Public Health England

Health Protection Report
weekly report

Volume 10 Number 22 Published on: **8 July 2016**

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News

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CMO advice for travellers to the Rio Olympics

The Chief Medical Officer for England has issued advice for UK residents travelling to Brazil for the Rio 2016 Olympics (5-12 August) and Paralympics (7-18 September), including official advice about the mosquito-borne Zika virus infection [1].

The World Health Organization's Emergency Committee on Zika advised in June that, given the low risk, there should be no general restrictions on travel to the Games but emphasised the importance of ensuring that all those attending should be fully informed of the risks of Zika virus infection and the personal protective measures necessary to reduce those risks [2]; also of the action they should take if they suspect they have been infected.

Professor Dame Sally Davies has issued "Five Top Tips" [1], in particular that those attending the Games should make sure they protect themselves by using a good insect repellent – high in the ingredients DEET or Picardin – use it according to instructions day and night and, in general, wear loose-fitting long-sleeved tops and trousers.

Those who are pregnant should postpone travel if possible, the CMO advises. If there is an obligation to travel, a doctor should be consulted beforehand so the necessary precautions can be explained. Regarding the risk of sexual transmission of the virus, travellers are advised that they should use condoms during sex while at the Olympics and for eight weeks after their return. Those with pregnant partners or hoping to become pregnant in the near future should consult the PHE website for further, specific advice [3].

References

1. DH and FCO (5 July). "Health advice for people travelling to a Zika affected area", GOV.UK news story.
2. PHE website. Zika Health Protection Guidance: Preventing infection by mosquito bites.
3. PHE website. Zika Health Protection Guidance: preventing infection by sexual transmission.

PHE publishes full annual STIs data for 2015

PHE has released its annual data on sexually transmitted infections (STIs) in England [1-6] which are covered in depth in this issue of *Health Protection Report*.

The main review report, Sexually Transmitted Infections and Chlamydia Screening in England, 2015 [1], 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 there were 434,456 sexually transmitted infections (STIs) reported in England in 2015; 54,275 of which were among gay, bisexual or other men who have sex with men, a 10% increase since 2014. Chlamydia was the most commonly diagnosed STI, accounting for 46% of diagnoses (200,288 cases), followed by genital warts (68,310 cases) [2].

The impact of STIs remains greatest in young people under the age of 25 years, and among gay, bisexual and other men who have sex with men. A large fall in genital warts seen this year in young women is an expected positive effect of the national HPV vaccination programme.

Individual reports are also presented on: chlamydia retesting [3]; *Lymphogranuloma venereum* [4]; shigella [5]; and genital warts [6].

References

1. PHE (5 July 2016). Sexually transmitted infections and chlamydia screening in England, 2015. *HPR* **10**(22) Advance Access report.
2. "New STI figures show continued increases among gay men", PHE press release, 5 July 2016.
3. PHE (5 July 2016). Monitoring rates of chlamydia re-testing within the English National Screening Programme (January 2013 to June 2015). *HPR* **10**(22) Advance Access report.
4. PHE (5 July 2016). Lymphogranuloma venereum infections in England 2004 to 2016. *HPR* **10**(22) Advance Access report.
5. PHE (5 July 2016). Shigella infections in England with a focus on sexual transmission between men who have sex with men: laboratory reports 2004 to 2016. *HPR* **10**(22) Advance Access report.
6. PHE (8 July 2016). Continuing trend of declining genital warts diagnoses in young women in England: update to end 2015. *HPR* **10**(22): news (see below).

Continuing trend of declining genital warts diagnoses in young women in England: update to end 2015

Rates of first-episode genital warts diagnoses in specialist sexual health clinics, collected in the Genitourinary Medicine Clinic Activity Dataset (GUMCADv2), among 15-19 year old females have declined by 38.9% between 2009 and 2015. Reductions were greatest among 15 year old females (83.2%), an age cohort largely offered the quadrivalent vaccine. A smaller reduction of 30.2% has also been seen in 15-19 year old males.

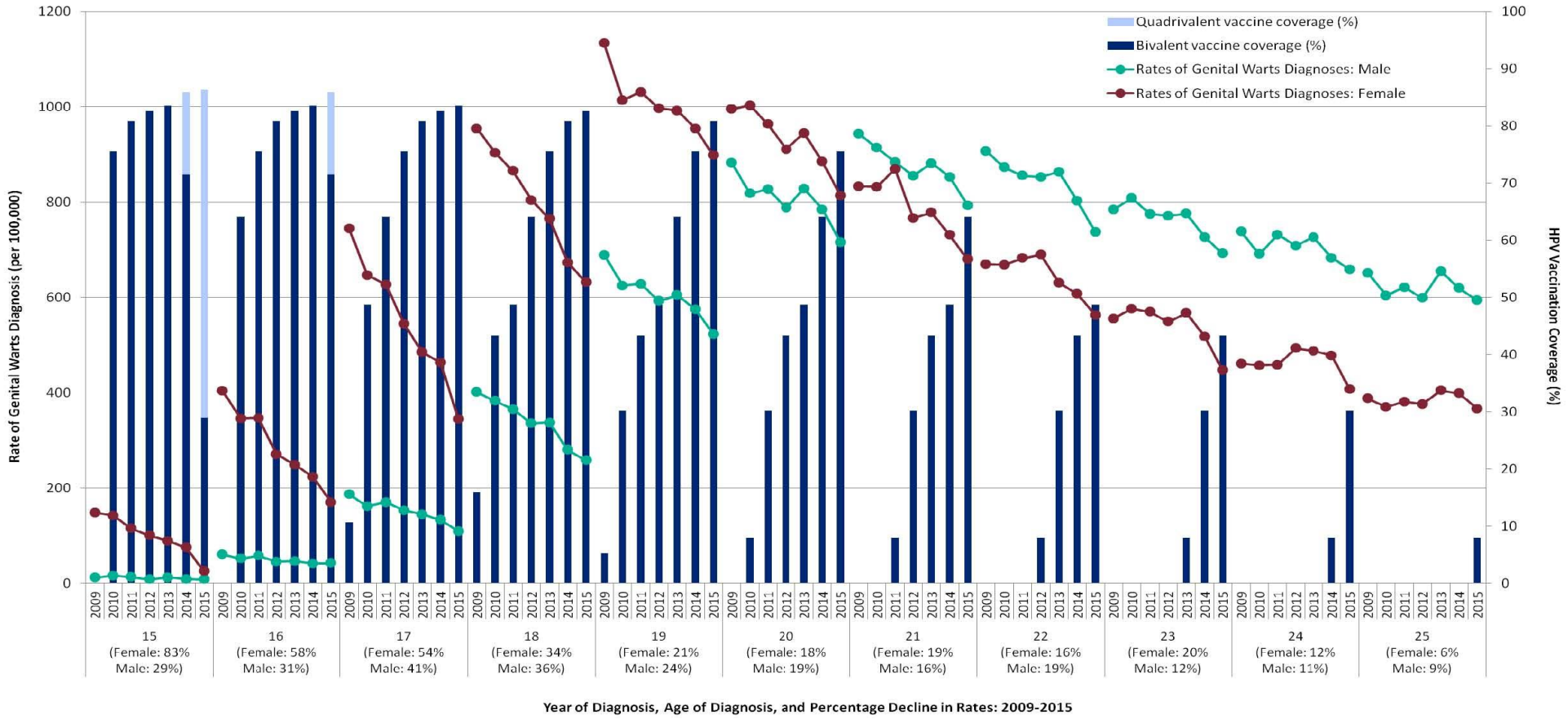
The UK was the first country in the world to introduce a national HPV vaccination programme in September 2008 using the bivalent HPV 16/18 vaccine. In September 2012, the programme changed to using the quadrivalent vaccine, which also includes HPV types 6 and 11, providing protection against genital warts (GW) [1]. The target group for the routine vaccination programme is 12-13 year old females and uptake has been high. Previously reported data up to the end of 2014 has shown modest declines in GW diagnoses, suggesting a potentially cross-protective effect of the bivalent vaccine against GW [2-4]. This report presents the first evidence of declines in GW diagnoses in young females offered the quadrivalent vaccine in England *.

Data for 2009 to 2015 collected in GUMCADv2, submitted by specialist sexual health clinics in England, were reviewed. The greatest declines were observed in 15 and 16 year-old females, a proportion of whom would have received the quadrivalent vaccine [5]. In 2015, 28.9% and 57.4% of 15 year-old females received the bivalent and quadrivalent vaccine, respectively, while 71.5% and 14.4% of 16 year old females received the bivalent and quadrivalent vaccine, respectively. All vaccinated females over the age of 17 in 2015 would have been offered the bivalent vaccine. A decrease of 83.2% and 58.0% between 2009 and 2015 in the rate of GW diagnoses was seen for 15 and 16 year-old females, respectively (see figure).

Overall, there has been a marked decrease of 38.9% (from 685.8 to 419.2 per 100,000 population) in the rate of GW diagnoses for females aged 15 to 19 years and of 17.5% (from 698.9 to 576.8 per 100,000 population) for females aged 20 to 24 years. A decrease of 30.2% (from 274 to 191.2 per 100,000 population) was seen for 15-19 year old males and 15.5% (from 849.6 to 718.2 per 100,000 population) for 20-24 year old males over the same time period. The percentage declines lessen with increasing age, as does the estimated vaccine coverage. In females above the age eligible for HPV vaccination (born before 1 September 1990), and same aged males, diagnosis rates showed no similar declines. Additionally, other STI diagnoses, specifically genital herpes, chlamydia, and gonorrhoea, did not show similar patterns of declines.

* All females of eligible age for vaccination (both bivalent and quadrivalent vaccine) included in this analysis would have been 3-dose recipients.

Rates of genital warts diagnoses and HPV vaccination coverage in England, by age and year



In summary, there have been very large reductions in the rate of GW diagnoses in young females offered the quadrivalent vaccine. Declines in rates of GW diagnoses are already higher than expected in this age group. Modest declines in rates of GW diagnoses were also seen in females only offered the bivalent vaccine, which strengthens evidence of a potential cross-protective effect as previously explored [3,4].

References

2. PHE (2009). Human papillomavirus (HPV) immunisation programme - first year safety review 2009.

3. PHE (2015). Continuing trend of declining genital warts diagnoses in young women in England associated with HPV 16/18 vaccination: update to end-2014. *HPR* **9**(22)

4. 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*. **208**(9): 1397-403.

5. Canvin M, Sinka K, Hughes G, Mesher D (in press). Decline in genital warts diagnoses among young women and young men since the introduction of the bivalent HPV (16/18) vaccination programme in England: an ecological analysis. *Sex Transm Infect*.

6. PHE (2015). Human Papillomavirus (HPV) Vaccine Coverage in England, 2008/009 to 2013/14: a review of the full six years of the three-dose schedule.

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HIV-STIs

Sexually transmitted infections[1] and chlamydia screening in England, 2015

- In 2015, there were approximately 435,000 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 200,288 diagnoses made in 2015
- The largest proportional increases in diagnoses between 2014 and 2015 were reported for syphilis (20%) and gonorrhoea (11%)
- Large increases in STI diagnoses were seen in MSM, including a 21% increase in gonorrhoea and a 19% increase in syphilis. High levels of condomless sex probably account for most of this rise
- There was a 7% decrease in diagnoses of genital warts (first episode) between 2014 and 2015
- In 2015, over 1.5 million chlamydia tests were carried out and over 129,000 chlamydia diagnoses were made in England among young people aged 15 to 24 years, the target population for the National Chlamydia Screening Programme (NCSP). This represents a reduction in overall testing and diagnoses from last year
- Twenty 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

Key messages and recommendations:

- Prevention should focus on groups at highest risk, including young adults, MSM and black ethnic minorities
- Consistent and correct use of condoms can significantly reduce risk of infection
- Rapid access to treatment and partner notification can reduce infection spread
- Regular testing for HIV and STIs is essential for good sexual health:
    - Anyone under 25 who is sexually active should be screened for chlamydia annually, and on change of sexual partner
    - MSM should test annually for HIV and STIs and every 3 months if having condomless sex with new or casual partners

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 specialist and non-specialist sexual health clinics (SHCs; see statistical note for further details) and, for chlamydia, from SHCs and community-based settings[2] [1]. Data are submitted from SHCs to the Genitourinary Medicine Clinic Activity Dataset (GUMCADv2) and from laboratories to the Chlamydia Testing Activity Dataset (CTAD), both of which are managed by Public Health England.

*** A corrected version of table 2b of this report was substituted prior to republication on 11 October 2016.**

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

[2] Specialist services include genitourinary medicine (GUM) clinics and integrated GUM/sexual and reproductive health (SRH) services, while non-specialist services include SRH Services, Young People's Services and Online Sexual Health Services. Community-based settings include Termination of Pregnancy clinics, Pharmacies, Outreach and General Practice.

SHCs 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 sexual and reproductive health (SRH) services (including termination of pregnancy services) and specialist SHCs.

Tests performed in community-based settings are assumed to be largely asymptomatic screens; tests performed in SHCs 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 2015, there were 434,456 new STI diagnoses made at SHCs in England. Of these, the most commonly diagnosed STIs were chlamydia (200,288; 46%), genital warts (first episode; 68,310; 16%), non-specific genital infections ([NSGI] 42,262; 10%), and gonorrhoea (41,193; 10%).

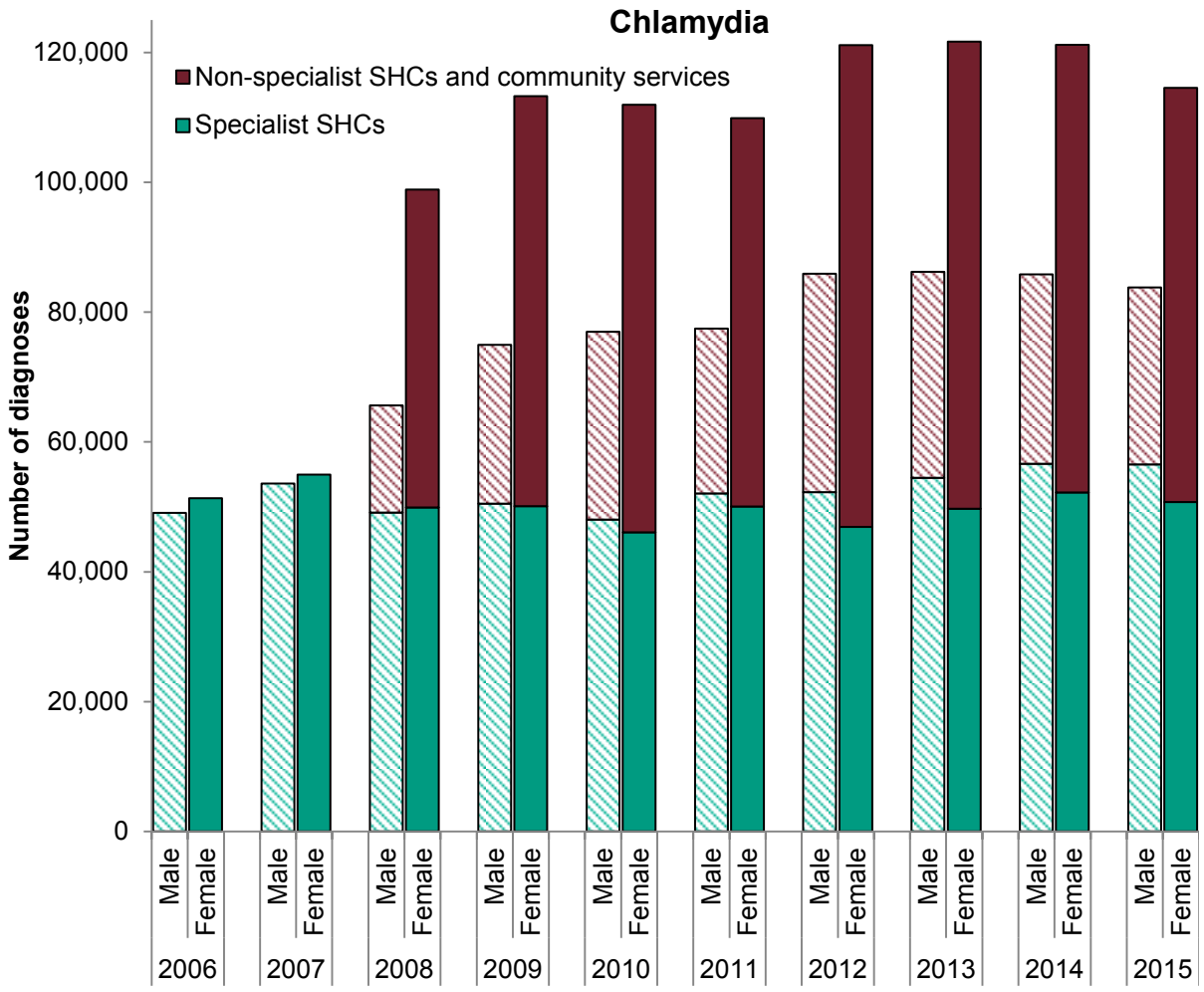
Compared to 2014, the total number of new STIs diagnosed in 2015 decreased by 3% (434,456 vs. 449,642). This is mostly explained by a decrease in the number of chlamydia diagnoses between 2014 and 2015 (4%; from 208,638 to 200,288). Most of the decrease in chlamydia diagnoses was due to a decrease in diagnoses from community-based settings (7%; 99,785 to 93,036). It may also be due to the reduction in heterosexual women testing in community-based settings, which could have had the effect of reducing the number of male partners attending for testing and treatment at specialist SHCs. A marked decrease in genital warts diagnoses between 2014 and 2015 (7%; from 73,086 to 68,310) also contributed to the overall decline in new STIs. Most of this is explained by a reduction in genital warts diagnoses in 15-19 year old females over the same time period (13%, from 7,921 to 6,878) associated with Human Papillomavirus vaccination. This and recent trends in genital warts are discussed in an accompanying article of this issue of the HPR [3]. Lastly, a reduction in NSGI diagnoses (10%; 47,183 to 42,262) also contributed to the overall decline in new STIs. This is consistent with the decline in NSGI reported since 2012 and may be due to the increasing use of nucleic acid amplification tests (NAATs) to detect chlamydia and gonorrhoea.

