Public Health England

Protecting and improving the nation's health

HIV in the United Kingdom: Towards Zero HIV transmissions by 2030

2019 report

Data to end of December 2018

To be read in conjunction with Appendix and National data tables

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Public Health England exists to protect and improve the nation's health and wellbeing and reduce health inequalities. We do this through world-leading science, research, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

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Contents

This report is published alongside the online HIV data tables and the Sexual and Reproductive Health Profiles released in September 2019[i]. The data tables provide detailed breakdowns of national data for people newly diagnosed with HIV and people accessing HIV care in the UK. The profiles include measures of HIV testing coverage, repeat HIV testing, new HIV diagnosis, late HIV diagnosis, diagnosed HIV prevalence, prompt antiretroviral treatment (ART) initiation and virological success.

The appendix to accompany this report can be found here: www.gov.uk/government/publications/hiv-in-the-united-kingdom

[i] Please note that new HIV diagnoses data were updated and republished on 1 October 2019 following a correction to the data for a single locality

Terminology

Combination HIV prevention: A mix of biomedical, behavioural and structural interventions, prioritised to meet the current HIV prevention needs of particular individuals and communities, so as to have the greatest sustained impact on reducing new infections. Combination prevention programmes should be rights-based, evidence-informed and community-owned (1).

Community HIV testing: HIV testing performed by community organisations (these are outside the National Health Service or private clinics), which may involve different types of specimen collection methods (for example point-of-care tests (POCTs) or specimen collection as dried blood spot or capillary tube).

Diagnosed HIV prevalence bands are based on the number of people diagnosed with HIV and accessing care at HIV outpatient clinics in a given year. They are expressed per 1,000 residents aged 15 to 59 years[ii]:

- **low**: HIV prevalence less than 2 in 1,000
- **high**: HIV prevalence between 2 and 5 in 1,000
- **extremely high**: HIV prevalence of 5 or more in 1,000

Gay and bisexual men (GBM): An inclusive term for gay, bisexual and other cis or trans men who have sex with men.

Gender and gender identity: In this report, men and women are defined as cis and trans adults aged 15 years and over who self-identify as a man or a woman. Due to small numbers, persons who identify as non-binary or in another way are not shown in binary gender breakdowns.

GUMCAD sexually transmitted infection (STI) surveillance system: A mandatory, disaggregated, pseudo-anonymised data return submitted by all commissioned sexual health services across England. The GUMCAD dataset includes information on all STI diagnoses made and services provided alongside demographic characteristics for every clinic attendance. The system enables the timely analysis and publication of routine STI data, detailed analyses of risk groups and longitudinal analyses of clinic attendees.

Heterosexual men and women: Within the HIV testing section of this report, this refers to people whose sexual orientation was reported as heterosexual at the time of their HIV diagnosis/STI clinic attendance. These data come from the GUMCAD dataset which collects sexuality and gender identity.

[ii] Diagnosed HIV prevalence bands for local authorities can be found at Sexual and Reproductive Health Profiles

HIV probably acquired heterosexually: Within the context of an HIV acquisition this refers to people who probably acquired their HIV infection through heterosexual sex (as opposed to how they identify sexually). This term is used in the new HIV diagnoses, incidence and people in HIV care and treatment sections of the report.

HIV test coverage: The percentage of eligible sexual health service (SHS) attendees who had an HIV test. It is based on the number of attendees tested for HIV (and not the number of tests reported).

Late HIV diagnosis: A person who has a CD4 cell count <350 cells/mm^3 within 91 days of their HIV diagnosis.

Reactive HIV result: This applies to all first tests of HIV which indicate the presence of HIV antibodies or antigens including: self-testing, self-sampling, point-of-care testing (POCT) and 4th generation serology laboratory tests. All first test results reported as reactive need a second confirmatory test.

Recent infection testing algorithm (RITA) programme: An algorithm used to distinguish a recently acquired HIV infection (usually within last 4 to 6 months) from one that is long-standing among newly diagnosed persons. It relies on a biomarker assay applied to the original new diagnosis blood sample, the CD4 cell count at diagnosis, and evidence of antiretroviral treatment (ART) or an AIDS-defining illness at the time of diagnosis.

Self-sampling HIV kits/test: A test in which the specimen to be tested is taken by the individual and sent to a laboratory or clinic for processing.

Self-testing HIV kit: A test carried out and interpreted by the individual undergoing the test.

Seroconversion: The initial period of infection following exposure to an infectious agent which is characterised by changes to the immune system (and therefore antibodies in the blood) and may be associated with a short non-specific illness.

Sexual health services (SHS) include:

- **non-specialist or level 2 sexual health services**: including sexual and reproductive health (SRH) services, young people's services, enhanced general practice (GP) services, online sexual health services and other sexual health services
- **specialist or level 3 sexual health services**[iii]**:** including genitourinary medicine (GUM) and integrated GUM/sexual and reproductive health (SRH) services

[iii] Further information about the level of services provided can be found in the BASHH/MEDFASH Standards for the management of STIs[iv] Defined as having less than 200 copies per millilitre of blood

Sexual health service (SHS) attendees eligible for HIV testing: These are attendees at SHS not known to be HIV positive who should be offered HIV testing according to current guidelines. They exclude persons for whom an HIV test was not appropriate, or for whom the attendance was reported as being for reproductive healthcare only.

Treatment as Prevention (TasP): People with HIV are unable to pass on the infection sexually if they are on treatment and have undetectable levels of the virus. This is also referred to as **Undetectable = Untransmittable (U=U).**

Vertical transmission of HIV: Transmission of HIV from a mother to their child during pregnancy, delivery or breastfeeding (also known as mother-to-child-transmission of HIV).

Unprotected sex: HIV can be transmitted sexually if no protection is used and the sexual partner with HIV has a detectable viral load[iv]. Protective methods include condom use, use of pre-exposure prophylaxis (PrEP) or use of ART to achieve an undetectable viral load.

[iv] Defined as having less than 200 copies per millilitre of blood

1. Summary findings

New HIV diagnoses and incidence

After a peak of new HIV diagnoses in the United Kingdom in 2014, a rapid decline has been observed from 6,278 in 2014 to 4,453 in 2018. This decline was particularly marked among gay and bisexual men (GBM) in whom diagnoses fell by 35% from 3,480 in 2014 to 2,250 in 2018)[v]. The steepest fall was observed among GBM who are white, born in the UK, aged 25 to 49 and residing in London.

The number of new HIV diagnoses in people who acquired HIV heterosexually has almost halved over the past decade from 3,400 in 2009 to 1,940 in 2018[v]. The steepest declines were in London residents, in those aged 25 to 34 years, in persons of black African ethnicity and those born abroad. Nearly half of all adults diagnosed in 2018 who acquired HIV heterosexually were born in a country of high HIV prevalence.

The fall in underlying incidence of HIV infection has continued. In GBM, the number of incident infections has declined by 71%, from a peak of around 2,800 new infections (95% credible interval (CrI) 2,600 to 3,000) in 2012 to 800 (CrI 500 to 1,400) in 2018. The estimated number of newly acquired HIV infections among men who acquired HIV heterosexually halved from 550 (CrI 400 to 650) in 2014 to 250 (CrI 150 to 350) in 2017. Equivalent estimates for women who acquired HIV heterosexually were 450 (CrI 350 to 600) and 350 (CrI 250 to 450).

Prevalence of undiagnosed HIV infections and late diagnosis

In 2018, there were an estimated 7,500 (CrI 5,400 to 11,500) people living with an undiagnosed HIV infection in the United Kingdom with 6,700 (CrI 4,900 to 10,100) in England. The number of GBM living with undiagnosed HIV infection has halved since 2014 to 3,600 (CrI 2,800 to 4,800) in 2018.

Twice as many people with undiagnosed HIV infection in England lived outside of London, 4,500 (CrI 3,000 to 7,500) compared to 2,100 (CrI 1,500 to 3,300) in London. While credible intervals overlap, this was also the case for GBM, 1,100 (CrI 600 to 2,200) in London and 2,400 (CrI 1,100 to 5,100) outside London, and for heterosexual men and women, 900 (CrI 700 to 1,500) in London and 2,000 (CrI 1,500 to 3,400) outside London.

[v] After adjusting for missing exposure information

The number of heterosexual black Africans in England who were unaware of their infection continued to decline with an estimated 1,200 (CrI 900 to 1,600) in 2018, two-thirds of whom were women, and three-quarters were outside London. An estimated 1,700 (CrI 1,100 to 3,500) heterosexual, non-black African adults in England were unaware of their infection. One half were women (800 CrI 600 to 1,100) and two-thirds lived in England outside of London (1,200 [CrI 800 to 2,600]).

There were an estimated 100 (CrI 30 to 400) people who inject drugs (PWID) living with an undiagnosed HIV infection in the United Kingdom in 2018. Of those who participated in the Unlinked Anonymous Monitoring (UAM) Survey of PWID, an estimated 1.2% (95% confidence interval [CI] 0.8 to 1.7) were living with HIV and nearly all (96%) were aware of their status.

The number of people diagnosed late decreased from 3,353 in 2009 to 1,883 in 2018[vi], representing a 44% decline over the decade. Nevertheless, the proportion of late diagnoses in 2018 remained high at 43%. There was substantial variation in sub-populations experiencing late HIV diagnosis rates. The highest rates were among black African men (65%), white men who acquired HIV heterosexually (59%), people aged over 50 years (59%) and people who inject drugs (58%).

Quality of clinical care and Treatment as Prevention (TasP)

In 2018, the UK continued to exceed all of the UNAIDS 90:90:90 targets. Of the 103,800 people (CrI 101,600 to 107,800) living with HIV, 93% were diagnosed, 97% of people diagnosed were receiving treatment and 97% of people receiving treatment were virally suppressed.

In 2018, treatment coverage was 97% among those accessing HIV care. Excluding those not linked to care, 78% of people newly diagnosed with HIV started treatment within 91 days of diagnosis in 2018 compared to 53% in 2015. Younger people and PWID were less likely to start treatment within 3 months of diagnosis.

Although retention in HIV care is high (98%), an estimated 1,800 people living with diagnosed HIV infection were not seen for HIV care in 2018. This included 300 people diagnosed in 2018 but not linked to HIV care and 1,500 people previously diagnosed who were not recorded as accessing care for at least 18 months.

An estimated 13,100 to 15,600 people were living with transmittable levels of virus in 2018, equivalent to 13% to 15% of all people living with HIV. Overall 7,500 were undiagnosed and up to 8,100 were people living with diagnosed HIV. Among those diagnosed, 22% are either not linked or not retained in care, 34% are not treated and 43% have no evidence of viral suppression.

[vi] Adjusted for missing CD4 count information

HIV Testing in specialist and non-specialist sexual health services (SHS)

Over 1.1 million attendees were tested for HIV in all SHS, an increase of 6% from 2017. Due to the steady fall in the numbers of undiagnosed HIV infections, the number of tests that are now needed to diagnose one new HIV infection has increased and the proportion of tests that are positive has fallen. Overall test positivity declined from 0.2% in 2017 to 0.1% in 2018. For heterosexual men and women, HIV test positivity remained low at 0.1% and among black African heterosexual men and women it fell to 0.3% and 0.4% respectively. Test positivity among GBM has been steadily decreasing and is now 0.7%.

In SHS overall, HIV test coverage was 61% with 760,031 eligible attendees reported as not tested for HIV. Although coverage was higher at specialist SHS than non-specialist SHS, 71% (543,236) of the eligible attendees who were not tested for HIV had attended specialist SHS, including 376,232 heterosexual women, 103,613 heterosexual men, and 15,417 GBM. Nearly half of the eligible specialist SHS attendees who were not tested had not been offered an HIV test while the other half declined the test offer.

Specialist SHS HIV testing in rest of England compared to London

Specialist SHS outside London were less likely to offer HIV tests to eligible service attendees than those in London (81% vs 88%) and across all exposure groups. As most eligible attendees went to specialist SHS outside London, this meant that 80% of specialist SHS attendees who were not offered an HIV test were seen at services outside London. The difference was greatest for heterosexual women attendees, 88% of whom were offered an HIV test in London compared to 79% outside London.

Coverage of HIV testing among black African and non-black African heterosexuals

The largest group of eligible attendees who were not tested at specialist SHS were non-black African heterosexual women attending services outside London. Over one quarter of a million (273,562) of these women were not tested for HIV in 2018, accounting for 49% of all eligible attendees who were not tested at specialist SHS.

HIV test coverage among black African heterosexual men and women (83% and 65%) was higher than among non-black African heterosexual men and women (77% and 56%). This was because 14% of black African heterosexuals declined a test offer compared to 21% of non-black African heterosexuals.

HIV testing of GBM

In 2018, 127,633 GBM were tested for HIV in SHS, a 9% increase from the previous year. Test positivity among GBM has fallen to 0.7% from 0.9% in 2017. The proportion of repeat testers (one or more HIV tests during the previous year at the same specialist SHS) increased to 45% (compared to 42% in 2017). The positivity rate in repeat testers also fell from 0.4% in 2017 to 0.3% in 2018.

In 2018, 46% of GBM testing in specialist SHS had not tested in the previous 2 years (at the same service). These men made up 75% of HIV diagnoses made among GBM at specialist SHS (1.3% positivity).

Less than half of GBM diagnosed with an anogenital bacterial STI in 2017, tested for HIV at the same service in the following year. Test positivity within this group was 4.9%, with one HIV infection diagnosed for every 21 men tested.

Other HIV testing services

Sentinel laboratory surveillance indicated that there was an increase in HIV testing in general practices in extremely high prevalence areas from 129 tests per 10,000 in 2016 to 156 tests per 10,000 in 2018 with smaller increases in other prevalence areas. HIV test positivity rates fell to 0.3% in extremely high prevalence areas, and 0.2% in practices in both high and low prevalence areas. Sentinel laboratory surveillance indicated that HIV test positivity was 0.7% in Accident and Emergency (A&E) departments, and 0.5% in other secondary care settings.

In 2018/19, 57,635 people newly arriving into or transferring between prisons were tested for HIV, an increase of 39% since 2017/18. Test coverage was 34% and test positivity was 1.2%.

Over a quarter of a million HIV tests were performed, sold or distributed in community and home settings in England. This included 138,453 *e*Sexual Health Service and 127,083 other online or community-based tests. These comprised 24,113 self-sampling test kits returned via the national HIV self-sampling service; 56,712 self-testing HIV kits bought by individuals or distributed via retailers; and 46,258 HIV tests reported through a survey of HIV testing in community settings[vii]. Test reactivity was available for the national HIV self-sampling scheme (0.5% high reactivity, 0.9% total reactivity) and for the community HIV testing survey (0.4% overall reactivity).

[vii] The Public Health England Community HIV Testing Survey is an annual national survey delivered to providers of HIV testing in community settings, which helps to assess how well national recommendations on community HIV testing are being implemented in England

Partner notification (PN)

Partner notification is highly effective in diagnosing people who have HIV and diagnosing HIV as promptly as possible (2). Of the 1,467 PN contacts who tested for HIV in 2018, 57 new HIV diagnoses were made. This represents an overall HIV test positivity among contacts of 3.9%, almost 24 times the overall test positivity for HIV tests performed in specialist sexual health services (0.2%).

Pre-Exposure Prophylaxis (PrEP)

All UK countries have scaled up access to PrEP, with a national programme in Scotland, a pilot programme in Wales, a 2-year project in Northern Ireland, and the Impact Trial in England. By the end of 2018, it is estimated that between 13,000 and 19,500 persons, across the UK, predominantly GBM, were taking PrEP (with approximately 13,000 on publicly funded trial/clinic PrEP and an additional 6,500 taking PrEP through self-purchase).

Needle and Syringe Provision (NSP) for People who inject drugs (PWID)

Although the prevalence of HIV remains low, outbreaks of HIV among PWID continue to occur, notably the ongoing incident in Glasgow. Around one in 5 PWID who injected in the past 4 weeks reported sharing of needles or syringes, a significant source of risk for bacterial infection and bloodborne virus (BBV) transmission. Needle and syringe provision (NSP) in the UK is suboptimal and varies by geography; around 3 in 5 PWID reported adequate provision in England, Wales and Northern Ireland in 2018 and around 80% reported adequate provision in Scotland in 2017/18.

2. Key messages

HIV prevalence, incidence and HIV care

There is evidence that combination prevention (including condom use, expanded HIV testing, prompt ART and the availability of pre-exposure prophylaxis (PrEP)) is working in the UK. For the third consecutive year, there have been steep declines in new diagnoses in GBM – the group with the highest transmission rate. Further declines and the possibility of eliminating transmission of HIV in the UK will depend upon sustained prevention efforts and expansion to reach all.

HIV testing

As it becomes progressively more challenging to discover and care for those living with undiagnosed HIV, it is essential that existing testing guidelines are fully implemented, and that these policies are applied equally in all parts of the country.

Over half a million people (35% of those eligible for testing) were not tested for HIV when they attended a specialist SHS in 2018. Specialist SHS should consider how they can improve coverage to match the 99% achieved by antenatal screening services.

GBM who have had an anogenital bacterial STI within the last year have a high risk of acquiring HIV. When attending specialist SHS, they and other men who are having unprotected or casual sex with men, should be encouraged to have an HIV and STI screen every 3 months.

GBM who have not tested within the last 2 years (at the same specialist SHS) were more likely to test positive for HIV compared to GBM who tested more recently. Public messaging should prompt them, and all men who have ever had sex with another man, to test for HIV.

Full implementation of national HIV testing recommendations for areas of the country where prevalence of diagnosed HIV infection is ‘high’ or ‘extremely high’, and among high risk populations, is desirable. These recommendations include testing in a range of settings such as hospitals, general practices, and the community and through online *e*-services. These activities all continue to make HIV diagnoses and serve different populations who might not access SHS.

The programme of BBV testing in prisons identifies infections among those who may not access other testing services. The efforts to achieve the target testing threshold of 75% uptake are continuing.

Clinical Care and Treatment as Prevention (TasP)

Providers of HIV care should encourage timely treatment initiation for people living with HIV. The number and proportion of people who begin ART and achieve viral suppression promptly following diagnosis is increasing. Further work is needed to achieve equity between population sub-groups.

While HIV treatment and viral suppression rates are very high in the diagnosed population, increased efforts are required to ensure those diagnosed are rapidly linked to, and retained in HIV care. Services should have documented policies for managing those who do not fully engage with care, and where possible provide arrangements to address this.

Partner notification (PN)

As undiagnosed HIV infections become rarer, strengthening the delivery of effective PN is essential to ending HIV transmission by 2030.

Pre-exposure Prophylaxis (PrEP)

PrEP services are in place in Scotland, Wales and Northern Ireland. The commitment to routine commissioning of PrEP in England upon culmination of the Impact Trial in 2020 (3, 4) is critical and likely to lead to acceleration of the fall in HIV incidence, especially in GBM. Public Health England is continuing to work closely with the Department of Health and Social Care, NHS England and Improvement, local authorities and the Impact trial team to plan for a seamless transition from the PrEP Trial to routine commissioning in 2020/21 (5).

Needle and Syringe Provision (NSP) for People who inject drugs (PWID)

Easily accessible harm reduction interventions for PWID, including access to sterile injecting equipment via NSP and opioid substitution therapy (OST) needs to be provided for all PWID, in line with national guidance (6-8).

3. Introduction

Great progress has been made in the UK in the control and prevention of HIV. Two years ago, the UK met the UNAIDS 90-90-90 target nationally with over 90% of people living with HIV being diagnosed, over 90% of those diagnosed being on treatment and over 90% of those on treatment having an undetectable viral load (9). Moreover, it is also apparent that the underlying incidence of new HIV infections, particularly in GBM, has been falling steadily for more than 5 years (10).

In 2016, London became the third city in the world to exceed the UNAIDS 90-90-90 target (11) and in 2018 was the first city to exceed the 95-95-95 target (12). Currently, 5 cities in the UK have joined the global fast-track cities initiative (13), where partner cities commit to attaining the three 90 targets. Attainment of these 90-90-90 targets is the start of the pathway towards achieving zero new HIV infections, zero HIV related deaths and zero HIV-related stigma.

In January 2019, the Health and Social Care Secretary set the goal for England to become one of the first countries to reach HIV elimination by 2030 (14). An Independent HIV Commission was launched in July 2019 to develop evidence-based recommendations to end HIV transmissions and HIV-attributed deaths within the next 10 years. The Commission's recommendations will be reviewed by the Department of Health and Social Care as part of its commitment to publish an action plan for eliminating HIV transmission in England (15).

This report provides an overview of the HIV epidemic in the UK up until the end of 2018. In advance of additional actions to get to zero HIV transmissions by 2030 (16), this report also focuses on 5 strategies that are key to future HIV control and prevention:

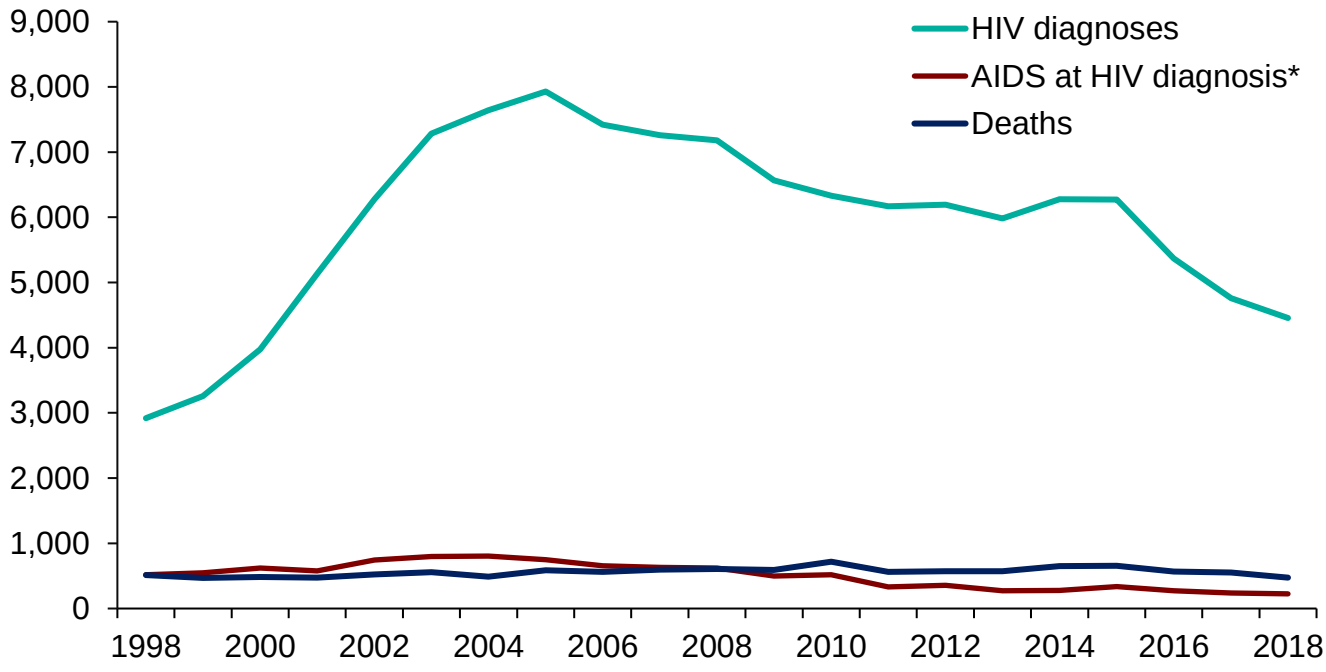
- HIV testing policies
- Clinical Care and Treatment as Prevention (TasP)
- Notification of partners of persons newly diagnosed with HIV (Partner Notification)
- Pre-exposure prophylaxis (PrEP)
- HIV prevention services for people who inject drugs (PWID)

4. New HIV diagnoses, incidence and care

4.1 New HIV diagnoses

In 2018, 4,453 people were newly diagnosed with HIV in the UK (3,266 men and 1,185 women[viii]), with 21% (922) of these known to have had a previous HIV diagnosis outside the UK. There were 225 people who were diagnosed with AIDS at HIV diagnosis and 473 people with diagnosed HIV who died from any cause in 2018 (Figure 1). Eleven people diagnosed with HIV in 2018 identified differently to the gender they were assigned at birth. Among new diagnoses, after adjusting for missing exposure information and rounded, 51% (2,250/4,453) were reported among gay and bisexual and other men who have sex with men (GBM), 19% (850/4,453) and 25% (1,090/4,453) were among men and women respectively who reported heterosexual sex as their probable route of infection and 2.5% (110/4,453) were among PWID. The remaining 140 new diagnoses were reported with other exposure routes and further information is being sought.

Figure 1: Number of new HIV diagnoses, AIDS at HIV diagnosis* and deaths in people with HIV: UK, 1998 to 2018

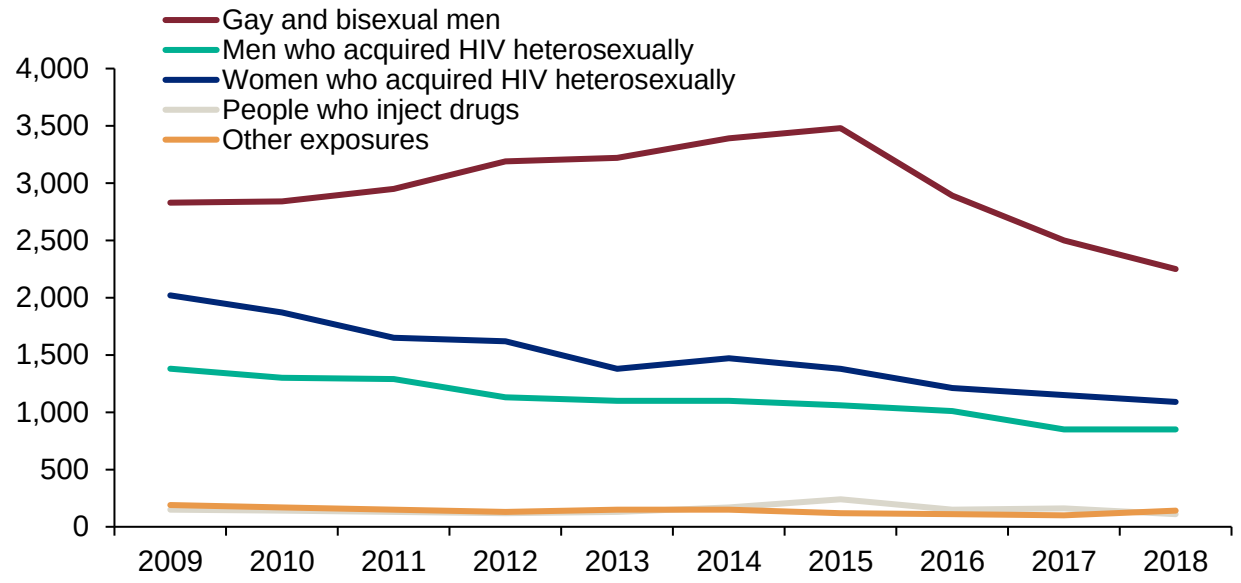


*AIDS defining illness within 3 months of an HIV diagnosis

[viii] New HIV diagnoses totals for men and women are based on gender identity and include trans people. The overall total includes people who identify as non-binary, in another way, and those with gender identity not reported.

The total of 4,453 HIV new diagnoses in 2018 represents a 32% decline over the last decade from the 6,565 diagnoses reported in 2009[ix]. This decline is due to a continued sharp decrease in diagnoses in GBM from 2015, and a more gradual decline in diagnoses in both men and women who acquired HIV heterosexually (Figure 2).

Figure 2: Number of new HIV diagnoses by exposure group*: UK, 2009 to 2018



*Adjusted for missing exposure information

Using observed data, new HIV diagnoses among residents in London continued to account for the largest proportion of new diagnoses reported in the UK (34%, 1,504/4,453) in 2018, which is a decline from 40% (2,646/6,563) in 2009. Residents in the Midlands and East of England region contributed to the highest number of new diagnoses outside of London (23%; 1,004/4,453) in 2018.

Two-thirds (67%, 3,000/4,453) of persons newly diagnosed in 2018 were aged between 25 and 49 years. The number and proportion of people diagnosed aged 50 years or over increased from 13% (829/6,565) in 2009 to 21% (936/4,453) in 2018.

