)
SE Coast	8	89.9 (*89.6*)	n/a (*n/a*)	89.9 (*89.5*)
South West	14	95.4 (*96.0*)	n/a (*n/a*)	95.3 (*96.0*)

† Primary Care Trusts/health boards
n/a = accurate estimate not available (see commentary above)

Coverage at 24 months

UK coverage of DTaP/IPV/Hib3 at 24 months decreased by 0.1% to 95.9% compared to the previous quarter [5]. Lancashire (Q47), Kent and Medway (Q67), Surrey and Sussex (Q68) and London (Q71) are the only ATs with DTaP/IPV/Hib3 coverage below the 95% target at 93.2%, 94.0%, 92.6% and 92.6% respectively (table 2a).

Compared to the previous quarter, UK coverage for PCV booster, Hib/MenC booster and MMR all increased by 0.2% to 92.6% and 92.5% and 92.5% respectively (table 2a) [5]. Country-specific comparisons for minimum coverage levels achieved for these three vaccines evaluated at 24 months show that Scotland and Wales achieved at least 95% coverage, Northern Ireland at least 94% and England at least 92%. Within England five ATs achieved at least 95% for all three vaccines (table 2a).

Table 2a. Completed primary immunisations at 24 months by country and English Area Team: January to March 2015 (*October to December 2014*)

Country and English Area Team (AT code*)	PCT/HB†	DTaP/IPV/Hib3 %	PCV booster %	Hib/MenC %	MMR1 %
United Kingdom	**176**	**95.9** (*96.0*)	**92.6** (*92.4*)	**92.5** (*92.3*)	**92.5** (*92.3*)
Wales	**7**	**97.6** (*96.9*)	**95.9** (*94.6*)	**95.2** (94.2)	**95.5** (94.5)
Northern Ireland	**4**	**97.9** (*98.4*)	**95.0** (*96.4*)	**94.7** (*95.9*)	**94.5** (*95.5*)
Scotland	**14**	**97.8** (*98.2*)	**95.5** (*95.3*)	**95.5** (*95.5*)	**95.2** (*95.4*)
England (Total)	**151**	**95.6** (*95.6*)	**92.1** (*91.9*)	**92.1** (*91.8*)	**92.0** (*91.8*)
English Area Teams					
Q44	4	97.4 (*97.1*)	94.2 (*94.1*)	95.8 (*93.4*)	95.3 (*95.4*)
Q45	6	97.5 (*97.8*)	95.4 (*95.5*)	96.2 (*95.3*)	95.1 (*94.5*)
Q46	10	97.2 (*97.1*)	93.2 (*93.6*)	92.7 (*92.9*)	93.3 (*93.7*)
Q47	5	93.2 (*95.5*)	89.7 (*88.2*)	89.7 (87.7)	90.4 (*91.7*)
Q48	4	96.0 (*97.0*)	93.3 (*94.2*)	92.8 (*93.7*)	92.8 (*93.6*)
Q49	7	97.6 (*96.0*)	95.9 (*93.6*)	95.9 (*93.8*)	95.9 (*93.6*)
Q50	5	96.9 (*97.4*)	95.4 (*95.2*)	94.2 (*94.1*)	95.0 (*94.6*)
Q51	5	96.6 (*96.5*)	92.6 (*93.1*)	93.9 (*93.9*)	92.4 (*92.8*)
Q52	5	97.6 (*97.4*)	95.8 (*95.2*)	95.8 (*95.2*)	95.3 (*94.7*)
Q53	4	98.5 (*98.3*)	96.4 (*96.2*)	95.5 (*95.2*)	96.7 (*96.5*)
Q54	8	95.2 (*94.8*)	91.8 (*91.4*)	90.8 (*90.7*)	91.1 (*91.0*)
Q55	4	97.6 (*97.7*)	94.5 (*94.1*)	94.7 (*94.2*)	94.2 (*93.7*)
Q56	5	96.4 (*96.9*)	93.9 (*94.0*)	94.0 (*94.0*)	93.5 (*93.3*)
Q57	5	96.5 (*97.1*)	94.9 (*94.6*)	94.9 (*95.1*)	94.2 (*93.9*)
Q58	5	96.6 (*97.3*)	95.4 (*95.0*)	95.2 (*95.2*)	94.9 (*94.6*)
Q59	3	97.7 (*97.0*)	94.5 (*93.5*)	94.3 (*93.6*)	94.8 (*93.5*)
Q60	5	97.3 (*98.1*)	95.2 (*95.9*)	94.5 (*95.3*)	94.6 (*95.4*)
Q64	4	95.6 (*97.0*)	94.7 (*94.5*)	93.9 (*93.7*)	94.1 (*93.5*)
Q65	4	97.6 (*97.1*)	94.2 (*93.7*)	93.1 (*93.1*)	93.0 (*93.2*)
Q66	4	96.7 (*96.9*)	94.7 (*94.2*)	94.0 (*93.2*)	94.3 (*93.9*)
Q67	3	94.0 (*94.1*)	88.6 (*88.0*)	88.8 (*88.4*)	87.8 (*87.5*)
Q68	5	92.6 (*91.5*)	89.3 (*88.0*)	88.9 (*87.7*)	88.6 (*87.5*)
Q69	4	95.4 (*95.7*)	92.9 (*93.5*)	92.7 (*93.5*)	92.4 (*93.7*)
Q70	6	95.7 (*96.5*)	92.7 (*94.4*)	93.5 (*93.8*)	93.8 (*94.0*)
Q71	31	92.6 (*92.3*)	85.7 (*85.5*)	86.3 (*86.1*)	86.5 (*86.0*)