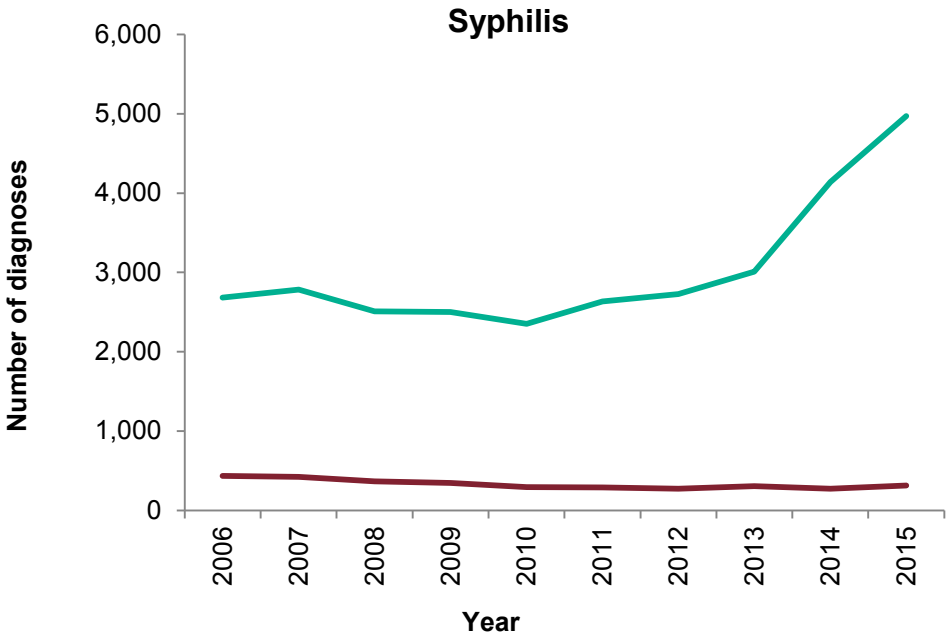
However, between 2014 and 2015, there were increases in diagnoses of syphilis ([primary, secondary and early latent stages] 20%; 4,412 to 5,288) and gonorrhoea (11%; 37,100 to 41,193), continuing the increasing trend in these infections seen in recent years: since 2012, syphilis diagnoses have risen by 76% (3,001 to 5,288) and gonorrhoea by 53% (26,880 to 41,193). These increases were maintained after adjusting for the corresponding increase in attendances at SHCs over the same period (17%; 2,616,730 to 3,055,385), as diagnosis rates per 100,000 attendances rose by 51% (114.7 to 173.1) for syphilis and 31% for gonorrhoea (1,027.2 to 1,348.2) from 2012 to 2015. Most of the increases in diagnoses of both infections are in men who have sex with men (MSM), the possible reasons for which are discussed in the following section of this report (*Men who have sex with men*).

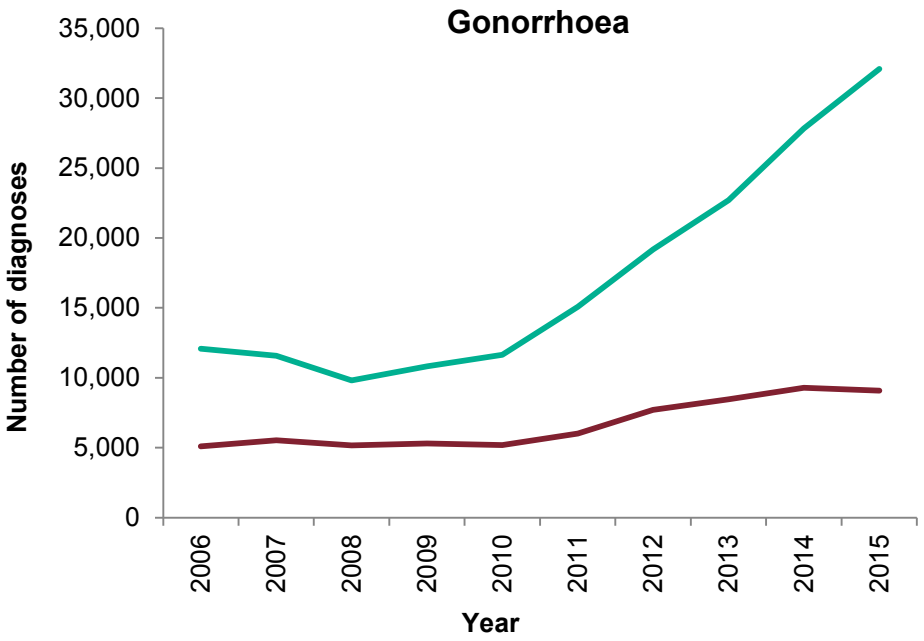
Over the past decade, diagnoses of gonorrhoea, syphilis, and genital herpes have increased considerably, most notably in males, while diagnoses of genital warts have decreased in females (figure 1). Since the full scale implementation of the NCSP in 2008, diagnosis rates of chlamydia have also increased in men and women. More STI testing in SHCs and through the NCSP [4] and routine use of more sensitive diagnostic tests, such as NAATs, partly explain these increases, although ongoing unsafe sexual behaviour has contributed. Chlamydia and genital warts diagnoses are discussed in later sections of this report (*Genital* Chlamydia trachomatis *tests and diagnoses in young people* and *Young heterosexuals and STIs*).

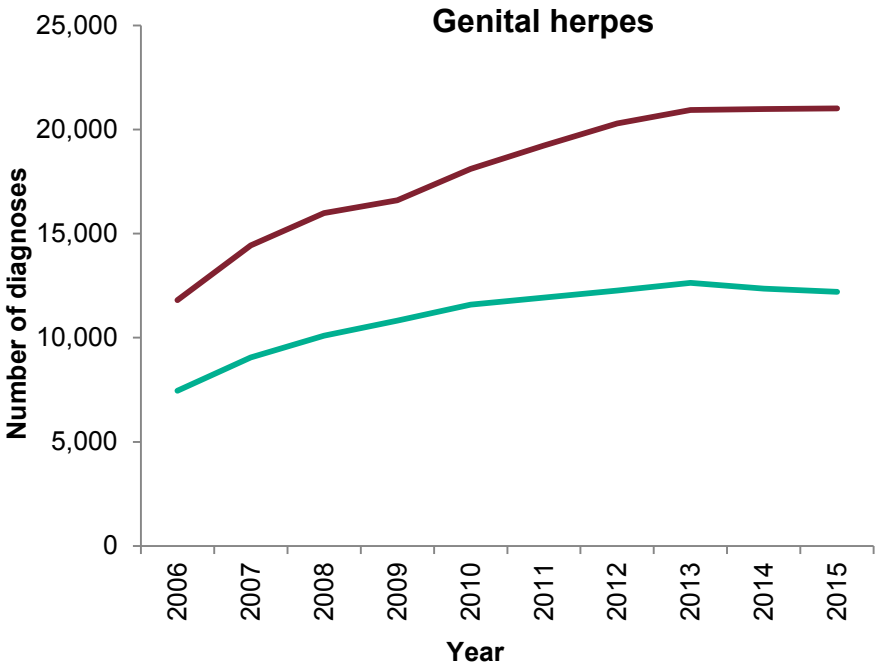
Reliable data on the sexual orientation of patients is available from SHCs' GUMCADv2 data returns. Among diagnoses made in these settings, there is substantial variation in the distribution of the most commonly diagnosed STIs by gender and sexual orientation. Men who have sex with men accounted for 79% of syphilis and 54% of gonorrhoea diagnoses, while heterosexual men and women accounted for 92% of genital warts, 92% of genital herpes and 85% of chlamydia diagnoses. Among heterosexuals, twice as many women as men were diagnosed with genital herpes.

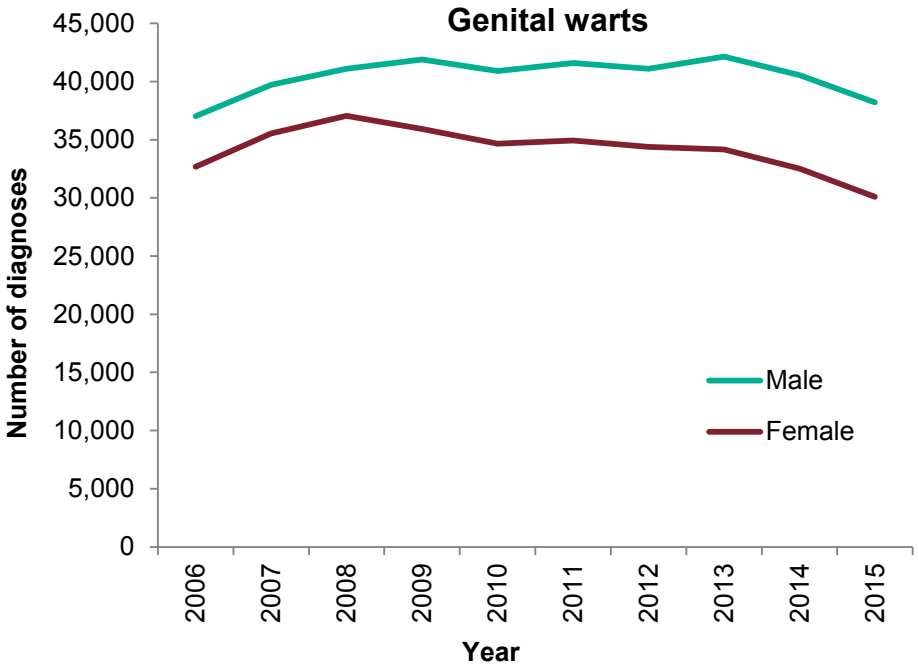
Figure 1. New diagnoses of chlamydia, syphilis (primary, secondary and early latent), gonorrhoea, genital herpes (first episode) and genital warts (first episode) at sexual health clinics* by gender, 2006–2015, England




Syphilis
6,000
5,000
4,000
3,000
2,000
1,000
0
Number of diagnoses
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Year


Gonorrhoea
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Number of diagnoses
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Year





* Data for chlamydia diagnoses from routine specialist sexual health clinics' returns to the genitourinary medicine clinic activity dataset (GUMCADv2) and non-specialist sexual health clinics' and community-based settings' returns to the chlamydia testing activity dataset; data for gonorrhoea, genital herpes, genital warts and syphilis diagnoses from routine specialist and non-specialist sexual health clinics' returns to GUMCADv2

Epidemiology of STIs in England

Men who have sex with men

In England in 2015, among male SHC attendees, 84% (4,192/4,971) of syphilis diagnoses, 70% (22,408/32,095) of gonorrhoea diagnoses, 21% (12,805/60,514) of chlamydia diagnoses, 12% (1,502/12,208) of genital herpes diagnoses and 9% (3,539/38,214) of genital warts diagnoses were in MSM (figure 2a).The median (interquartile range) age of MSM diagnosed with these STIs ranged from 28 (23-36) years for genital warts to 36 (29-44) years for syphilis (figure 2b).

The number of diagnoses of STIs reported in MSM attending SHCs has risen sharply in recent years and accounts for the majority of the increased diagnoses seen among men (figure 1). Gonorrhoea diagnoses increased by 21% (18,571 to 22,408), syphilis diagnoses by 19% (3,536 to 4,192), and chlamydia diagnoses by 8% (11,896 to 12,805) from 2014 to 2015 (figure 2c). This is consistent with recent trends as, by 2015, diagnoses of gonorrhoea (105%; 10,932 to 22,408), syphilis (95%; 2,147 to 4,192), chlamydia (52%; 8,416 to 12,805), genital herpes (21%; 1,246 to 1,502) and genital warts (12%; 3,149 to 3,539) had increased considerably since 2012

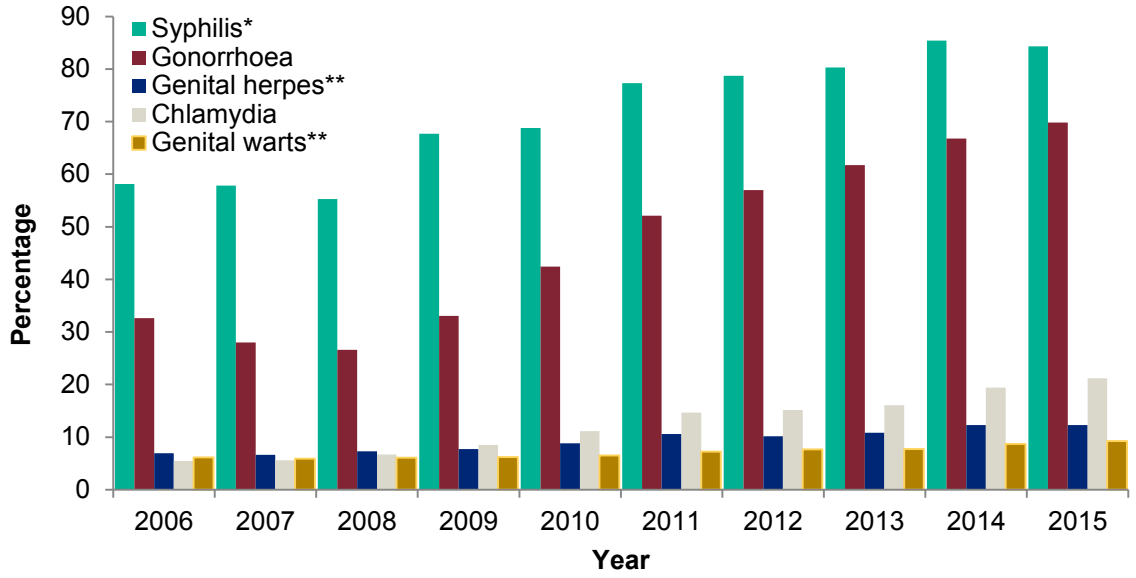
Gonorrhoea was the most commonly diagnosed STI among MSM in 2015: 10% (2,188/22,408) were infected at multiple anatomical sites. While 15% (3,400/22,408) were only infected in the pharynx, 25% (5,570/22,408) presented with rectal infections (figure 2d), suggesting significant numbers of transmissions occurred through condomless anal sex. High levels of gonorrhoea transmission are of particular concern, given the emergence of gonococcal resistance (including high-level resistance) to azithromycin, one of the antimicrobials used for treatment [5-7], and the first documented global case of treatment failure with first-line dual therapy reported recently in the UK [8].

From 2014 to 2015, diagnoses of lymphogranuloma venereum (LGV) increased by 39%, and a high proportion of patients diagnosed with LGV were co-infected with HIV (74%) and/or diagnosed with another STI or blood borne virus in the same year (63%) [9]. There is also increasing concern about sexually transmissible enteric infections in MSM. For example, from 2014 to 2015, non-travel associated diagnoses of *Shigella flexneri* 2a in men increased by 30% while diagnoses in women remained low and stable, suggesting high levels of sexual transmission between MSM [10]. Trends in LGV [11] and *Shigella* spp [12] are discussed further in accompanying articles in this issue of the HPR.

Several factors are likely to have contributed to the continued rise in diagnoses among MSM. Some of the increase in gonorrhoea and chlamydia diagnoses in MSM may be due to better detection through increased screening of extra-genital (rectal and pharyngeal) sites using NAATs [13], in response to current gonorrhoea testing guidance [14] and the LGV epidemic [15,16]. However, the impact of these developments will have progressively lessened in recent years as they have become more established. There is growing evidence 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 [10,15]. 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. In 2015, 40% (1,653/4,141) of syphilis, 24% (2,948/12,503) of chlamydia and 20% (4,404/21,915) of gonorrhoea diagnoses in MSM were in HIV-positive men. This suggests that rapid STI transmission is occurring in dense sexual networks of HIV-positive MSM [17]. Furthermore, the number of new HIV diagnoses in MSM rose to 3,360 in 2014, consistent with the steadily increasing trend observed since 2010; this is thought to be due to high levels of ongoing HIV transmission and increased levels of HIV testing [18].

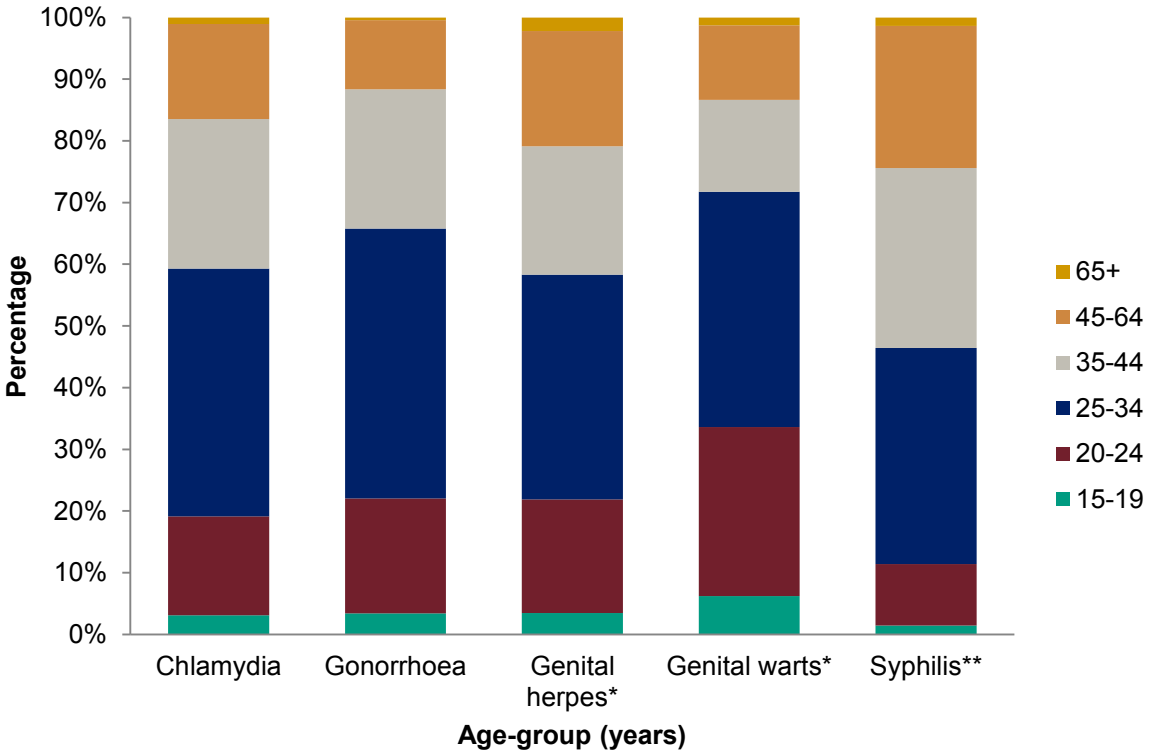
Men who have sex with men continue to experience high rates of STIs and remain a priority for targeted HIV and STI prevention and health promotion work. To address this need, HIV Prevention England (http://www.hivpreventionengland.org.uk/) have been contracted to deliver, on behalf of Public Health England, a range of activities that aim to reduce HIV incidence in MSM and other most at-risk populations. HIV Prevention England will provide system leadership, social marketing, amplification of local work and monitoring to promote among MSM and other most at-risk populations HIV testing, condom use, awareness of STIs and other evidence-based HIV prevention interventions as well as addressing stigma and discrimination. Additionally, a targeted HPV vaccination pilot programme for MSM is being introduced in England this year to evaluate whether a national programme can be rolled out across the country at a later date. HPV vaccination of MSM could provide MSM with direct protection against HPV infection with the aim of reducing the incidence of genital warts and HPV-related cancers.