4.1.1 New diagnoses among gay and bisexual men (GBM)

Using observed data, the number of new HIV diagnoses among GBM was on the rise at the beginning of the decade, alongside simultaneous increases in testing rates and observed increases in incidence among GBM. (Figure 2). The number of new HIV diagnoses among GBM in 2018 (1,908) was 30% lower than the number reported in 2009 (2,709) and 40% lower than in 2014 (3,165) (Figure 2). Nearly one quarter (23%,

[ix] Surveillance figures are updated and revised annually for previous years due to reporting delay and additional information received from some services, allowing us to reallocate previously past incomplete or inaccurate data.

445/1,908) of new HIV diagnoses in GBM in 2018 were known to have been previously diagnosed outside the UK.

London accounted for 39%[x], (736/1,907) of the GBM diagnoses in 2018 compared to almost half (48%, 1,523/3,165) in 2014 (Figure 3a). New diagnoses have also declined since 2014 in the Midlands and East of England (36%, 464 to 296) and South of England (21%, 395 to 311). Outside England, declines were observed in all the devolved nations: Scotland (33%, 111 to 74), Wales (16 %, 73 to 61), and Northern Ireland (5%, 44 to 42).

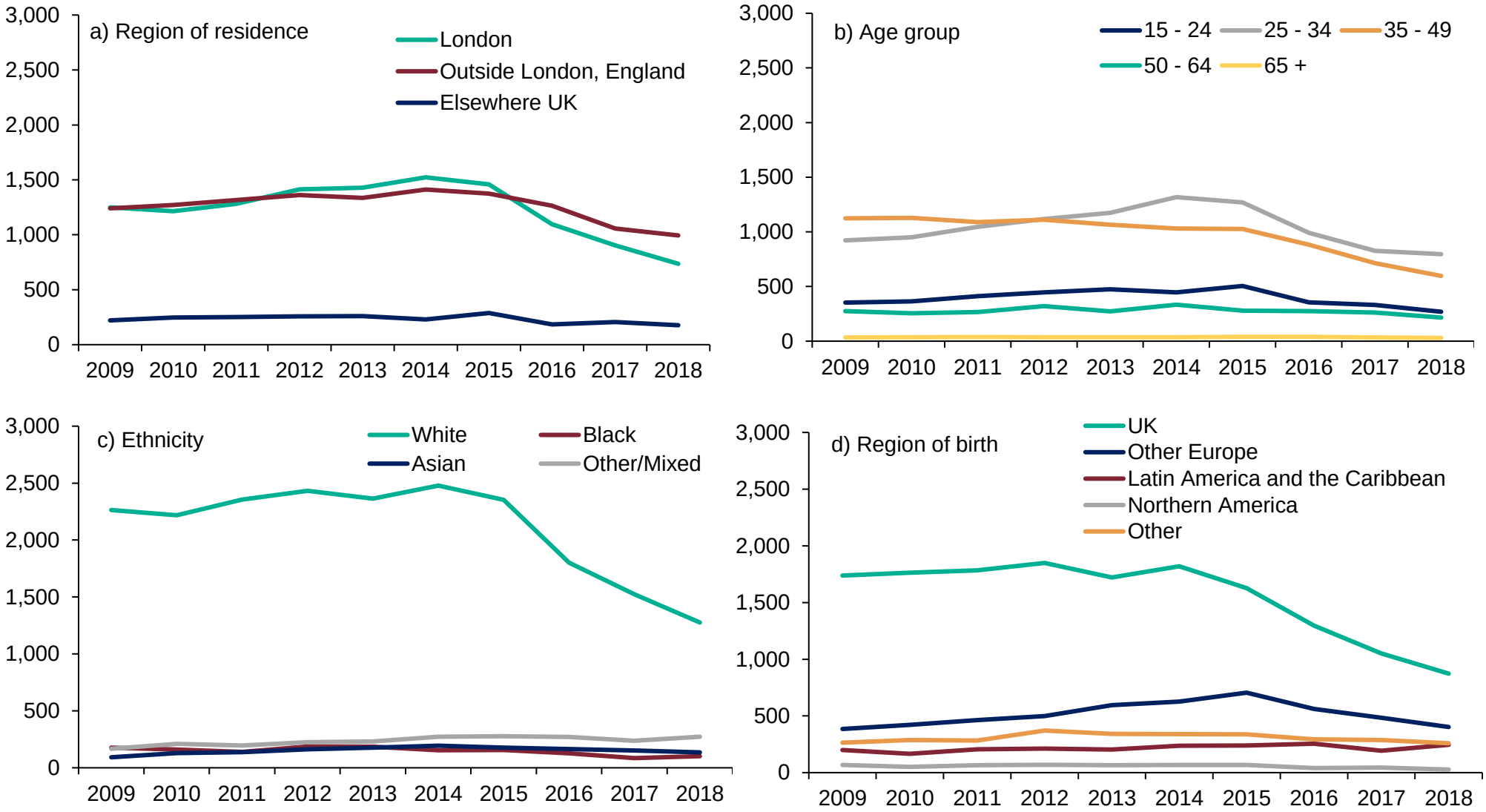
Almost three-quarters of GBM newly diagnosed in 2018 were aged 25 to 49 years (73%, 1,393/1,908) with a median age at diagnosis of 33 years (inter-quartile range (IQR) 27 to 43); this has not changed substantially over the past 10 years (Figure 3b). Across age groups, between 2014 and 2018, the steepest decline in HIV diagnoses among GBM was observed among those aged 25 to 34 years (42%, 1,318 to 796) and 35 to 49 years (42%, 1,030 to 597), followed by 15 to 24 years (40%, 446 to 269), 50 to 64 (35%, 334 to 216) and those aged 65+ (19%, 37 to 30) (Figure 3b).

In 2018, 71%[xi] of newly diagnosed GBM were of white ethnicity (Figure 3c), and the number of new diagnoses among white GBM declined by 49% since 2014 (2,478 to 1,276). The overall numbers of black, Asian and minority ethnic (BAME) GBM newly diagnosed with HIV were lower, and declines were also observed relative to 2014 among black men (34%, 154[xii] to 101[xiii]) and Asian men (30%, 194 to 136). New diagnoses among GBM of other/mixed ethnicity have remained stable (0%, 273 to 273).

Almost three-quarters (71%, 1,276/1807) of newly diagnosed GBM in 2018 were born in the UK[xiv] or elsewhere in Europe. A decline in new HIV diagnoses has been observed in both groups since 2014; 1,820 to 873 (52%) in UK-born men and 626 to 403 (36%) among men born elsewhere in Europe (Figure 3d). New diagnoses among GBM born in Northern America[xv] declined from 67 to 27 since 2014 (60%), by 37% among GBM born in Oceania (46 to 29), by 22% among GBM born in Asia (195 to 153) and by 22% among GBM born in Africa (99 to 77). New HIV diagnoses among GBM born in Latin America and the Caribbean have varied between 193 and 255 diagnosed each year since 2014 and comprised 14% (245) of diagnoses among GBM in 2018.

[x] Data are presented where residence is known and after imputing place of residence from place of diagnosis where not reported. Data completeness for residence among new diagnoses was 99.6% in 2018 and 100% in 2015.
[xi] Data are presented where ethnicity is known. Data completeness for ethnicity among new diagnoses was 86% in 2018.
[xii] The 154 diagnoses among black men in 2014 included 62 men of black African ethnicity, 63 men of black Caribbean ethnicity and 29 men of black-other ethnicity
[xiii] The 101 diagnoses among black men in 2018 includes 48 men of black African ethnicity, 39 men of black Caribbean ethnicity and 14 men of black-other ethnicity.
[xiv] Data are presented where region of birth is known. Data completeness for region of birth among new diagnoses was 85% in 2018.
[xv] Northern America includes Bermuda, Canada, Greenland, Saint Pierre and Miquelon, United States of America

Figure 3: Number of HIV diagnoses* among GBM, by population characteristics: UK, 2009 to 2018



Observed data, not adjusted for missing information

4.1.2 New diagnoses among people who acquired HIV heterosexually

In 2018, using observed data, 724 men and 826 women who were reported as having acquired HIV through heterosexual sex were newly diagnosed in the UK, and 22% (333/1,550) of these had been previously diagnosed outside the UK. The number of newly diagnosed men and women who acquired HIV heterosexually peaked in 2004, and halved between 2009 and 2018, from 3,236 to 1,550 (Figure 2).

The decline over the decade was particularly steep among residents in London (63%, from 1,135 to 416) (Figure 4a). The number of new diagnoses among men and women who acquired HIV heterosexually in 2018 was highest among the Midlands and East of England residents (461), followed by London residents (416), the North of England residents (327) and the South of England (215) residents. In Scotland, Wales, Northern Ireland and Scotland the number of new diagnoses among men and women who acquired HIV heterosexually was lower at 65, 35, and 30 respectively

Over the last decade, the steepest decline in new HIV diagnoses among men and women who acquired HIV heterosexually was observed in those aged 25 to 34 years (67%, 1,089 to 355), followed by 15 to 24 year olds (66%, 278 to 94) (Figure 4b). The median age at diagnosis in 2018 was 45 years (IQR: 36 to 53 years) among men and 39 years (IQR: 31 to 49 years) among women. In 2009, the median age at diagnosis was 40 years (IQR: 33 to 47 years) and 34 years (IQR: 29 to 41 years) respectively. Overall, in 2018, 34% (246/724) of men were aged 50 years or over at the time of their diagnosis, in comparison to 23% (187/826) of women. These figures compare to 19% (253/1,320) and 10% (184/1,916) in 2009, respectively.

Black African men and women accounted for 44%[xvi] (643/1,477) of new HIV diagnoses among adults who acquired HIV heterosexually in 2018, compared to 61% (1,961/3,219) of new diagnoses in 2009, representing a 67% decline (1,961 to 643). However, it should be noted that the decline has levelled off since 2017 (626) and 2018 (643) (Figure 4c). Over the same time, diagnoses among black Caribbean men and women who acquired HIV heterosexually also declined, from 141 in 2009 to 46 in 2018 (67% fall). Men and women who acquired HIV heterosexually and were of white ethnicity accounted for 38% (555/1,477) of new diagnoses in 2018, compared to 24% (773/3,219) in 2009.

In 2018, almost half (47%, 698/1,475) of men and women diagnosed with HIV in the UK who acquired HIV heterosexually were born in a country of high HIV prevalence[xvii] and 31% (452) were born in the UK (Figure 4d). The equivalent figures for 2009 were 63%

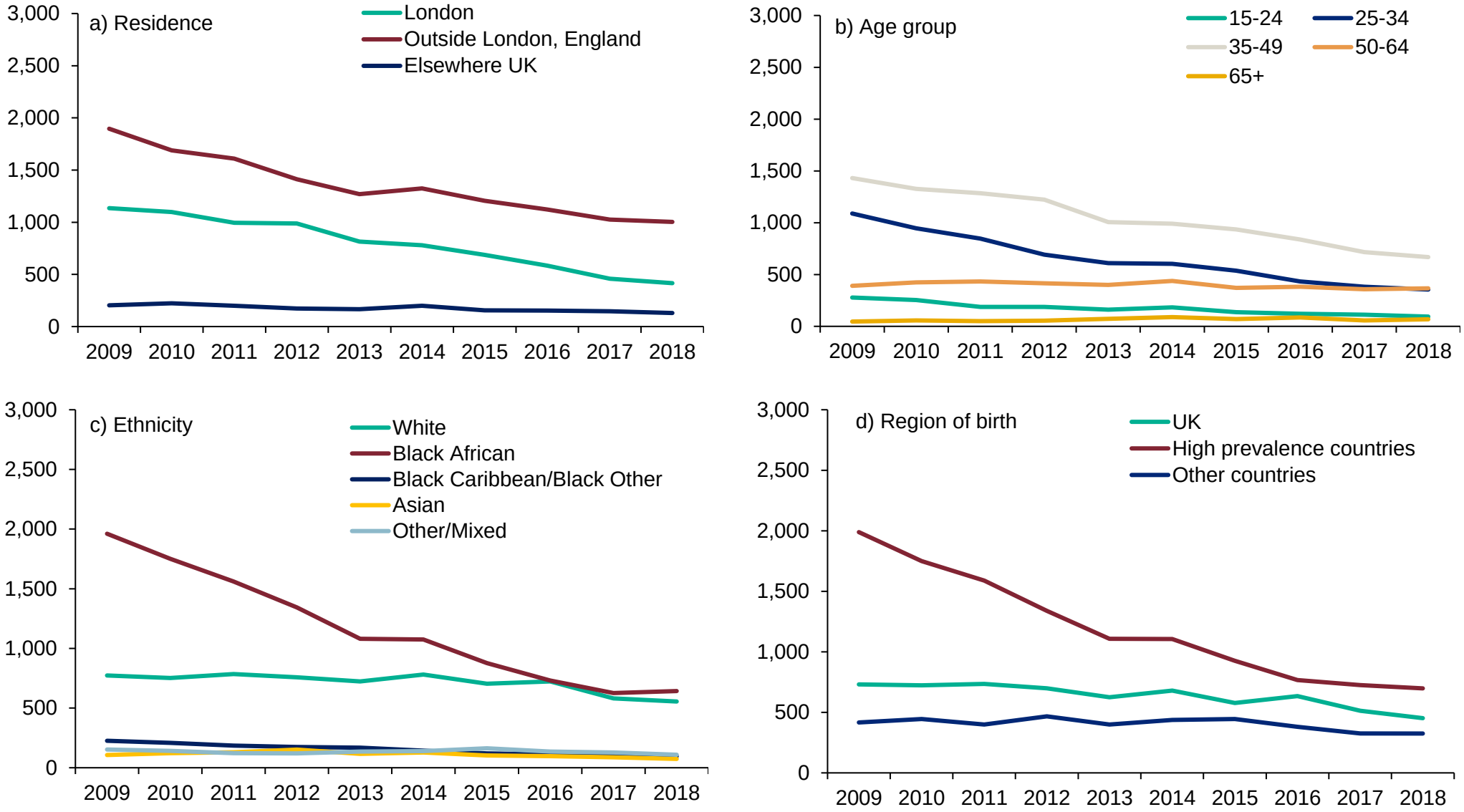
[xvi] Proportions presented where ethnicity is known. Data completeness for ethnicity among new diagnoses in 2018 was 86% and 99% in 2009

[xvii] Proportions presented where data on country of birth are known. Data completeness for country of birth among new diagnoses was 85% in 2018 and 96% in 2009

(1,989/3,137) and 23% (731) respectively. Most people diagnosed in 2018 and born in a high prevalence country were of black African ethnicity (81%, 550/678); the majority of those born in the UK were of white ethnicity (83%, 366/439).

Figure 4: Number of HIV diagnoses* among men and women who acquired HIV heterosexually, by population characteristics: UK, 2009 to 2018

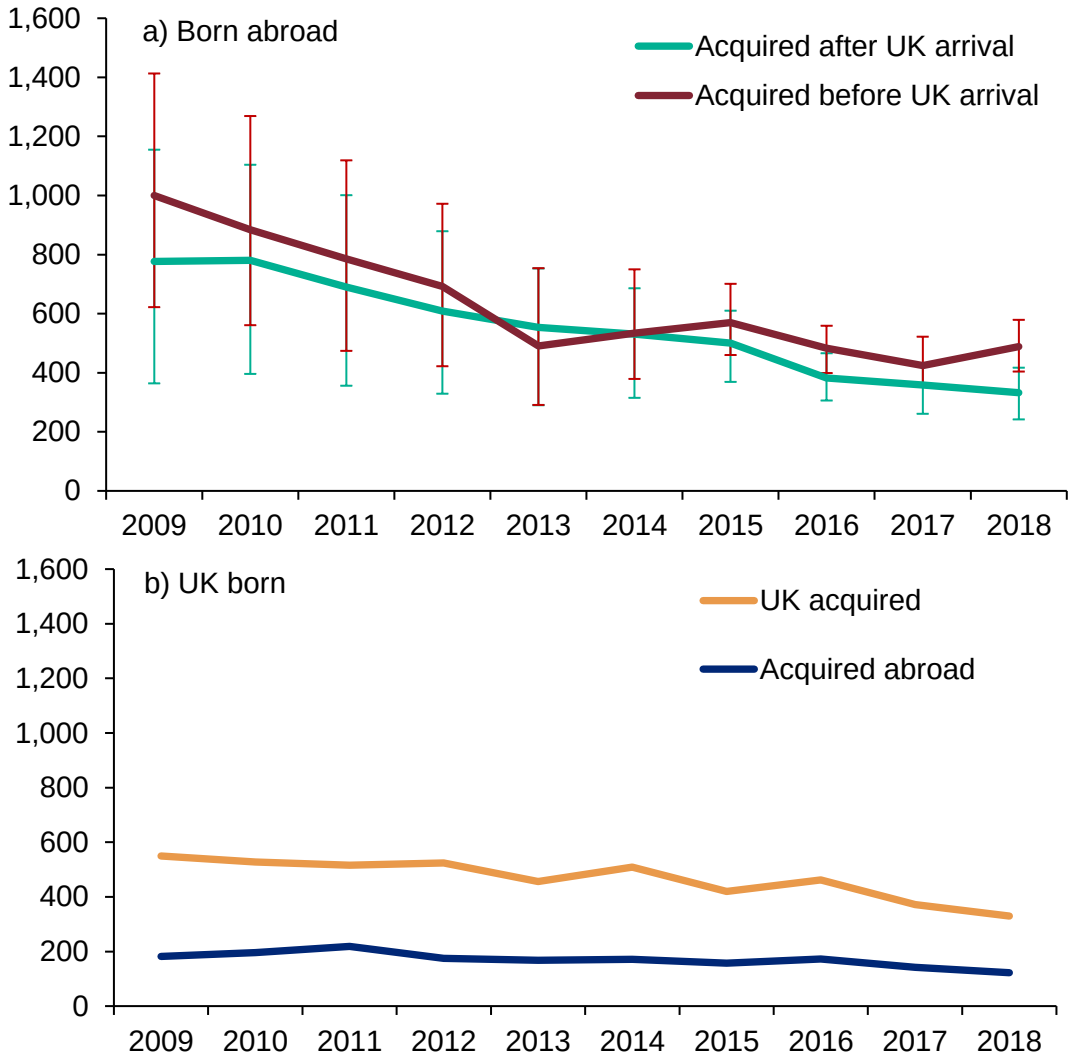
*Observed data, not adjusted for missing information



4.1.2.1 Probable country of infection among men and women who acquired HIV heterosexually

By assigning probable country of infection based upon information on CD4 decline and year of UK arrival, the number of people who acquired HIV heterosexually and who are likely to have acquired HIV after arrival to the UK can be estimated (17). The CD4 back-calculation model estimated a decline in infections acquired after arrival to the UK among those born abroad from 777 (uncertainty range: 364 to 1,155) in 2009 to 332 (uncertainty range: 242 to 417) in 2018. The model also estimated a decline of infection acquired before UK arrival from 1,000 (uncertainty range: 622 to 1,413) to 489 (uncertainty range: 404 to 579) over the same period (Figure 5a). Among UK-born men and women, infections acquired abroad remained low and stable while a decline was observed from 550 in 2009 to 330 in 2018 for UK-acquired infections (Figure 5b).

Figure 5: Estimated number of new diagnoses among men and women who acquired HIV heterosexually, by place of acquisition (UK or abroad) and by country of birth: UK, 2009 to 2018



4.1.3 New diagnoses among pregnant women

In 2018, 119 women were newly diagnosed with HIV whilst pregnant (Table 1), with 70% (83/119) of these diagnoses made in antenatal settings. The majority of these pregnant women newly diagnosed in 2018 were born outside the UK (78%; 88/113) [xviii] and just over half of those born abroad (56%; 49/88) were of black African ethnicity.

Table 1: HIV diagnoses among pregnant women by region of birth and ethnicity: UK, 2015 to 2018

Region of birth	Ethnicity	2015	2016	2017	2018
UK	White	18	15	20	16
	Black African	4	5	2	2
	Other/Not stated	3	3	3	7
Outside UK	White	22	16	14	24
	Black African	65	38	47	49
	Other/Not stated	15	13	21	15
Total (including where region of birth is not stated)		130	90	109	119

4.1.4 Trans people

Since the availability of information on gender identity and trans status in 2015, 67 new diagnoses have been recorded among trans[xix] people; 11 diagnoses in 2018, 16 in 2017, 16 in 2016 and 24 in 2015. Six trans people diagnosed in 2018 were aged 35 to 49 years, 6 were white and 7 were diagnosed late.

4.1.5 People who inject drugs (PWID)

The number of people who probably acquired HIV through injecting drug use has fallen by a third since 2009 (140 to 94), and comprised 2% of all new HIV diagnoses in 2018 (94/4,453). Of these 94 individuals, 80% (75/94) were men, 85% (80/94) were aged between 25 to 49 years, 89% (84/94) were of white ethnicity. Just over one third (36%; 34/94) were Midlands and East of England residents, 19% (18/94) were London

[xviii] Data are presented where region of birth is known. Data completeness for region of birth among new HIV diagnosis was 85% complete in 2018

[xix] Trans is an umbrella term that refers to all people whose gender identity is different to the gender given at birth, this includes trans men, trans women, non-binary, and other gender identities

residents, 19% (18/94) were South of England residents, 13% (13/94) were residents of Scotland and 12% (11/94) North of England residents.

Box A: Ongoing HIV outbreak in Glasgow

First recognised in early 2015, an outbreak of HIV among PWID in Glasgow continued in 2018. Since it began, over 150 individuals have been diagnosed with HIV, with injecting drug use or sexual contact with someone known to inject drugs, being the main risk factors for HIV acquisition. The outbreak is related to transmission among those who inject drugs within Glasgow city centre, mainly heroin with or without cocaine. Many of those affected are homeless, and are in contact with the criminal justice system.

Phylogenetic analysis has demonstrated an outbreak strain of subtype C virus with identical primary non-nucleoside reverse transcriptase inhibitor (NNRTI) mutations (E138A and V179E) uncommon elsewhere in the UK*. HIV prevalence in PWID in Glasgow city centre has increased from 1.1% in 2011 to 10.8% in 2018†.

This outbreak is being managed through increasing awareness of the risks of HIV among the at-risk population and specialist drug treatment services, increasing provision of needle and syringe programmes (eg greater evening availability), improving the frequency of HIV testing and its accessibility and proactively supporting the early treatment of those newly diagnosed. An intervention model was developed that supported a clinical nurse specialist and an HIV consultant-led service within health services for the homeless. A new model of ART delivery within community pharmacy services allows ART to be dispensed with opioid substitution therapy (OST).

The Glasgow outbreak occurred despite widespread availability of core HIV prevention services including NSP, OST and ART, and highlights the complex control measures and multidisciplinary response required.

* Ragonnet-Cronin M, Jackson C, Bradley-Stewart A, Aitken C, McAuley A, Palmateer N, et al. Recent and Rapid Transmission of HIV Among People Who Inject Drugs in Scotland Revealed Through Phylogenetic Analysis. J Infect Dis. 2018;217(12):1875-82.

† McAuley A, Palmateer NE, Goldberg DJ, Trayner KM, Shepherd SJ, Gunson RN, Metcalfe R, Milosevic C, Taylor A, Munro A, Hutchinson SJ. Re-emergence of HIV related to injecting drug use despite a comprehensive harm reduction environment: a cross-sectional analysis. The Lancet HIV. 2019 May 1;6(5):e315-24.

4.1.6 Late HIV diagnosis

For surveillance purposes, a late HIV diagnosis is defined as having a CD4 cell count of less than 350 cells/mm^3 within 91 days of HIV diagnosis[xx]. Late HIV diagnosis is the most important predictor of morbidity and premature mortality among people with HIV infection (18). Furthermore, people diagnosed late are likely to have been living with an undiagnosed HIV infection for at least 3 to 5 years (19) and may have been at risk of passing on HIV to partners if having unprotected sex.

Overall, the adjusted[xxi] number of late HIV diagnoses decreased from 3,353 in 2009 to 1,883 in 2018, representing 52% and 43% of all new diagnoses in 2009 and 2018 respectively and a 44% decline over the decade. One quarter (24%, 825/3,465) of all adults diagnosed in 2018 were severely immunocompromised (with a CD4 count <200 cells/mm^3) at the time of their diagnosis.

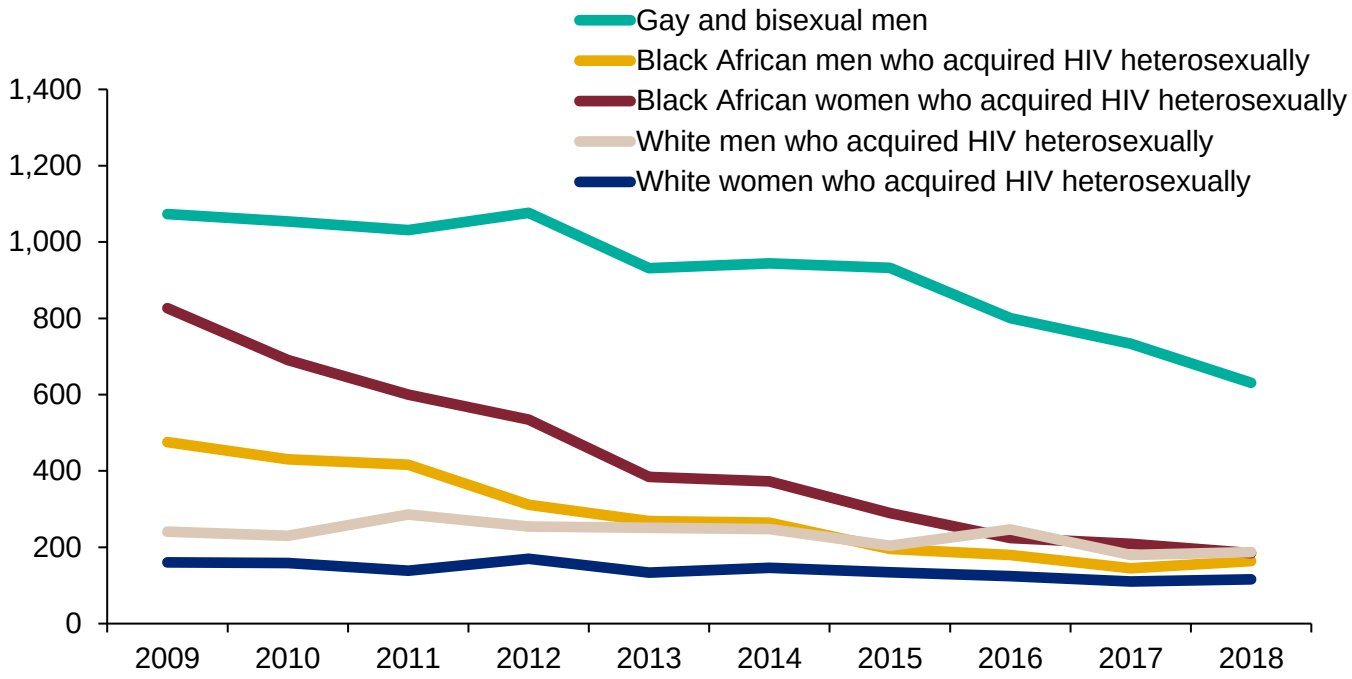
The number of late diagnoses among all men and women who acquired HIV heterosexually has more than halved between 2009 and 2018 (from 2,000 to 836) and in 2018 the proportion diagnosed late among this group was 54% (836/1,550). The decline in the number of late diagnoses was most marked among black African women (78% decline, from 827 to 185) and men (66%, from 476 to 164) who acquired HIV heterosexually (Figure 6), although the proportion diagnosed late still remained high in these groups in 2018 (47%, 185/390 and 65%, 164/253, respectively) (Appendix 7). In contrast, the number of white men and women who acquired HIV heterosexually diagnosed late has declined less steeply over the past decade (22%, 241 to 187 and 28%, 161 to 116, respectively) and the proportions of late diagnoses among white men and women who acquired HIV heterosexually in 2018 were 59% (187/318) and 49% (116/237) respectively. Between 2009 and 2018, late diagnoses declined by 35% among PWID (71 to 46) and in 2018, 58% were diagnosed late. A 63% decline in GBM diagnosed late was observed over the same period (1,703 to 631), and in 2018, a third (631/1,908) were diagnosed late.