* See table 1a for key to Area Team organisational code
† Primary Care Trusts/health boards

Table 2b. Completed primary immunisations at 24 months by former Strategic Health Authority, England: January to March 2015 (*October to December 2014*)

Former English Strategic Health Authorities (SHAs)	PCT/HB†	DTaP/IPV /Hib3 %	PCV booster %	Hib/MenC %	MMR1 %
North East	12	97.6 (*98.0*)	95.6 (*95.5*)	96.1 (*95.5*)	95.4 (*94.9*)
North West	24	96.3 (*96.3*)	92.9 (*92.4*)	92.8 (*91.8*)	93.2 (*93.2*)
Yorkshire and Humber	14	97.2 (*97.1*)	94.9 (*94.7*)	94.9 (*94.6*)	94.5 (*94.2*)
East Midlands	9	97.6 (*97.5*)	94.9 (*94.2*)	94.8 (*94.2*)	94.8 (*94.0*)
West Midlands	17	96.6 (*96.5*)	93.8 (*93.7*)	92.9 (*93.0*)	93.4 (*93.5*)
East of England	13	96.7 (*97.1*)	94.5 (*94.4*)	94.6 (*94.8*)	93.9 (*93.8*)
London	31	92.6 (*92.3*)	85.7 (*85.5*)	86.3 (*86.1*)	86.5 (*86.0*)
South Central	9	95.2 (*96.0*)	92.6 (*93.7*)	92.8 (*93.4*)	93.1 (*93.8*)
SE Coast	8	93.2 (*92.5*)	89.0 (*88.0*)	88.8 (*88.0*)	88.3 (87.5)
South West	14	96.5 (*96.9*)	94.5 (*94.3*)	93.8 (*93.5*)	93.8 (*93.6*)

† Primary Care Trusts/health boards

Coverage at five years

UK coverage evaluated at five years increased by 0.1% for MMR2 and Hib/MenC booster, remained at the same levels for DTaP/IPV/Hib, and decreased by 0.1% for MMR1 and DTaP/IPV booster when compared to the previous quarter [5]. At least 95% coverage was achieved for the primary course of DTaP/IPV/Hib3 for all countries and all but three English ATs (Kent and Medway (Q67), Surrey and Sussex (Q68), and London (Q71)) (tables 3a).

UK coverage of MMR1 at five years reached 95% for the first time last quarter and has only decreased by 0.1% during the current evaluation. All countries and all English ATs except for Surrey and Sussex (Q68) achieved at least 90%. Scotland, Northern Ireland, Wales and 21 English ATs achieved at least 95% coverage for MMR1 and 19 achieved at least 90% for MMR2 at five years (tables 3a).

All devolved administrations and all but six English ATs achieved at least 90% coverage for the DTaP/IPV booster.