Figure 2a. Proportion of all male sexually transmitted infection diagnoses which are among men who have sex with men, sexual health clinics†, 2006–2015, England



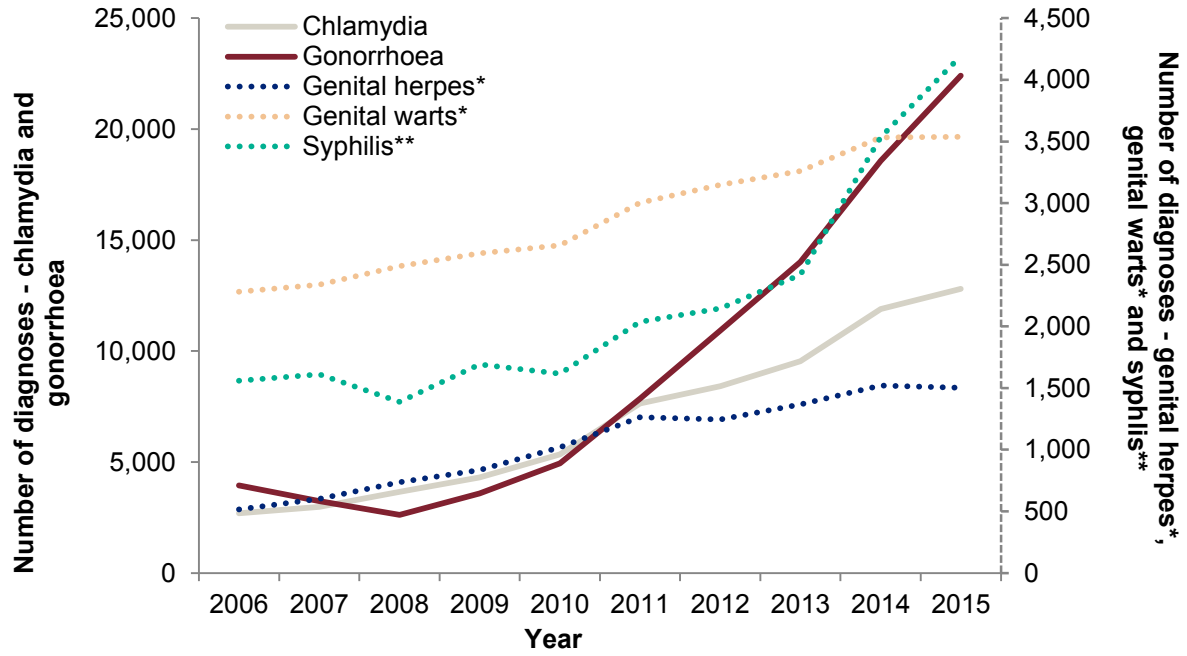
* Primary, secondary and early latent; ** First episode
†Data from routine specialist and non-specialist sexual health clinics' returns to the genitourinary medicine clinic activity dataset

Figure 2b. Percentage of diagnoses of selected sexually transmitted infections (STIs) in men who have sex with men, sexual health clinics†, by age-group‡ and STI, 2015, England (*corrected 11 October 2016*)



* First episode; ** Primary, secondary and early latent; ‡ Years
†Data from routine specialist and non-specialist sexual health clinics' returns to the genitourinary medicine clinic activity dataset

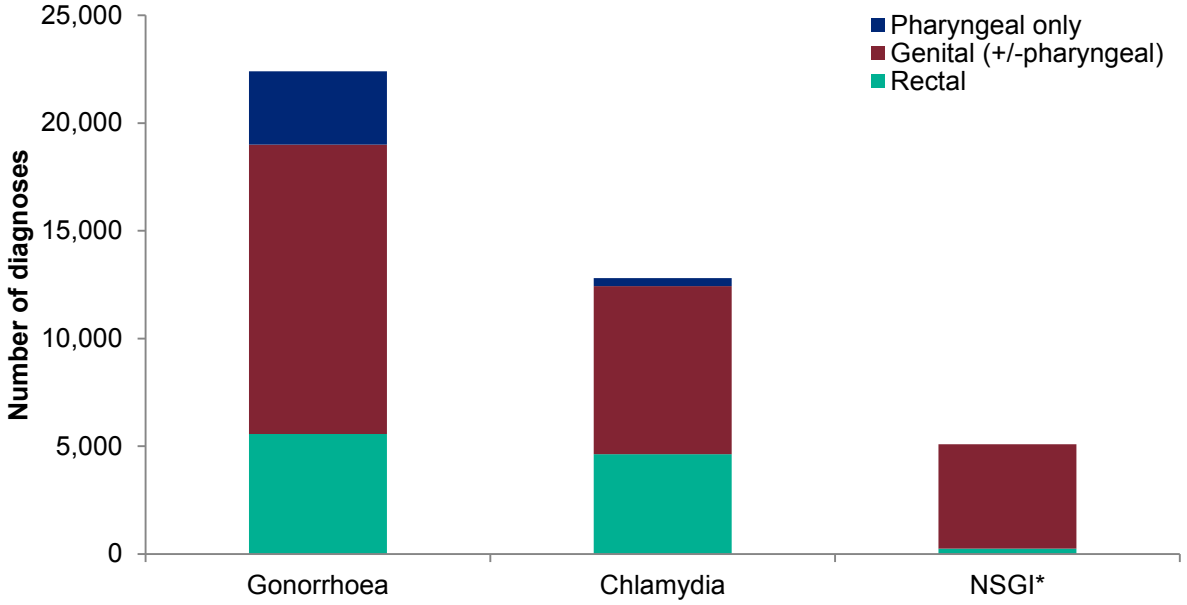
Figure 2c. Number of new diagnoses of selected sexually transmitted infections in men who have sex with men, sexual health clinics†, 2006–2015, England



* First episode; ** Primary, secondary and early latent

† Data from routine specialist and non-specialist sexual health clinics' returns to the genitourinary medicine clinic activity dataset

Figure 2d. Number of new diagnoses of selected sexually transmitted infections in men who have sex with men, sexual health clinics†, by anatomical site of infection, 2015, England



* Non-specific genital infection

† Data from routine specialist and non-specialist sexual health clinics' returns to the genitourinary medicine clinic activity dataset

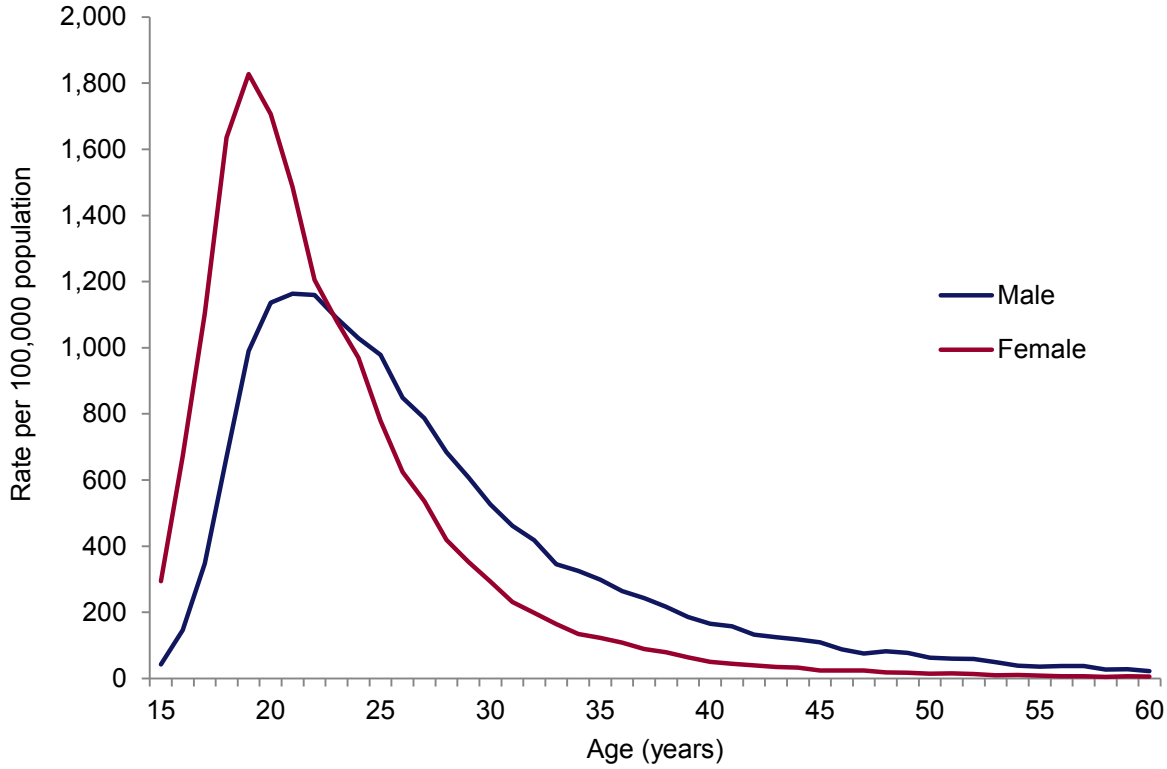
Young people and STIs

Data from a British population survey, the National Survey of Sexual Attitudes and Lifestyles (Natsal-3), suggest that people aged 16-24 years are most likely to report a new sex partner or two or more sex partners of the opposite sex in the past year [19]. People of this age group continue to experience the highest rates of chlamydia, genital herpes and genital warts, while the highest rates of gonorrhoea and syphilis in men occur in older age-groups (figure 3). In 2015, among heterosexuals diagnosed in SHCs, 62% (62,191/100,165) with chlamydia, 52% (9,088/17,414) with gonorrhoea, 51% (32,113/62,547) with genital warts, and 41% (12,591/30,658) with genital herpes were aged 15 to 24 years.

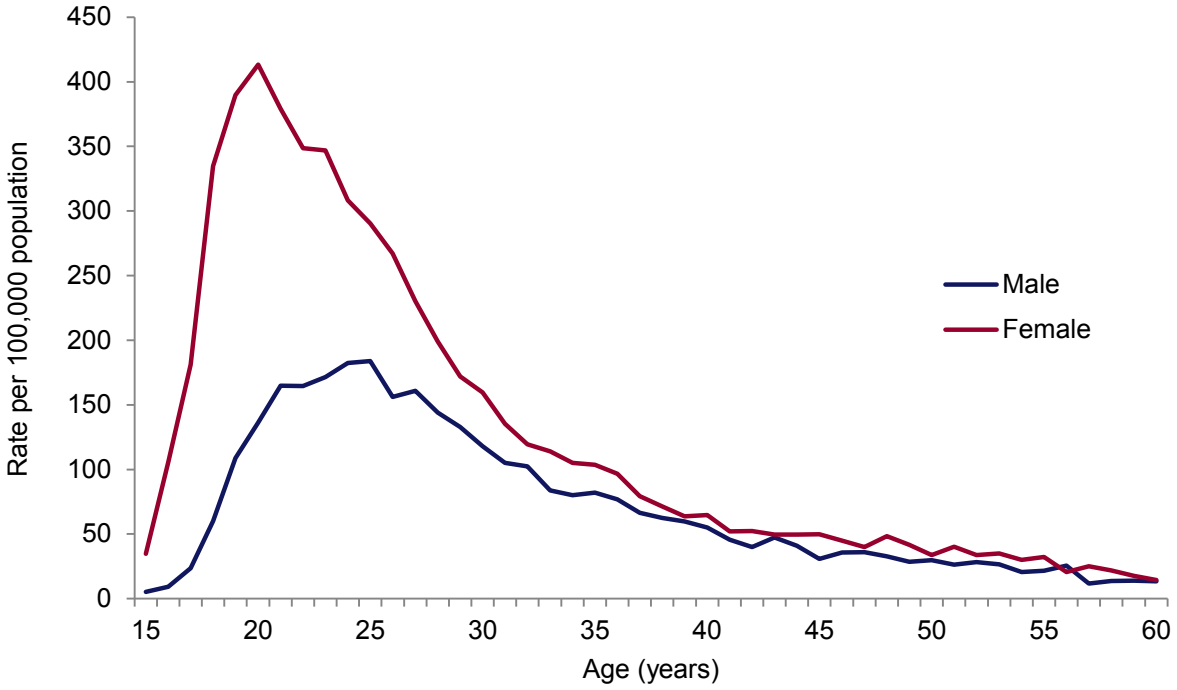
Although overall numbers of STI diagnoses in those aged 15 to 24 years have risen considerably in the last five years, there has been a decline recently in cases of genital warts in young females (figure 4). This decrease is associated with Human Papillomavirus vaccination and is discussed in an accompanying article in this issue of the HPR [3]. Similarly, there was a decrease in diagnosis rates of chlamydia among those aged 15 to 24 years (figure 4); this is discussed further in a following section of this report (*Genital* Chlamydia trachomatis *tests and diagnoses in young people*).

Figure 3. Rates of selected sexually transmitted infection diagnoses among people aged 15-60 years attending sexual health clinics† by single year of age and gender, 2015, England

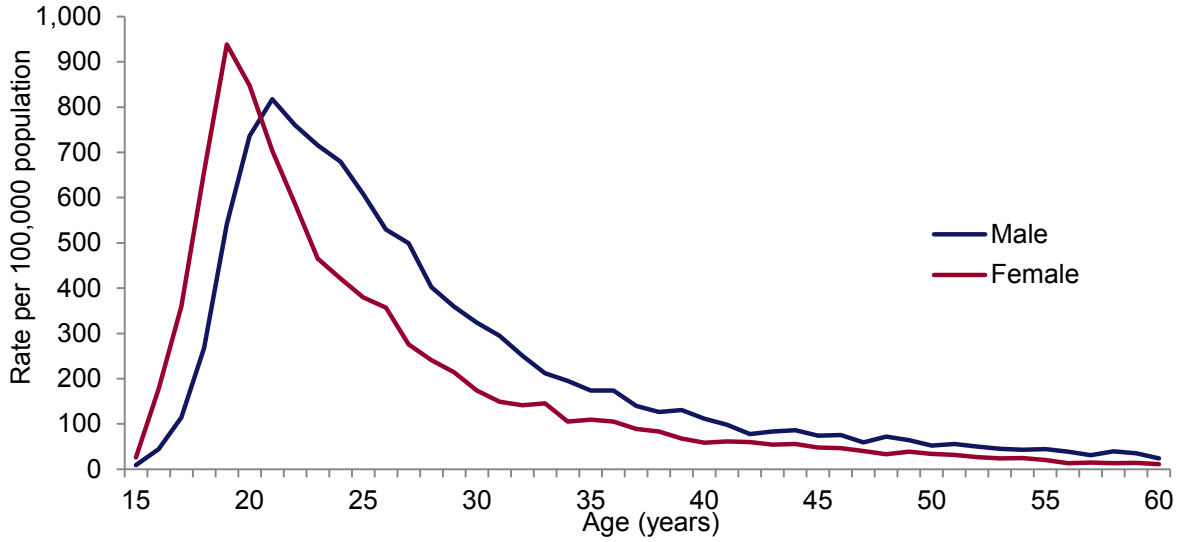
a. Chlamydia



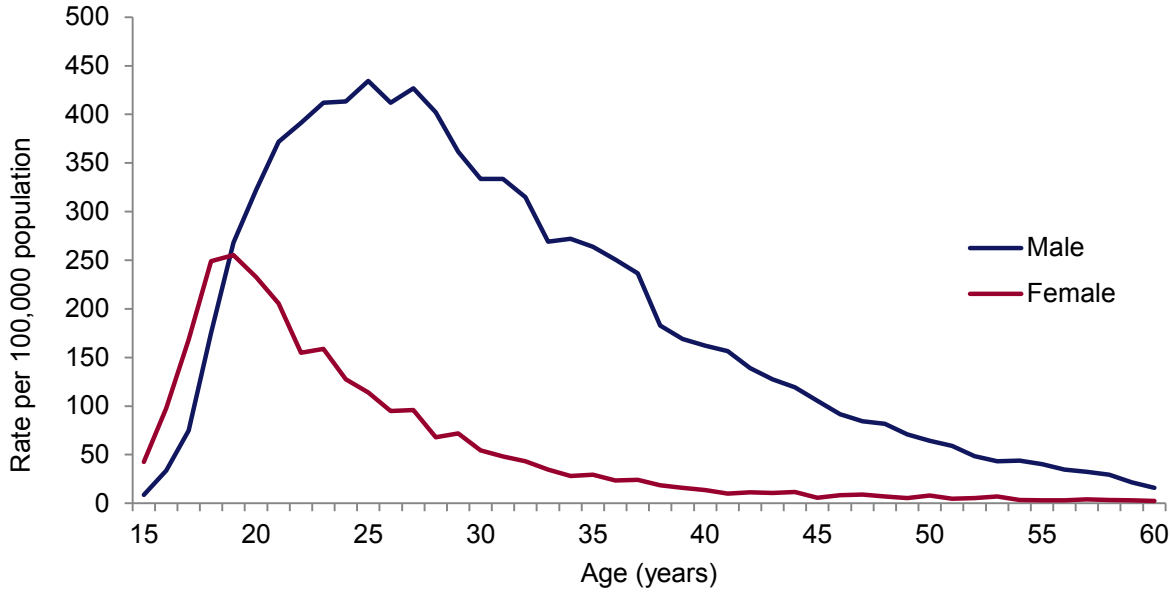
b. Genital herpes (first episode)