The proportion of HIV diagnoses made at a late stage of infection increased with age largely due to the longer delay before diagnosis as well as a more rapid decline in CD4 counts among older persons. In 2018, 28% (133/473) of people aged 15 to 24 years were diagnosed late compared to 58% (449/770) and 64% (107/166) among those aged 50 to 64 years and over 65 years, respectively.

[xx] The calculation of a late HIV diagnosis includes people reported to have had a diagnosis abroad prior to a UK diagnosis and does not currently exclude those with clinical indication of a recently acquired HIV infection (for example, through RITA or a recent HIV negative test).

[xxi] Late diagnoses data in this section are adjusted for missing CD4 information. CD4 count at diagnosis was 78% complete in 2018 and 85% complete in 2009.

Figure 6: Adjusted* number of people diagnosed late by exposure group: UK, 2009 to 2018



*Adjusted for missing CD4 count at diagnosis.

Throughout this report, the term late diagnosis is used to refer to the late stage of HIV infection at an adult's first positive HIV test in the UK. However, many people living with HIV were first diagnosed abroad before their arrival in the UK. In 2018, a total of 921 adults (21% of all adult new reports of HIV diagnoses) had been previously diagnosed abroad. The number of late diagnoses in this group accounted for, on average 13% of all late diagnoses made between 2015 and 2018 (ranging from 11 to 14%). It is important that as soon as possible after arrival this population is linked to HIV care and treatment is continued or initiated rapidly. In 2018, almost one quarter (23%; 208/921)[xxi] of adults first diagnosed abroad had a CD4 count <350 cells/mm^3, when first tested in the UK.

4.1.7 AIDS at HIV diagnosis

The number of people diagnosed with an AIDS-defining illness at HIV diagnosis has steadily declined over the past decade. In 2018, 225 people were diagnosed with an AIDS-defining illness at or within 3 months of their HIV diagnosis; a 55% decline from 500 in 2009. The number of people with AIDS at diagnosis and a CD4 count less than 350 cells/mm^3 and less than 200 cells/mm^3 in 2018, was 176 and 168 respectively.

Where illness data were reported[xxii], pneumocystis pneumonia remained the most commonly diagnosed AIDS-defining illness, accounting for 37% (87/225) of AIDS diagnoses in 2018, followed by candidiasis[xxiii] (22%; 50/225), tuberculosis[xxiv] (8%, 19/225) and Kaposi's sarcoma (8%, 18/225).

4.1.8 Setting of diagnosis

The setting of first positive test was reported for 91% (4,019/4,409) of adults (aged ≥ 15 years) newly diagnosed with HIV in the UK in 2018. Most adults (66%, 2,641/4,019)[xxv] in the UK continue to have their first positive HIV test in sexual health services (SHS), followed by hospital wards/accident and emergency (A&E) (10%, 415/4,019), general practice (7%, 294/4,019) and outpatient services (8%, 303/4,019 (Figure 7). Key groups most likely to have been diagnosed outside of SHS include: women (42%, 432/1,030), people of black Caribbean ethnicity (45%, 38/84), PWID (58%, 52/89), people aged 50 years and above (47%, 376/807) and people diagnosed late with HIV (46%, 658/1,411). The proportion of HIV diagnoses made outside SHS has increased over the past decade in line with the evolving HIV epidemic and changes to testing recommendations (Appendix 3) (20).

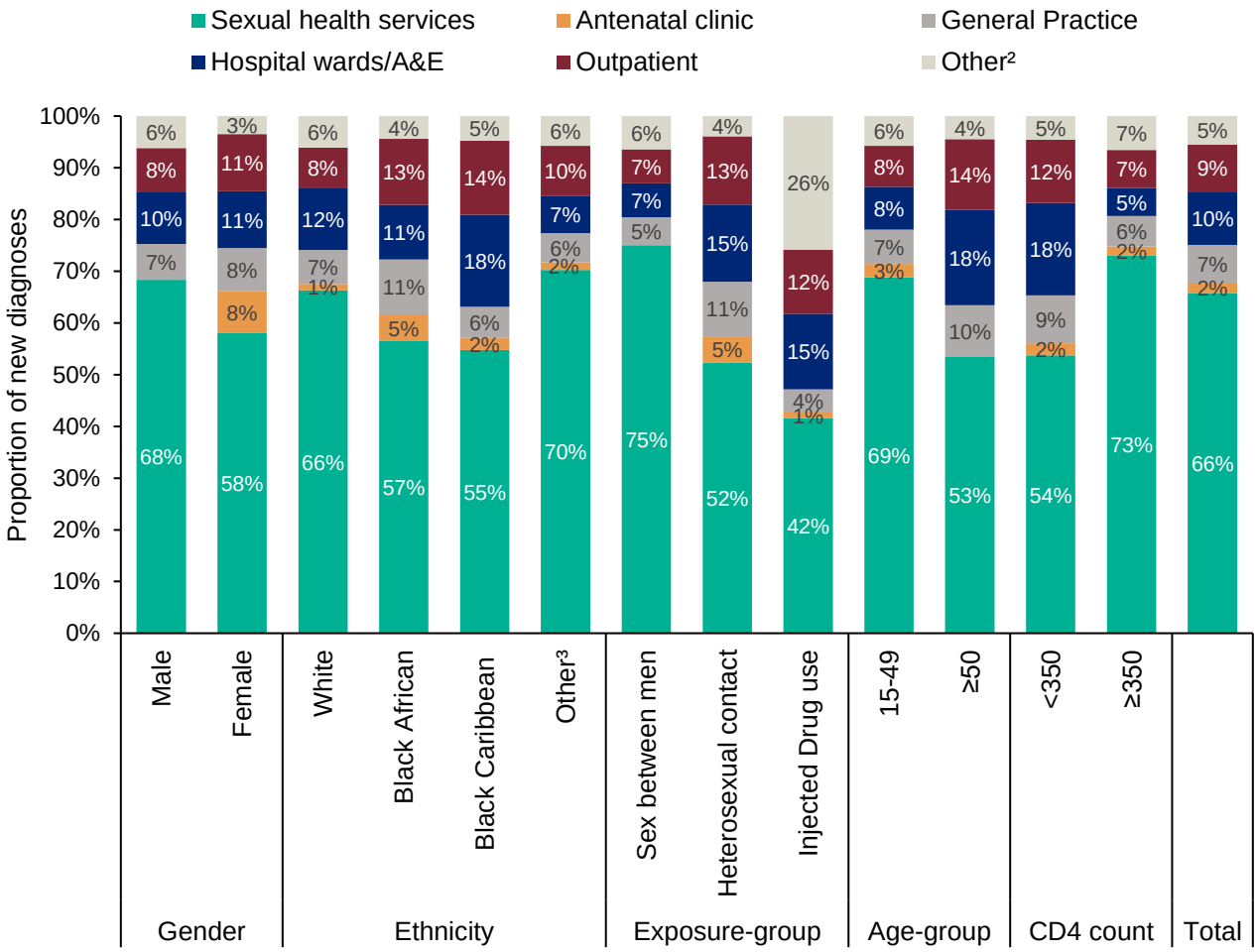
[xxii] Data are presented where AIDS-defining illness information is known. Data completeness for AIDS-defining illnesses among was 93% complete in 2018. Please note breakdowns in this paragraph present the absolute number of AIDS-defining illnesses reported within numerators; there were 41 people who had more than one AIDS-defining illness reported in 2018

[xxiii] Includes oesophageal candidiasis and candidiasis of bronchi, trachea or lung

[xxiv] Includes extrapulmonary and pulmonary tuberculosis

[xxv] Through previous data triangulation, the proportion of people diagnosed in sexual health services is likely to be an overestimate *(20. Croxford S, Yin Z, Kall M, Burns F, Simmons R, Copas A, et al. Where do we diagnose HIV infection? Monitoring new diagnoses made in nontraditional settings in England, Wales and Northern Ireland. HIV Med. 2018.)*

Figure 7: Setting of first positive test among adults newly diagnosed with HIV by population group[1]: UK, 2018



[1] Among new HIV diagnoses with setting of diagnosis reported (n=4,019)
[2] Other diagnoses settings include: drug misuse services, prisons, blood transfusion service, community service, self-testing, self-sampling, private medical clinics and other services not specified.
[3] Other ethnic groups include: black - other, Asian, mixed and other ethnicity.

4.2 Deaths among people living with HIV

Getting to zero AIDS-related deaths is a key vision within the UNAIDS strategy for the global HIV response (21). In 2018, 473 people with HIV infection died from all causes in the UK, with a median age of death of 55 years [IQR: 46 to 63]. Assuming that approximately 22 to 47% of deaths are attributable to AIDS-defining illnesses (22, 23), 104 to 222 AIDS-related deaths in 2018 may have been preventable through earlier diagnosis.

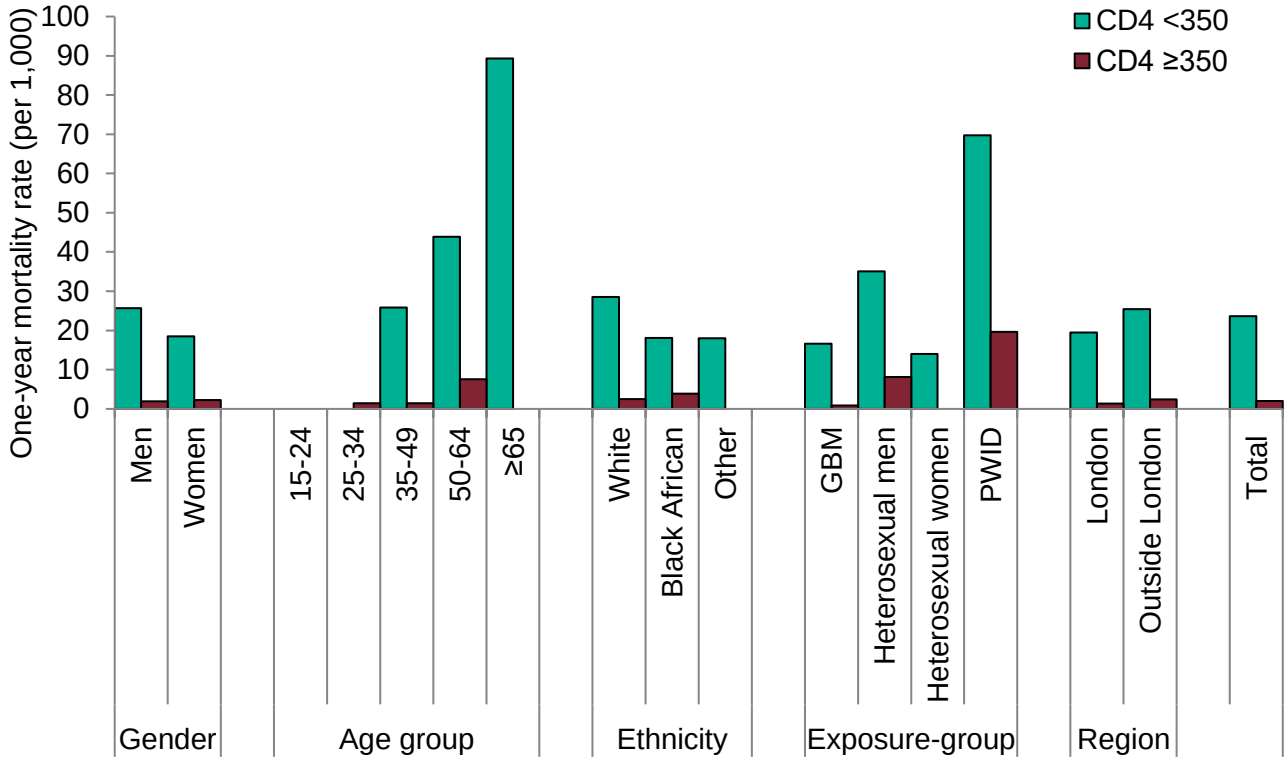
All-cause mortality among people with HIV was 4.92 per 1,000 in 2018, a decline from 9.06 in 2009. Mortality rates among most subgroups of people with HIV in 2018 were similar, including: men (5.15 per 1,000), women (4.41 per 1,000), GBM (3.01 per 1,000) and people who acquired HIV heterosexually (3.28 per 1,000). However, mortality

among people diagnosed with HIV who injected drugs was much higher, at 23.61 per 1,000.

In 2018, the crude mortality rate among people aged 15 to 59 years who were diagnosed promptly was 1.19 per 1,000, in line with the general population of the same age group (1.61 per 1,000)[xxvi]. Among men aged 15-59 years, equivalent figures were 1.40 per 1,000 among those diagnosed promptly and 1.97 per 1,000 among men in the general population aged 15 to 59 years respectively; among women aged 15 to 59 years, these figures were 0.73 and 1.24 per 1,000.

People diagnosed late are at increased risk of developing an AIDS-defining illness and continue to have a more than 10-fold increased risk of death in the year following their diagnosis (24). One-year mortality among people diagnosed late in 2017 was 23.62 per 1,000, compared to 2.01 per 1,000 among people diagnosed promptly (Figure 8). One-year mortality was particularly marked among people aged 65 years and over, at 89.29 per 1,000 (5 deaths among 56 people diagnosed late in 2017).

Figure 8: One year mortality rates among adults newly diagnosed with HIV by CD4 cells/mm^3 at diagnosis: UK, 2017



[xxvi] Population and death data from Office for National Statistics mid-2017 population estimates and deaths and population estimates by single year of age, 2017

4.3 Incidence and estimates of the total number of people living with HIV

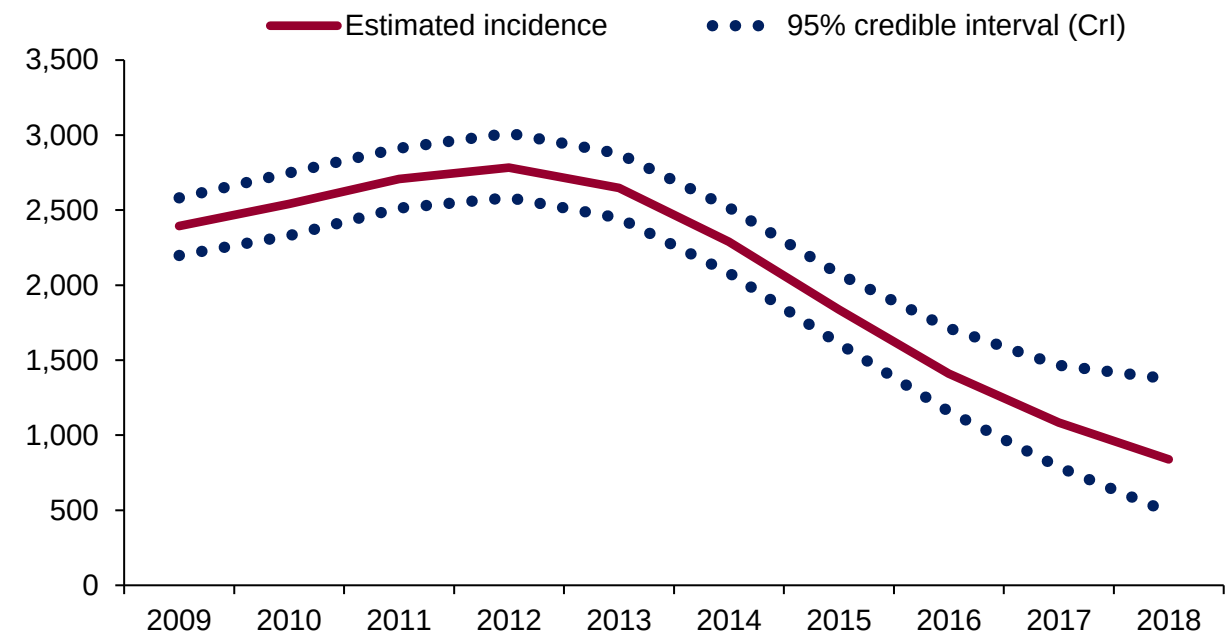
4.3.1 Recent infection testing algorithm (RITA)

In 2018, 38% of people who were newly diagnosed with HIV were tested for recent infection using a recent infection testing algorithm (RITA) (25); this proportion was similar among GBM and people who acquired HIV heterosexually, at 41%. Based on the 789 new HIV diagnoses among GBM with RITA results in 2018, just over a quarter (26%) were likely diagnosed at a recent stage of infection (infection probably acquired within 4 months of the date of the first confirmed antibody positive specimen) (Appendix 1). The proportion of GBM diagnosed with recent infection initially increased from 23% (343/1,515) in 2011 to 35% in 2014 (617/1,761), after which a decline was observed, however the number of centres submitting specimens has changed over time therefore the make-up of the populations tested for recent infection may also have changed. In mid-2013 the original HIV recency assay (Abbott AxSYM) used within Public Health Engand's RITA was withdrawn by the manufacturer and testing was moved to the Sedia Limiting Antigen Assay. Internal verification showed these assays had similar performance characteristics. Of people who acquired HIV heterosexually, the proportion with a RITA result showing diagnosis at a recent stage of infection increased from 7% (51/689) in 2009 to 10% (66/634) in 2018.

4.3.2 Estimated incidence and undiagnosed HIV infection

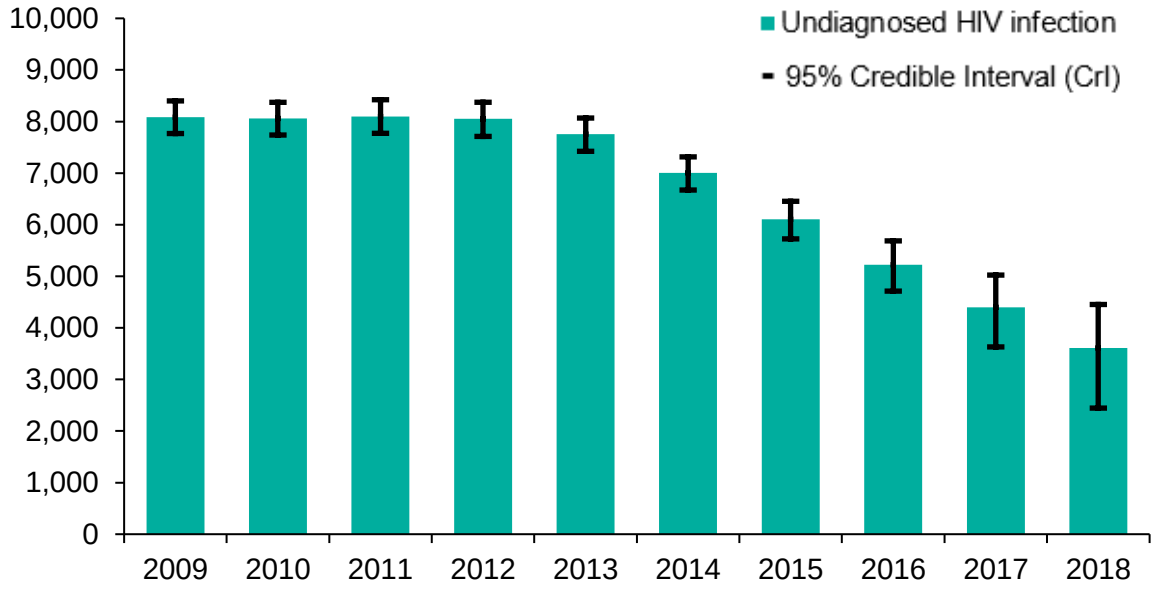
A CD4 back-calculation model is used to estimate HIV incidence among GBM living in England (26); the model has now been extended to account for the increased probability of diagnosis after acquiring infection. The estimated number of new infections acquired per year rose from around 2,400 infections (95% credible interval (CrI) 2,200 to 2,600) in 2009, to a peak of 2,800 (CrI 2,600 to 3,000) in 2012, before falling by 71% to 800 (CrI 500 to 1,400) in 2018 (Figure 9). Over the past 5 years the number of incident infections has declined by 65% from an estimated 2,300 in 2014.

Figure 9: Estimates of HIV incidence in GBM: England, 2009 to 2018



The CD4 back-calculation model is also used to estimate undiagnosed HIV infections among GBM. The model has been refined to exclude men who probably acquired HIV abroad and were first diagnosed prior to arrival in the UK. Following this adjustment, the number of GBM estimated to be living with an undiagnosed HIV infection in England was 3,600 (CrI 2,800 to 4,800) (Figure 10). This is a 50% decline from the 7,000 (CrI 6,700 to 7,300) in 2014.

Figure 10: Estimates of undiagnosed HIV infection in GBM using the CD4 back calculation method: England, 2009 to 2018



Using a modelling approach that combines new HIV diagnoses, RITA data and HIV testing history (27), the estimated number of newly acquired HIV infections among heterosexual men halved from 550 (CrI 400 to 650) in 2014 to 250 (CrI 150 to 350) in 2017 (Figure 11). Equivalent estimates for women were 450 (350 to 600) and 350 (CrI 250 to 450) (Figure 12).

Figure 11: Estimated new HIV infections in heterosexual men, England 2014 to 2017

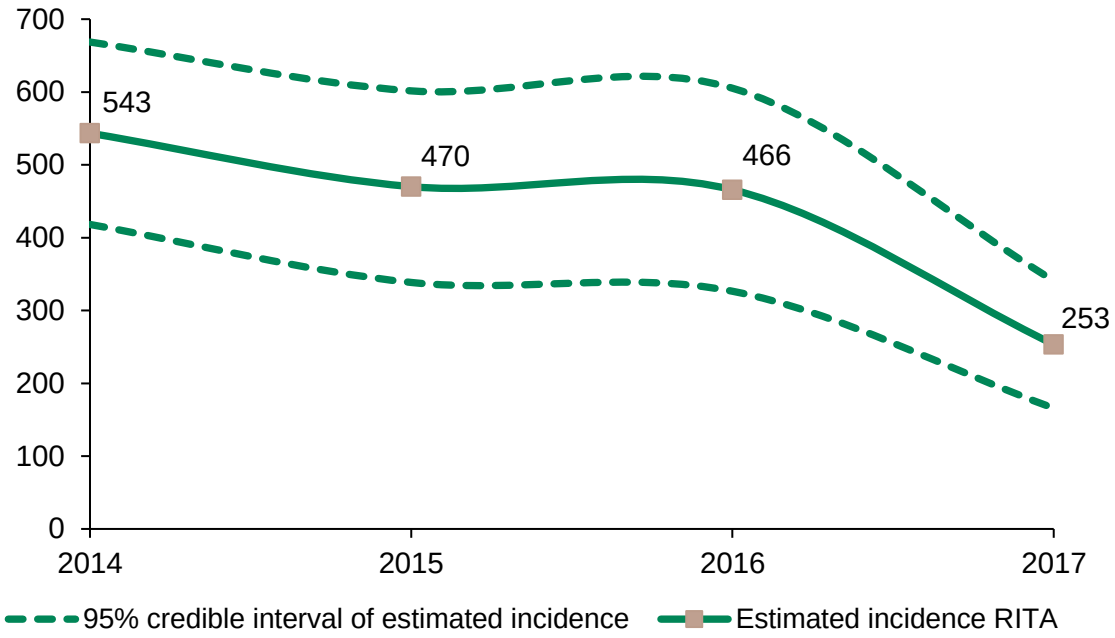
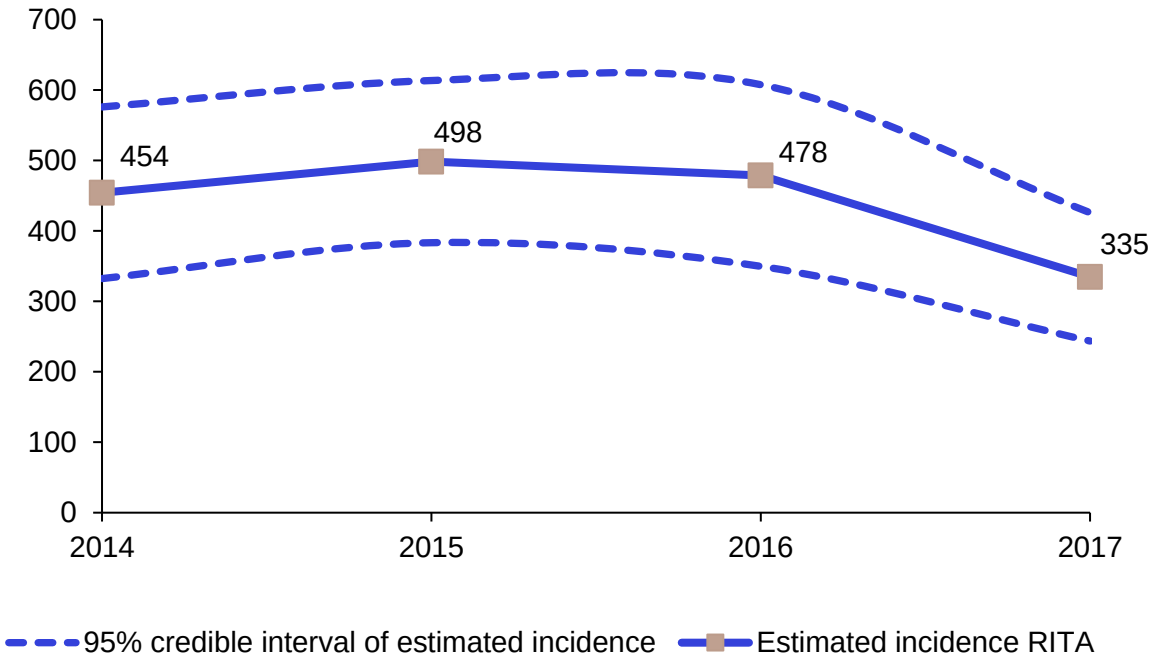


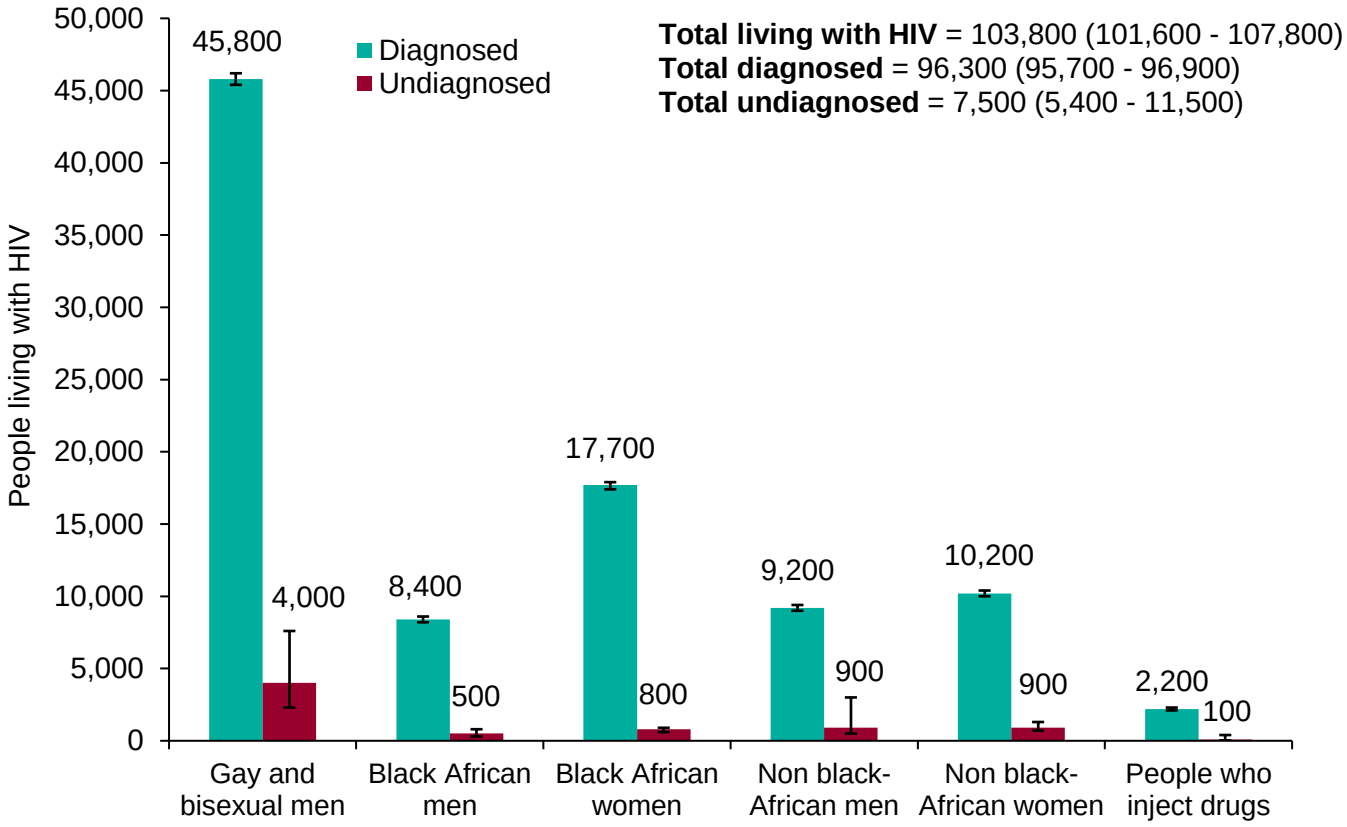
Figure 12: Estimated new HIV infections in heterosexual women, England 2014 to 2017



4.3.3 Multi-Parameter Evidence Synthesis (MPES) model[xxvii]: estimating the total number of people living with HIV including those undiagnosed

In 2018, an estimated 103,800 (CrI 101,600 to 107,800) people were living with HIV infection in the UK (Figure 13, Table 2 and Table 3). The overall prevalence of HIV in England in 2018 was 2.3 per 1,000 (CrI 2.2 to 2.4) among people aged 15 to 74 years.