Table 3a. UK completed primary immunisations and boosters at five years by country and English Area Team: January to March 2015 (October to December 2014)

ENGLAND Area Team (AT) code*	Number of PCTs in AT	Primary		Booster		
		DTaP/IPV Hib3 %	MMR1 %	MMR2 %	DTaP/ IPV %	Hib/ MenC
United Kingdom	**176**	**96.1** (*96.1*)	**94.9** (*95.0*)	**89.3** (*89.2*)	**89.2** (*89.3*)	**93.2** (*93.1*)
Wales	**7**	**97.7** (*97.1*)	**97.6** (*97.0*)	**93.6** (*93.0*)	**93.6** (*93.5*)	**94.8** (*94.1*)
N. Ireland	**4**	**98.3** (*97.6*)	**97.4** (*96.8*)	**93.6** (*93.2*)	**94.5** (*94.3*)	**96.7** (*96.0*)
Scotland	**14**	**98.2** (*98.1*)	**97.2** (*97.3*)	**93.0** (*93.8*)	**93.6** (*94.5*)	**95.3** (*96.4*)
England (Total)	**151**	**95.7** (*95.8*)	**94.5** (*94.6*)	**88.6** (*88.5*)	**88.4** (*88.4*)	**92.8** (*92.7*)
English Area Teams						
Q44	4	95.8 (*96.7*)	95.8 (*95.9*)	90.2 (91.0)	90.6 (*91.7*)	93.2 (*93.5*)
Q45	6	97.5 (*97.9*)	95.7 (*96.0*)	92.8 (*93.6*)	93.6 (*94.2*)	96.3 (*96.3*)
Q46	10	97.1 (*97.1*)	96.4 (*96.6*)	92.2 (*92.1*)	91.4 (*92.2*)	93.5 (*93.0*)
Q47	5	96.0 (*96.7*)	96.3 (*96.2*)	87.9 (*87.5*)	83.9 (*83.9*)	93.0 (*93.7*)
Q48	4	97.5 (*96.8*)	97.1 (*97.0*)	91.6 (*91.1*)	90.7 (*91.1*)	95.7 (*95.3*)
Q49	7	98.0 (*98.4*)	97.3 (*98.0*)	94.1 (*94.5*)	95.0 (*95.0*)	96.3 (*95.6*)
Q50	5	96.6 (*96.9*)	95.7 (*95.8*)	91.6 (*92.4*)	92.4 (*93.1*)	94.0 (*93.5*)
Q51	5	96.6 (*96.9*)	95.2 (*95.3*)	90.9 (*90.0*)	91.1 (*90.7*)	95.4 (*95.1*)
Q52	5	97.6 (*97.0*)	97.1 (*96.8*)	93.3 (*93.0*)	93.4 (*93.0*)	96.4 (*95.8*)
Q53	4	97.7 (*97.3*)	96.8 (*96.5*)	94.4 (*93.8*)	95.3 (*94.9*)	92.9 (*92.5*)
Q54	8	96.1 (*96.2*)	95.2 (*94.9*)	87.9 (*88.4*)	88.0 (*88.6*)	92.3 (*92.3*)
Q55	4	97.5 (*97.6*)	96.2 (*96.1*)	92.1 (*91.6*)	92.0 (*91.6*)	95.9 (*95.8*)
Q56	5	95.8 (*96.3*)	94.1 (*94.2*)	89.7 (*89.8*)	90.7 (*90.8*)	93.4 (*93.1*)
Q57	5	97.1 (*97.4*)	95.4 (*95.9*)	92.2 (*92.8*)	93.5 (*93.8*)	95.3 (*96.2*)
Q58	5	96.5 (*96.2*)	95.4 (*95.4*)	91.8 (*91.5*)	92.9 (*92.5*)	95.3 (*94.6*)
Q59	3	96.4 (*96.8*)	96.2 (*96.0*)	91.0 (*91.0*)	91.4 (*91.6*)	93.5 (*93.3*)
Q60	5	97.7 (*98.0*)	96.0 (*96.5*)	92.5 (*92.5*)	93.5 (*93.2*)	95.6 (*96.0*)
Q64	4	96.6 (*96.7*)	95.3 (*95.5*)	91.4 (*91.7*)	92.3 (*92.6*)	94.4 (*93.9*)
Q65	4	97.7 (*97.8*)	96.7 (*96.8*)	92.4 (*91.5*)	91.5 (*91.8*)	93.6 (*95.0*)
Q66	4	97.1 (*96.9*)	96.4 (*95.5*)	92.3 (*91.4*)	93.0 (*92.3*)	94.1 (*93.6*)
Q67	3	94.5 (*95.2*)	93.0 (*93.3*)	81.1 (*80.2*)	82.3 (*81.0*)	92.4 (*92.9*)
Q68	5	92.6 (91.9)	89.3 (*89.8*)	82.9 (*82.7*)	83.8 (*83.4*)	88.9 (*88.5*)
Q69	4	96.5 (*95.8*)	95.7 (*95.1*)	90.0 (*89.5*)	89.4 (*89.3*)	94.1 (*93.1*)
Q70	6	96.3 (*96.6*)	96.0 (*95.0*)	91.6 (*90.7*)	91.8 (*91.3*)	94.0 (*93.1*)
Q71	31	92.3 (*92.8*)	90.5 (*91.2*)	80.1 (*80.5*)	77.0 (*78.0*)	87.5 (*88.0*)