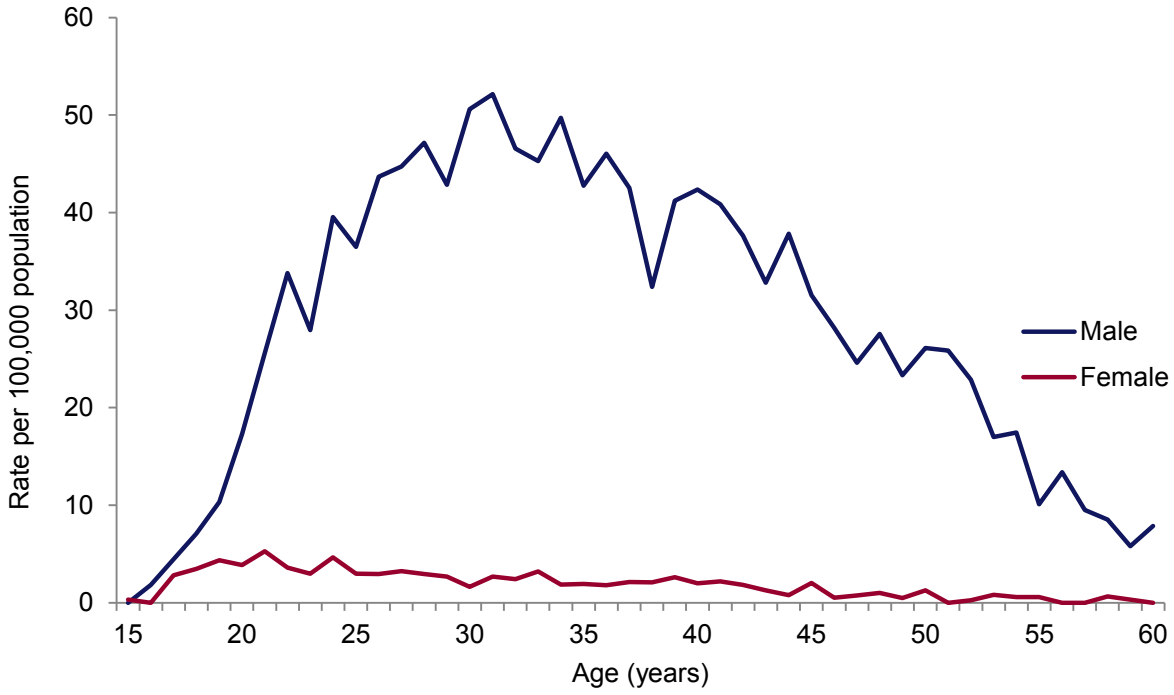
c. Genital warts (first episode)



d. Gonorrhoea



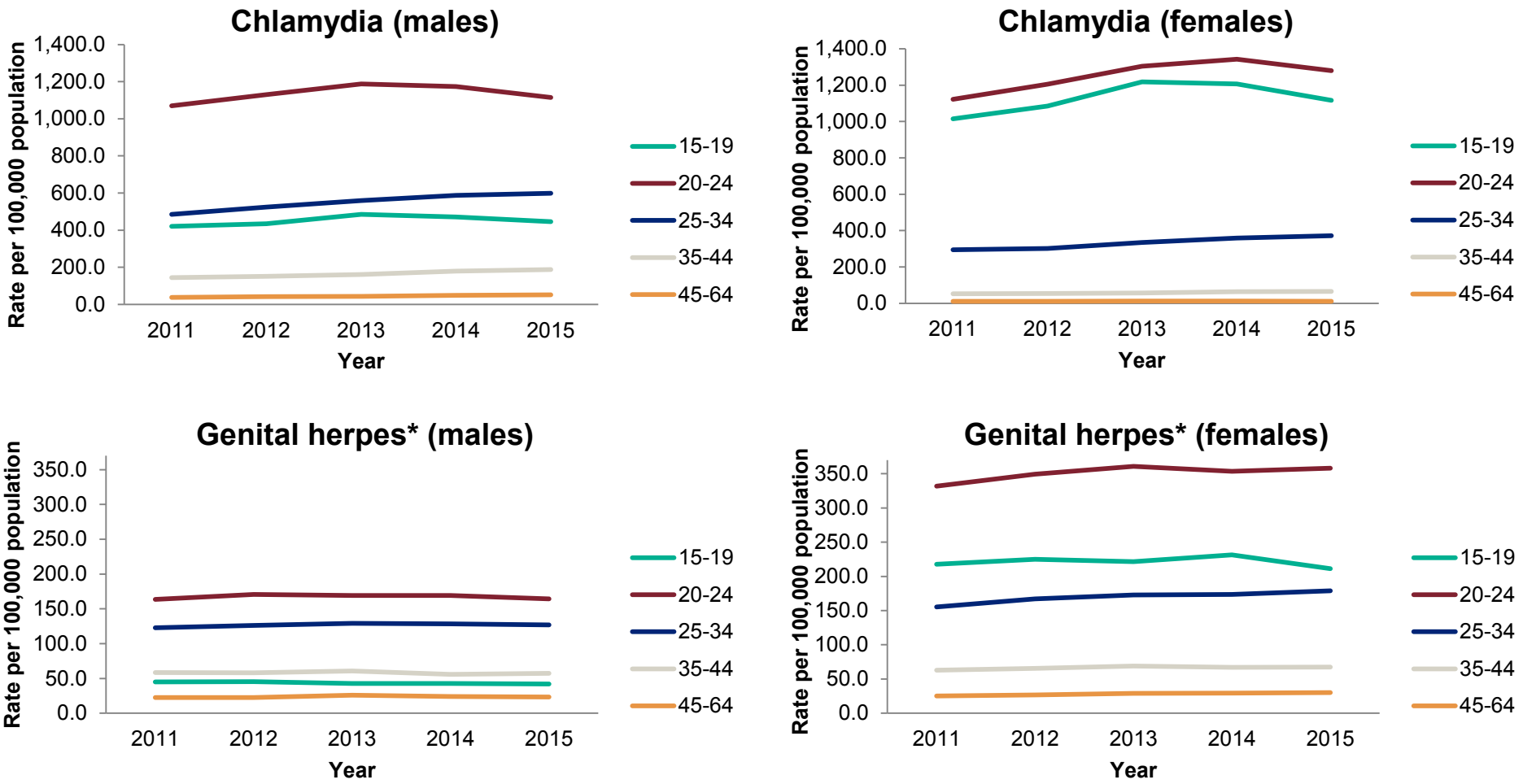
e. Syphilis (primary, secondary and early latent)

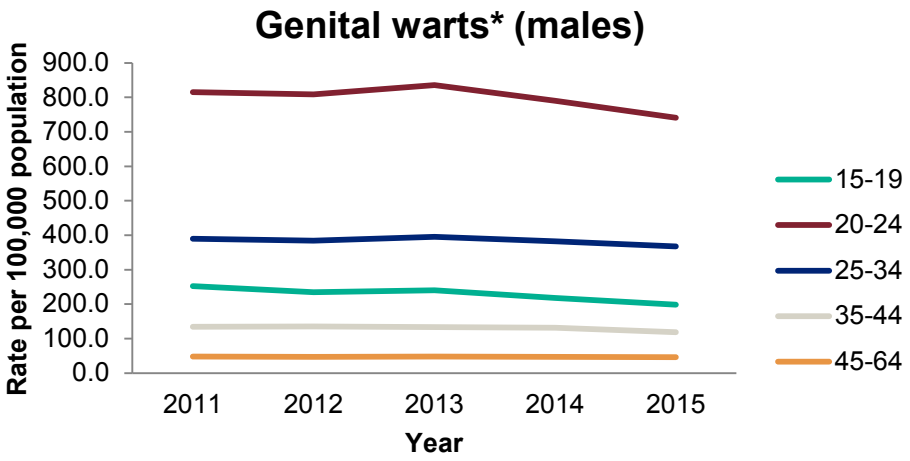


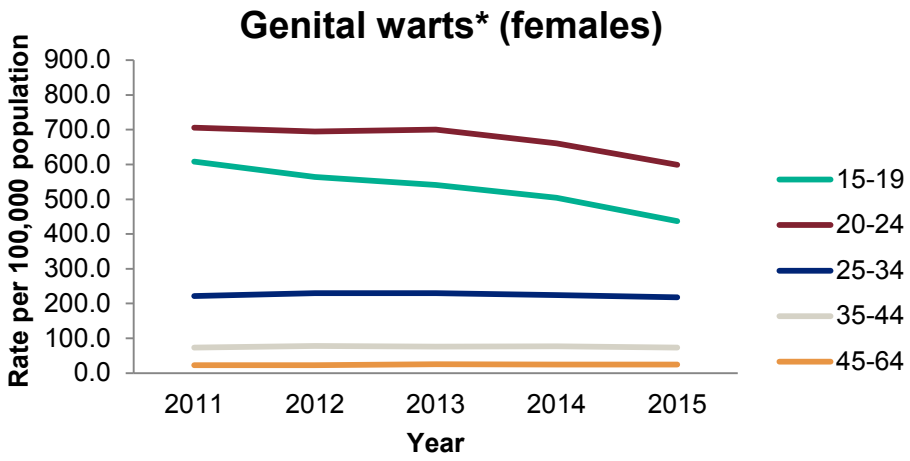
† Data from routine specialist and non-specialist sexual health clinics' returns to the genitourinary medicine clinic activity dataset

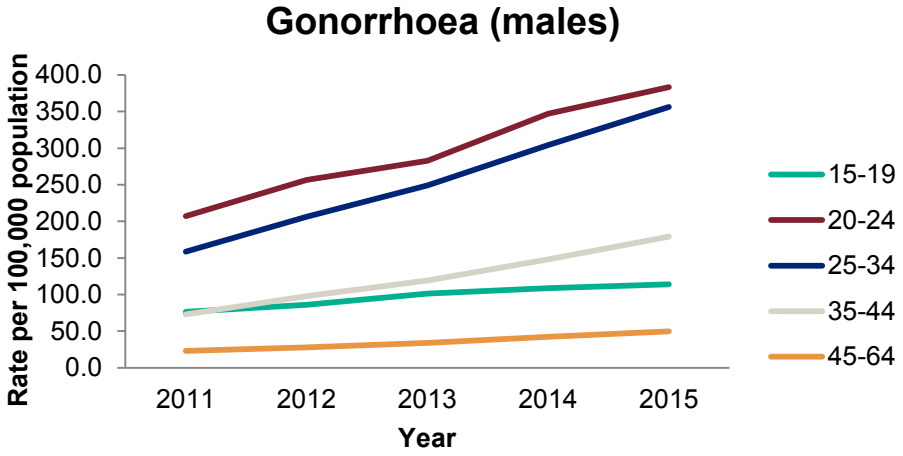
Different scales are used for the y-axes of different STIs.

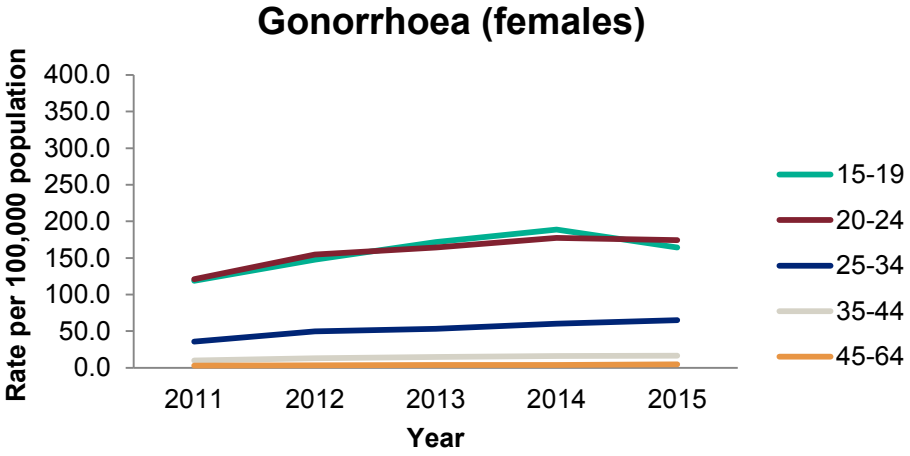
Figure 4. Rates of selected sexually transmitted infection diagnoses at sexual health clinics† by gender and age group‡, 2011–2015, England

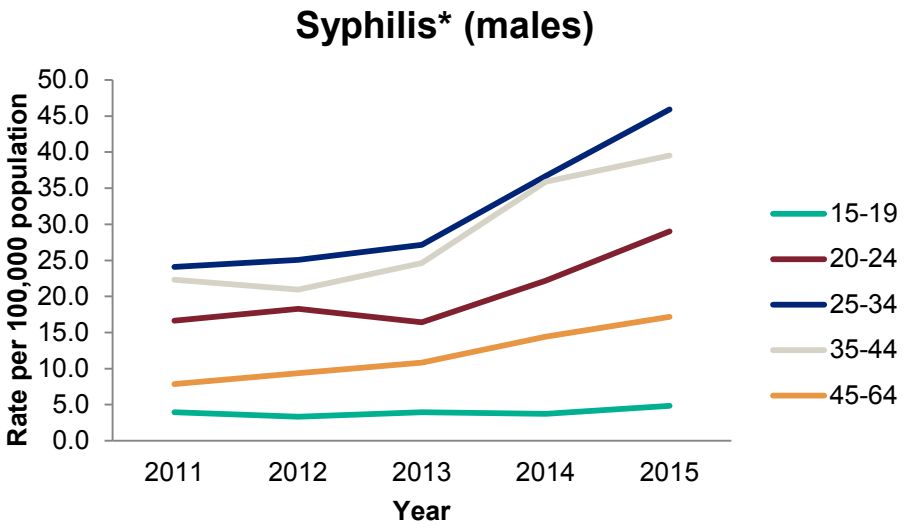


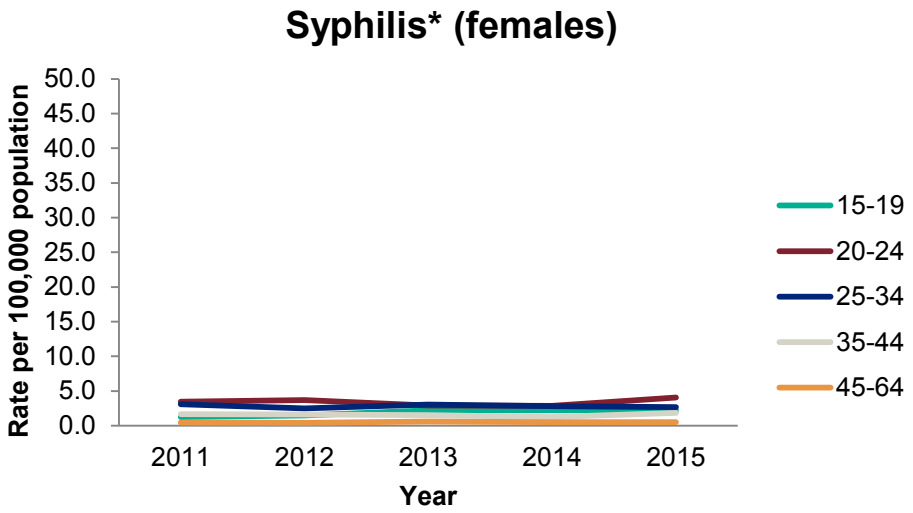

Genital warts* (males)
Rate per 100,000 population
900.0
800.0
700.0
600.0
500.0
400.0
300.0
200.0
100.0
0.0
2011
2012
2013
2014
2015
Year
15-19
20-24
25-34
35-44
45-64


Genital warts* (females)
Rate per 100,000 population
900.0
800.0
700.0
600.0
500.0
400.0
300.0
200.0
100.0
0.0
2011
2012
2013
2014
2015
Year
15-19
20-24
25-34
35-44
45-64


Gonorrhoea (males)
Rate per 100,000 population
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
2011
2012
2013
2014
2015
Year
15-19
20-24
25-34
35-44
45-64


Gonorrhoea (females)
Rate per 100,000 population
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
2011
2012
2013
2014
2015
Year
15-19
20-24
25-34
35-44
45-64





† Data from routine specialist and non-specialist sexual health clinics' returns to the genitourinary medicine clinic activity dataset; ‡ Years

* First episode; ** Primary, secondary and early latent

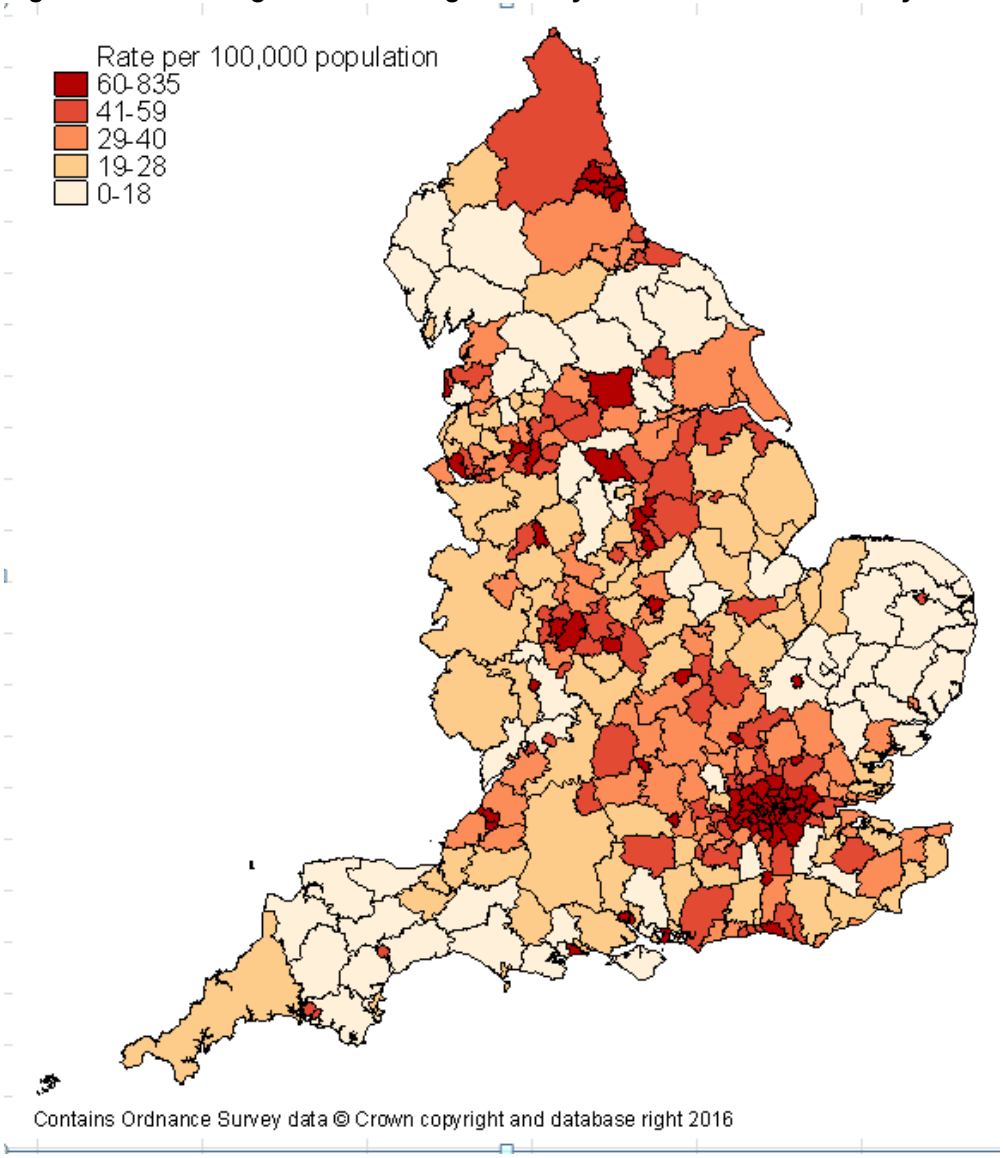
Different scales are used for the y-axes of different STIs.

Sexually transmitted infection 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 diagnosis and treatment services. Geographic variations are most pronounced for less common STIs. For instance, the results of the most recent Natsal survey highlight the relatively low prevalence of gonorrhoea (<0.1% in women and men aged 16-44 years) [20], but there is a high degree of geographical clustering of this infection [21,22]. In 2015, among lower tier Local Authorities (LAs) reporting at least one diagnosis of gonorrhoea, the rate of gonorrhoea diagnoses at SHCs ranged from 7.1 (Mid Suffolk) to 834.7 (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 socioeconomic deprivation [23-25] (figures 5a and 5b). Further, there is a strong association between poorer sexual health, as evidenced by higher diagnosis rates of STIs, and increasing levels of socioeconomic deprivation [26].