Figure 13: Estimated number of people living with HIV (diagnosed and undiagnosed), all ages: UK, 2018



[xxvii] The Multi-Parameter Evidence Synthesis (MPES) model is described in more detail in Appendix 24.

Table 2: Estimated number of people living with HIV and estimated number undiagnosed by exposure group: UK and England, 2018*

Exposure category		UK			England		
		Number of people living with HIV (95% Credible Interval)	Number undiagnosed (95% Credible Interval)	% Undiagnosed (95% Credible Interval)	Number of people living with HIV (95% Credible Interval)	Number undiagnosed (95% Credible Interval)	% Undiagnosed (95% Credible Interval)
Gay and bisexual men		49,800 (48,000, 53,400)	4,000 (2,300, 7,600)	8% (5, 14%)	45,200 (43,600, 48,200)	3,600 (2,000, 6,700)	8% (5, 14%)
Heterosexuals	Black African men	8,900 (8,700, 9,200)	500 (300, 800)	6% (4, 9%)	8,500 (8,200, 8,800)	500 (300, 700)	6% (4, 8%)
	Men excluding black Africans	10,200 (9,600, 12,200)	900 (500, 3,000)	9% (5, 24%)	9,000 (8,600, 10,800)	800 (400, 2,600)	9% (5, 24%)
	Black African women	18,400 (18,200, 18,800)	800 (600, 900)	4% (3, 5%)	17,600 (17,300, 17,900)	700 (600, 900)	4% (3, 5%)
	Women excluding black Africans	11,100 (10,700, 11,500)	900 (700, 1,300)	8% (6, 11%)	10,000 (9,800, 10,400)	800 (600, 1,100)	8% (6, 11%)
All heterosexuals		48,600 (47,800, 50,800)	3,200 (2,400, 5,200)	7% (5, 10%)	45,200 (44,400, 47,100)	2,900 (2,200, 4,700)	6% (5, 10%)
People who inject drugs		2,300 (2,200, 2,600)	100 (30, 400)	6% (1, 15%)	1,800 (1,600, 2,000)	100 (20, 300)	5% (1, 14%)
Total		**103,800 (101,600, 107,800)**	**7,500 (5,400, 11,500)**	**7% (5, 11%)**	**94,900 (92,900, 98,300)**	**6,700 (4,900, 10,100)**	**7% (5, 10%)**

* Numbers may not add to total due to rounding to the nearest 100 and exclusion of data relating to HIV acquired through vertical transmission and blood/blood-related products

Table 3: Estimated number of people living with HIV and estimated number undiagnosed by exposure group: London and rest of England, 2018*

Exposure category		London			England, outside London		
		Number of people living with HIV (95% Credible Interval)	Number undiagnosed (95% Credible Interval)	% Undiagnosed (95% Credible Interval)	Number of people living with HIV (95% Credible Interval)	Number undiagnosed (95% Credible Interval)	% Undiagnosed (95% Credible Interval)
Gay and bisexual men		20,300 (19,700, 21,400)	1,100 (600, 2,200)	6% (3, 10%)	24,800 (23,400, 27,500)	2,400 (1,100, 5,100)	10% (5, 19%)
Heterosexuals	Black African men	3,400 (3,200, 3,600)	200 (100, 300)	5% (3, 9%)	5,100 (4,900, 5,300)	300 (200, 500)	6% (4, 9%)
	Men excluding black Africans	3,000 (2,800, 3,500)	200 (100, 800)	8% (4, 22%)	6,100 (5,700, 7,400)	600 (300, 2,000)	10% (5, 26%)
	Black African women	6,900 (6,700, 7,100)	300 (200, 300)	4% (3, 5%)	10,700 (10,400, 10,900)	500 (400, 600)	4% (3, 6%)
	Women excluding black Africans	3,600 (3,400, 3,700)	200 (200, 300)	7% (5, 9%)	6,500 (6,300, 6,800)	600 (400, 800)	9% (6, 12%)
All heterosexuals		16,900 (16,500, 17,500)	900 (700, 1,500)	5% (4, 9%)	28,300 (27,700, 29,700)	2,000 (1,500, 3,400)	7% (5, 11%)
People who inject drugs		700 (600, 800)	40 (10, 100)	5% (1, 15%)	1,100 (1,000, 1,300)	60 (10, 200)	5% (1, 15%)
Total		**39,000 (38,200, 40,200)**	**2,100 (1,500, 3,300)**	**5% (4, 8%)**	**55,800 (54,300, 58,800)**	**4,500 (3,000, 7,500)**	**8% (6, 13%)**

* Numbers may not add to total due to rounding to the nearest 100 and exclusion of data relating to HIV acquired through vertical transmission and blood/blood-related products

A total of 49,800 (CrI 48,000 to 53,400) GBM were estimated to be living with HIV in the UK in 2018 (Table 2). The overall prevalence of HIV was 88 (CrI 77 to 102) per 1,000 among GBM in England aged 15 to 74 years and was higher in London compared with the rest of England (127 per 1,000 (CrI 110 to 147)) and 71 per 1,000 (CrI 59 to 85) respectively).

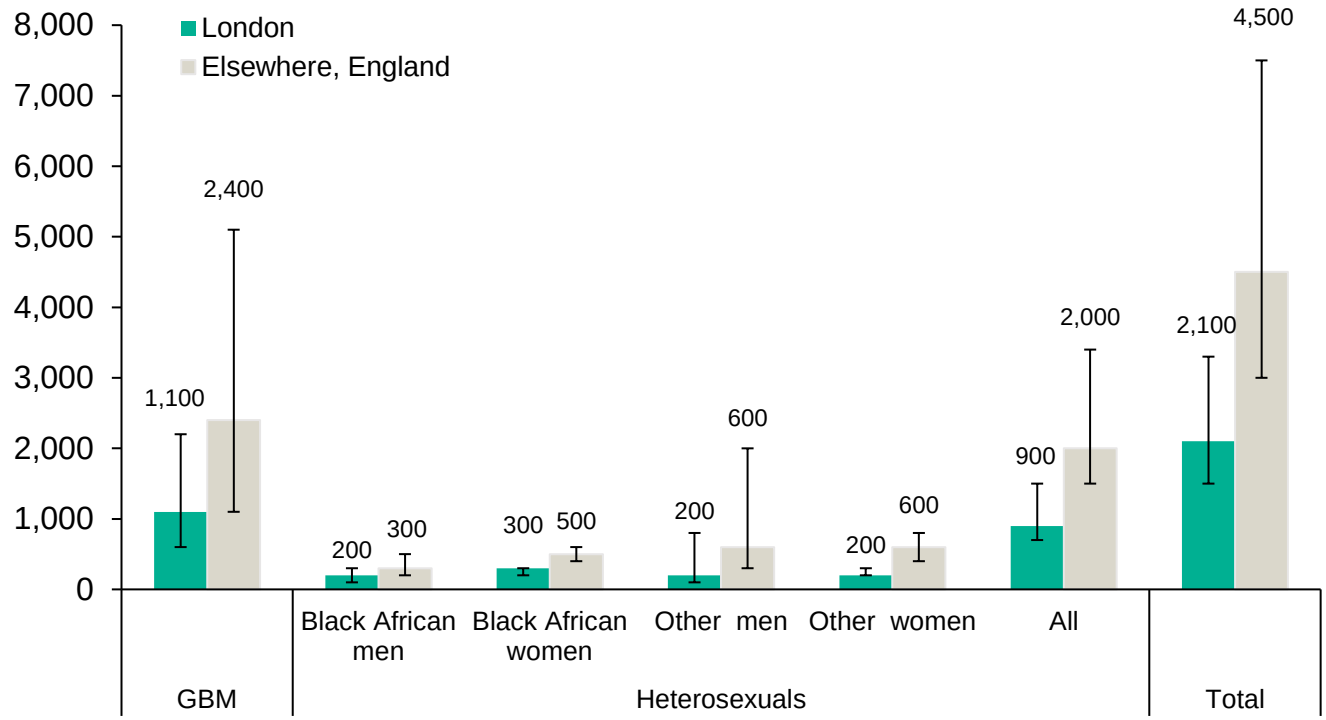
There were 29,500 (CrI 29,100 to 30,000) heterosexual women and 19,100 (CrI 18,500 to 21,100) heterosexual men estimated to be living with HIV in the UK, of whom 18,500 (CrI 18,200 to 18,800) and 8,900 (CrI 8,700 to 9,200) were black African women and men respectively (Table 2). The estimated prevalence of HIV among heterosexual women and men aged 15 to 74 years in England was low (1.10 per 1,000 (CrI 1.08 to 1.15)), and greater among black African adults (36.6 per 1,000 (CrI 36.0 to 37.3)).

There were an estimated 7,500 (CrI 5,400 to 11,500) people unaware of their HIV infection in the UK in 2018 (Table 2), equivalent to 7% (CrI 5 to 11%) of all people living with HIV in the UK, and 6,700 (CrI 4,900 to 10,100) people undiagnosed in England. An estimated 4,000 (CrI 2,300 to 7,600) GBM were living with an undiagnosed HIV infection in the UK and an estimated 3,600 (CrI 2,000 to 6,700) GBM were living with undiagnosed HIV infection in England, in line with the 3,600 (CrI 2,800 to 4,800) GBM in England estimated to be undiagnosed through the CD4 back-calculation method.

Twice as many people with undiagnosed HIV infection in England lived in England outside of London, 4,500 (CrI 3,000 to 7,500) compared to 2,100 (CrI 1,500 to 3,300) in London (Figure 14). While credible intervals overlap, this was the case for GBM, 1,100 (CrI 600 to 2,200) in London and 2,400 (CrI 1,100 to 5,100) in England outside London, and for heterosexual men and women, 900 (CrI 700 to 1,500) in London and 2,000 (CrI 1,500 to 3,400) in England outside London.

The number of heterosexual black Africans who were unaware of their infection in the UK in 2018 continued to decline with an estimated 1,300 (CrI 1,000 to 1,700) in 2018, two-thirds of whom were women, and 60% were in England outside London. An estimated 1,700 (CrI 1,100 to 3,500) heterosexual non-Black African adults in England were unaware of their infection. Half were women (800 CrI 600 to 1,100) and two-thirds lived in England outside of London (1,200 (CrI 800 to 2,600)).

Figure 14: Estimated number of people living with undiagnosed HIV (London and outside London), all ages: England, 2018



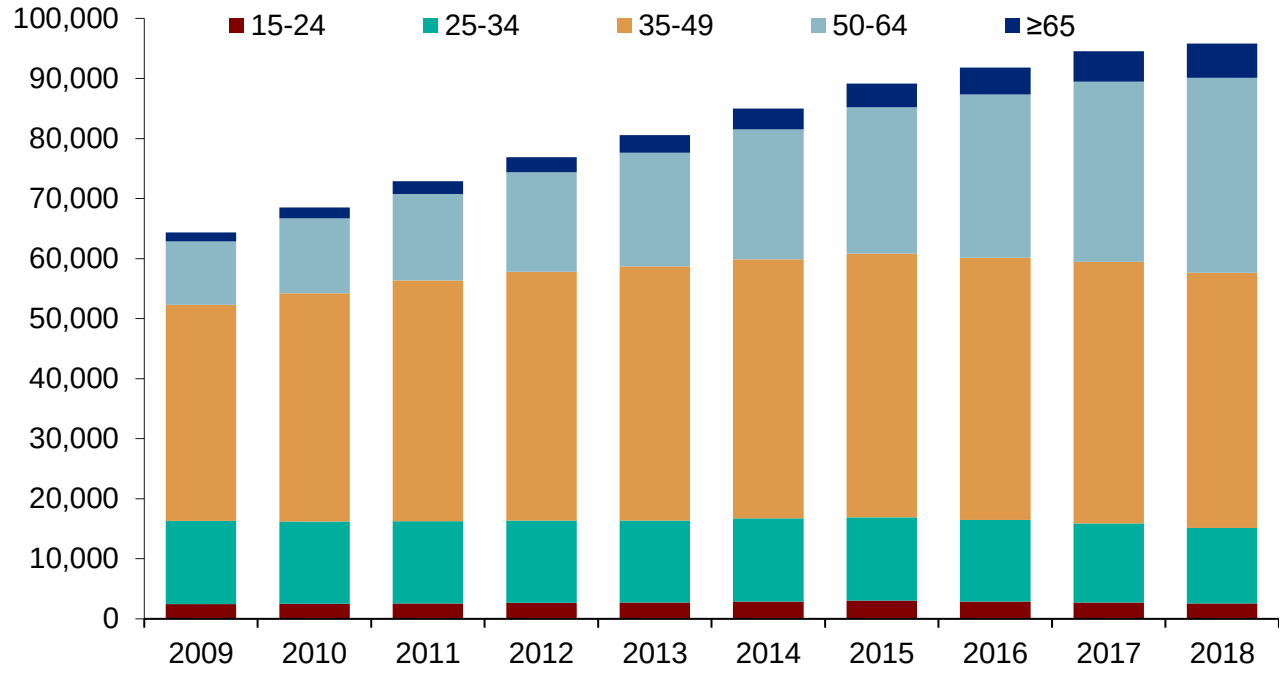
4.4 People living with diagnosed HIV and receiving HIV care

In 2018, 96,142 people[xxviii] (66,257 men, including 22 transmen and 29,712 women, including 128 transwomen) living with diagnosed HIV infection received HIV care in the UK. This is a 47% increase on the number a decade ago (65,249 in 2009) and is due to the availability of effective treatment for HIV prolonging the lives of people living with HIV, as well as ongoing new diagnoses.

The median age of people receiving HIV care has increased over the past decade, from 41 years in 2009 to 46 years in 2018, and two-fifths (40%; 38,193 / 96,142) were aged 50 years and above (Figure 15).

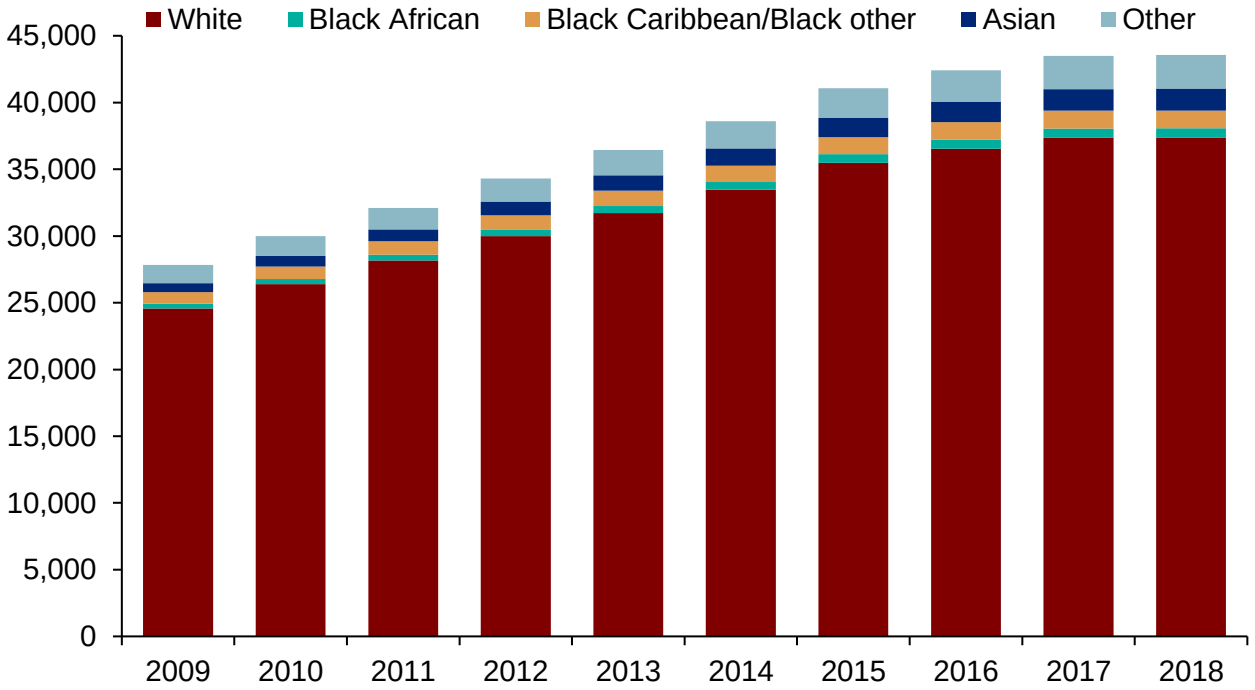
[xxviii] The overall total includes people who identify in another way and those with gender identity not reported.

Figure 15: People diagnosed with HIV receiving care, by age group: UK, 2009 to 2018



In 2018, 14%[xxix] (6,201/43,570) of GBM receiving HIV care were from BAME groups, a similar proportion to that in 2009 (12%, 3,280/27, 843) (Figure 16).

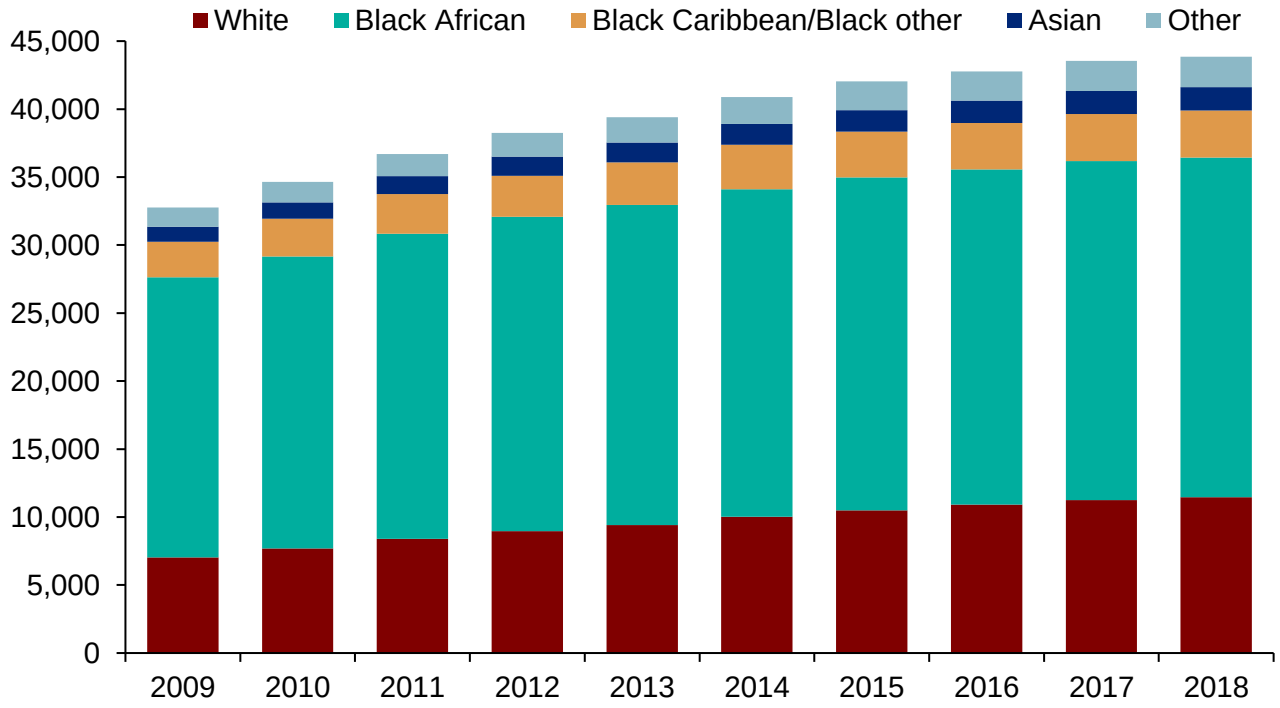
Figure 16: Gay and bisexual men diagnosed with HIV receiving care, by ethnic group: UK, 2009 to 2018



[xxix] Data are presented where ethnicity is known. Data completeness for ethnicity among people with HIV receiving HIV care was 98% in 2018 and 99.7% in 2009

Among men and women who acquired HIV heterosexually, those of black African ethnicity accounted for the greatest proportion of those receiving care (57%; 24,966/43,850); 26% (11,470/43,850) were of white ethnicity compared to 21% (7,037/32,773) in 2009 (Figure 17). In 2018, 152 trans people were receiving care in the UK; 64% were of white ethnicity and 39% were aged between 35 to 49 years.

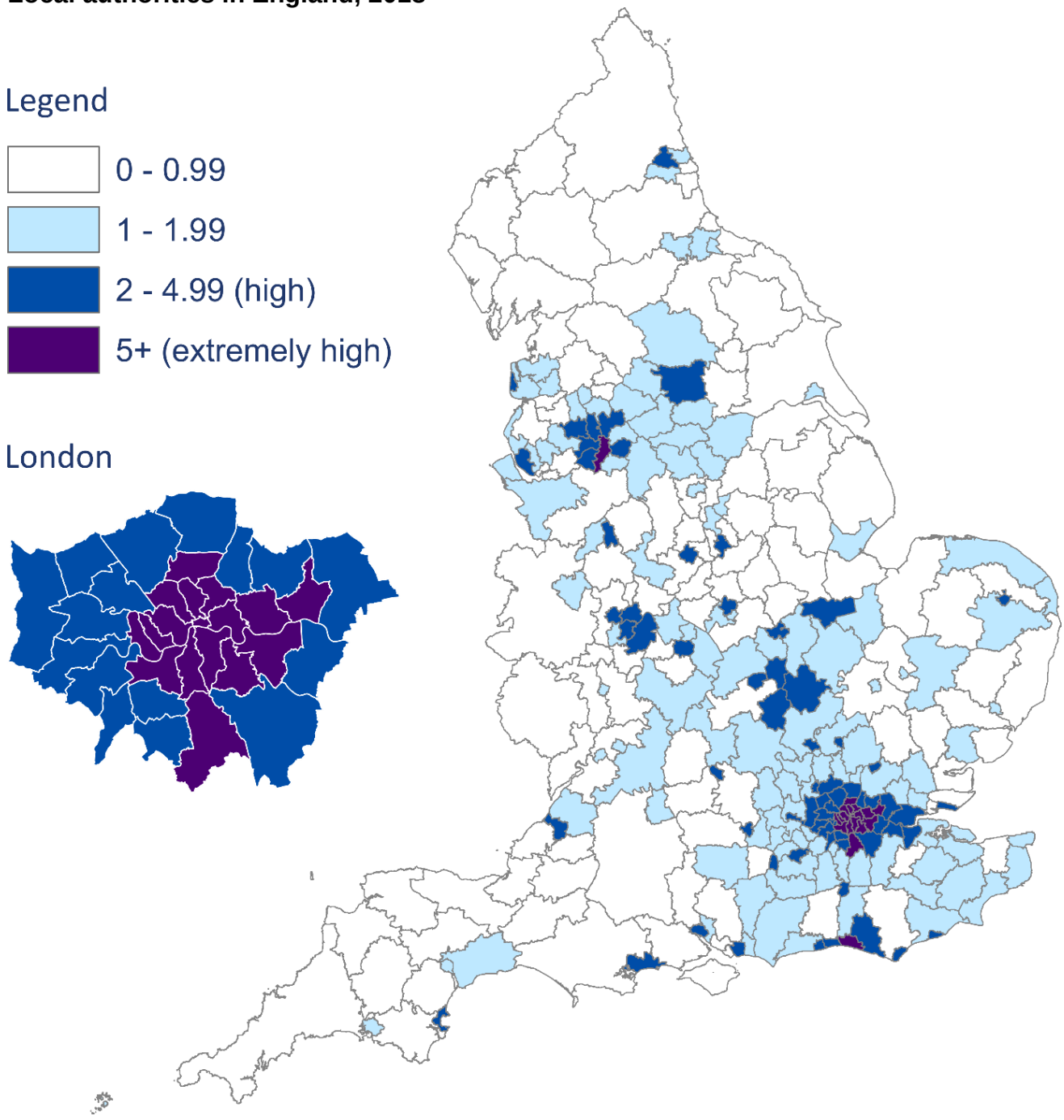
Figure 17: Men and women diagnosed with HIV receiving care and who acquired HIV heterosexually, by ethnic group: UK, 2009 to 2018



Among the 96,142 people who received HIV care in 2018, 6,664 (7%) were diagnosed with HIV abroad prior to their arrival in the UK. The proportion previously diagnosed abroad was similar for GBM (6%, 2,790/44,575) and men and women who acquired HIV heterosexually (7%, 3,082/44,451). Over three-quarters (79%, 5,289/6,664) of individuals first diagnosed abroad were also born abroad. Among those born and previously diagnosed abroad, 36% (1,927/5,289) did not access care within one year of their arrival in the UK and 46% (659/1,444) had a CD4 count <350 cells/mm^3 at the time of their first HIV positive test in a UK setting.

Overall, 84 of 317 local authorities in England had a “high-diagnosed-prevalence” (greater than 2 per 1,000 population aged 15 to 59 years) in 2018 (Figure 18). Of these, 19 had an “extremely-high-diagnosed prevalence” (defined as greater than 5 per 1,000 population aged 15 to 59 years) including; 17 London local authorities, Manchester, and Brighton and Hove. In 2016, NICE guidelines recommended expanded HIV testing should be implemented among areas of high and extremely high prevalence (28). A full list of local authorities in England with diagnosed HIV prevalence rates above 2 per 1,000 population is provided in Appendix 4.

Figure 18: Diagnosed HIV prevalence (per 1,000 population aged 15 to 59 years): Local authorities in England, 2018



5. HIV testing

5.1 Policy recommendations

HIV testing plays a critical role on the pathway to HIV elimination. Identifying HIV infections through testing is the first essential step towards prompt, effective treatment which both benefits individuals and prevents the onward spread of infection. As the number of undiagnosed HIV infections falls, it remains important to ensure that existing testing policies are fully implemented.

In 2008, the British Association for Sexual Health and HIV (BASHH), British HIV Association (BHIVA) and the British Infection Society (BIS) developed national testing guidelines that recommend universal HIV testing in sexual health services (SHS) and promote the normalisation of routine HIV testing in a range of settings and among key populations (29).

NICE guidelines in 2016 built on these existing guidelines and further recommend (28):

- HIV testing in primary and secondary care based on local HIV prevalence and patient risk
- HIV testing in community settings in areas with a high or extremely high prevalence and for groups and communities at a high risk of HIV
- self-sampling test kits for groups and communities with high rates of HIV

NICE issued Quality Standards in 2017 (30) that support the implementation of its guidance. These standards focus on improving the uptake of HIV testing in hospitals and general practice, among people with HIV indicator conditions, regular HIV testing among people with increased risk and testing those who present following an HIV diagnosis in a sexual partner. In addition, the BASHH standards for the management of STIs state that all attendees with needs relating to STIs should be offered an HIV test at first attendance (31).

Regular test-seeking is encouraged for those at continued risk of HIV acquisition (ie men who are having unprotected or casual sex with other men and people who are having unprotected or casual sex with people from countries where HIV is common).

This section complements and builds on the 2019 NICE review of the impact of their guidance on HIV testing (32). This section also supports PHE’s key messages for testing policies and recommendations to the public on HIV testing. Appendix 3 shows which information sources have been used to assess the different HIV testing policy recommendations.