* See table 1a for key to Area Team organisational code.

3b. Completed primary immunisations and boosters at five years by former Strategic Health Authority, England: January to March 2015 (*October to December 2014*)

Former English SHAs	PCT/ HB †	Primary		Booster		
		DTaP/IPV /Hib3 %	MMR1%	MMR2 %	DTaP/ IPV %	Hib/ MenC
North East	12	97.7 (*98.1*)	96.5 (*97.0*)	93.4 (*93.9*)	94.3 (*94.4*)	96.4 (*95.9*)
North West	24	96.8 (*97.0*)	96.5 (*96.6*)	91.1 (*91.1*)	90.0 (*90.6*)	93.8 (*93.7*)
Yorkshire and Humber	14	97.0 (*96.9*)	96.2 (*96.1*)	92.3 (*92.2*)	92.6 (*92.5*)	95.5 (*95.0*)
East Midlands	9	97.1 (*97.2*)	96.1 (*96.1*)	91.9 (*91.3*)	92.3 (*92.1*)	94.9 (*94.6*)
West Midlands	17	96.9 (*96.9*)	95.8 (*95.7*)	90.8 (*90.9*)	91.3 (*91.4*)	93.3 (*93.3*)
East of England	13	96.3 (*96.5*)	94.8 (*95.1*)	90.9 (*91.1*)	92.0 (*92.0*)	94.6 (*94.6*)
London	31	92.3 (*92.8*)	90.5 (*91.2*)	80.1 (*80.5*)	77.0 (*78.0*)	87.5 (*88.0*)
South Central	9	96.4 (*95.8*)	95.9 (*94.9*)	90.7 (*89.9*)	90.4 (*90.1*)	93.8 (*92.6*)
SE Coast	8	93.4 (*93.2*)	90.8 (*91.2*)	82.2 (*81.7*)	83.2 (*82.5*)	90.3 (*90.3*)
South West	14	97.1 (*97.2*)	96.0 (*95.9*)	92.1 (*91.6*)	92.3 (*92.3*)	94.2 (*94.4*)

† Primary Care Trusts/health boards

Neonatal hepatitis B vaccine coverage in England: January to March 2015

Vaccine coverage data in England for three doses of hepatitis B vaccine, in infants born to hepatitis B surface antigen (HBsAg) positive mothers, who reached the age of one year in this quarter (i.e. those born between January and March 2014), and coverage of four doses of vaccine in infants who reached two years of age (i.e. those born between January and March 2013) are presented by Area Team in table 4a below. Table 4b shows coverage by SHA for historical comparison.

PHE received 12 month coverage and 24 month coverage returns for 132 (87%) and 133 (88%) former PCTs respectively, compared to 138 reporting both 12 and 24 month data in the previous quarter. The quality of these data is variable and should be interpreted with caution. Where a zero was reported a check was made to ensure that this was a true zero rather than due to no data being available. Twelve of the 25 ATs were able to provide data for the whole patch (table 4a).

12 month coverage of three doses of Hep B in England decreased by 1% to 84% when compared to the last quarter and coverage of four doses at 24 months remained at 72% [5].