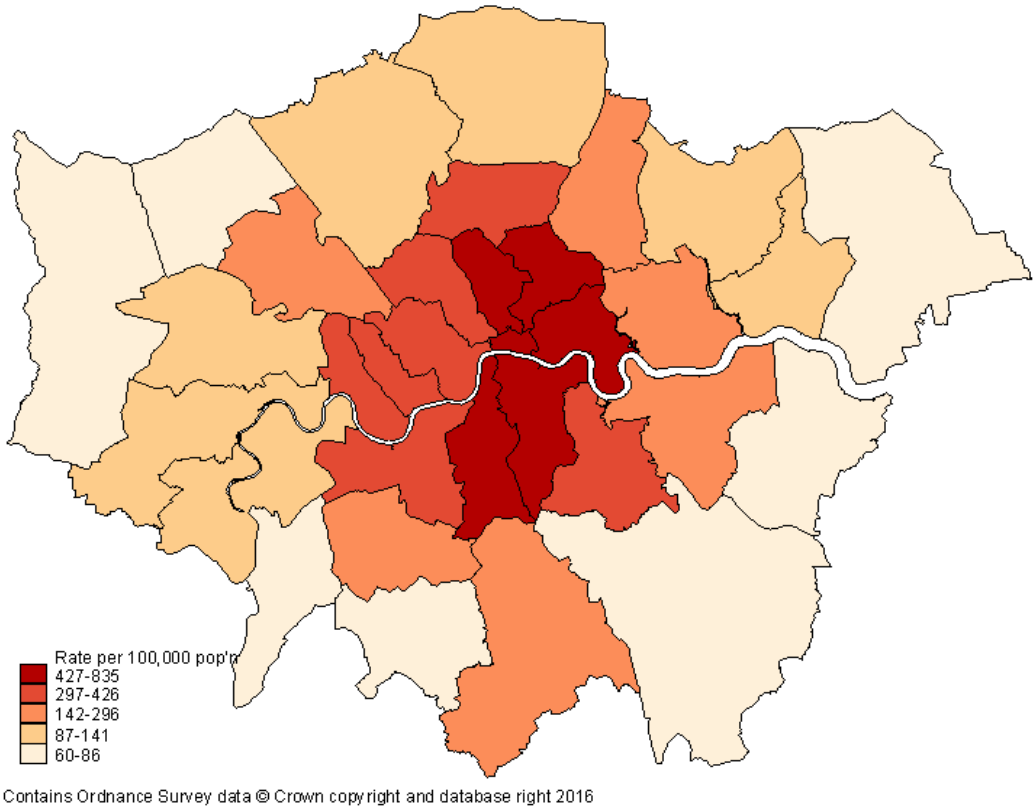
To allow LAs and public heath leads to monitor the sexual and reproductive health of their population, PHE regularly updates the Sexual and Reproductive Health Profiles. These profiles include interactive maps, charts and tables that provide a snapshot of sexual and reproductive health across a range 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, 2015, England



* Data from routine specialist and non-specialist sexual health clinics' returns to the genitourinary medicine clinic activity dataset

Figure 5b. Rates of gonorrhoea diagnoses* by lower-tier Local Authority of residence, 2015, London



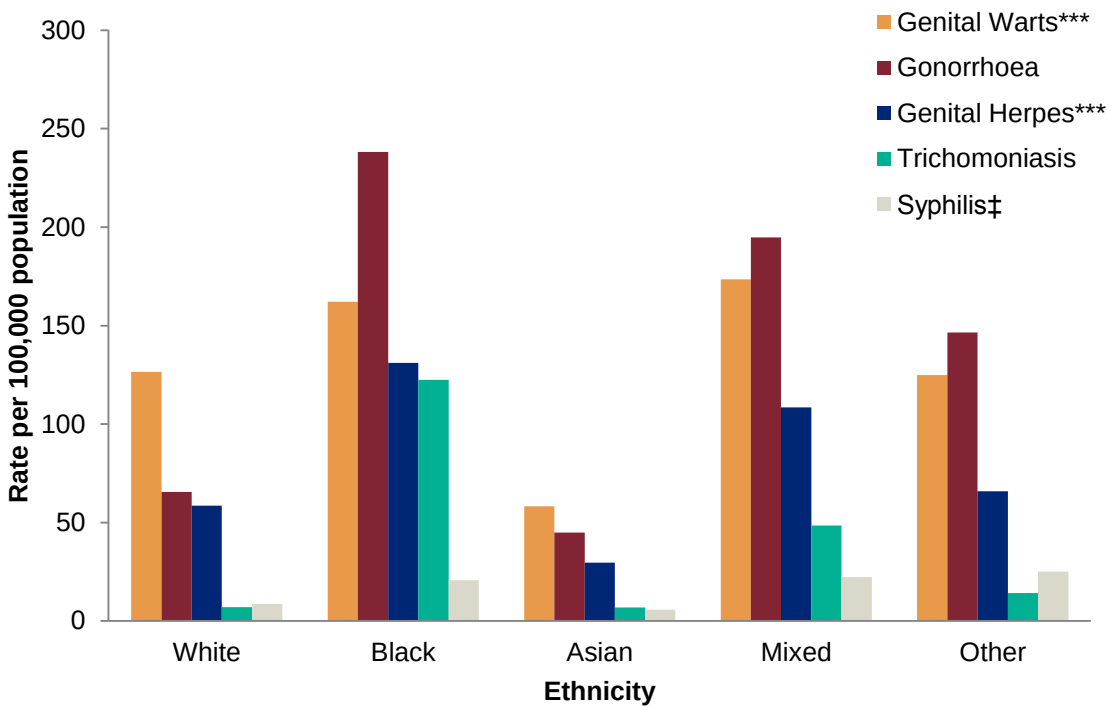
* Data from routine specialist and non-specialist sexual health clinics' returns to the genitourinary medicine clinic activity dataset

STI distribution by ethnicity

The highest rates of STI diagnoses at SHCs 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 [25]. 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 [27]. Additionally, risk behaviours and STI epidemiology vary between black African and Caribbean ethnic groups [27,28].

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 (http://bbsti.hpru.nihr.ac.uk/our-research/research-themes/theme-overview-understanding-risk-and-risk-reduction-sexually). 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 sexually transmitted infection (STI) diagnoses* by ethnicity and STI, 2015, England



* Data from routine specialist and non-specialist sexual health clinics' returns to the genitourinary medicine clinic activity dataset. ** First episode. ‡ Primary, secondary and early latent

Genital Chlamydia trachomatis *tests and diagnoses in young people*

In 2015, over 1.5 million chlamydia tests were carried out in England among young people aged 15 to 24 years. A total of 129,022 chlamydia diagnoses were made among this age group, equivalent to a detection rate of 1,887 per 100,000 population. Assuming one test per person, an estimated 32% of young females and 13% of young males were tested for chlamydia.

Chlamydia testing coverage, detection rate and percentage testing positive varied by Public Health England (PHE) Centre area of residence (figure 7). The percentage of young people tested for chlamydia ranged from 19% in West Midlands and the East of England to 27% in London. The percentage testing positive ranged from 7.4% in the South East to 9.6% in Yorkshire and Humber. North West had the highest detection rate per 100,000 population (2,328) while South East had the lowest (1,501). 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 non-specialist SHCs and community-based settings (including primary care) although there is variation by area. For example in the North West 71% of tests were undertaken in non-specialist SHCs and community-based settings, in comparison to 52% in London where a much greater amount of testing was performed in specialist SHCs.

Four years of data are now available in CTAD and trends show a decline in testing coverage, a small change in positivity and a decline in the detection rate (figure 7). The biggest change in detection rate was seen 2014-2015 where the figure has fallen by 7.3%. It is likely that the trends seen at the PHE centre area and national levels 2012-2015 are as a result of a combination of the following:

I. A true decline in testing coverage: The coverage decline shown in figure 7 is mostly attributable to fewer tests in non-specialist SHCs and community venues which may be, in part, a result of the integration of sexual health services in a number of programme areas. There has also been a small decline in the number of tests (2%) and diagnoses (5%) from specialist SHCs.
II. Improvements in data quality: There has been a reduction in double counting of tests and diagnoses corresponding to improvements in coding of data by providers and laboratories prior to submission which has contributed to the decline in coverage seen 2012-2014. This does not influence the 2014-2015 decline in detection rate as data indicate only a very small proportion (<4%) of diagnoses are likely to have been double counted in both 2014 and 2015.

Chlamydia detection rates were higher in females than males across all areas (1.7 to 2.2 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 1.6 to 2.4 times higher than among males aged 15 to 19 years.

Figure 7. Chlamydia testing coverage, detection rates and percentage of tests positive* among 15 to 24 year olds by testing venue and PHE Centre area, 2012 - 2015, England

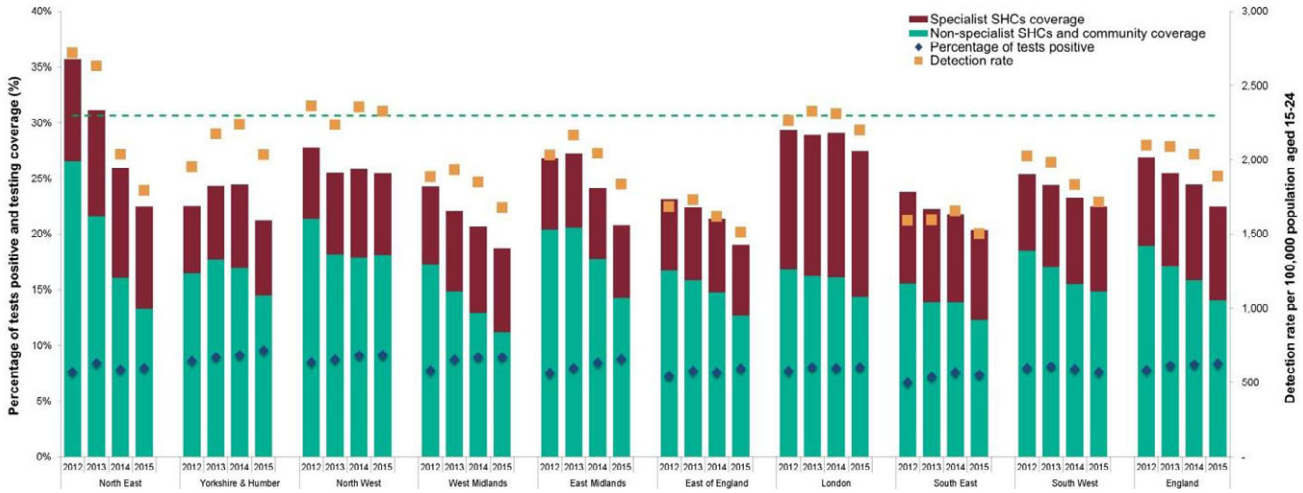
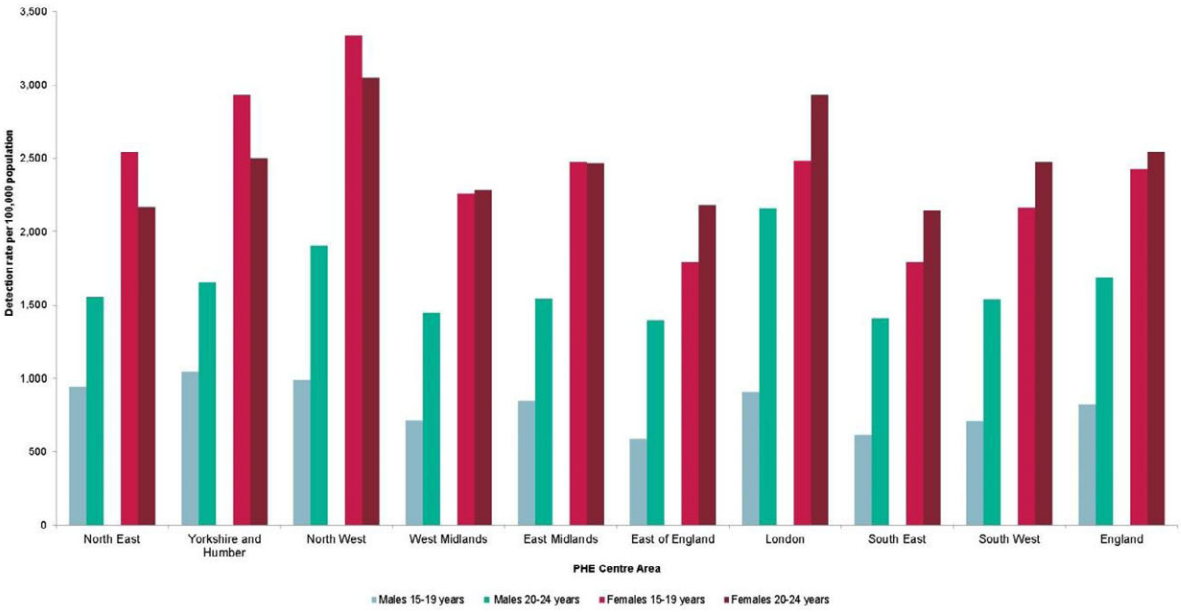


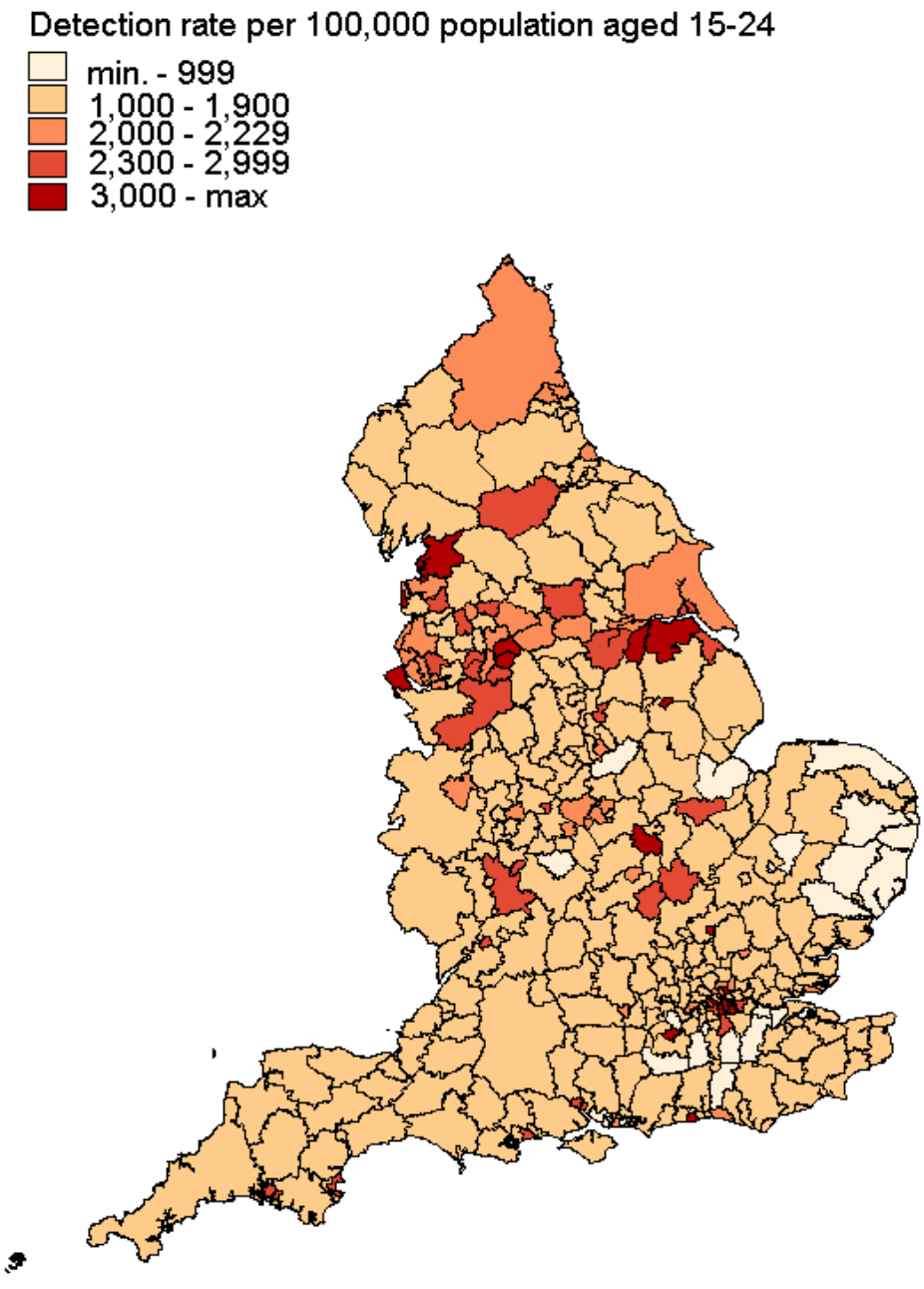
Figure 8. Chlamydia detection rates* among 15 to 24 year olds by gender, age-group and PHE Centre area, 2015, England



* Data from routine specialist and non-specialist sexual health clinics' returns and community-based settings

Chlamydia detection rates exhibit considerable geographic variation (figures 8-10) and, in 2015, 20% of Upper Tier Local Authorities (UTLAs) achieved a detection rate of 2,300 or above (table 1). Differences in detection rate could be due to differences in testing coverage (table 1), as chlamydia detection rate shows a strong relationship with chlamydia testing coverage (figure 10), or heterogeneity in behavioural risk for chlamydia. In 2015, the median UTLA detection rate was 1,837 per 100,000 population aged 15-24 (IQR 1,537-2,198). The 2015 rates show 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 actively works to support local authorities' data quality improvement initiatives.

Figure 9. Chlamydia detection rates* among 15 to 24 year olds by UTLA of residence, 2015, England and London PHE Centre area



* Data from routine specialist and non-specialist sexual health clinics' returns and community-based settings

Figure 10. Chlamydia testing coverage and detection rate* among 15 to 24 year olds by UTLA of residence, 2015, England

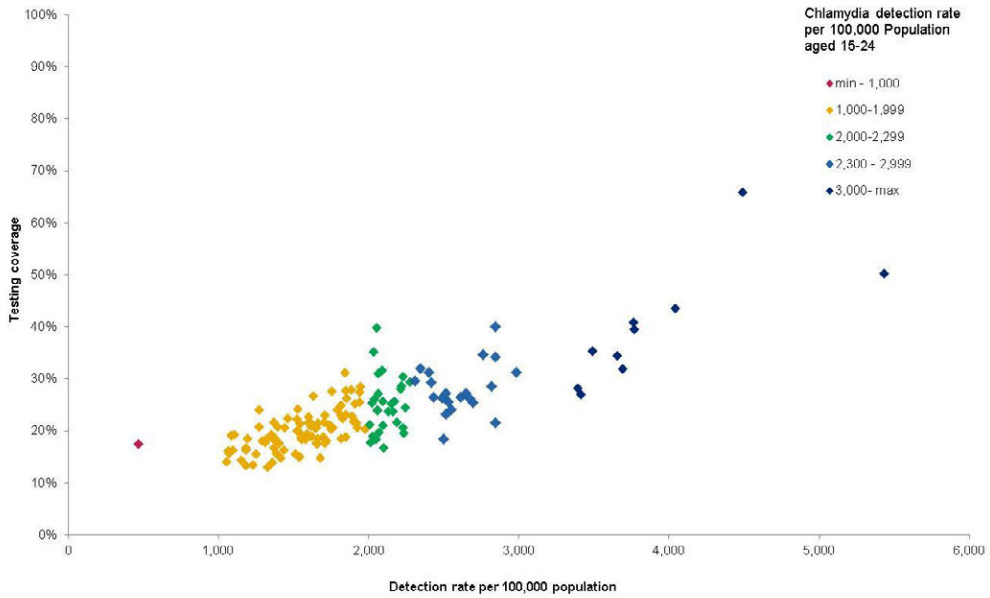


Table 1. Chlamydia testing coverage, and number and proportion of UTLAs achieving a chlamydia detection rate* among 15 to 24 year olds of at least 2,300 per 100,000 population by PHE Centre (PHEC) area, 2015, England

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	23%	0	0%	4	33%	8	67%
Yorkshire and Humber	21%	5	33%	4	27%	6	40%
North West	25%	10	43%	7	30%	6	26%
West Midlands	19%	0	0%	2	14%	12	86%
East Midlands	21%	0	0%	3	33%	6	67%
East of England	19%	3	25%	1	8%	8	67%
London	27%	9	27%	5	15%	19	58%
South East	20%	1	6%	3	17%	14	78%
South West	23%	3	19%	0	0%	13	81%
England	**23%**	**31**	**20%**	**29**	**19%**	**92**	**61%**

* Data from routine specialist and non-specialist sexual health clinics' returns and community-based settings

When considered by testing venue, the largest proportion of chlamydia tests and diagnoses in England in 2015 were in specialist SHCs (Table 2). Large numbers of tests and diagnoses also took place in SRH venues and primary care (GP). Only small numbers of tests were reported from pharmacy and termination of pregnancy (ToP) venues. Positivity was highest in specialist SHCs which is expected as patients attending these services are more likely to be symptomatic than those attending non-specialist SHCs and community venues.