5.2 Sexual health services (SHS) in England

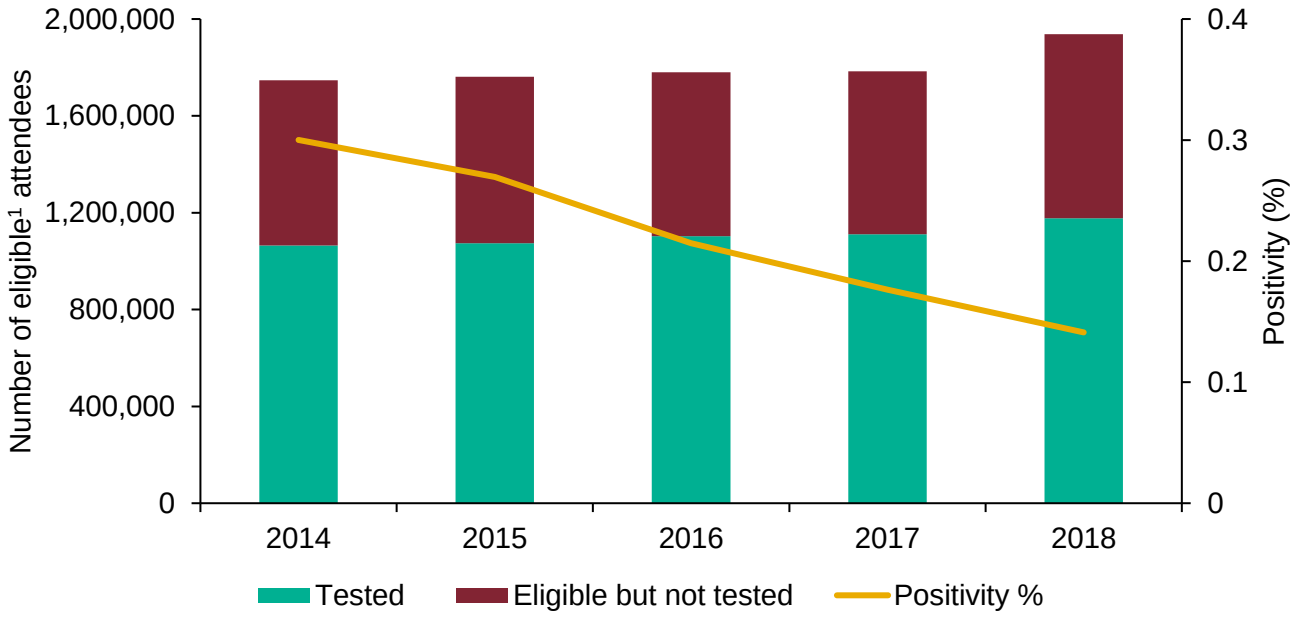
5.2.1 All SHS (specialist and non-specialist services)

The number of people attending SHS in England and the number of HIV tests carried out have continued to rise (Figure 19). In 2018, over 1.9 million people attended SHS who were eligible for HIV testing. Over 1.1 million of these attendees were tested for HIV, an increase of 6% since 2017 (Appendix 8).

The overall increase in people testing in SHS masked a 2% fall in the number of people testing at a specialist SHS (from 1,012,674 in 2017 to 987,537 in 2018). This was compensated by an increase in people testing in non-specialist SHS and was largely driven by a three-fold rise in the number of people tested for HIV through *e*Sexual Health Services (43,890 in 2017 to 129,687 in 2018).

Overall test positivity in SHS has continued to fall from 0.2% in 2017 to 0.1% in 2018. In 2018, testing SHS attendees identified 41% (1,661/4,005) of new adult (15 years and over) diagnoses of HIV in England. Just over half of these new diagnoses made in SHS were in GBM (898), with most of the remainder in heterosexual men (342) and heterosexual women (306).

Figure 19: Number of eligible attendees[1], number tested and positivity in all SHS attendees: England, 2014 to 2018



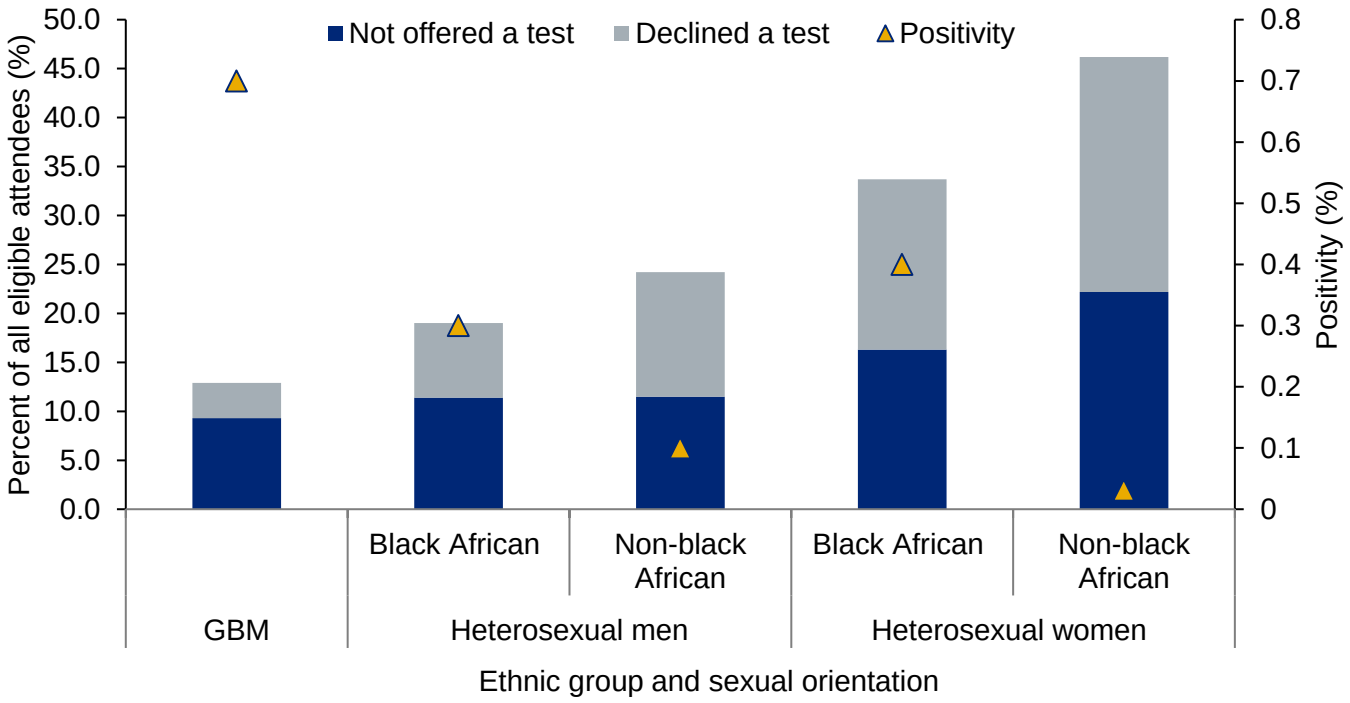
[1] Eligible SHS attendee: any patient attending a SHS at least once during a calendar year; excluding those patients known to be HIV positive or for whom an HIV test was not appropriate, or for whom the attendance was reported as being for and related to reproductive health care only.

HIV test coverage was 61% in SHS overall, with 760,031 eligible attendees reported as not being tested for HIV. Over half (421,160/760,031) of these attendees were not offered a test despite being eligible for testing. These included 229,883 (22%) heterosexual female attendees, 64,478 (12%) heterosexual male attendees and 13,621 (9%) GBM attendees (Figure 20) (Appendix 8).

The remaining 45% (338,871/760,031) of eligible SHS attendees, who were not tested for HIV, were reported to have declined an HIV test. Nearly three-quarters of these attendees were heterosexual women (74%, 251,627/338,871). Heterosexual women were most likely to decline an HIV test (24%, 251,627/1,059,934), followed by heterosexual men (12%, 65,563/534,476) and GBM (4%, 5,288/146,542) (Appendix 9).

When compared by sexual orientation, heterosexual women comprised the greatest proportion of eligible attendees not tested for HIV overall (Figure 20). It should be noted, however, that this may reflect a combination of testing practices, patient choice, and misclassification of attendances that are solely for reproductive care rather than STI-related needs (31).

Figure 20: Missed opportunities among eligible attendees[1] not offered or declined an HIV test at all SHS by ethnic group and sexual orientation: England, 2018



[1] Eligible SHS attendee: any patient attending a SHS at least once during a calendar year; excluding those patients known to be HIV positive or for whom an HIV test was not appropriate, or for whom the attendance was reported as being for and related to reproductive health care only.

5.2.2 Specialist SHS

In 2018, HIV test coverage was 65% (987,537/1,530,773) at specialist SHS with an HIV test positivity of 0.2%. This testing resulted in 1,632 new diagnoses, 98% (1,632/1,661) of all diagnoses made in SHS (Appendix 9).

Despite specialist SHS having a higher HIV test coverage than non-specialist SHS, just over half a million eligible people who attended specialist SHS were not tested for HIV. Nearly half of these people were not offered an HIV test (47%, 254,068/543,236) and the remaining 289,168 eligible attendees declined an HIV test.

In 2018, 376,232 (44%) heterosexual women and 103,613 (22%) heterosexual men attended specialist SHS but were not tested for HIV. Of these, 163,767 heterosexual women and 43,036 heterosexual men were not offered an HIV test, and 212,465 heterosexual women and 60,577 heterosexual men declined a test.

5.2.2.1 London and outside London

Specialist SHS outside London were less likely than those in London to offer an HIV test to eligible attendees (81% vs 88%). As most eligible attendees attended a specialist SHS outside London, this meant that 80% (211,878/263,230) of specialist SHS attendees who were not offered an HIV test were seen at services outside London (Appendix 10).

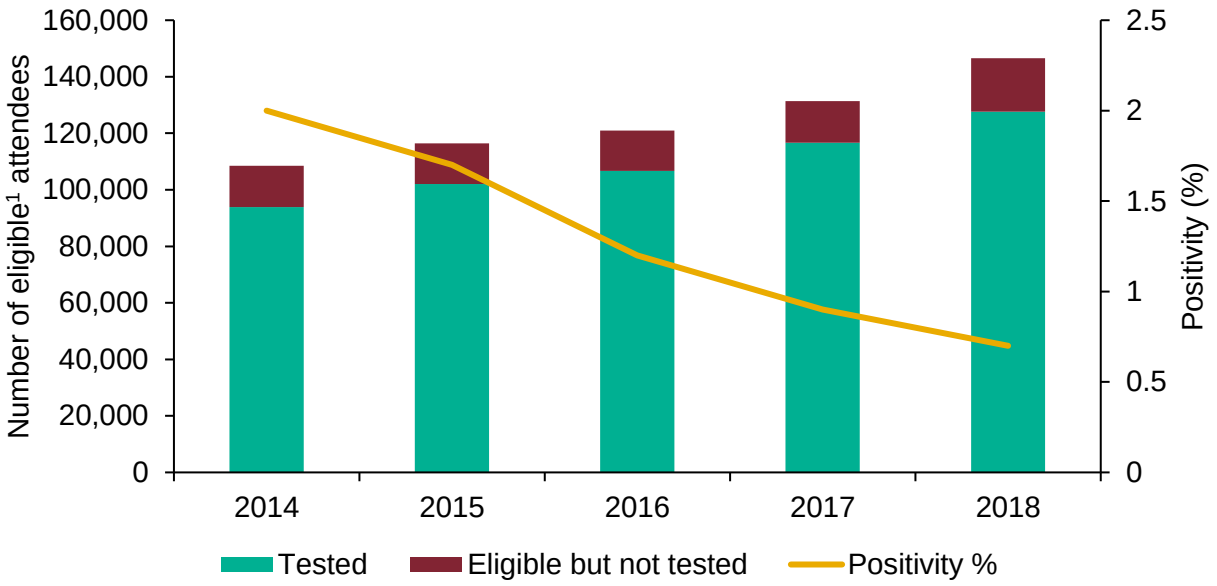
All exposure groups (heterosexual men and women, and GBM) were more likely to be offered an HIV test at London specialist SHS than at services outside London. This difference was greatest for heterosexual women attendees, 88% of whom were offered an HIV test in London compared to 79% outside London. The proportion of heterosexual men and women, and GBM who declined HIV tests at specialist SHS were similar inside and outside London.

5.3 Gay and bisexual men

5.3.1 All SHS (specialist and non-specialist services)

In 2018, 11% (127,633/1,176,990) of people tested in SHS were GBM and 54% (898/1,661) of new diagnoses made at SHS were in this group (Appendix 8). The number of GBM attending SHS has continued to increase over the past 5 years, as has the number tested for HIV (Figure 21). In 2018, 127,633 GBM were tested for HIV in SHS, a 9% increase from the previous year (116,642 in 2017). Test positivity among GBM has continued to fall, from 0.9% in 2017 to 0.7% in 2018. In 2018, HIV test positivity varied by age group and was highest among 25 to 49 year olds (0.9%) and lowest among 15 to 24 year olds (0.6%) (Appendix 12).

Figure 21: Trends in eligible attendees[1], HIV tests and positivity for gay and bisexual male attendees at all SHS: England, 2014 to 2018



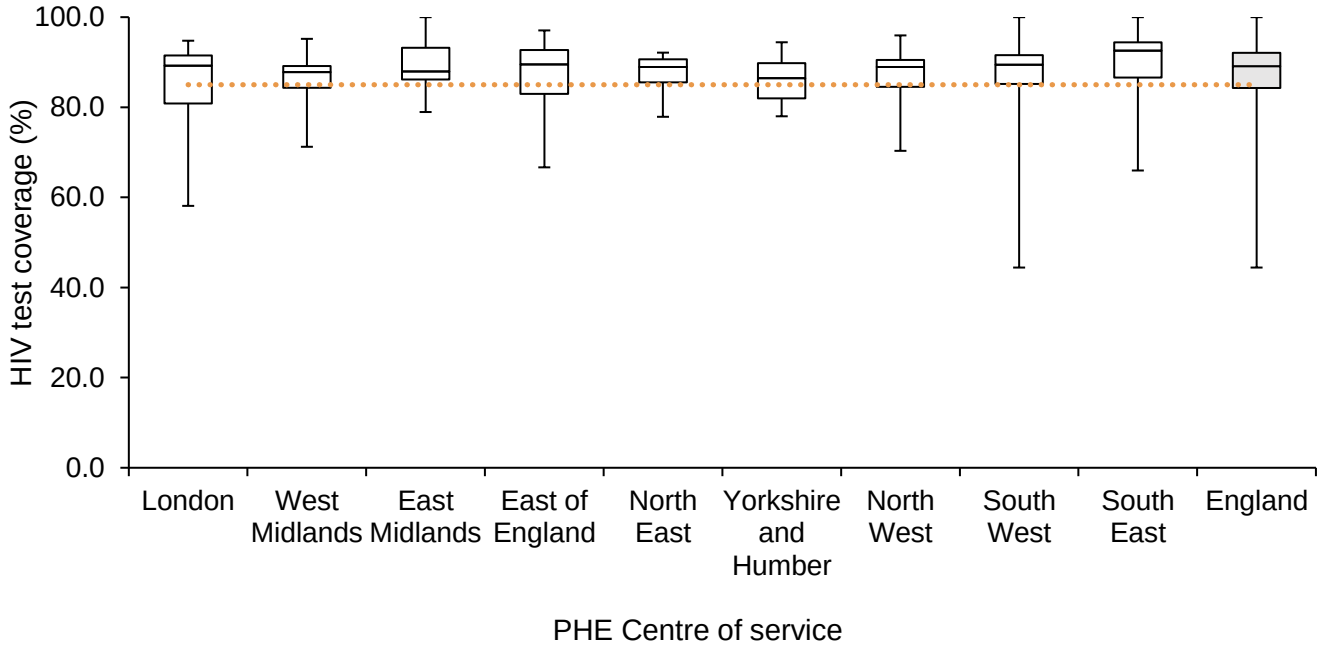
[1] Eligible SHS attendee: any patient attending a SHS at least once during a calendar year; excluding those patients known to be HIV positive or for whom an HIV test was not appropriate, or for whom the attendance was reported as being for and related to reproductive health care only.

Test coverage among GBM was high with 91% (132,921/146,542) being offered a test, and 87% (127,633/146,542) tested. However, this level of coverage still meant that 18,909 eligible GBM who attended SHS were not tested for HIV, of whom 13,621 were not offered a test (Appendix 9).

5.3.2 Specialist SHS

The BASHH standards state that clinics should test 85% of all attendees (with needs relating to STIs) for HIV at their first attendance (31). In 2018, 71% (156/219) of specialist SHS met this target among GBM attendees. This proportion ranged from 58% in Yorkshire and Humber to 80% in the South East. Figure 22 shows the distribution of HIV test coverages at individual specialist clinics for GBM attendees. Each boxplot shows the median test coverage of clinics in a PHE Centre of service and extends to the minimum and maximum coverage of a single clinic in that centre.

Figure 22: Proportion of specialist SHS[1] meeting or exceeding BASHH standards (85%) in eligible[2] GBM attendees by PHE Centre of service[3]: England, 2018



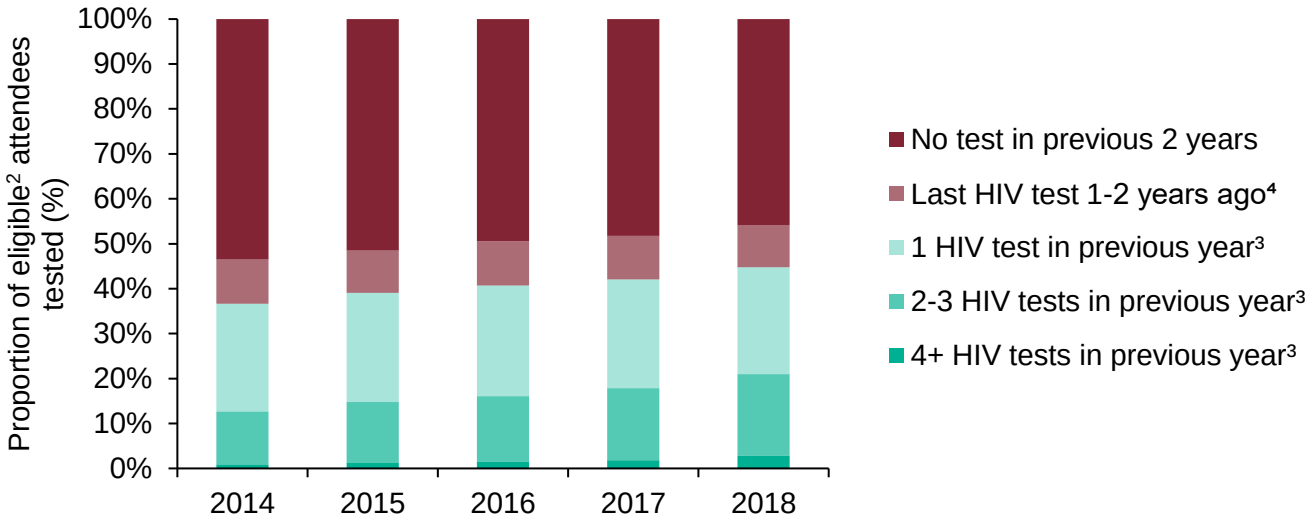
[1] Specialist SHS: referring to level 3 sexual health services (including genitourinary medicine (GUM) and integrated GUM/sexual and reproductive health (SRH)).
[2] Eligible SHS attendee: any patient attending a SHS at least once during a calendar year; excluding those patients known to be HIV positive or for whom an HIV test was not appropriate, or for whom the attendance was reported as being for and related to reproductive health care only.
[3] Service data: Data represent STI tests & diagnoses made in services in England, & regional breakdowns represent service location. Data include non-England residents as well as England residents, therefore numbers will differ from other GUMCAD data presented.

In 2018, 45% (49,627/110,766) of GBM who were tested for HIV were reported as having had one or more HIV tests during the previous year (at the same specialist SHS). This was an increase from 42% (45,980/109,284) in 2017 (Figure 23) (Appendix 13a). Test positivity among repeat testers fell from 0.4% in 2017 to 0.3% in 2018 (Appendix 13b).

The proportion of GBM tested for HIV, who had frequently tested for HIV (2 or more HIV tests during the previous year, at the same specialist SHS) also increased, from 18%

(19,489/109,284) in 2017 to 21% (23,193/110,766) in 2018. In 2018, 8% (75/890) of GBM diagnosed with HIV at specialist SHS were among this frequently tested group. Despite this, nearly half (46%, 50,740/110,766) of GBM who tested at a specialist SHS in 2018 had not been tested in the previous 2 years (at the same service). However, three-quarters (75%, 665/890) of HIV diagnoses made among GBM at specialist SHS were made in GBM who had not tested in the previous 2 years. In addition, this group had the highest test positivity (1.3%) among GBM attending specialist SHS (Appendix 13b).

Figure 23: Gay and bisexual men testing for HIV at specialist SHS[1]: previous HIV tests at the same clinic: England, 2014 to 2018

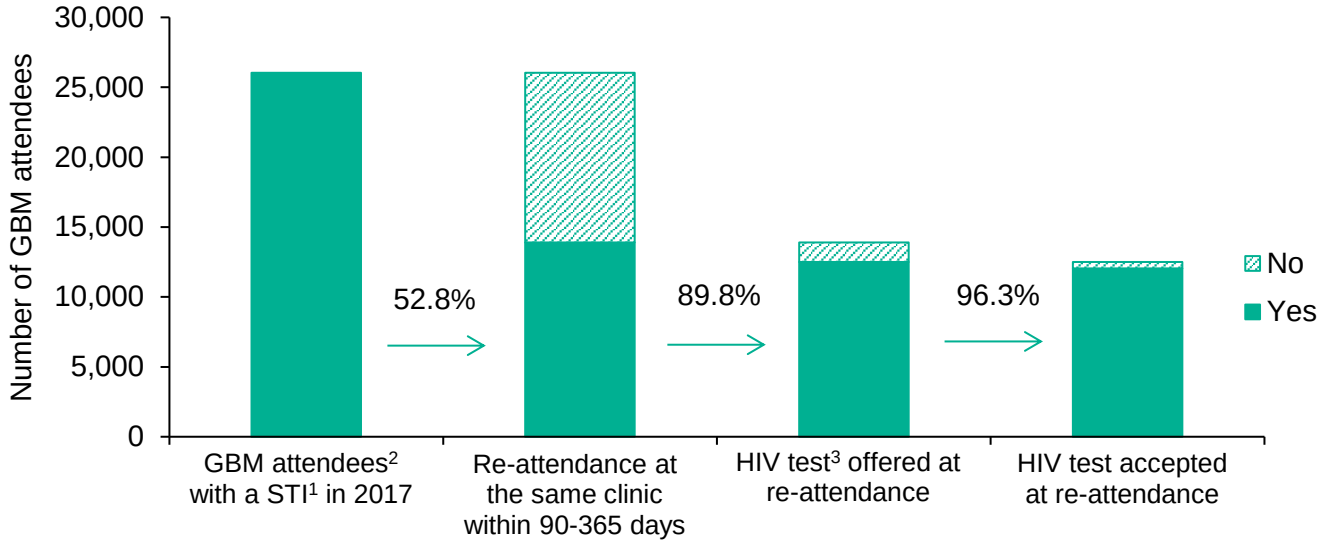


[1] Specialist SHS: referring to level 3 sexual health services (including genitourinary medicine (GUM) and integrated GUM/sexual and reproductive health (SRH)).
[2] Eligible SHS attendee: any patient attending a SHS at least once during a calendar year; excluding those patients known to be HIV positive or for whom an HIV test was not appropriate, or for whom the attendance was reported as being for and related to reproductive health care only.
[3] Previous year: 43 - 365 days before the last test in a calendar year or date of new diagnosis
[4] 1-2 years ago: at least one test in the 366 - 730 days and no tests in the 43 - 365 days before the last test in a calendar year or date of new diagnosis

GBM with an anogenital bacterial STI diagnosis subsequently have a high incidence of HIV infection. Of the 26,031 GBM diagnosed with an anogenital bacterial STI in 2017, 46% (12,035/26,031) were tested at the same service for HIV in the year following their STI diagnosis (Figure 24). These tests identified 584 new diagnoses of HIV, a positivity of 4.9%. One new HIV diagnosis was made for every 21 men tested in this group (Appendix 14).

Nearly half of this group (47%, 12,125/26,031) did not re-attend the same specialist SHS. Of those who did return to the same service, 10% (1,413/13,906) were not offered a test and 4% (458/12,493) were offered but declined a test.

Figure 24: HIV testing cascade among gay and bisexual men who had a STI[1] in the past year attending specialist SHS: England, 2017 to 2018



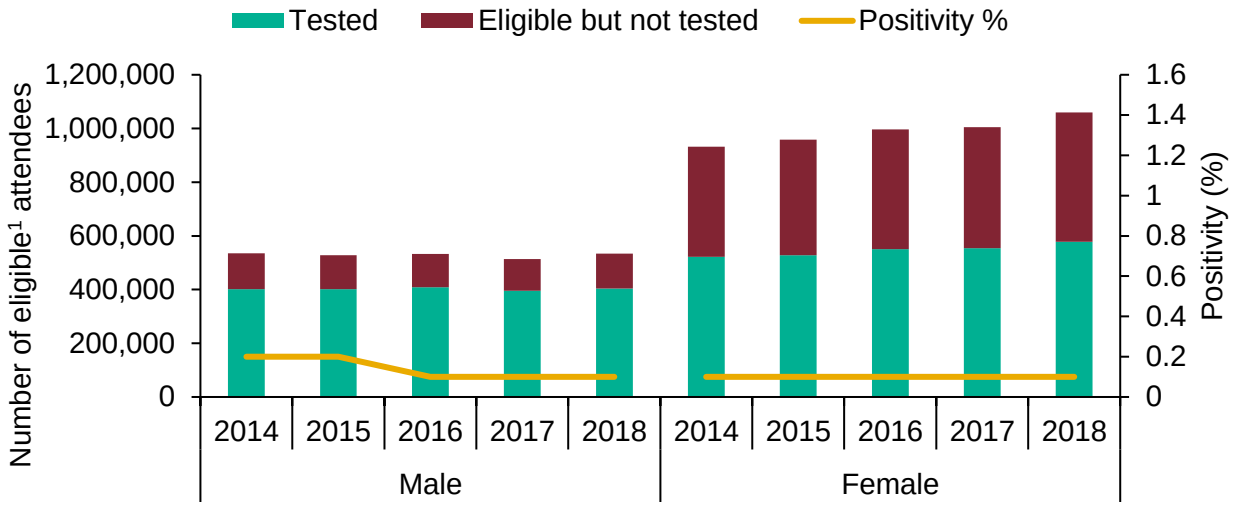
[1] GBM with an anogenital STI diagnosis in 2017
[2] Excludes GBM attendees previously diagnosed with HIV
[3] Offered an HIV test at least once in the 90 - 365 days after STI diagnosis

5.4 All heterosexual men and women

5.4.1 All SHS (specialist and non-specialist services)

The number of heterosexual men and women tested for HIV in all SHS has stayed stable since 2014 (Figure 25). In 2018, test coverage among heterosexual women (55%, 578,424/1,059,934) remained lower than among heterosexual men (76%, 404,435/534,476) (Appendix 15). Test coverage among all heterosexuals was lower in non-specialist SHS (51%, 137,631/269,337) than in specialist SHS (64%, 845,238/1,325,703). In 2018, 8% (88,292/1,059,934) of all heterosexual female SHS attendees attended a sexual reproductive health (SRH) service, where HIV test coverage was 32% (28,447/88,292) (Appendix 9).

Figure 25: Trends in number of heterosexual attendees tested at all SHS by gender: England, 2014 to 2018



[1] Eligible SHS attendee: any patient attending a SHS at least once during a calendar year; excluding those patients known to be HIV positive or for whom an HIV test was not appropriate, or for whom the attendance was reported as being for and related to reproductive health care only.

Overall in 2018, HIV test positivity remained low at 0.1% for both heterosexual men and women attending SHS (Figure 25). HIV test positivity varied by age group, with heterosexuals aged 50 and above having the highest HIV positivity (0.3%). While only 5% (47,224/982,859) of heterosexuals who tested for HIV in SHS were aged 50 and above, 25% (161/648) of heterosexual HIV diagnoses made in SHS were in this age group. HIV test coverage among heterosexuals aged 50 and over was greater than among heterosexuals overall (66%, 47,224/71,770 vs 61%, 982,859/1,594,410) (Appendix 12).