Table 4a. Neonatal hepatitis B coverage in England by English Area Team: January to March 2015 (*October to December 2014*)

Area Team (AT code)	PCT returns with 12 month data	12 month deno-minator	Coverage at 12 months	PCT returns with 24 month data	24 month deno-minator	Coverage at 24 months
Q44	3 of 4	5	100 (*100*)	3 of 4	2	100 (*100*)
Q45	6 of 6	3	67 (*100*)	6 of 6	5	100 (*100*)
Q46	8 of 10	79	80 (*70*)	8 of 10	107	35 (*44*)
Q47	2 of 5	6	67 (–)	2 of 5	0	– (–)
Q48	3 of 4	7	100 (*33*)	3 of 4	11	73 (*78*)
Q49	7 of 7	7	100 (*100*)	7 of 7	5	100 (*100*)
Q50	5 of 5	7	57 (71)	5 of 5	2	100 (*100*)
Q51	4 of 5	13	100 (*100*)	4 of 5	7	100 (*92*)
Q52	5 of 5	29	100 (97)	5 of 5	29	90 (*76*)
Q53	3 of 4	16	100 (*100*)	3 of 4	12	100 (*88*)
Q54	7 of 8	13	38 (70)	7 of 8	15	33(*52)*
Q55	4 of 4	10	100 (*100*)	4 of 4	10	100 (75)
Q56	4 of 5	5	100 (*100*)	4 of 5	9	89 (*91*)
Q57	4 of 5	4	75 (100)	5 of 5	7	86 (*94*)
Q58	5 of 5	31	94 (*100*)	5 of 5	18	94 (93)
Q59	2 of 3	8	25 (33)	2 of 3	7	29 (58)
Q60	5 of 5	4	100(*100)*	5 of 5	11	100 (*67*)
Q64	4 of 4	7	57 (*83*)	4 of 4	5	80 (*83*)
Q65	4 of 4	3	100 (*78)*	4 of 4	5	80 (–)
Q66	4 of 4	0	– (*100*)	4 of 4	2	100 *(100*)
Q67	3 of 3	6	100 (*13*)	3 of 3	9	100 (*75*)
Q68	3 of 5	8	88 (*82*)	3 of 5	12	92 (*76*)
Q69	4 of 4	26	96 (*96*)	4 of 4	28	75 (*79*)
Q70	5 of 6	14	79 (*100*)	5 of 6	10	100 (*100*)
Q71	28 of 31	188	83 (*85*)	28 of 31	179	79 (*75*)
England	**132 of 151**	**499**	**84 (*85*)**	**132 of 151**	**507**	**72 *(72)***

Notes: " – " indicates "no data available" for the denominator but "not applicable" for coverage; see table 1a for key to Area Team organisational codes.

Table 4b. Neonatal hepatitis B coverage in England by former Strategic Health Authority: January to March 2015

English SHAs	PCT returns with 12 month data	12 month denominator	Coverage at 12 months	PCT returns with 24 month data	24 month denominator	Coverage at 24 months
North East	12 of 12	10	90	12 of 12	10	100
North West	17 of 24	79	81	17 of 24	120	39
Yorkshire and Humber	13 of 14	48	94	13 of 14	55	92
East Midlands	8 of 9	30	73	8 of 9	21	76
West Midlands	15 of 17	33	76	15 of 17	38	74
East of England	11 of 13	23	96	12 of 13	30	90
London	28 of 31	188	83	28 of 31	179	79
South Central	8 of 9	40	98	8 of 9	35	80
SE Coast	6 of 8	14	93	6 of 8	21	95
South West	14 of 14	16	63	14 of 14	15	87
England	**132 of 151**	**499**	**84**	**133 of 151**	**507**	**72**

Relevant links for country-specific coverage data

England
http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/immunisation

Northern Ireland
http://www.publichealthagency.org/directorate-public-health/health-protection/vaccination-coverage

Scotland
http://www.isdscotland.org/Health-Topics/Child-Health/Immunisation/

Wales
http://www.wales.nhs.uk/sites3/page.cfm?orgid=457&pid=54144/

Other relevant links
https://www.gov.uk/government/collections/immunisation

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