Table 2 Chlamydia tests, diagnoses, and percentage tests positive* by testing venue, 15-24 year olds, 2015, England

Testing venue	Tests	Diagnoses	Proportion of tests positive (%)
Specialist SHCs	576,089	59,848	10.4
SRH	257,394	23,533	9.1
GP	298,263	17,741	5.9
Pharmacy	17,374	1,449	8.3
ToP	20,470	1,263	6.2
Internet	76,842	6,491	8.4
Other	276,900	17,669	6.4
Unknown	15,487	1,028	6.6
Total	**1,538,819**	**129,022**	**8.4**

* Data from routine specialist and non-specialist sexual health clinics' returns and community-based settings

Since 2012, the proportion of tests from specialist SHCs venues has increased (figure 11a). 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 2012-2014 due to integration of SRH and specialist SHCs services in many programme areas.

The 2015 figures show an overall 8% decline in the number of tests and a 7% decline in the number of diagnoses from all service settings compared to 2014 (figure 11b). This is mainly attributable to:

I. 20% fewer tests reported from 'other' settings in 2015 compared to 2014. Internet tests are also no longer categorised as 'other' so some decline was anticipated due to coding changes. However the rise in internet tests is not sufficiently large to explain the fall in tests from 'other' settings.

II. 18% fewer tests reported from SRH settings in 2015 compared to 2014.

III. The upward trend in specialist SHCs tests and diagnoses did not continue into 2015 and we saw a decline in specialist SHCs tests and diagnoses for the first time since CTAD was implemented in 2012. This may be due to the reduction in women testing in other venues which could have the effect of reducing the number of male partners attending for testing and treatment at specialist SHCs.

Figure 11a. Chlamydia tests* among 15 to 24 year olds by testing venue, 2012 - 2015, England

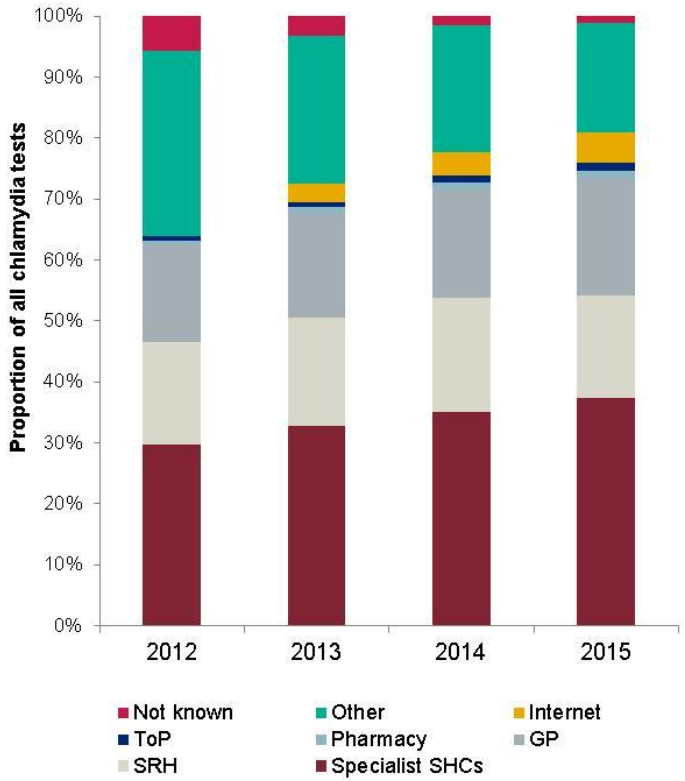
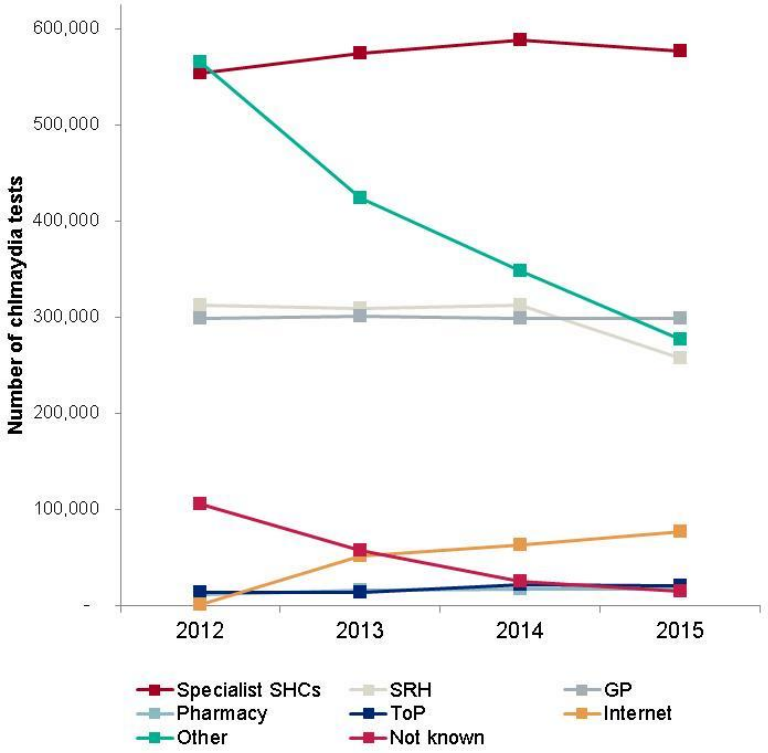


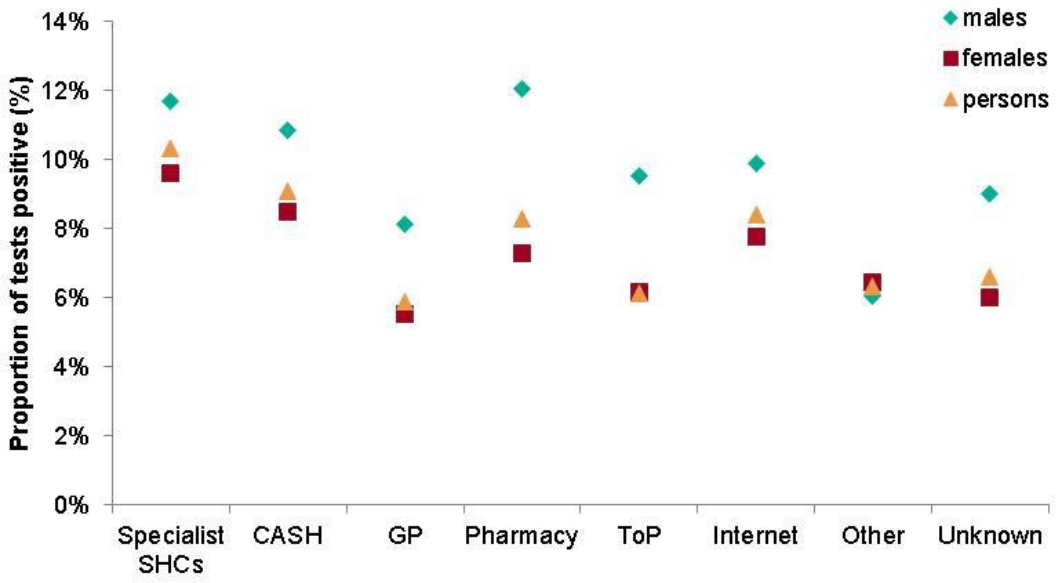
Figure 11b. Chlamydia tests* among 15 to 24 year olds by testing venue, 2012 - 2015, England



* Data from routine specialist and non-specialist sexual health clinics' returns and community-based settings

In recent years we have seen a rise in online sexual health services offered both as part of commissioned care and privately. In 2015 the CTAD surveillance system was amended to enable identification of NHS/LA commissioned tests ordered through an internet service due to the increasing use of this method of service delivery. Use of this coding has increased throughout 2015 and in total 76,842 tests and 6,491 diagnoses were reported in 2015. The proportion of internet tests that were positive was 8.4%, comparable to other testing settings (figure 12). Internet testing yielded good positivity for males and females, and was highest in 15-19 compared to 20-24 year olds (table 3).

Figure 12. Proportion of chlamydia tests positive* among 15 to 24 year olds by testing venue, 2015, England



* Data from routine specialist and non-specialist sexual health clinics' returns and community-based settings

Table 3. Chlamydia tests, diagnoses and the proportion of tests positive from internet services among 15 to 24 year olds, 2015, England

	Males			Females			Persons		
	15-19	20-24	15-24	15-19	20-24	15-24	15-19	20-24	15-24
Tests	5,898	17,758	23,656	14,580	38,394	52,974	20,525	56,317	76,842
Diagnoses	673	1,680	2,353	1,484	2,640	4,124	2,158	4,333	6,491
Proportion positive	11.4%	9.5%	9.9%	10.2%	6.9%	7.8%	10.5%	7.7%	8.4%

Discussion and conclusions

In 2015, there was a small (3%) decrease in STI diagnoses in England to approximately 435,000 cases. Fewer NSGI and genital warts diagnoses contributed to this, but this overall decline in the number of STIs was primarily due to a sharp decrease in chlamydia diagnoses, as this comprised 55% of the roughly 15,000 fewer STI diagnoses in 2015 relative to 2014. While the number of chlamydia diagnoses from SHCs remained relatively stable over this period, there was a 7% decrease in chlamydia diagnoses reported from community-based settings, emphasising the need for increased scale up of opportunistic screening through the NCSP.

There are a number of other key areas of concern. Gonorrhoea diagnoses continued the sharp rise seen in recent years, exceeding 40,000 cases in 2015. Although improved test sensitivity and uptake may have contributed, increased gonorrhoea transmission is likely playing a major role. Reversing this trend is a priority given the spread of resistance to frontline antimicrobials used for treating gonorrhoea and the depletion of effective treatment options [6,8,29,30].

Of particular concern is the continuing and rapid rise in syphilis and gonorrhoea among MSM, which strongly suggests high levels of condomless sex. HIV 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, and likely plays a role in the reported STI trends. For those who are HIV negative, serosorting increases the risk of HIV seroconversion as 14% of MSM are unaware of their infection [31]. A recent cluster of hepatitis B in MSM who identify as heterosexual highlights the diversity of the MSM population and the need for culturally appropriate and sensitive targeting of health promotion messages, including at cruising sites and sex on premises venues [32].

There was notable variation in the chlamydia detection rate among 15 to 24 year olds by geographic area, largely reflecting rates of testing. Local authorities 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 non-specialist SHCs and community-based settings focusing on those which serve the populations with the highest need based on positivity. 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 [33]; and ensure treatment and partner notification standards are met [34].

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 substantially reduces 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 [35], will promote delivery of these key messages.

Resources on the PHE website

Further STI data are available on the PHE website in tables (https://www.gov.uk/government/statistics/sexually-transmitted-infections-stis-annual-data-tables, https://www.gov.uk/government/statistics/national-chlamydia-screening-programme-ncsp-data-tables) 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 https://www.gov.uk/government/collections/chlamydia-surveillance-data-screening-and-management, respectively.

Further information on the Gonoccocal Resistance to Antimicrobials Surveillance Programme is available at https://www.gov.uk/government/publications/gonococcal-resistance-to-antimicrobials-surveillance-programme-grasp-report.

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. Specialist SHC data covering diagnoses since 2009 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 SHCs 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. From 2012, GUMCADv2 was expanded to include reporting from all commissioned level 2 sexual health services.

2. Routine returns from the following sexual health services (referred to as 'SHCs' in the main text above) were considered in this report:

i. Level 3 (specialist) services: genitourinary medicine (GUM) clinics and integrated GUM/sexual and reproductive health (SRH) services
ii. Level 2 (non-specialist) services: SRH, Young People's Services and Online and other sexual health Services.

Details on the levels of sexual health service provision are provided in appendix B of the Standards for the Management of STIs (British Association for Sexual Health and HIV/Medical Foundation for HIV and Sexual Health): http://www.medfash.org.uk/uploads/files/p18dtqli8116261rv19i61rh9n2k4.pdf.

3. 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.

4. 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 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, 'Specialist SHCs' also includes integrated GUM/SRH clinics.

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Infection reports

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HIV-STIs

Monitoring rates of chlamydia re-testing within the English National Screening Programme (January 2013 to June 2015)

Key points

- Young adults who test positive for chlamydia are at high risk of repeat infection(s) [1-8].
- Since August 2013, the NCSP has recommended that young adults who test positive for chlamydia be routinely offered a re-test around three months after completing treatment.
- This analysis shows that, between January 2013 and June 2015, quarterly rates of re-testing 7-14 weeks after diagnosis have peaked at 14.0% for non-GUM settings and 13.4% in GUM settings. We found no notable change in rates of re-testing following the introduction of the NCSP recommendation.

Background

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 of the index patient or a partner [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 including condom use [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 data tables on chlamydia re-testing rates by PHE Centre area (PHE-C) and lower tier local authority (LA) (available here by PHE-C and by LA for users of the HIV-STI web portal). These data tables are available on an annual basis to aid local monitoring and decision making. A re-testing audit tool is also available here.

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-C for January 2013 to June 2015. Positivity at re-test was calculated for England and PHE-C areas.

Re-testing rates in non-GUM (non-specialist sexual health clinics (SHCs) & community) settings, and in genitourinary medicine (GUM) clinics (specialist SHCs) [1], 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 identification 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 LA with fewer than 10 diagnoses per quarter. The proportion of LAs whose data were included in the analysis has improved over time (table 1).

Table 1. LA data included in PHE-C and England totals, non-GUM settings by quarter, 2013-2015[1]

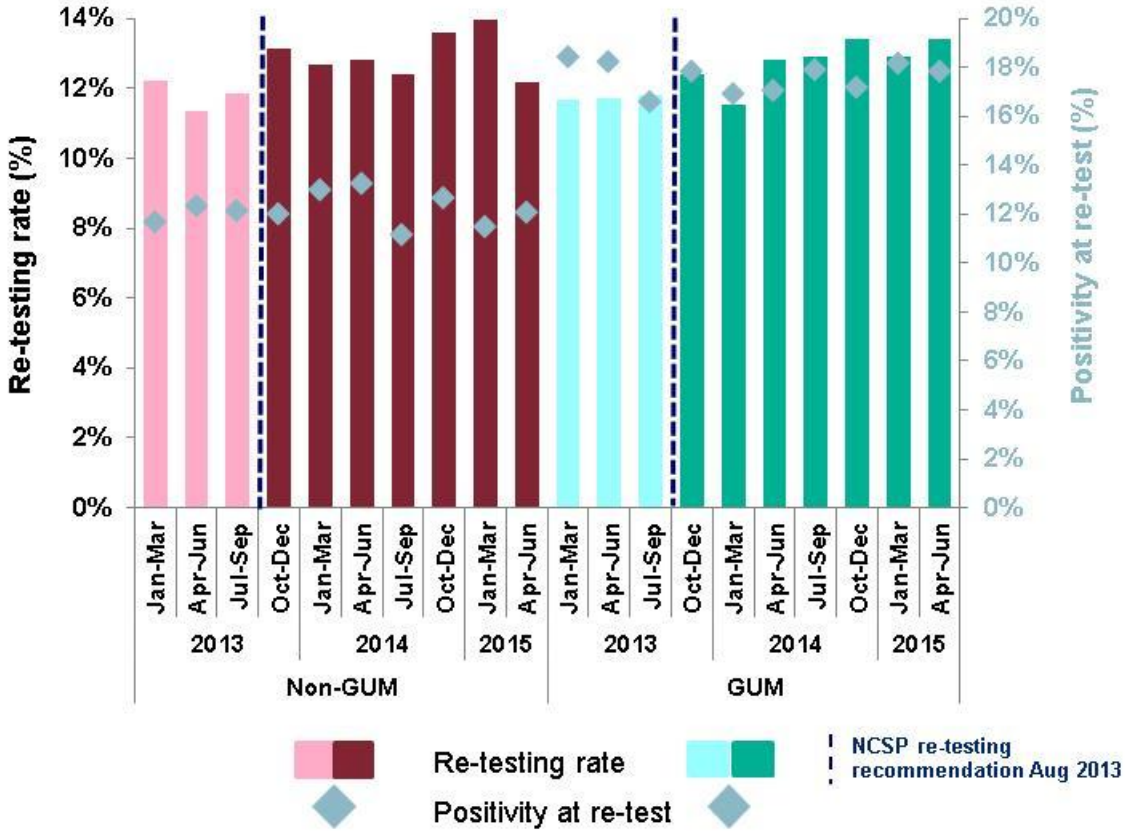
	LAs included		
Quarter	**2013**	**2014**	**2015**
Jan-Mar	75% 243/326	79% 259/326	81% 265/326
Apr-Jun	71% 233/326	79% 258/326	81% 263/326
Jul-Sep	73% 239/326	81% 264/326	–
Oct-Dec	75% 246/326	83% 271/326	–

National rates of re-testing

Since 2013, quarterly re-testing rates for England ranged between 11.3% and 14.0% for non-GUM settings and between 11.5% and 13.4% in GUM settings. The data show no notable change in rates of re-testing following the NCSP recommendation in August 2013. Positivity at re-test was consistently higher in GUM (16.6% - 18.4%) compared to non-GUM settings (11.2% – 13.2%) (figure 1).

[1] Data for Jul-Sep and Oct-Dec 2015 are unavailable at the time this report was processed as the subsequent two quarters of data are required to identify re-tests up to 14 weeks after the end of the reported quarter.

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 2013 – June 2015, 15-24 year-olds, England[2].