5.5 Non-black African heterosexual attendees

5.5.1 All SHS (specialist and non-specialist services)

In 2018, 73% (853,060/1,176,990) of people tested in SHS were non-black African heterosexuals and 27% (388/1,661) of new diagnoses made at SHS were in this group. Test positivity was 0.1% among non-black African heterosexual men, and less than 0.1% among non-black African heterosexual women. HIV test coverage was higher among non-black African heterosexual men than women (76% vs 54%). These coverage levels resulted in over half a million non-black African heterosexual SHS attendees not being tested for HIV (Appendix 16).

5.5.2 Specialist SHS

Most (86%) non-black African heterosexuals tested at SHS were tested at a specialist SHS. HIV test coverage among non-black African heterosexuals was higher at specialist SHS than non-specialist SHS and higher among non-black African heterosexual men than women (77% vs 56%). However, the large numbers of attendees at specialist SHS meant that most of the non-black African heterosexual eligible attendees who were not tested for HIV were seen at a specialist SHS (79%, 423,857/534,675). Most of these non-black African heterosexuals who were not tested for HIV at specialist SHS, were women (79%, 333,237/423,857).

5.5.2.1 Specialist SHS in London and outside London

The largest group of eligible attendees who were not tested at specialist SHS, were non-black African heterosexual women attending services outside London. Over one quarter of a million (273,562) of these women were not tested for HIV in 2018, accounting for 49% of all eligible attendees who were not tested at specialist SHS.

Non-black African heterosexual women were equally likely to decline a test in London and outside London, but far less likely to be offered a test outside London than in London (79% vs 88%) (Appendix 11).

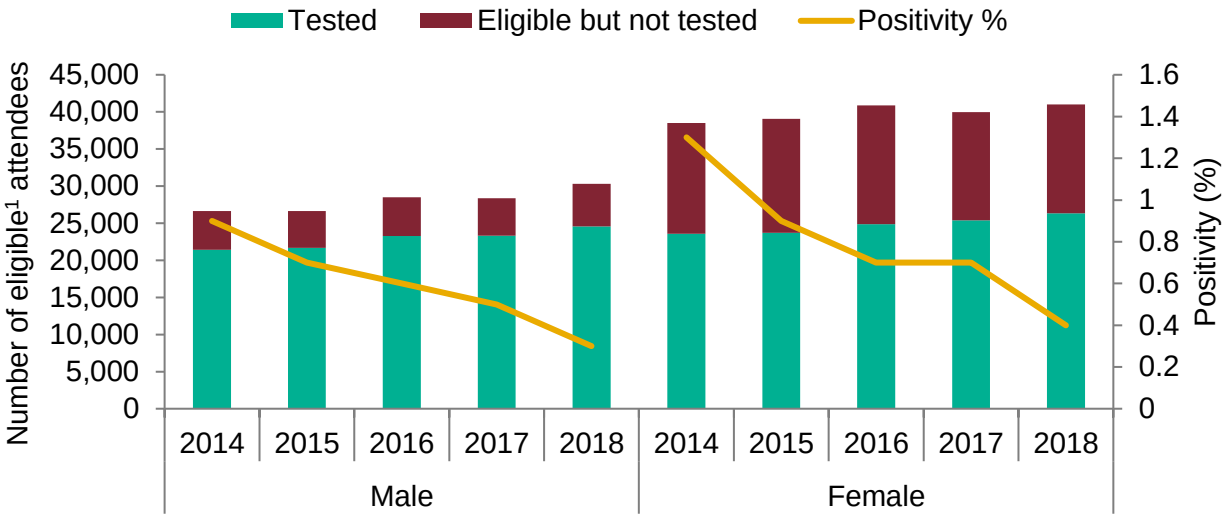
5.6 Black African heterosexual men and women

5.6.1 All SHS (specialist and non-specialist services)

The number of black African heterosexual men and women tested for HIV in 2018 at SHS increased by 5% and 4% respectively from 2017. HIV test coverage was higher among black African heterosexual men and women (81% and 64%) than among heterosexual men and women overall (76% and 55%) (Appendix 17).

Over the past 5 years, HIV test positivity has continued to fall in this group. In 2014, positivity was 0.9% in men and 1.3% in women, whereas in 2018, positivity was 0.3% in men and 0.4% in women (Figure 26).

Figure 26: Trends in number of black African heterosexual attendees tested at all SHS by gender: England, 2014 to 2018



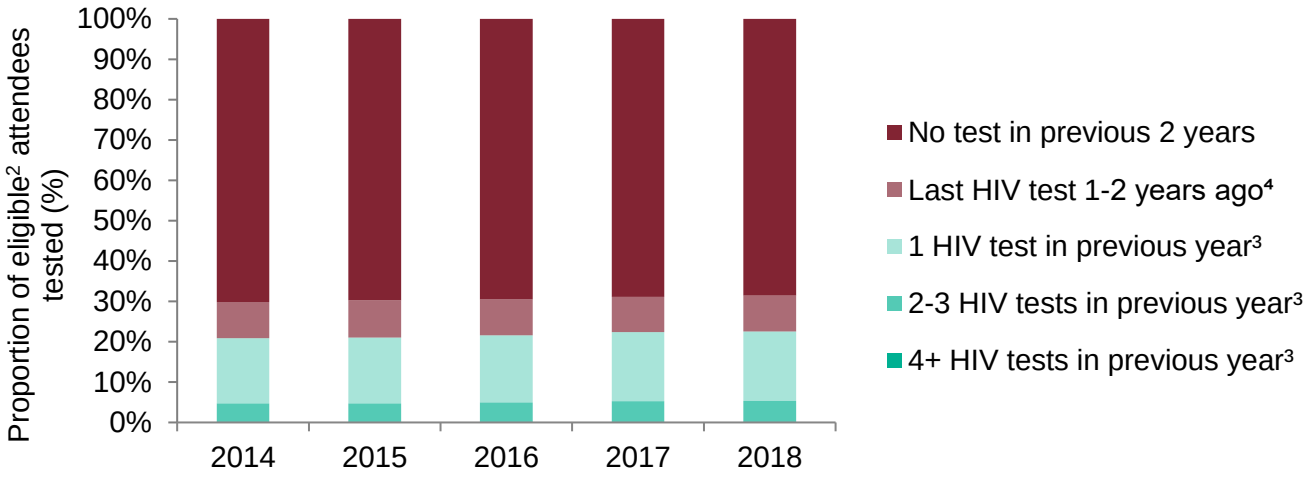
[1] Eligible SHS attendee: any patient attending a SHS at least once during a calendar year; excluding those patients known to be HIV positive or for whom an HIV test was not appropriate, or for whom the attendance was reported as being for and related to reproductive health care only.

5.6.2 Specialist SHS

In specialist SHS, HIV test coverage among black African heterosexual men and women (83% and 65%) was higher than among non-black African heterosexual men and women (77% and 56%). This was because only 14% of black African heterosexuals declined a test offer compared to 21% of non-black African heterosexuals (Appendix 11).

In 2018, 23% (9,742/43,225) of black African heterosexuals who had been tested for HIV had one or more tests in the previous year at the same service. This proportion was similar to 2017 (22%, 9,676/43,220) (Figure 27) (Appendix 18a). In 2018, only 4% (8/189) of HIV diagnoses among black African heterosexual attendees were made among this group (Appendix 18b).

Figure 27: Repeat HIV testing among black African heterosexuals attending specialist SHS[1]: England, 2014 to 2018



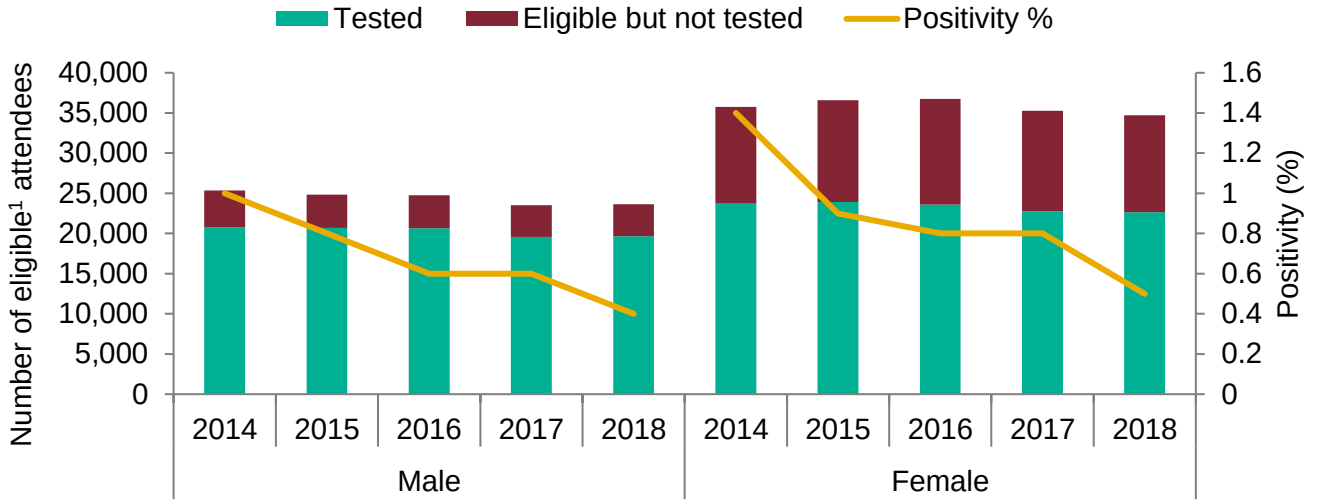
[1] Specialist SHS: referring to level 3 sexual health services (including genitourinary medicine (GUM) and integrated GUM/sexual and reproductive health (SRH)).
[2] Eligible SHS attendee: any patient attending a SHS at least once during a calendar year; excluding those patients known to be HIV positive or for whom an HIV test was not appropriate, or for whom the attendance was reported as being for and related to reproductive health care only.
[3] Previous year: 43-365 days before the last test in a calendar year or date of new diagnosis
[4] 1-2 years ago: at least one test in the 366-730 days and no tests in the 43-365 days before the last test in a calendar year or date of new diagnosis

5.7 Heterosexual attendees born in a country with a high HIV prevalence

5.7.1 All SHS (specialist and non-specialist services)

The number of heterosexual attendees born in a country with high HIV prevalence who were tested for HIV in SHS has remained stable since 2014, as has HIV test coverage. Coverage among heterosexual male and female attendees born in a country with high HIV prevalence (83% and 65%) was higher than among heterosexual men and women overall (76% and 55%). HIV test positivity has fallen among heterosexuals born in a country with high HIV prevalence since 2017; from 0.6% to 0.4% among men, and from 0.8% to 0.5% among women (Figure 28) (Appendix 19). A full list of countries with high HIV prevalence can be found in Appendix 2.

Figure 28: Trends in number tested among heterosexual attendees born in a high prevalence country at all SHS by gender: England, 2014 to 2018



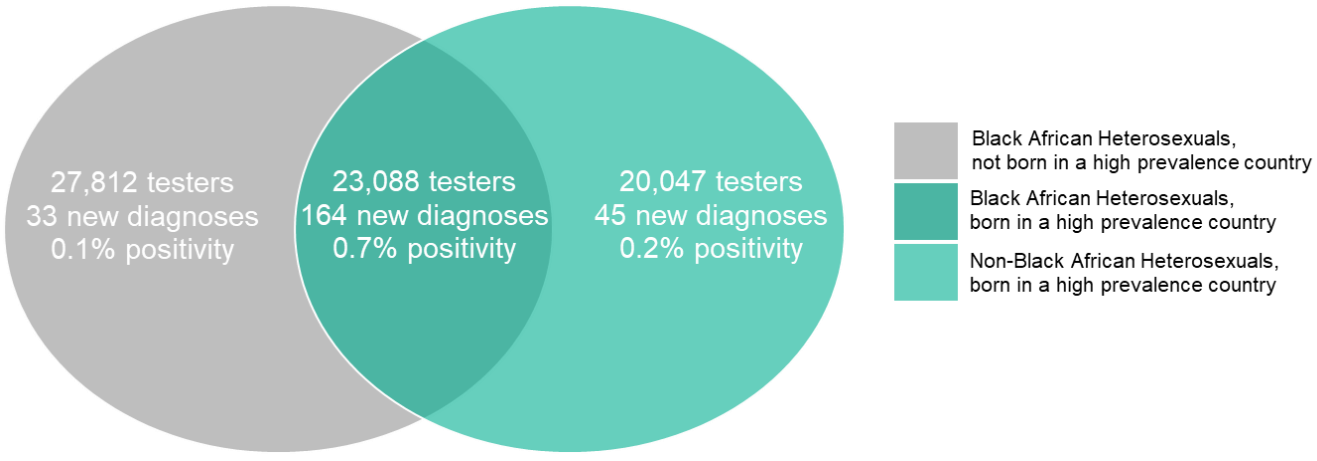
[1] Eligible SHS attendee: any patient attending a SHS at least once during a calendar year; excluding those patients known to be HIV positive or for whom an HIV test was not appropriate, or for whom the attendance was reported as being for and related to reproductive health care only.

5.8 Black African and/or born in a country with high diagnosed HIV prevalence

5.8.1 All SHS (specialist and non-specialist services)

This section combines information about heterosexual SHS attendees of black African ethnicity with information about those who were born in a country with high diagnosed HIV prevalence. The data have been combined because there are substantial overlaps between these 2 groups. Heterosexuals of black African ethnicity who were born in a high prevalence country have a higher HIV test positivity (0.7%) than those born in other countries and account for the majority (83%, 164/197) of diagnoses among black African heterosexual SHS attendees (Figure 29).

Figure 29: Tests, new diagnoses and positivity in black Africans and/or born in a high prevalence country attending all SHS: England, 2018



5.9 Black Caribbean heterosexual attendees

5.9.1 All SHS (specialist and non-specialist services)

In 2018, 40,254 black Caribbean heterosexuals were tested for HIV at SHS, an increase of 4% since 2017. HIV test coverage among black Caribbean heterosexual men (76%) was the same as for heterosexual men overall, whereas test coverage among black Caribbean heterosexual women was higher than for heterosexual women overall (68% vs 55%). HIV test positivity among this group has remained stable at 0.1% over the past 5 years.

5.10 Trans people

5.10.1 All SHS (specialist and non-specialist services)

In 2018, 204 trans people were reported as having attended SHS and being eligible for HIV testing, 172 were offered an HIV test, 16 of whom declined the offer. These low numbers reflect the introduction of a new code in 2017 to identify trans attendees, which has yet to be fully implemented. Ongoing surveillance developments will allow for more accurate identification of trans people attending SHS and will be presented in future reports.

5.11 Expanded routine testing in areas of high and extremely high diagnosed HIV prevalence

Testing data from general practices (GPs) and hospitals are presented from laboratories reporting to the Sentinel Surveillance of Blood Borne Viruses (SSBBV) (33). SSBBV has collected data on testing for hepatitis A-E, HIV and HTLV since 2002.

The number of tests presented includes all tests until a person is diagnosed positive; no tests are counted after a positive test and a person can be counted more than once. Positivity is calculated using the number of people tested, a person can only be counted once within a year. However, as an individual can test in more than one setting, the individual is counted once for each test setting (ie diagnosed HIV prevalence band). Antenatal HIV testing data were excluded from SSBBV analyses.

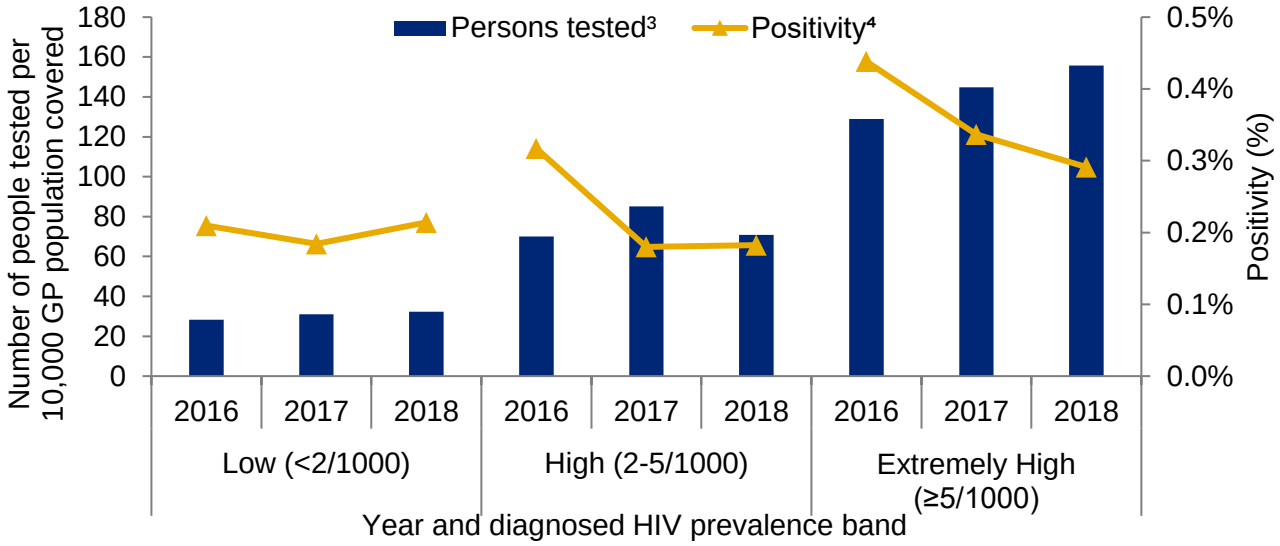
5.11.1 General practice

This report includes SSBBV HIV testing data from GPs who cover 72% of the GP population in extremely high prevalence areas, 30% in high prevalence areas and 26% in low prevalence areas. Testing trends are presented using data from laboratories for which SSBBV had HIV tests consistently reported between 2016 and 2018.

Among GPs using laboratories reporting to SSBBV, HIV testing coverage in extremely high prevalence areas increased from 129 persons tested per 10,000 in 2016 to 156 persons tested per 10,000 in 2018. Smaller increases in HIV test coverage were seen among GPs in high and low prevalence bands (Figure 30).

In 2018, HIV testing coverage in GPs in extremely high prevalence areas was more than twice that seen in high prevalence areas (71 per 10,000) and nearly 5 times higher than in low prevalence areas (32 per 10,000). HIV test positivity rates have fallen in all areas, to 0.3% in practices in extremely high prevalence areas and 0.2% in high and low prevalence areas (Figure 30). HIV test positivity rates reflect both underlying prevalence and testing practices.

Figure 30: Number of people tested and positivity in general practice[1] by diagnosed HIV prevalence band[2] in data captured by SSBBV: England, 2016 to 2018



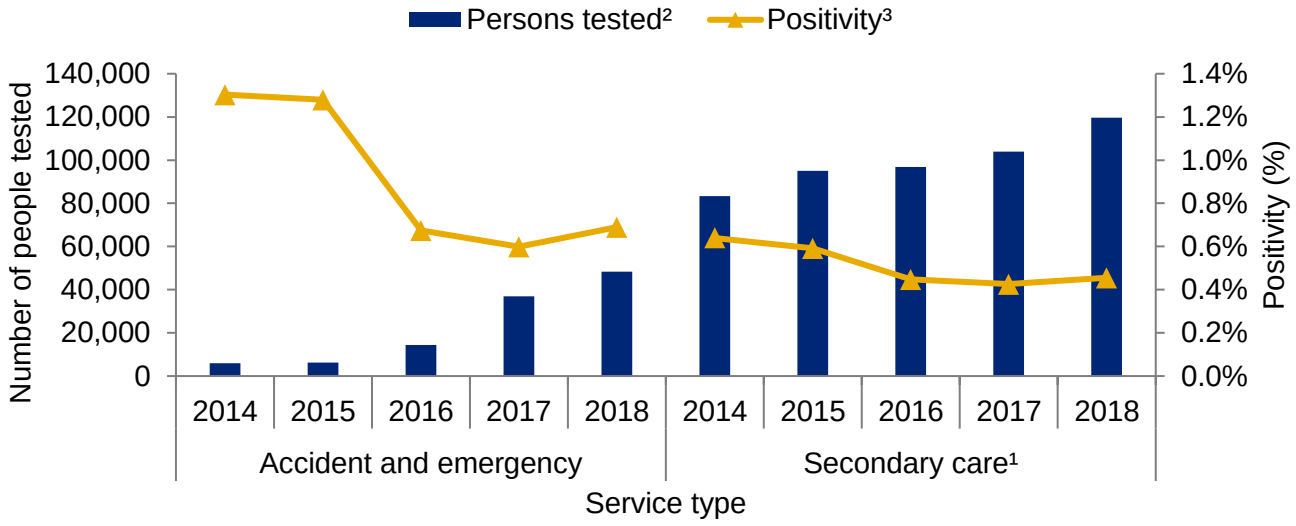
[1] GP practices that consistently reported to SSBBV from 2016-2018.
[2] Based on the diagnosed HIV prevalence data in those aged 15-59 in 2018, banding by service local authority.
[3] Persons are only counted once per year. Persons can be counted more than once if they tested across multiple years or in different prevalence bands.
[4] Positivity is calculated as the number positive/number of individuals tested.

5.11.2 A&E and other secondary care

In 2018, SSBBV reported data on 56,986 HIV tests in accident and emergency (A&E) settings, and 148,184 HIV tests in other secondary care settings (including in-patient and out-patient settings), equating to 48,307 and 119,643 individuals respectively. Test positivity was 0.7% in A&E, and 0.5% in other secondary care settings (Figure 31). Testing trends are presented using data from laboratories for which SSBBV had HIV tests consistently reported between 2014 and 2018.

The number of people tested and positivity in hospitals is likely to reflect local testing initiatives and differs across sites and over time. Changes in testing practices were evident as there was a nine-fold increase in tests carried out in A&Es reporting to the surveillance system between 2014 and 2018. The steep increase in testing was accompanied by a fall in positivity from 1.3% to 0.7%. Testing in other secondary care settings increased by 43% between 2014 and 2018, and positivity fell from 0.6% to 0.5% (Appendix 20).

Figure 31: Number of people tested and positivity in accident and emergency and all other secondary care settings[1] in data captured by SSBBV: England, 2014 to 2018



[1] Excludes testing within antenatal and HIV services. Includes hospitals that consistently reported to SSBBV from 2014-2018.
[2] Persons are only counted once per year. Persons can be counted more than once if they tested across multiple years or in different prevalence bands.
[3] Positivity is calculated as the number positive/number of individuals tested.

5.12 HIV testing in other services seeing at risk groups

5.12.1 Healthcare services for those diagnosed with tuberculosis

In 2018, testing information was available for 95% (4,228/4,446) of people notified with TB who had a previously unknown HIV status. Of these people, 95% (4,008/4,228) were tested for HIV.

HIV test coverage among people notified with TB was highest in those born in countries with high HIV prevalence (97%), followed by those born in all other countries except the UK (96%) and lowest among those born in the UK (92%).

In 2018, 2.7% (120/4,504) of TB cases were co-infected with HIV (as determined by matching TB cases to HIV cases). For co-infected notified TB cases where the country of birth was known, 55% (63/115) were born in countries with a high HIV prevalence (34).

5.12.2 Prisons

In 2014, PHE, NHS England (NHSE) and HM Prison and Probation Service (HMPPS) started implementing an ‘opt out’ blood-borne virus (BBV) testing programme in which all people newly arriving into or transferring between prisons would be offered a test for HCV, HBV and HIV[xxx] (35). Full programme roll-out across the English prison estate was achieved in April 2018 with a reported seven-fold increase in HIV testing uptake.

For the financial year 2018/2019, data from the Health and Justice Indicators of Performance (HJIPs) showed that 77% (131,419/170,284) of eligible people newly arriving into or transferring between prisons were offered an HIV test. Test uptake was 44% (57,635/131,419) and test coverage was 34% (57,635/170,284). Despite the large increase in HIV testing, current levels still fall short of the lower BBV testing threshold proposed by NHS England (50 to 74%), and well below the target threshold of 75% uptake (36).

In 2018/19, 57,635 people newly arriving into or transferring between prisons were tested for HIV, an increase of 39% since 2017/18. This testing identified 665 HIV infections in 2018/19, a test positivity of 1.2% (37).

The number of people in prison tested in SHS reported through GUMCAD fell by 14% since 2017 (from 1,467 in 2017 to 1,258 in 2018). Six new diagnoses were identified at specialist SHS, a test positivity of 0.5% (Appendix 21).

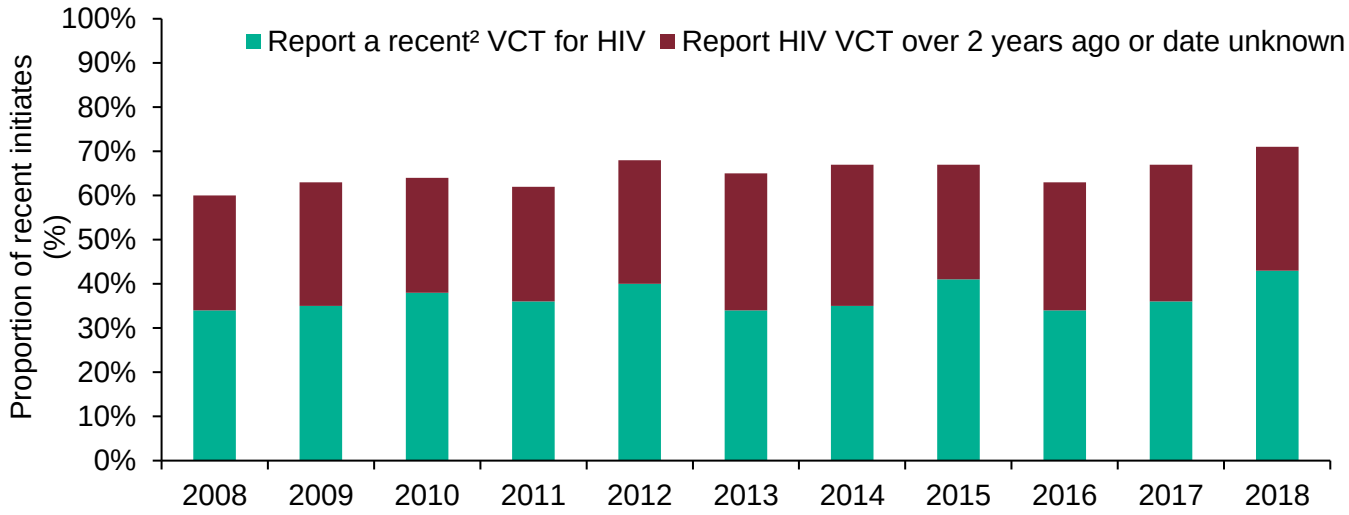
[xxx] HIV testing should be recommended to all prisoners including those already in prison unless: they have been tested in the last 12 months and have not subsequently put themselves at risk of infection; they have been tested and are positive; they are known to be HIV positive.

5.12.3 Specialist services for people who inject drugs

The Unlinked Anonymous Monitoring (UAM) Survey of People Who Inject Drugs (PWID) (38) recruits current and former psychoactive drug injectors through drug and alcohol services. This survey found that HIV prevalence among this group has remained relatively stable in England over the past decade (1.5% (95%CI 1.1-2.0%) in 2008 to 1.2% (95%CI 0.8-1.7%) in 2018). Most (96%, 24/25) HIV positive PWID who participated in the survey in England during 2018, were aware of their status.

The prevalence of HIV was lower (0.5%) among survey participants who reported initiation of injecting drug use within the last 3 years (recent initiates) compared to PWID who first injected over 3 years ago (1.2%). In 2018, 71% of recent initiates reported ever having an HIV test, and 43% of recent initiates reported that their most recent test was in the previous 2 years (Figure 32).