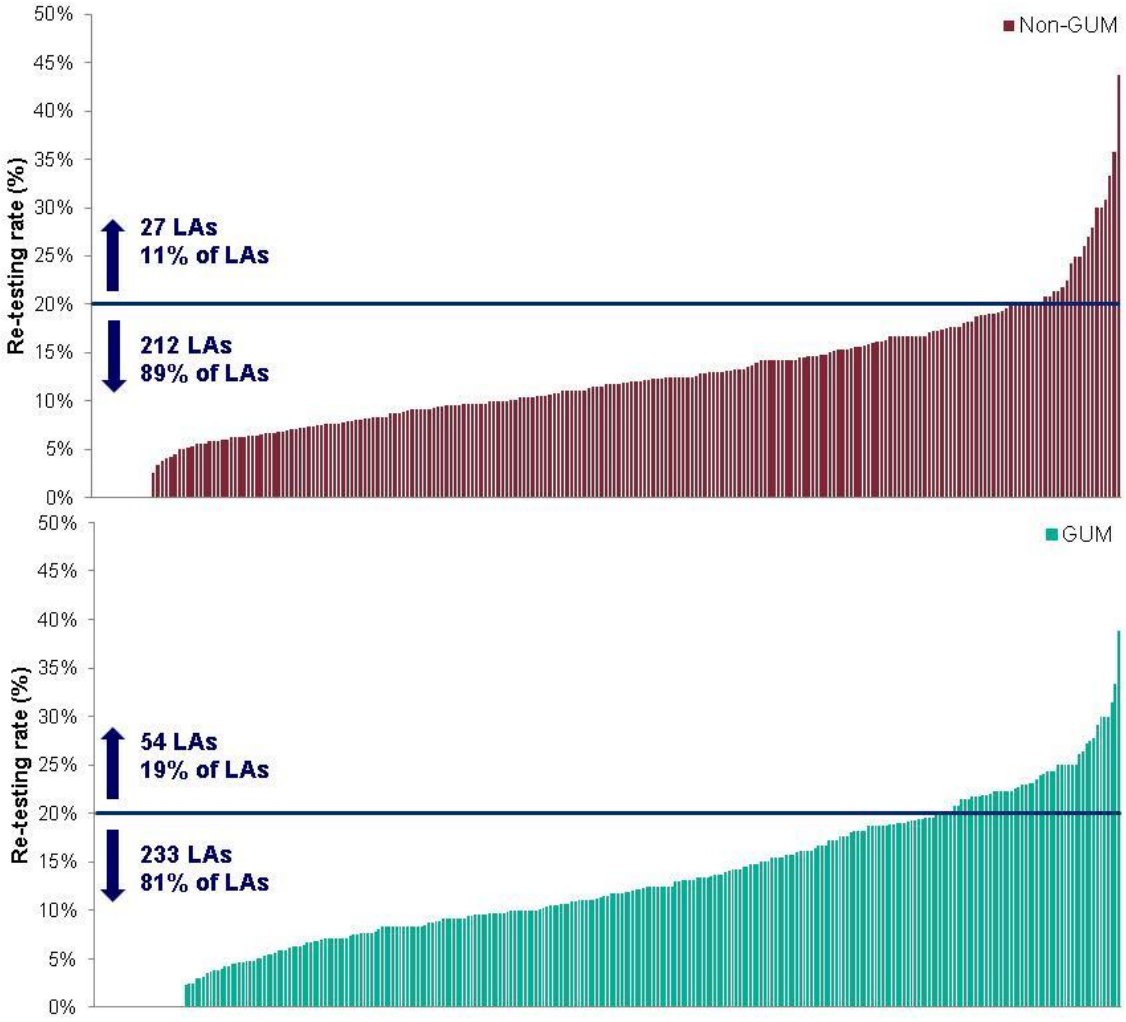


Local rates of re-testing

Rates of re-testing varied considerably by LA. Based on the latest available data rates were consistently below 20% in non-GUM and GUM settings for the majority of LAs across all quarters. Re-testing rates ranged from 0-44% (median 11.8% IQR: 7.9-15.8%) in non-GUM settings and from 0-39% in GUM settings (median 11.5% IQR: 7.4-18.2%) for the latest available data, Q2 2015 (figure 2). Positivity at re-test is not presented by LA as the numbers are too low in many for meaningful interpretation.

[2] Non-GUM rates exclude data from LAs where >20% of records were missing required data items.

Figure 2. Chlamydia re-testing rates within 7-14 weeks following a positive diagnosis by local authority, April – June 2015, 15-24 year-olds, England[3].



Discussion

This report provides an update for monitoring rates of chlamydia re-testing using the two national STI surveillance systems. Despite the limitations of these data (box 1), our findings suggest that in 2015, as few as 1 in 5 chlamydia diagnoses among young adults were followed by a re-test within 7 to 14 weeks.

Since the NCSP recommendation for offer of re-test was incorporated into case management guidance in August 2013 the surveillance data does not provide evidence of an increase in re-testing rates at the national level in either non-GUM or GUM settings. However, we can only measure re-testing coverage; offer of re-test is not captured in surveillance datasets.

Re-testing rates by LA show large variation which may be attributable to small numbers of index diagnoses in many LAs. The majority of LAs 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

[3] LAs excluded where < 10 diagnoses. LAs also excluded from non-GUM analyses where >20% of records were missing required data items.

to explore their local re-testing figures in more detail. The national audit report on chlamydia re-testing is available here.

Positivity at re-test is higher than the positivity seen overall in both GUM and non-GUM settings[4]; 11.7% vs. 7.2% in non-GUM and 18.0% vs. 10.4% 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 3 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] available here. The relative cost of implementing different methods of recall for re-testing is dependent upon existing local practices.

Box 1: 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.
- A proportion of non-GUM records were reported without the data items required to monitor re-testing. Since monitoring began this figure has been reduced from 23% in Q1 2013 to 16% in Q2 2015 and we can be more confident in the accuracy of these re-testing estimates.

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

- Increased completion of data items submitted to CTAD;
- Better accounting of the proportion of patients who are likely to retest in a different service from their initial test, either by moving between GUM services, or between GUM and non-GUM services. We recommend LAs check patient pathways to determine the extent to which this may affect their data.

[4] Re-testing positivity figure based on January-June 2015 data and overall positivity based on January-December 2015 data.

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Infection reports

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HIV-STIs

Shigella infections in England with a focus on sexual transmission between men who have sex with men: laboratory reports 2004 to 2016

Key points

- The epidemiology of shigella in England has changed markedly over the past decade, with non-travel associated cases accounting for a large and increasing proportion of diagnoses, rising from 26% in 2004 to 63% in 2015.
- Most cases of shigella not known to be associated with travel were in men; including 87% of *Shigella. flexneri* 3a, 80% of *S. flexneri* 2a and 59% of *S. sonnei* cases, while diagnoses of shigella in women during 2004-2016 remained low (*S. flexneri*) or stable (*S. sonnei*).
- Overall, male to female sex ratios rose substantially from 2004, and peaked in 2014 at 59:1 for *S. flexneri* 3a and 17:1 for *S. flexneri* 2a, and in 2015 for *S. sonnei* at 3:1.
- The absolute number of shigella cases in men peaked in 2013 for *S. flexneri* 3a, and in 2015 for *S. flexneri* 2a and *S. sonnei* cases, and there has subsequently been a fall in monthly cases of these *Shigella* species. Although transmission levels appear to have fallen it is possible that other *Shigella* species will replace *S. flexneri* 2a and *S. sonnei*.
- Together, these data are consistent with intense levels of sexual transmission in England of shigella among men who have sex with men.
- Clinicians should sensitively assess sexual history when managing men diagnosed with shigella to promote appropriate testing, diagnosis and management, and referral to sexual health services where indicated.

Introduction

This report presents data on the recent trends and epidemiology of shigella in England. Faecal specimens from cases with symptoms of gastrointestinal infection are submitted to local hospital, private and regional laboratories in England for culture of Shiga toxin-producing *Escherichia coli*, *Salmonella*, *Campylobacter,* and *Shigella* species. Local hospital laboratories are recommended to submit presumptive strains of *Shigella flexneri* and other *Shigella* spp. to the Public Health England (PHE) national reference laboratory in London, the Gastrointestinal Bacteria Reference Unit (GBRU), for confirmation and typing, using standard biochemistry and serological tests. Neither sexual behaviour nor sexual orientation are routinely collected as part of this process, but the number of cases associated with sexual transmission among men may be approximated by identifying diagnoses for men and women aged 16 to 60 years and excluding cases where recent travel outside the UK was reported. Given an assumption that equal numbers of men and women would be affected if transmission between men were not a risk factor, excess male cases are deemed likely to be in MSM [1]. Gender ratios are also used to understand the proportion of cases that might be attributable to MSM transmission.

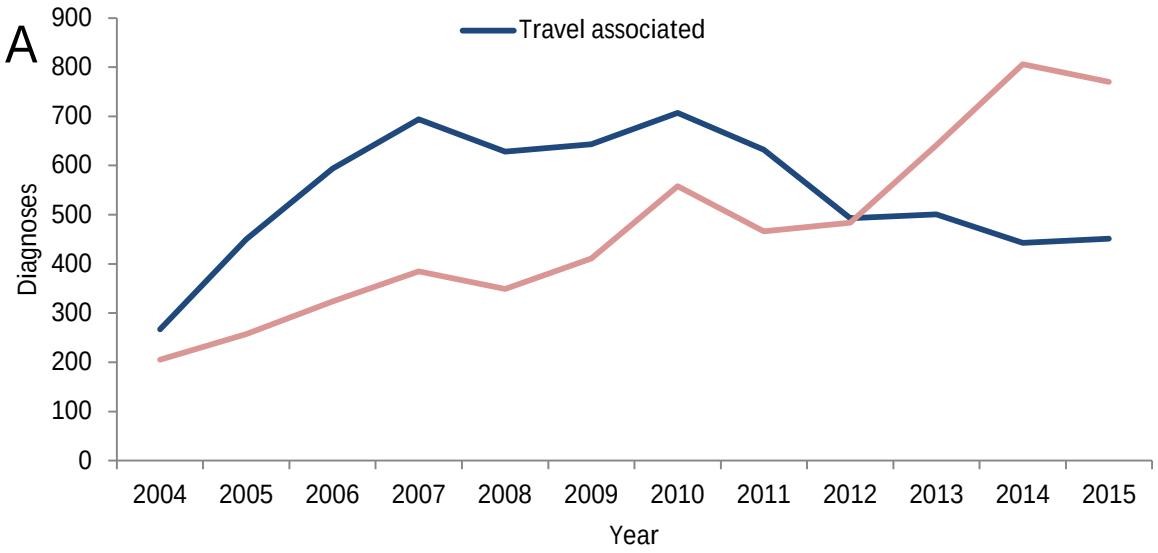
Recent trends in shigellosis in England

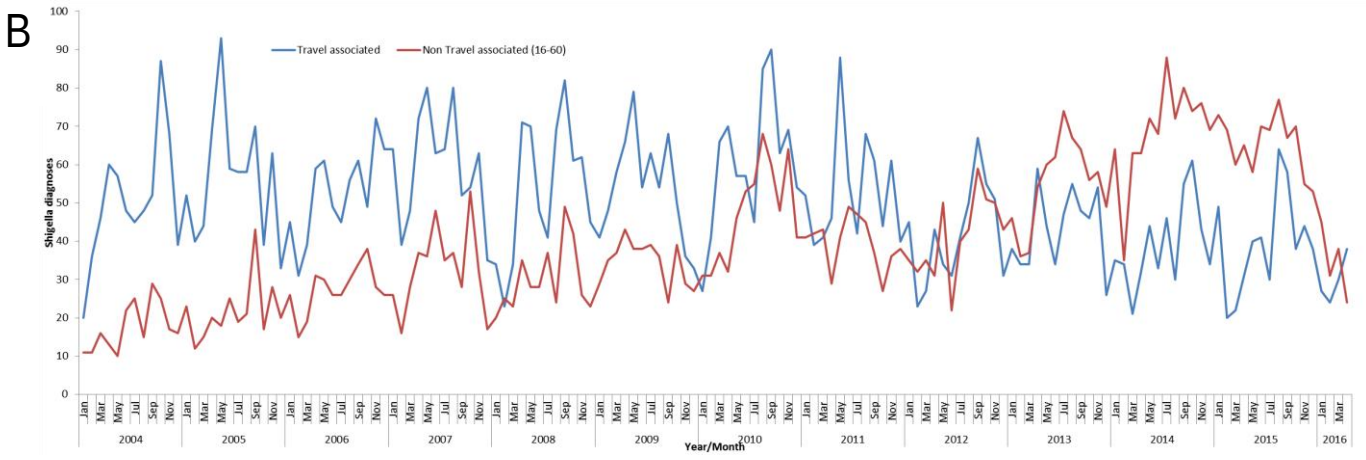
In the past, most shigella diagnoses in England were associated with travel to high-incidence regions. However, since 2004, the number of non-travel associated cases has increased, and in 2012 started to exceed the number of travel associated cases for all ages (figure1A).

Overall, between January 2004 and April 2016, the total number of *Shigella* spp. diagnoses in England among 16 to 60 year olds was 10,851 and of these, 5,910 (54%) were not known to be associated with travel outside the UK. The proportion of non-travel associated cases rose over this period from 26% in 2004 to 63% in 2015.

More recently, the number of non-travel associated cases has declined and fell below the level of travel associated cases in March 2016 for the first time since mid-2013 (Figure 1B).

Figure 1. All diagnoses of shigella in England by year: travel associated (all ages) and non-travel associated (aged 16-60 years) by (A) year 2004-2015 (B) month (2013-2016)





The remainder of this report focuses on diagnoses not known to be associated with travel.

Among those without recent travel history, diagnoses of *S. flexneri* 3a, *S. flexneri* 2a, and *S. sonnei* accounted for 89% (702/786) in 2015, representing a 15% increase from 74% (153/207) in 2004 (table 1B).

Cases in men rose substantially over the same period while cases in women were stable. Gender ratios can be used to track this change; male to female ratios started to rise in 2004 and peaked at 59:1 for *S. flexneri* 3a and 17:1 for *S. flexneri* 2a in 2014, and at 3:1 *S. sonnei* in 2015.

Table 1. Patients aged 16 to 60 years diagnosed with *Shigella* spp. and with no reported history of travel outside the United Kingdom, by sex, and male to female sex ratios, England, 2004-2015

Shigella species	serotype	Gender and sex ratio	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
S. flexneri	1b	Male	8	6	16	18	12	9	8	9	17	8	9	2	122
		Female	5	2	6	5	8	8	4	6	7	10	4	4	69
		ratio	1.6	**3.0**	**2.7**	**3.6**	1.5	1.1	**2.0**	1.5	**2.4**	0.8	**2.3**	0.5	1.8
	2a	Male	9	21	27	18	23	23	51	30	42	75	222	291	832
		Female	8	16	28	22	18	17	14	22	12	13	13	23	206
		ratio	1.1	1.3	1.0	0.8	1.3	1.4	**3.6**	1.4	**3.5**	**5.8**	**17.1**	**12.7**	**4.0**
	3a	Male	3	6	11	11	18	65	77	83	86	154	118	49	681
		Female	5	5	5	6	8	8	10	10	10	15	2	3	87
		ratio	0.6	1.2	**2.2**	1.8	**2.3**	**8.1**	**7.7**	**8.3**	**8.6**	**10.3**	**59.0**	**16.3**	**7.8**
	6	Male	4	5	11	12	6	6	7	9	11	8	4	4	87
		Female	1	10	14	9	13	14	15	12	11	7	2	2	110
		ratio	**4.0**	0.5	0.8	1.3	0.5	0.4	0.5	0.8	1.0	1.1	**2.0**	**2.0**	0.8
	other	Male	11	6	9	21	15	14	33	31	45	37	36	39	297
		Female	7	4	13	9	8	15	15	13	11	16	12	18	141
		ratio	1.6	1.5	0.7	**2.3**	1.9	0.9	**2.2**	**2.4**	**4.1**	**2.3**	**3.0**	**2.2**	**2.1**
S. sonnei	N/A	Male	77	73	52	86	83	90	148	136	146	192	268	257	1608
		Female	51	72	90	124	98	125	136	87	64	99	108	79	1133
		ratio	1.5	1.0	0.6	0.7	0.8	0.7	1.1	1.6	2.3	1.9	**2.5**	**3.3**	**1.4**
S. boydii	N/A	Male	9	7	18	14	13	5	10	5	5	13	10	4	113
		Female	5	11	13	15	17	9	20	11	9	13	9	7	139
		ratio	1.8	0.6	1.4	0.9	0.8	0.6	0.5	0.5	0.6	1.0	1.1	0.6	0.8
Dysenteriae	N/A	Male	2	3	2	4	12	2	7	2	4	1	2	0	41
		Female	2	6	4	10	4	4	10	7	11	2	5	4	69
		ratio	1.0	0.5	0.5	0.4	3.0	0.5	0.7	0.3	0.4	0.5	0.4	0.0	0.6
Species unidentified	N/A	Male	1	4	5	5	2	0	0	0	0	0	0	0	17
		Female	2	4	5	4	2	0	1	2	0	0	0	0	20
		ratio	0.5	1.0	1.0	1.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Total			207	253	319	384	356	414	565	473	491	663	824	786	5735

NA: not applicable
The male to female sex ratios ≥ 2.0 are highlighted in bold

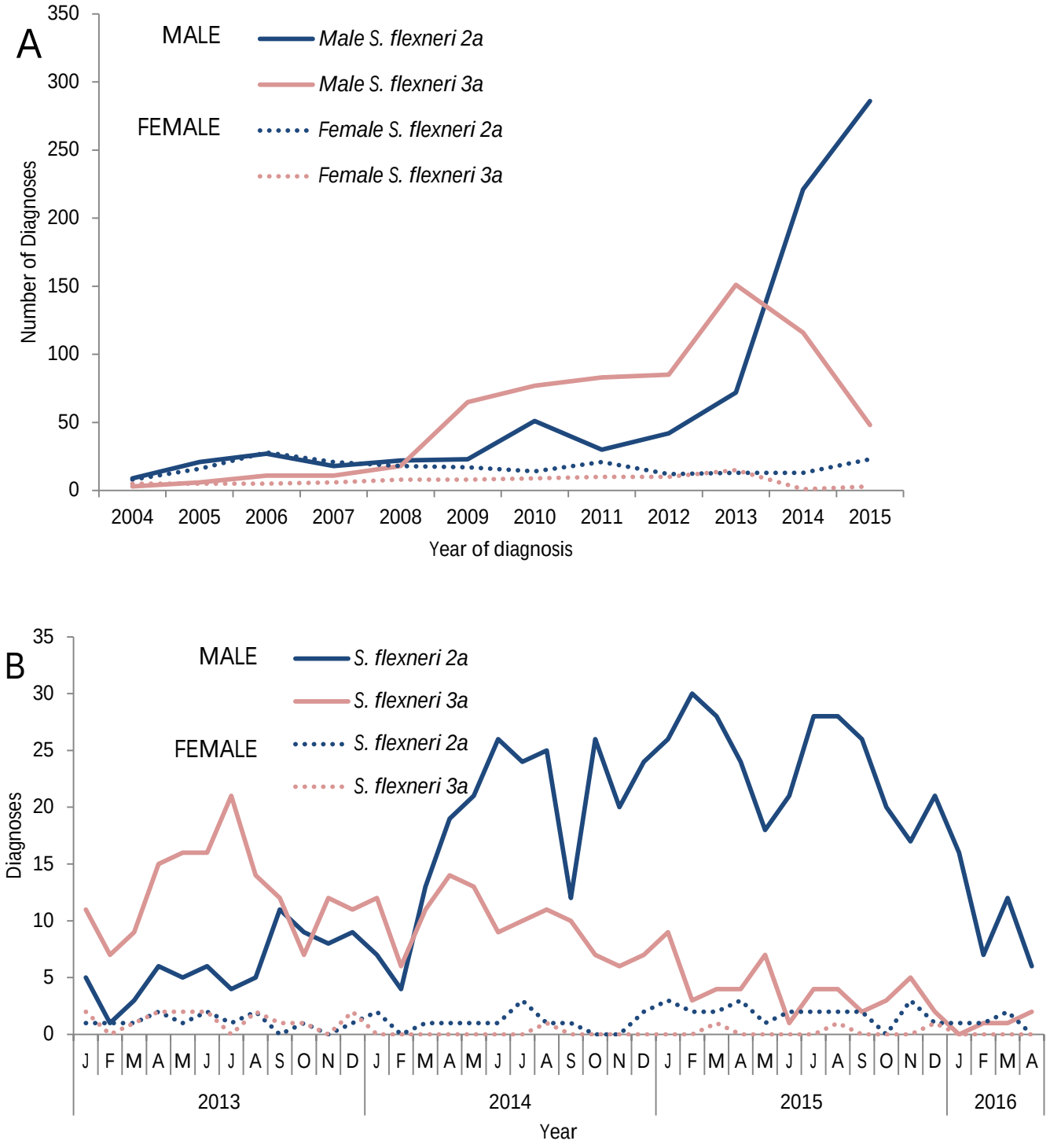
S. flexneri

Diagnoses of *S. flexneri* 3a in men increased steadily from 2004 to 2013 (from 3 to 151 cases), with sharp increases noted in 2009 and 2013, but fell in 2014 (116 cases) and this fall continued through 2015 (51 cases). Diagnoses in women during this period remained low (table1A; figure 2A).

Diagnoses of *S. flexneri* 2a in men followed a similar pattern, although increases emerged later, rising from a baseline of nine cases in 2004 with peaks in 2010 (50 cases) and 2015 (286 cases); diagnoses in women during this period also remained low (table1A; figure 2A).

Monthly reporting has shown that a switch in the predominant serotype of *S. flexneri* from type 3a to type 2a occurred from March 2014. Monthly data suggest that the number of male cases of *S. flexneri* 2a has been decreasing since August 2015 and is now at levels last observed in February 2013 (table1B; figure 2B).

Figure 2. Patients aged 16 to 60 years diagnosed with *S. flexneri* serotypes 2a and 3a, with no reported history of travel outside the United Kingdom, by sex, England, (A) annually 2004-2015 and (B) monthly January 2013 - April 2016.

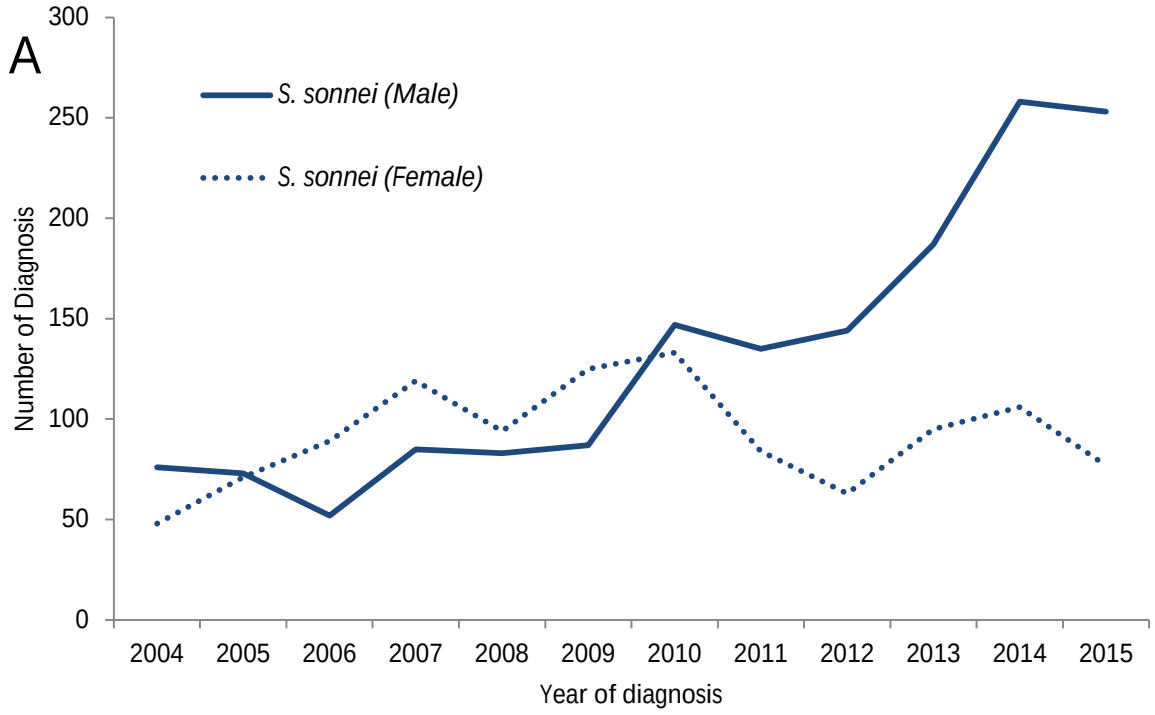


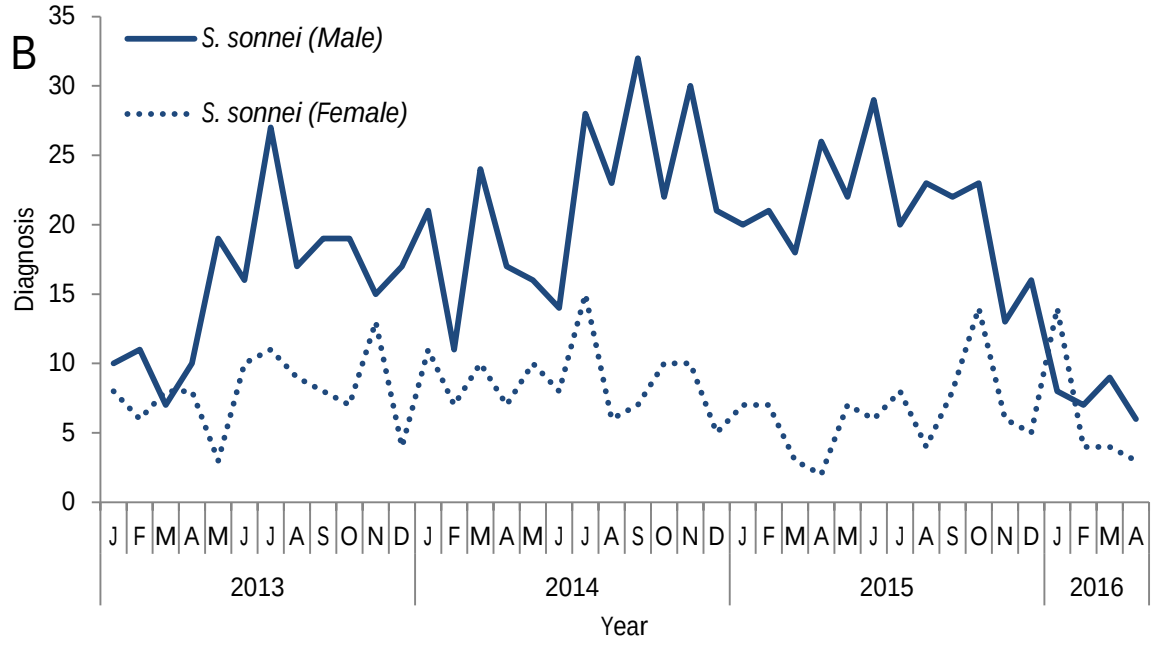
S. sonnei

Annual diagnoses of *S. sonnei* in men began to exceed those in women (139 compared with 127 cases) in 2010, and have since risen steadily in men (253 cases in 2015) while remaining stable in women (table 1A; figure 3A).

Monthly surveillance data suggest that *S. sonnei* diagnoses in men peaked in July 2015 (29 cases), but started to drop from October 2015 and by March 2016 reached lower levels not seen since March 2013 (table 1B; figure 3B).

Figure 3. Patients aged 16 to 60 years diagnosed with *S. sonnei*, with no reported history of travel outside the United Kingdom, by sex, England, (A) annually 2004-2015 and (B) monthly January 2013 - April 2016.





Between 2004 and 2015, the age distribution for cases of *S. flexneri* 3a, *S. flexneri* 2a, and *S. sonnei* was similar for men and women: 65% (2,024/3,121) of male cases and 60% (851/1,426) of female cases were in those aged 25 to 44 years. However, geographic distribution differed: 65% (2,043/3,121) of male cases of *S. flexneri* 2a, *S. flexneri* 3a and *S. sonnei* were reported by laboratories in London, Manchester, or Brighton, whereas only 37% (528/1,426) of female cases were from these areas.

Discussion and conclusions

These laboratory data suggest three waves of shigella transmission has occurred in England among adult men since 2009. The first was of *S. flexneri* 3a from 2009 to 2013, which was replaced by waves of *S. flexneri* 2a and then *S. sonnei* between 2011 and 2015. Diagnoses in women throughout this period have remained stable. These data strongly suggest intense shigella transmission between MSM during these periods and are consistent with a previously reported epidemic of shigellosis in England associated with sexual transmission between men [2,3]. Surveillance systems will tend to underestimate the total numbers of infections occurring in the population due to cases not presenting to healthcare settings and/or not providing diagnostic faecal samples, and these data are likely to underestimate the true number of cases occurring.

The number of shigella cases in men appears to have fallen over the past six months until March 2016, which may be due to several reasons, including that the number of susceptible at risk individuals in the population has fallen, and that infection control and shigella awareness messages might have contributed to less risky sexual behaviour in MSM (although no decrease has been observed in diagnoses of other STIs in MSM over the same period). It remains possible that a different *Shigella* species / serotype or another gastrointestinal pathogen might replace *S. flexneri* 2a and *S. sonnei*, and surveillance systems and clinicians should monitor for any such change.

The emergence of shigella epidemics in MSM in England has coincided with rapid increases in diagnoses of gonorrhoea, lymphogranuloma venereum, and syphilis among MSM [4-6], as well as clusters of other sexually transmissible enteric pathogens, and many of these men are co-infected with HIV. This syndemic of STIs has been linked to dense sexual networks among MSM diagnosed with HIV, reporting of large numbers of sexual partners, chemsex (sexual activity under the influence of stimulant drugs), and meeting sex partners at sex parties through social media networking applications [2,3].

MSM with shigella may present to a range of healthcare settings, and often not to specialist sexual health clinics. In the event of shigella diagnosis in men, particularly where this is not associated with travel to an endemic area, a sexual history should be sensitively obtained. Patients reporting same sex partners are likely to be at risk of other STIs and HIV co-infection, and clinicians should consider referral to sexual health services for appropriate HIV/STI screening, partner notification and prevention advice. In addition to advice about handwashing, personal hygiene, and returning to work [7], MSM diagnosed with shigella should be advised about the risk of sexual transmission and to avoid sexual activity for at least one week after symptoms cease.

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Infection reports

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HIV-STIs

Lymphogranuloma venereum infections in England 2004 to 2016

Key Points

- LGV diagnoses have continued to increase in the UK; diagnoses rose by 40% from 2014 to 2015 (679 to 948)
- In 2015, most cases of LGV were among white MSM aged 25-44 years (87%), living in London (80%) and diagnosed with HIV (65%)
- Most cases of LGV in 2015 were diagnosed with another STI or blood borne virus in the same year
- Clinicians should maintain a high index of suspicion for LGV and consider testing, including in asymptomatic MSM with HIV

Introduction

This report presents data on the recent trends and epidemiology of *Lymphogranuloma venereum* (LGV) in the United Kingdom (UK). Primary diagnostic laboratories submit specimens from patients with symptoms compatible with LGV and diagnosed with *C. trachomatis* in England, Wales and Northern Ireland, and their sexual contacts with *C. trachomatis,* to the Public Health England national reference laboratory, the Sexually Transmitted Bacteria Reference Unit (STBRU) in London for typing [1]. Specimens from asymptomatic HIV-positive men who have sex with men (MSM) diagnosed with *C. trachomatis* have recently been included [2]. In Scotland, specimens are submitted to the Scottish Bacterial Sexually Transmitted Infections Reference Laboratory (SBSTIRL) in Edinburgh. Since August 2015, one primary diagnostic laboratory in England has carried out LGV typing and submits the data directly to PHE through the chlamydia testing activity dataset [3] . The combined dataset is cleaned and validated according to a standard protocol. Further information on LGV cases diagnosed in England is available from the Genitourinary Medicine Clinic Activity Dataset (GUMCADv2), which collected anonymised patient-level electronic data from all GUM clinics in England [4].

Trends in confirmed laboratory reports in the UK, 2003 to March 2016

Between 1st January 2003 and 31st March 2016 there were 4,663 LGV diagnoses in the UK. Of these, 4,674 (99.7%) were in men, and 245 men had repeat diagnoses (see figure). Overall, the trend in the number of LGV cases each year has been upward, with three rapid increases in 2005 (220 cases), 2010 (510 cases) and 2014 (677 cases). In the intervening periods numbers of diagnoses have been stable or falling. The highest annual number of diagnoses in the UK LGV epidemic was reported in 2015 (946 cases); a continuation of the rapid increase seen in 2014. The number of diagnoses have continued to rise in the first quarter of 2016.

Case characteristics among clinical reports in England, 2015

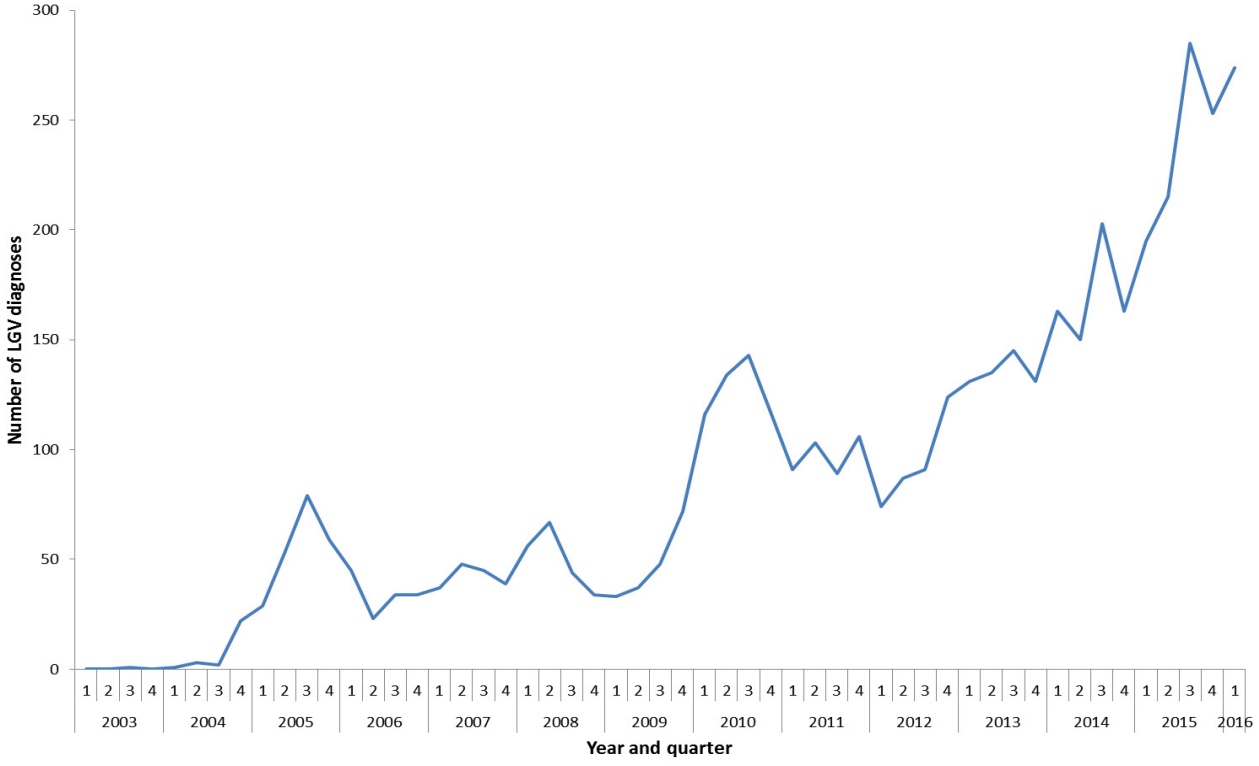
In 2015, 12,503 diagnoses of *C. trachomatis* among MSM and 666 LGV cases in MSM in England were reported to GUMCADv2. Among the group of MSM with LGV reported, the median (IQR) age at LGV diagnosis was 37 (range: 17–73) years, around half were born in the UK (327, 49%), most were white (509, 76%), and most were living in London (532, 80%). Around two thirds of these MSM were diagnosed with HIV (436, 65%), and in nearly all cases were diagnosed with HIV before (330, 76%) or at the same time as their LGV diagnosis (89, 20%). Many patients were diagnosed with another STI or blood borne virus infection during 2015 (416, 62%); these infections included gonorrhoea (349, 52%), syphilis (124, 19%) and hepatitis C (23, 3%) (see table).

Discussion and conclusions

LGV diagnoses in the UK have risen rapidly over the past twelve years, with a sharper increase observed in the past three years. While some of the recent increase may reflect new national guidelines advising testing of asymptomatic HIV-positive MSM with *C. trachomatis* for LGV [2], these data indicate continued high levels of LGV transmission among MSM, particularly in London, and emphasise the high risk of other STIs in MSM diagnosed with LGV. Around two thirds of cases had previously diagnosed HIV, and a similar proportion had at least one other STI or BBV diagnosed in the same year. The trend in LGV diagnoses parallels those seen for syphilis and gonorrhoea and together these data suggests the sexual health of MSM is worsening [5].

About a quarter of LGV infections are in patients without rectal symptoms and it is possible that an undiagnosed reservoir of infection is contributing to transmission [6]. It is therefore important that clinicians have a low index of suspicion for LGV, and routinely test asymptomatic HIV-positive MSM diagnosed with *C. trachomatis* to ensure appropriate treatment and partner management [7]. At the same time, public health messages should be reinforced to raise awareness of LGV among both clinicians and patients.

Number of cases diagnosed with *Lymphogranuloma venereum*, per quarter, United Kingdom, 2003 to end March 2016 (n=4,663)



Characteristics of MSM patients diagnosed with LGV at GUM clinics reported through GUMCADv2 in England, 2015

Characteristic	Number	Percentage
Total number of patients	666	100
Age grouping		
15-24	45	7
25-34	254	38
35-44	231	34
45-44	99	15
55-64	26	4
Above 65	5	1
Other *	6	1
Other STI or blood borne virus infection diagnosed in 2015		
Gonorrhoea	349	52
Syphilis	124	19
Genital herpes	22	3
Genital warts (first episode)	9	1
Hepatitis C	23	3
No other STI or BBV infection	250	38
HIV status		
Positive	436	65
Negative/Unknown	230	35
Proximity of HIV diagnosis to LGV diagnosis**		
HIV>3 months before LGV	299	69
HIV 0–3 months before LGV	31	7
Same date	89	20
HIV 0–3 months after LGV	13	3
HIV>3 months after LGV	4	1
Area of residence		
London	532	80
Outside London	134	20
Country of birth		
United Kingdom	327	51
Outside United Kingdom	339	49
Ethnicity		
White	509	76
Asian	28	4
Black	33	5
Mixed	27	4
Other	69	10

* Other age group represents cases aged 0-15 and those of unknown age

** Of 436 MSM who were HIV positive

Note: A total of 717 LGV cases were reported in GUM clinics in England in 2015, 24 women and 27 men (13 heterosexual and 14 unknown sexual orientation) were excluded from the analysis because they may represent miscoding

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