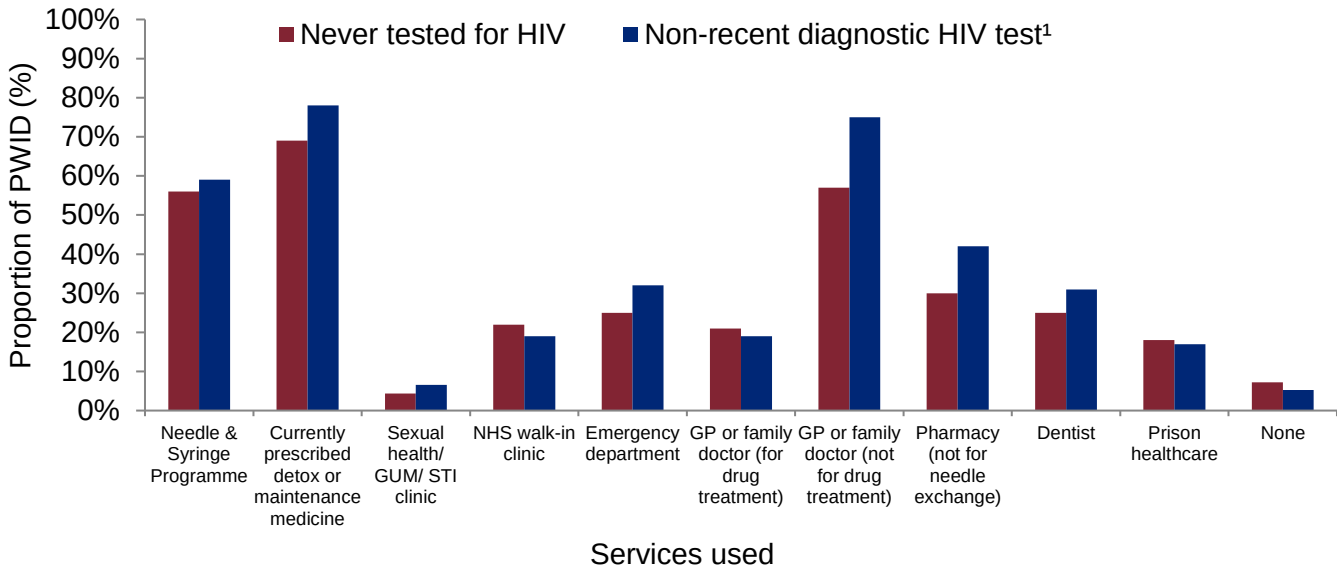
Figure 32: Self-reported uptake of voluntary confidential test (VCT) for HIV among recent initiates[1] to injecting drug use: England, 2008 to 2018



[1] Recent initiates: first injected during preceding 3 years
[2] Reported last VCT for HIV in the current or previous year

Many PWID reported never having had an HIV test or not having been tested in the last 2 years despite attending a range of clinical services. Of the participants who last reported being tested over 2 years ago (non-recent), 78% were receiving treatment for their drug use (ie prescribed a detox or maintenance medicine); 75% had seen a GP for reasons other than for drug treatment; and 59% had used a needle and syringe programme (NSP) in the last year. A similar pattern was seen in those who reported never having been tested for HIV; 69% were receiving treatment for their drug use; 57% had seen a GP for reasons other than for drug treatment in the last year; and 56% had used an NSP (Figure 33).

Figure 33: Self-Reported access to health services in the previous year among PWID who report never having had a diagnostic HIV test and those who report not testing recently[1]: England, 2018



[1] Reported the year of their last diagnostic HIV test was over 2 years ago or year of last test was unknown

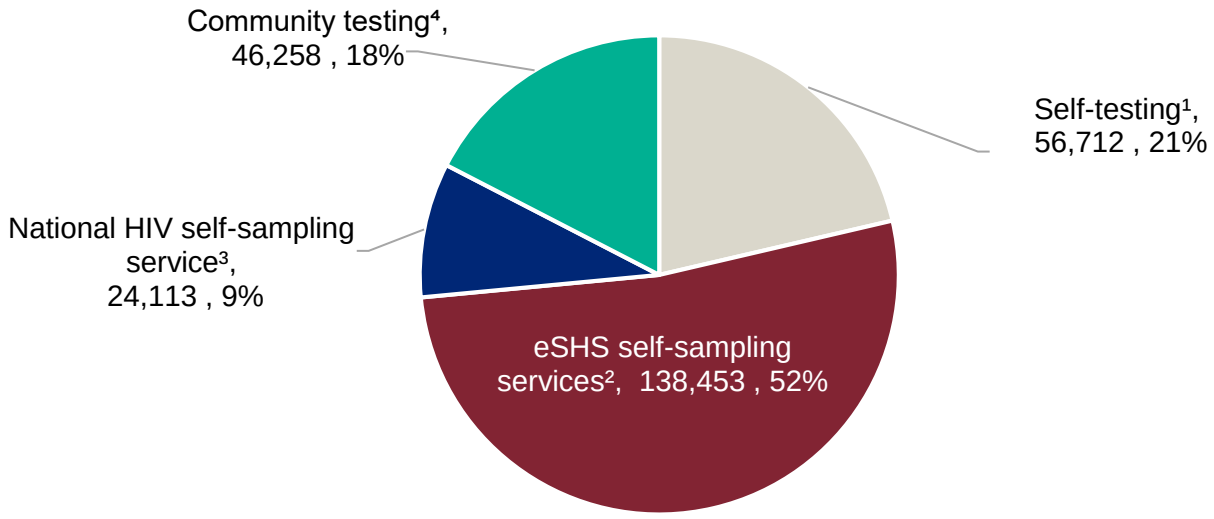
5.13 HIV testing at home and in the community

HIV testing is available in several non-clinical settings. This report includes data on self-sampling tests carried out by the National HIV Self-Sampling Service (39) and through *e*Sexual Health Service (*e*SHS) that report to the GUMCAD STI surveillance system. The tests provided through *e*SHS are also included within the overall SHS data reported in sections 5.2 through 5.10 of this report. Data are also included on HIV self-test kits sold and distributed within England (40, 41) and on HIV tests carried out in community settings.

In 2018, 265,536 HIV tests were carried out, sold or distributed in community and home settings in England. This included 138,453 tests provided through *e*SHS and 127,083 other online or community-based tests (Figure 34).

The 127,083 other online and community-based HIV tests included 24,113 self-sampling test kits returned via the national HIV self-sampling service; 56,712 self-testing HIV kits sold to individuals (39,003) or distributed via retailers (17,709); and 46,258 HIV tests reported through PHE's 'Survey of HIV Testing in Community Settings'. A list of the organisations who participated in the survey can be found in Appendix 22.

Figure 34: HIV tests carried out through self-testing, self-sampling schemes and community testing services: England, 2018



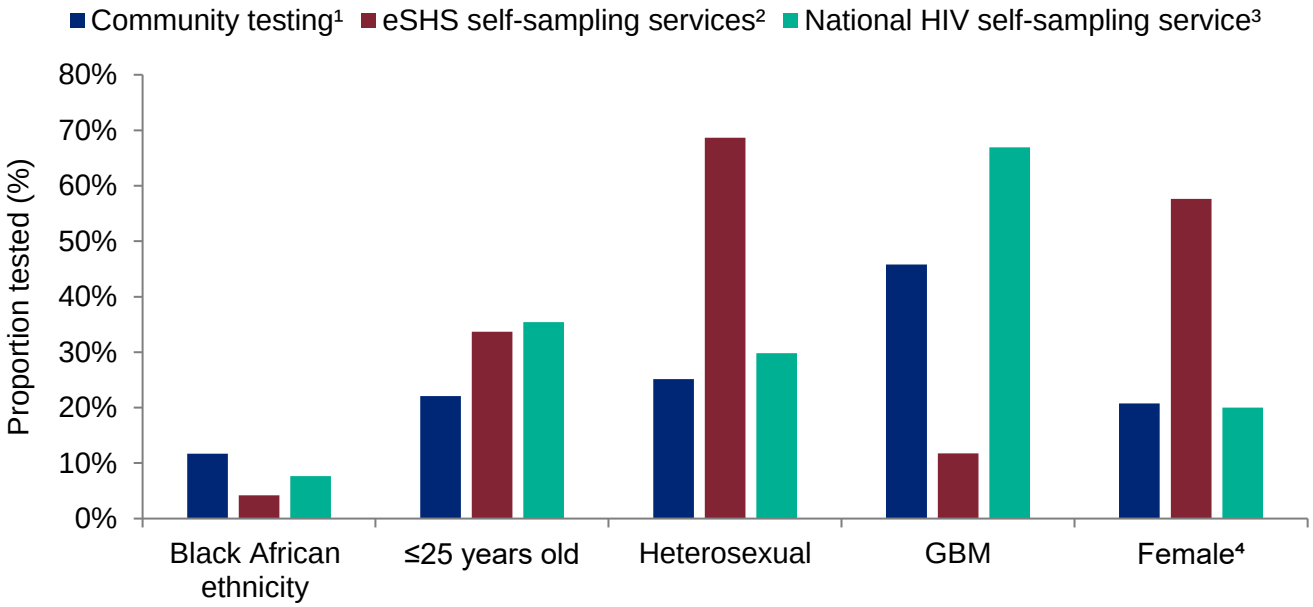
[1] Self-tests purchased privately online and distributed via retail pharmacies. Data provided by BioSure and bioLytical.
[2] Tests returned to self-sampling services which report to the GUMCAD STI Surveillance System. These are also included in the overall SHS HIV testing data.
[3] Tests returned to the National HIV self-sampling service.
[4] Tests reported through the national Survey of HIV Testing in Community Settings.

Test reactivity is available for the national HIV self-sampling scheme (0.5% high reactivity, 0.9% overall reactivity[xxxi] (39)) and for the community HIV testing survey (0.4% overall reactivity).

Community testing, *e*SHS self-sampling and national HIV self-sampling services are used by different population groups (Figure 35). The proportion of tests carried out among those of black African ethnicity was higher in community testing services (12%) compared to the national HIV self-sampling service (8%) or *e*SHS self-sampling services (4%). The proportion of tests carried out in GBM was higher in the national HIV self-sampling service (67%) than in community services (46%) or *e*SHS self-sampling services (12%) (Appendix 23).

[xxxi] Overall reactivity includes high reactives, low reactives and equivocals (those that are initially identified as reactive results but could not be repeated (for example, due to insufficient volumes of blood) or, less frequently, gave a non-reactive result on the repeat test)

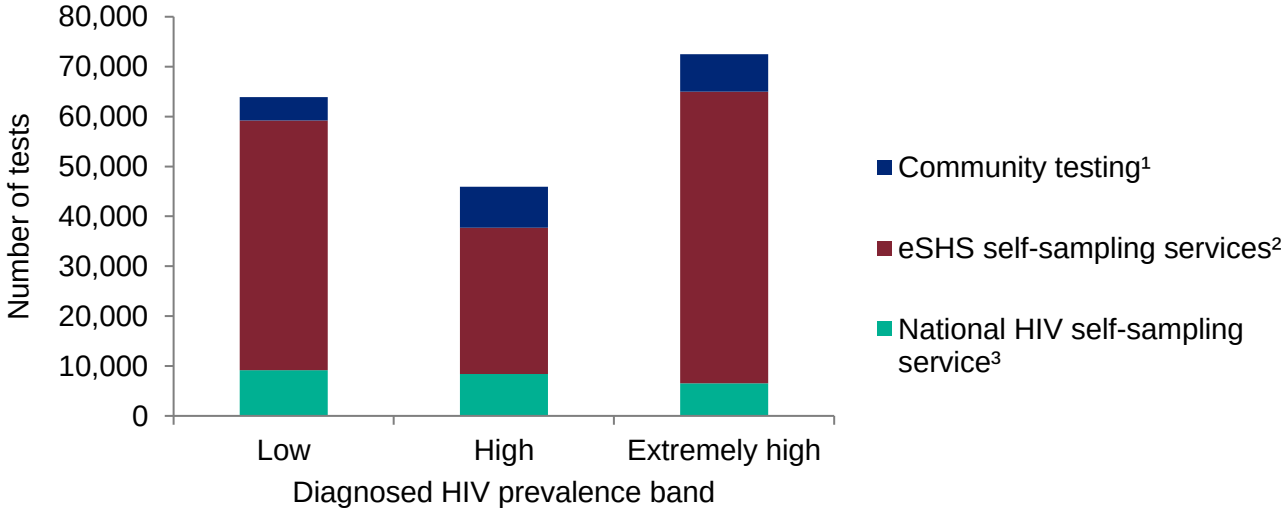
Figure 35: Characteristics of persons tested through community testing services and self-sampling schemes: England, 2018



[1] Tests reported through the national survey of community testing.
[2] Tests returned to self-sampling services which report to the GUMCAD STI Surveillance System. These are also included in the overall SHS HIV testing data.
[3] Tests returned to the National HIV self-sampling service.
[4] Includes cis and trans female.

The number of HIV tests carried out using online and community testing services varied by diagnosed HIV prevalence band (Figure 36). In 2018, 25% of these tests were reported from high prevalence areas, and 40% from extremely high prevalence areas.

Figure 36: HIV tests carried out through self-sampling schemes and community testing services: diagnosed prevalence band: England, 2018



[1] Tests reported through the national survey of community testing
[2] Tests returned to self-sampling services which report to the GUMCAD STI Surveillance System
[3] Tests returned to the National HIV self-sampling service

5.14 Universal screening

In 2018, coverage of HIV testing remained high in antenatal services (exceeding 99%) and all blood and tissue donations were tested for HIV (Table 4).

Table 4: HIV test coverage and newly diagnosed rate in pregnant women presenting at antenatal services and blood, bone and tissue donors: England, 2017 to 2018

	Year period	Eligible	Tested	Coverage (%)[1]	New diagnoses/ Confirmed positive[2]	Newly diagnosed rate / 100,000 tested[3]
Antenatal[4]	2017/18	659,995	657,231	99.6	94	14.3
Blood and tissue donations	2018	-	1,588,685	100	3	0.2

[1] For antenatal data, coverage is presented for the 139/147 providers who submitted complete matched cohort data.
[2] For antenatal data, new diagnoses are presented and for blood donations confirmed positives are presented
[3] For antenatal data, exclusions were applied where data for either infectious diseases in pregnancy screening (IDPS) standard 1 or standard 5 was missing or incomplete meaning absolute numbers reported are lower than those reported for individual standards.
[4] Data from financial year 2017/2018 is presented

5.14.1 Antenatal services

Uptake of HIV screening in pregnant women who engage with antenatal care remains high. During the financial year 2017/2018, coverage exceeded 99% with 657,231 pregnant women tested for HIV (42). Positivity remained low and 14.3 per 100,000 women were newly diagnosed with HIV during pregnancy. The number of new HIV diagnoses made in antenatal settings in the UK can be found in Table 1 (Section 4.1.3).

5.14.2 Blood donors

Donors are voluntary, unpaid individuals aged 17 years and over and selected to be at low risk of blood-borne infections, which includes a 3-month deferral for higher risk sexual behaviour (43). People wishing to donate are advised not to give blood if they are HIV positive or think they need a test for HIV. NHS Blood and Transplant (NHSBT) screens all blood donations made in England for evidence of HIV infection (44).

In 2018, 1.58 million donations were tested for HIV with 3 confirmed positive (0.2 per 100,000 donations) (45). Two of these were new donors and one was a repeat donor. The positivity rate declined from 0.7 per 100,000 donations in 2014. Confirmed positive donors are advised of their result and asked about potential sources of infection (46). In 2018, sex between men and women was identified as the probable source of infection for all 3 HIV infections detected in blood donors. Between 2014-2018, 69% of HIV positive blood donors reported sex between men and women at the post test discussion.

HIV detection in blood donors has declined, leading to an extremely low risk of an undetected HIV infection being released into the blood supply. However, the use of pre-exposure prophylaxis (PrEP) is of concern as there is the potential for low-level HIV infections to go undetected (47). Donors are currently asked about medication they are taking, but to help donors make an informed decision on donating, an explicit question on PrEP has been added to the Donor Health Check questionnaire completed before each donation. Potential donors who have taken PrEP in the last 3 months are not eligible to donate blood.

Research has emerged showing that HIV positive individuals, taking antiretrovirals and with an undetectable viral load (< 200 copies/ ml), have a negligible risk of transmitting the virus to their sexual partner (48). Despite strong evidence suggesting that undetectable virus equals untransmittable, ‘U=U’, being applicable to sexual transmission, this does not apply to blood donation (47) because transfusion transmitted infections have been recorded in patients with viral loads of <200 copies/ml (49). Therefore, donors with undetectable HIV viral load are asked not to donate blood and ‘U=U’ does not change donor selection guidelines (50).

6. Clinical care and Treatment as Prevention (TasP)

HIV treatments continue to evolve and improve the clinical outcomes and life expectancy of people living with HIV. Early initiation of HIV treatment limits damage to the immune system and reduces the risk of developing complications. In addition to the clinical benefits of treatment, achieving and maintaining viral suppression prevents onward transmission of the virus. The public health benefit of HIV treatment is referred to as 'Treatment as Prevention' (TasP) or Undetectable = Untransmittable ("U=U") (51, 52).

6.1 The continuum of HIV care

In 2018, the UK continued to exceed the Joint United Nations Programme on HIV/AIDS (UNAIDS) 90:90:90 targets of 90% of people living with HIV to be diagnosed, 90% of people diagnosed to be receiving ART and 90% of people on treatment to be virally suppressed (11). This was achieved for all people living with HIV and separately for GBM and heterosexual men and women (Table 5). The targets were also met in London and other Fast Track cities of the UK: Brighton, Glasgow, Liverpool and Manchester (Appendix 6) as well as the rest of England.

Table 5: UNAIDS 90-90-90 global and substantive targets by region and exposure group: UK, 2018

		UNAIDS global targets (90:90:90)			UNAIDS substantive targets: (90:81:73)		
		UK	London	Rest of UK	UK	London	Rest of UK
All	People living with HIV	103,800 (101,600-107,800)	39,000 (38,200 -40,200)	64,700 (62,900 - 68,300)	103,800 (101,600 - 107,800)	39,000 (38,200 - 40,200)	64,700 (62,900 - 68,300)
	Diagnosed HIV infection	93%	95%	92%	93%	94%	92%
	Receiving treatment	97%	98%	97%	90%	92%	89%
	Virally suppressed	97%	97%	97%	87%	89%	86%
Gay and bisexual men	People living with HIV	49,800 (48,000–53,400)	20,300 (19,700-21,400)	29,400 (27,900 - 32,700)	49,800 (48,000 – 53,400)	20,300 (19,700-21,400)	29,400 (27,900 - 32,700)
	Diagnosed HIV infection	92%	94%	92%	92%	94%	92%
	Receiving treatment	98%	99%	97%	88%	90%	86%
	Virally suppressed	98%	97%	99%	86%	87%	85%
Heterosexual men and women	People living with HIV	48,600 (47,800-50,800)	16,900 (16,500-17,500)	31,800 (31,100-33,500)	48,600 (47,800-50,800)	16,900 (16,500-17,500)	31,800 (31,100-33,500)
	Diagnosed HIV infection	93%	95%	93%	93%	95%	93%
	Receiving treatment	97%	97%	97%	88%	89%	88%
	Virally suppressed	98%	96%	99%	86%	86%	87%

6.2 Linkage to HIV care

In 2017, 94% (4,291/4,589) of adults who were newly diagnosed in 2017 were linked to HIV care within 3 months; the remaining 6% is equivalent to 298 people newly diagnosed not being linked to care. In 2018, 89% (3,813/4,286) of adults newly diagnosed with HIV infection were linked to care within 3 months of diagnosis. However, since data are to December 2018, this proportion will rise as further reports of people accessing HIV care are incorporated.

Among the 298 people newly diagnosed in 2017 but not linked to care, the completeness of demographic information was low, at around 50%, due to the lack of opportunity to improve data quality for such patients. However, where demographic information was reported, 52% were GBM (59/113), and 42% (47/113) were people who acquired HIV heterosexually. One third (34% (43/125) were UK born. Nearly half (49%; 71/146) were of white ethnicity and a quarter (25%;36/146) were of black African ethnicity.

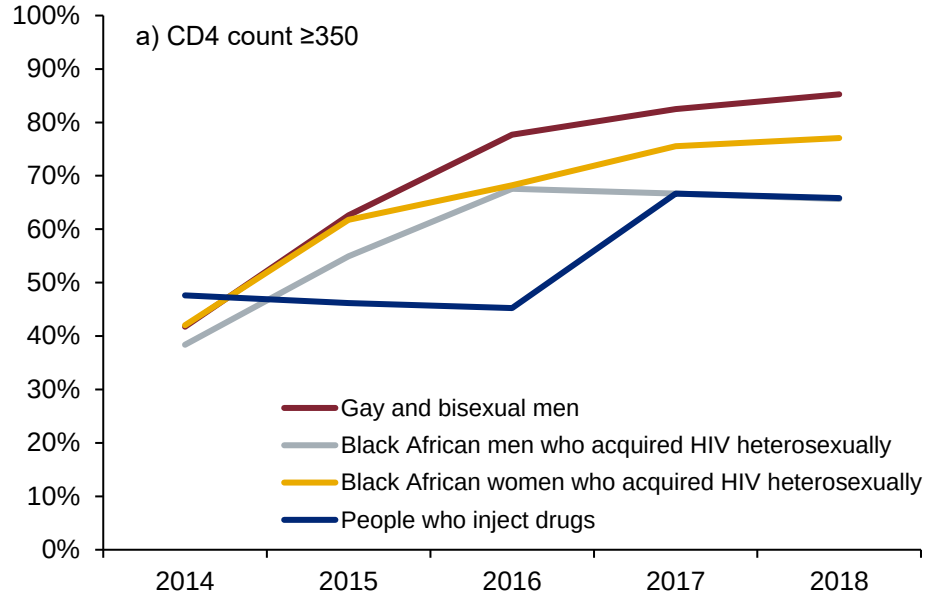
6.3 Time to treatment

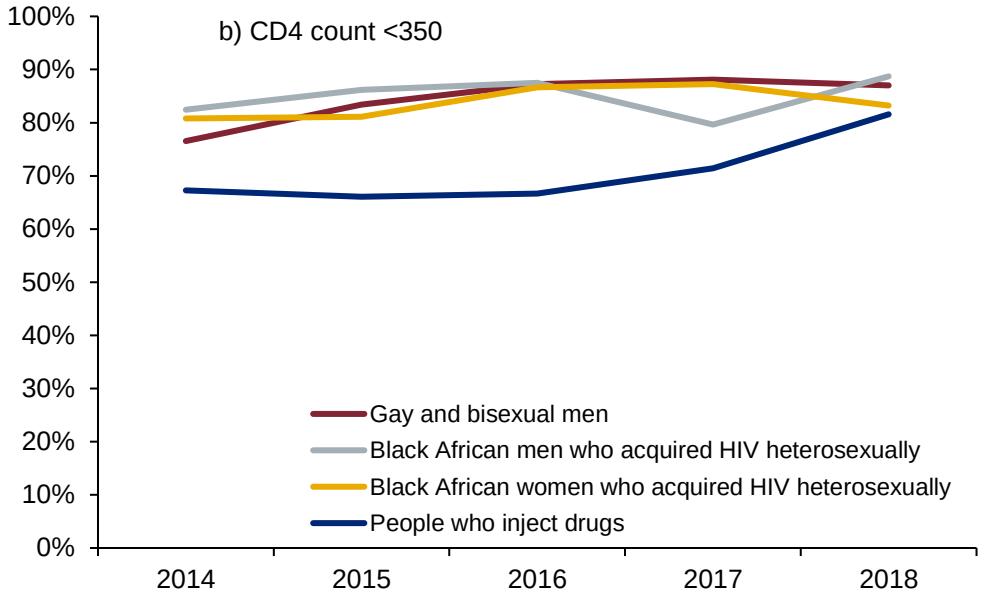
BHIVA HIV treatment guidelines have recommended immediate initiation of treatment for all individuals regardless of CD4 count since 2015. This recommendation became a nationally commissioned service in April 2018 (53, 54). In 2018, excluding people who died or who were not linked to HIV care, 78% (2,915/3,761) of newly diagnosed people started treatment within 3 months of diagnosis compared to 53% (2,751/5,157) of those who were first diagnosed in 2014.

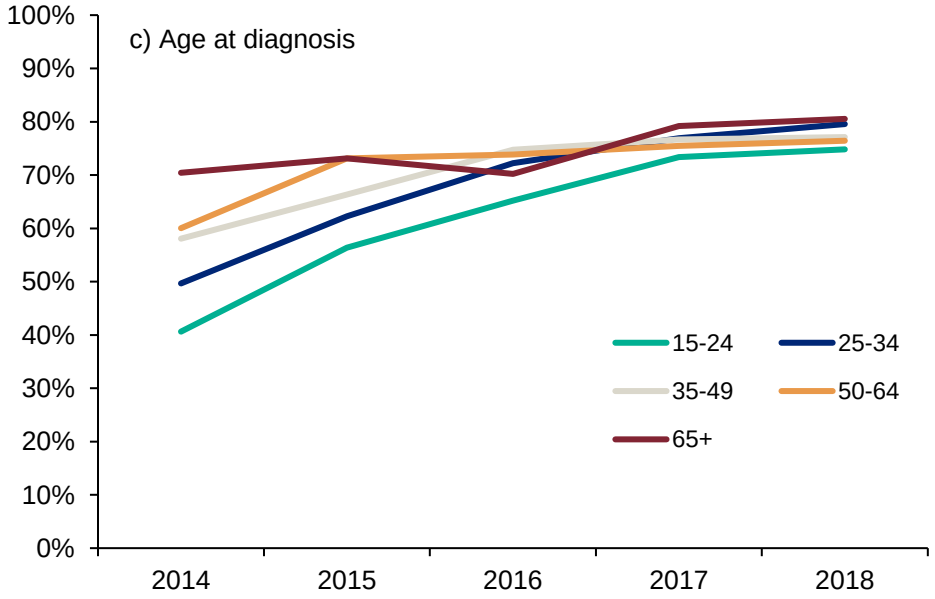
The proportion of people diagnosed late (CD4 <350 cells/mm^3) who started treatment within 3 months of diagnosis has remained consistently high at around 80% over the past 5 years. In contrast, this proportion increased among people diagnosed promptly (CD4 ≥350 cells/mm^3) from 41% (1,094/2,652) in 2014 to 81% (1,483/1,834) in 2018 (Figure 37a), which reflects the changes in treatment recommendations and subsequent NHS policy. A trend towards earlier treatment initiation is observed among all persons diagnosed promptly regardless of exposure category. However, uptake of treatment among PWID (70% 65/93) (Figure 37a,b) and people aged 15-24 (75%; 309/413) (Figure 37c) remains lower than other groups in 2018

Overall, an estimated 95% of people newly diagnosed and linked to HIV care attained viral suppression within a year of diagnosis.

Figure 37: Proportion initiating treatment within 91 days by CD4 status and age group: UK, 2014 to 2018







6.4 Retention in HIV care

People seen for care at least twice at any HIV clinic in the UK within an 18-month period are considered ‘retained in care’. In 2016, 98% (90,175/91,823) of people seen for HIV care were retained in care by June 2018. Excluding the 140 people who died, 1.6% (1,506/91,823) were not retained in care. Among this group, equal proportions (37%) were GBM (551) and men and women who acquired HIV heterosexually (558). One half were white (50%, 751), a third were black African (30%, 447) and two-thirds (66%, 1,003) lived outside of London.

6.5 Treatment coverage

In 2018, all patients had information recorded about HIV treatment and 97% (93,384/96,142) of people who attended for HIV care in the UK were receiving treatment. Treatment coverage was equally high across all sub-groups.

6.6 Viral suppression

In the UK in 2018, based on available viral load information (88%), 97% (81,775/84,129) of those receiving treatment had an undetectable viral load (defined as having less than 200 copies/ml). Virological suppression was very high across all regions and populations, with the exception of people aged 15 to 24 years (87%, 1,938/2,228).

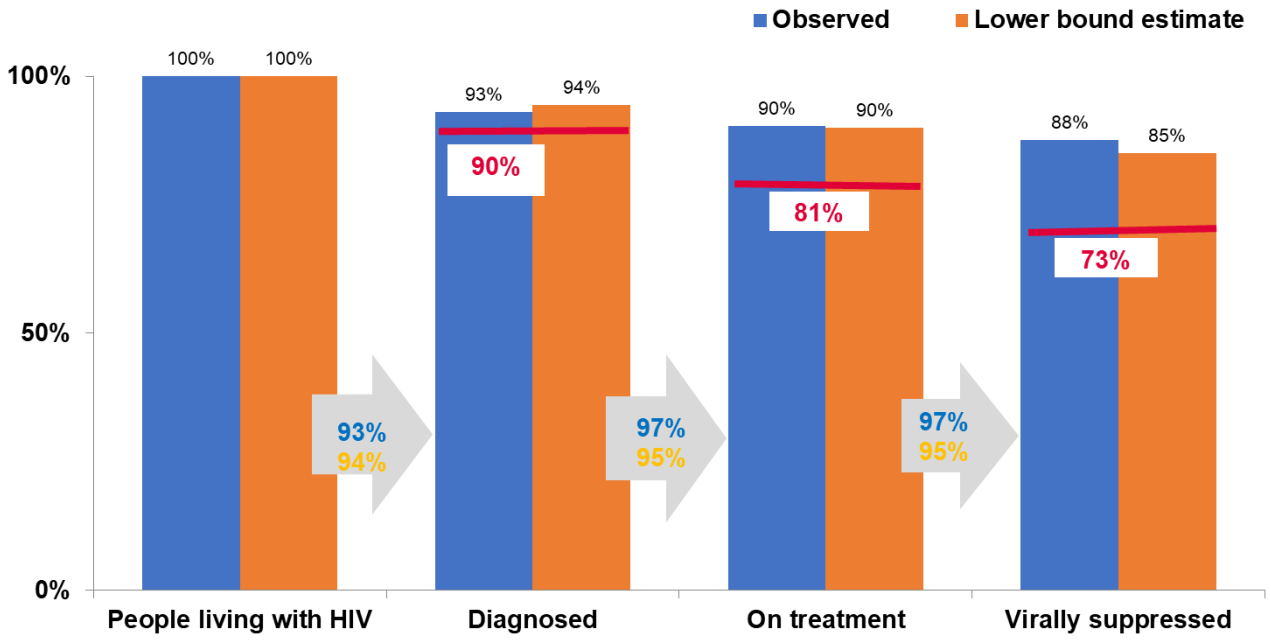
Of the 9,255 people on treatment but with no viral load report in 2018, 70% (6,479) had evidence of viral suppression at their previous attendance in 2016 or 2017. Assuming that the remaining 2,776 people were not virally suppressed, a sensitivity analysis would suggest a lower bound to the percentage virally suppressed of 95% (88,254/93,384).

6.7 Sensitivity analysis of viral suppression among all people living with HIV

Figure 38 shows a comparison of the UK continuum of care based on all diagnosed people in HIV care in 2018, with data adjusted for missing information, against a “lower bound scenario” whereby; those not linked to care (approximately 300 people, as described in paragraph 6.2) and not retained in care (approximately 1,500 people, as described in paragraph 6.4) are included in the diagnosed population and the conservative estimate (as described in paragraph 6.6) of viral suppression is used.

In this “lower bound scenario” analysis, the UK continues to meet the UNAIDS target with 94% diagnosed, 95% of those diagnosed receiving treatment and 95% of those treated being virally suppressed.

Figure 38: Comparison of the UNAIDS target outcomes for observed and lower bound scenarios *, UK, 2018



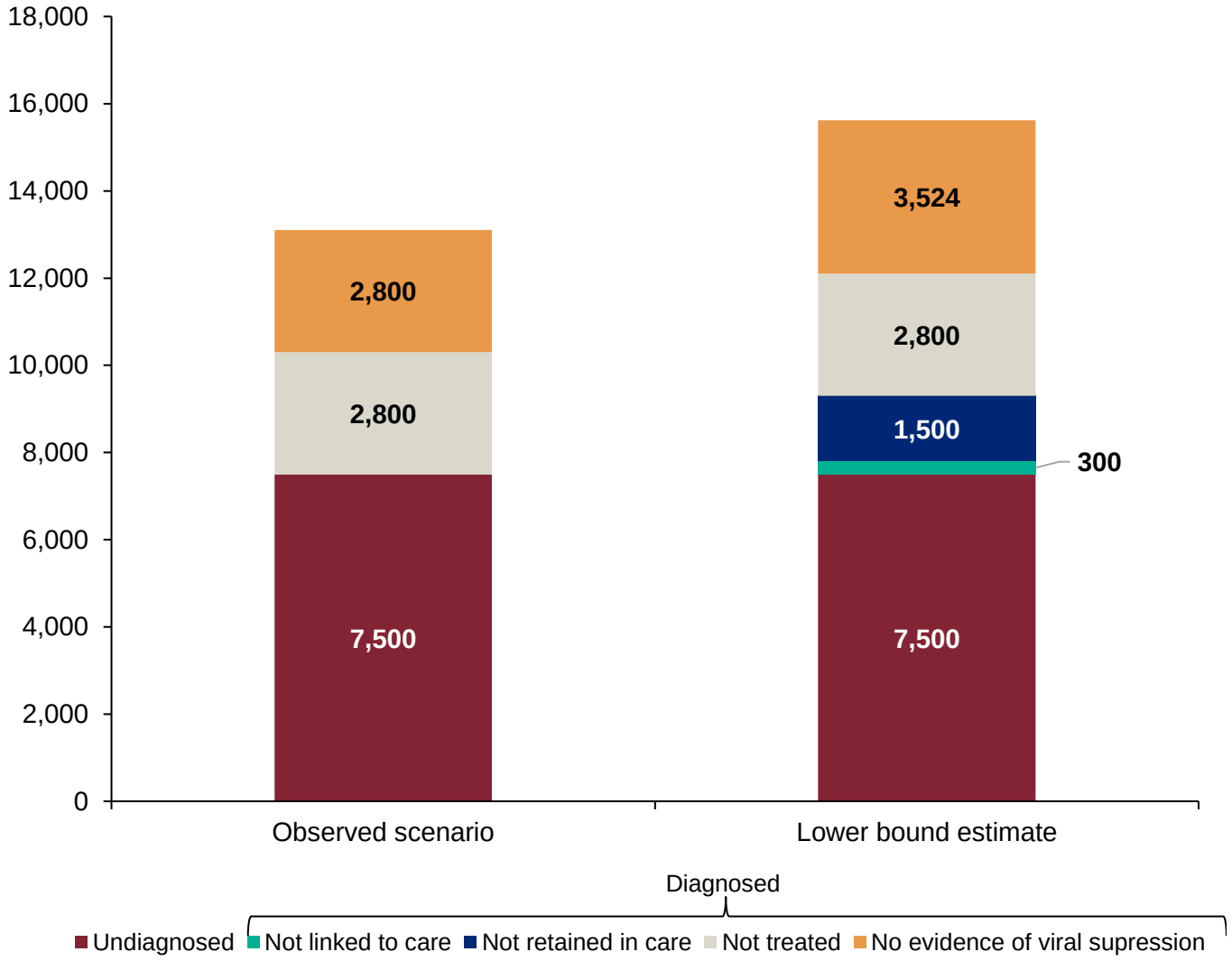
* Taking into account the estimated 300 people not linked to care, 1,500 not retained in care and a 70% viral suppression rate among those with missing viral load information.

6.8 Number of people living with transmittable levels of virus

Using the “observed scenario”, there were approximately 13,100 people living with transmittable levels of virus in 2018, equivalent to 12.6% of all people living with HIV (Figure 39). Of these, 7,500 were undiagnosed and of the remaining 5,600 people living with diagnosed HIV, half had evidence of receiving treatment in 2018.

In the lower bound scenario in Figure 39, 15,600 people had transmittable levels of virus in 2018, equivalent to 15% of people living with HIV. Overall 7,500 were undiagnosed. Of the 8,100 people living with diagnosed HIV, 4% (300) were not linked to care after diagnosis, 18% (1,500) were not retained in care, 34% (2,800) were not receiving treatment and 43% (3,500) were receiving treatment but had no evidence of viral suppression.

Figure 39: Estimated number of people living with HIV who have transmittable levels of virus, UNAIDS definitions and lower bound scenario*: UK, 2018



*Taking into account the estimated 300 people not linked to care, 1,500 not retained in care and a 70% viral suppression rate among those with missing viral load information

7. Partner notification (PN)

HIV partner notification (PN) is a process in which contacts of people with HIV, either newly diagnosed or a person living with HIV with a detectable viral load, are identified and offered HIV testing (55). PN is important for diagnosing HIV in individuals, who may be unaware they have the infection, and linking them to care. Individuals who are tested as a result of PN are much more likely to test positive compared to those tested through other testing policies. Each new HIV diagnosis through PN offers the opportunity to initiate a further round of PN. This may reveal a linked chain of individuals unaware they are living with HIV and accelerate halting of further transmission. As undiagnosed HIV infections become less common, strengthening the delivery of effective PN is essential to ending HIV transmissions in England by 2030.

In 2018, 2,325 individuals were newly diagnosed with HIV at specialist SHS. Although the total number of contacts for these individuals is not known, 1,704 people attended as a result of PN for HIV (contacts). Of these contacts, 86% (1,467) were tested on the day of their attendance and 57 new HIV diagnoses were made. Testing would not have been necessary for all contacts as some would have known their HIV status through recent testing.

The overall HIV test positivity of PN contacts was 3.9% in 2018, 24 times the HIV test positivity in specialist sexual health services (0.2%). It should be noted, however, that a recent BASHH audit of 1,399 contacts tested through PN found 293 (21%) were newly diagnosed with HIV infection and that regular partners were most likely to test positive (56).

Of the 392 heterosexual men tested through PN in 2018, 13 (3%) were diagnosed with HIV as were 11 (3%) of the 344 heterosexual women. Although the numbers of heterosexual partners notified has diminished over the past 5 years, the yield of new HIV diagnoses from PN has remained high (Table 6).

Table 6: Outcomes of partner notification at specialist SHS: heterosexual attendees, England, 2014 to 2018

Year		2014		2015		2016		2017		2018	
New HIV diagnoses at specialist SHS (a)	Male	858		824		746		600		519	
	Female	899		715		634		584		457	
Partner notified contacts[1] (b)	Male	559		509		528		451		428	
	Female		467		475		489		440		402
HIV status known contacts[2] (c)		31	32	11	8	5	17	8	17	7	7
HIV status unknown contacts (b-c)		528	435	498	467	523	472	443	423	421	395
PN contacts tested (d)		478	376	455	417	467	416	410	376	392	344
Diagnosed among PN contacts tested (e)		28	14	21	16	21	10	18	14	13	11
Positivity among newly tested contacts (e/d)		6%	4%	5%	4%	4%	2%	4%	4%	3%	3%

[1] Index patients and subsequent partner notified contacts cannot be linked in GUMCAD.
[2] Includes contacts previously diagnosed with HIV and where an HIV test was considered not appropriate at PN attendance.

Of the 711 GBM tested through PN in 2018, 33 (5%) were diagnosed with HIV. Although the numbers of GBM partners notified has declined in 2017 and 2018, the yield of new HIV diagnoses in this sub-group has remained high (Table 7).

Table 7: Outcomes of partner notification at specialist SHS: GBM attendees, England, 2014 to 2018

Year	2014	2015	2016	2017	2018
New HIV diagnoses at specialist SHS (a)	2,372	2,105	1,624	1,355	1,168
Partner notified contacts[1] (b)	1,182	1,108	1,230	1,054	851
HIV status known contacts[2] (c)	105	66	70	98	56
HIV status unknown contacts (b-c)	1,077	1,042	1,160	956	795
PN contacts tested (d)	948	928	1,011	858	711
Diagnosed among PN contacts tested (e)	60	59	43	40	33
Positivity among newly tested contacts (e/d)	6%	6%	4%	5%	5%

1 Index patients and subsequent partner notified contacts cannot be linked in GUMCAD.
[2] Includes contacts previously diagnosed with HIV and where an HIV test was considered not appropriate at PN attendance.

8. Pre-exposure prophylaxis (PrEP)

HIV pre-exposure prophylaxis (PrEP) involves HIV negative people taking antiretroviral medicine, either daily, or before and after sex (ie “event based” or “on demand” dosing), to prevent acquisition of HIV. Evidence from a series of randomised-controlled trials, including the jointly PHE-sponsored and partially PHE-funded PROUD Trial, showed that when PrEP is taken consistently, it is highly effective at protecting people who are at a high risk of acquiring HIV (57-60). Comprehensive professional guidelines on PrEP were first published in 2018 (60).

Since late 2015, PrEP use has scaled-up across the UK, with people accessing PrEP medication through various routes. These include a national programme in Scotland (61) and a 3-year pilot programme in Wales that both began in July 2017 (62); the Impact Trial from October 2017 in England (63); a two-year project that began in September 2018 in Northern Ireland (64) and self-purchase largely from abroad through online retailers (65, 66).

8.1 PrEP in Scotland

In April 2017, the Scottish Medicines Consortium approved the use of Emtricitabine/Tenofovir disoproxil as PrEP to prevent sexually transmitted HIV infection in adults at high risk of being infected (61) as part of the comprehensive approach to HIV prevention, in tandem with regular HIV testing and safer sex practices.

The NHS-funded HIV PrEP programme was implemented in Scotland on 1 July 2017, making PrEP available via sexual health clinics to those at highest risk of sexual acquisition of HIV. During the first year of the programme (1 July 2017 to 30 June 2018), 1,872 individuals were prescribed PrEP, of whom 99% (1,855) were identified as GBM. The largest proportion (39%) of those prescribed PrEP were aged 20-29 at their first prescription and almost one third (28%) were aged 40 or above. For approximately one-fifth of those prescribed PrEP during the first 12 months, this was the first time, or the first time in the previous 10 years, that they attended a sexual health service. Further details regarding the implementation, uptake and monitoring of PrEP in Scotland are available in the first year report (67).

8.2 PrEP in Wales

PrEP has been provided through NHS Wales’ Sexual Health Services since 17th July 2017, following an announcement from the Minister for Health & Social Services that it would be offered to all of those at highest risk of HIV infection who would benefit from the preventative treatment. From July 2017 to the end of 2018, 841 people had been

prescribed PrEP through NHS Wales' Sexual Health Services, 91% (762/841) of whom were GBM. By the end of 2018, 52% (436/841) of those who had been prescribed PrEP were currently taking it (68).

8.3 PrEP in Northern Ireland

PrEP has been available in Northern Ireland through a Risk Reduction Clinic (RRC) service since July 2018, with funding initially secured until April 2020 (64). The service is delivered by the GUM team in Belfast Health and Social Care Trust (HSCT) and is designed to accept referrals from all GUM clinics in Northern Ireland. It offers interventions aimed at reducing unsafe sexual behaviour, along with PrEP, to patients meeting risk-based criteria. This important service component is provided by a Health Advisor at patients' initial RRC visit as a minimum. The options of further Health Advisor sessions or referral to a Clinical Psychologist if appropriate are available. During the project's 6 months of operation in 2018, 275 individuals were seen at the RRC. Monitoring of the service is through a combination of clinical activity data and GUMCAD returns. An evaluation report of the pilot's first year is now in preparation, and plans to extend delivery of the RRC service to another HSCT and improve accessibility for patients are being implemented.

8.4 PrEP in England

The Impact Trial (69) is a non-interventional, non-randomised, pragmatic health technology assessment of PrEP implementation. It aims to answer real-world questions about PrEP eligibility, uptake and duration of use, including the effect of PrEP scale-up on HIV and other STIs. The trial will continue recruiting until mid-July 2020, with full results available in early 2021. By the end of 2018, over 140 level 3[xxxii] sexual health clinics had recruited participants. The trial was expanded from its original capacity of 10,000 places to 13,000 in June 2018 and again to 26,000 places in early 2019, with 15,700 receiving PrEP over its first 23 months (5). The Trial has already shown that the need for PrEP is much greater than was estimated by an earlier multidisciplinary, multi-stakeholder working group. In 2016, this group expected that 2,000 would access PrEP in the first year of a programme, 3,000 in the second year, and 5,000 would be on PrEP in year 5 (70).

It is very probable that the scale-up of PrEP use, especially during 2018, (Figure 40) will have had a substantial effect on reducing underlying HIV incidence, in addition to the effect of intensified HIV testing combined with immediate treatment initiation in those newly diagnosed with HIV. By the end of 2018, there were an estimated 10,000 GBM on trial PrEP and up to another 5,000 accessing PrEP through other means. Nevertheless, this level of PrEP uptake has yet to have an observable effect on the numbers of

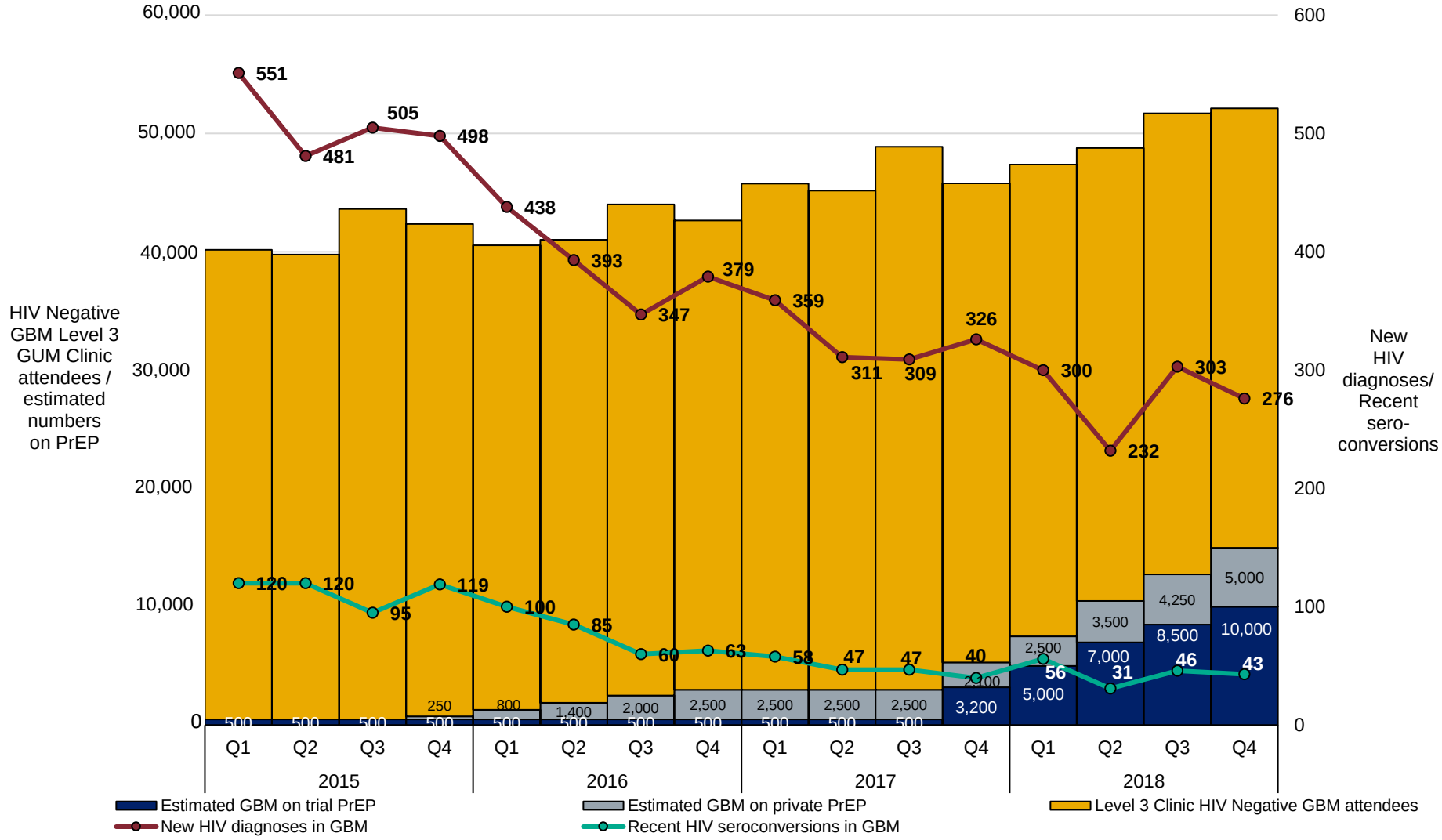
[xxxii] Level 3 clinics are Genitourinary (GUM) clinics and integrated GUM and sexual and reproductive health (SRH) clinics only

recorded recent seroconversions in GBM clinic attendees, which during 2018 was between 31 and 56 in each quarter (Figure 40). Equally, the 2018 quarterly numbers of new HIV diagnoses in GBM clinic attendees has stayed between 200 and 300. Follow-up of these individuals who have recently seroconverted through the SHARE[xxxiii] surveillance system has shown that almost all were not taking PrEP, and the circumstances of the few who were under investigation.

It is also possible that the PrEP scale-up during 2018 will have brought forward new HIV diagnoses and recognition of recent seroconversions through increased clinic attendance (and testing) among GBM at PrEP initiation visits. As the need for PrEP is addressed and Impact Trial recruitment increases to over 20,000 during 2019, conditions may be reached whereby there is a rapid fall in new HIV diagnoses and recent seroconversions in GBM clinic attendees from 2019 onwards.

[xxxiii] The SHARE (Surveillance of HIV Acquired Recently: Enhanced) surveillance system was introduced by Public Health England in 2018 to closely monitor recent seroconversions (new HIV diagnoses where individuals have a previous negative HIV test in the 12 months prior to diagnosis date).

Figure 40: Monitoring population effectiveness of PrEP in GBM in England 2015 – 2018: Comparing trends of estimated numbers on PrEP, new HIV diagnoses and recent seroconversions among level 3 GUM clinic GBM attendees*



**Data from PHE's GUMCAD STI Surveillance System, Impact trial recruitment updates(5) and 2019 and 2018 PrEP User Survey data*

9. Needle and syringe provision (NSP) for people who inject drugs (PWID)

The Unlinked Anonymous Monitoring (UAM) Survey of People Who Inject Drugs (PWID) recruits current and former psychoactive drug injectors through drug and alcohol services in England, Wales and Northern Ireland (38). In Scotland, PWID attending injecting equipment provision sites are recruited through the Needle Exchange Surveillance Initiative (NESI) (71). Data on self-reported use of needle and syringe provision (NSP) is collected, with 'adequate' provision considered to be reached when the reported number of needles received meets or exceeds the number of times the individual injects.

The proportion of PWID in the UK reporting adequate NSP in 2018 was suboptimal. In 2018, around 3 in 5 (63%) of PWID who had injected in the preceding 28 days reported adequate provision in England, Wales and Northern Ireland. In 2017/18, the proportion of PWID who had injected in the past 6 months in Scotland reporting adequate NSP was 80% (72).

The proportion of PWID reporting needle and syringe sharing in England, Wales and Northern Ireland has not improved in recent years. The level of direct needle and syringe sharing reported by UAM participants who had injected during the preceding 4 weeks was 18% in 2018. This was similar to levels seen in 2008 (19%) and an increase from 14% in 2012, when reported sharing levels were at their lowest (38). In Scotland, sharing of needles and syringes in the previous month fell from 15% during 2008-09 to 10% in 2017-18 among individuals attending drug treatment services (71).

10. Recommendations for the public

The most common way of getting HIV in the UK is through unprotected sexual contact[xxxiv] with a person who is unaware of their HIV infection.

You can protect yourself from HIV through using a condom with new and casual partners and by using Pre-exposure Prophylaxis (PrEP). Condom use will also stop you getting or transmitting other STIs.

People with HIV are unable to pass on the infection sexually if they are on treatment and have undetectable levels of the virus. The message Undetectable = Untransmittable or "U=U" has been widely used and is endorsed by PHE. Links to further information resources are in Box B below.

Getting tested for HIV has never been easier, with free tests available through sexual health clinics, GP surgeries, as well as through a self-sampling service or by using a self-testing kit (see Box B below).

If you are a man and have ever had sex with another man, you should get tested for HIV.

Men who are having sex with other men should have an HIV test at least once a year and those who are having unprotected or casual sex with men should have an HIV test and STI screen[xxxv] (see Box C) every 3 months.

Black African men and women, and those born in countries where HIV is common (see Box D), should have an HIV test.

People who are having unprotected sex with new or casual partners from countries where HIV is common should test every year.

If you are diagnosed with HIV your partner(s) may need to have an HIV test as they may be unaware of their own HIV status. There are a number of ways that partners can be notified, and your healthcare provider will explain different options and support you with the process.

[xxxiv] Unprotected sex: HIV can be transmitted sexually if no protection is used and the sexual partner with HIV has a detectable viral load. Protective methods include consistent condom use, effective use of PrEP or use of antiretroviral treatment (ART) to achieve an undetectable viral load.

[xxxv] You should discuss with your healthcare provider which STI tests are most appropriate for you, based on your risks and any symptoms you may have. It is important that you are tested according to national STI testing guidelines from the British Association for Sexual Health and HIV.

Anyone who is diagnosed with HIV will benefit from starting treatment immediately. By accepting early treatment, people living with HIV will be able to live a long and healthy life and will protect their sexual partners from the risk of acquiring the infection. HIV treatment is free to all in the UK regardless of immigration or residency status.

Box B: Information on HIV prevention

Information about preventing HIV

- www.nhs.uk/conditions/hiv-and-aids
- www.aidsmap.com/about-hiv
- www.tht.org.uk/hiv-and-sexual-health
- www.hiv.scot/Pages/News/Category/resources
- www.nidirect.gov.uk/conditions/hiv-and-aids
- www.rainbow-project.org/Pages/Category/sexual-health
- www.friskywales.org/about-hiv.html

Information about HIV treatment & U=U

- www.i-base.info

Information about Pre-exposure Prophylaxis (PrEP) and how to access PrEP in the UK

- England: www.prepimpacttrial.org.uk
- Scotland: https://prep.scot/
- Northern Ireland: www.sexualhealthni.info/pre-exposure-prophylaxis-prep-hiv
- Wales: www.friskywales.org/wales-prep-project.html

- www.iwantprepnow.co.uk
- https://prepster.info/

Box C: Ways to get an HIV test

All HIV testing by the NHS is free and confidential for everyone, regardless of immigration or residency status.

There are many ways to get tested for HIV:

- go to a sexual health clinic or a community testing site
- ask your GP for an HIV test
- request a self-sampling kit online or obtain a self-testing kit

You can find your nearest sexual health service using the following links:

- England: www.nhs.uk/Service-Search/Sexual-health-services/LocationSearch/1847
- Scotland: www.sexualhealthscotland.co.uk/get-help/sexual-health-service-finder
- Northern Ireland: www.sexualhealthni.info/gum-clinics-northern-ireland
- Wales: www.nhsdirect.wales.nhs.uk/LocalServices/?s=SexualHealth

Your local community testing site can be found using the following link:

- www.aidsmap.com/european-test-finder

You can request a self-sampling kit online via www.freetesting.hiv. Other local online services can be found by searching your local authority's webpage.

Box D: What is an STI screen?

An STI screen consists of tests for different STIs. Most commonly this would be for chlamydia, gonorrhoea and syphilis. Tests for other STIs are not normally needed if you do not have any symptoms; the nurses and doctors at your local sexual health service can provide advice on which STIs you should be tested for. All STI testing by the NHS is free and confidential for everyone, regardless of immigration or residency status.

You can find your nearest sexual health service using the following links:

- England: www.nhs.uk/Service-Search/Sexual-health-services/LocationSearch/1847
- Scotland: www.sexualhealthscotland.co.uk/get-help/sexual-health-service-finder
- Northern Ireland: www.sexualhealthni.info/gum-clinics-northern-ireland
- Wales: www.nhsdirect.wales.nhs.uk/LocalServices/?s=SexualHealth

Further information on STIs is available here:

- www.nhs.uk/conditions/sexually-transmitted-infections-stis
- www.sexwise.fpa.org.uk/stis

Box E: Countries where HIV is common*

Africa
Angola, Benin, Botswana, Burundi, Cameroon, Central African Republic, Chad, Cote d'Ivoire, Djibouti, Equatorial Guinea, Eswatini, Ethiopia, Gabon, the Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mali, Mauritius, Mozambique, Namibia, Nigeria, Republic of the Congo, Rwanda, Sierra Leone, South Africa, South Sudan, Togo, Uganda, United Republic of Tanzania, Zambia, Zimbabwe

Latin America and the Caribbean
Antigua and Barbuda, Bahamas, Barbados, Belize, Guyana, Haiti, Jamaica, Panama, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago

Europe
Ukraine

Asia
Thailand

* Countries where HIV prevalence in the population overall is reported by UNAIDS to be 1% or greater

11. Appendix

The appendix to accompany this report can be found here:
www.gov.uk/government/publications/hiv-in-the-united-kingdom

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