**Manuscript Cover Page**

**Title: Monitoring of the HIV epidemic using routinely collected data: the case of the United Kingdom**

**Running Heading: HIV monitoring in the United Kingdom**

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**Additional information (should it be required) on ethical approval specific to HIV surveillance in the UK:** National HIV surveillance relies on routinely collected electronic data being forwarded to Public Health England (PHE) by sites providing HIV testing, care and treatment. The NHS Trusts and Primary Care Trusts (Sexually Transmitted Diseases) Directions 2000, enables PHE to collect HIV data without consent for surveillance and prevention services from NHS trusts. Through National Information Governance Board for Health and Social Care approval under section 251, PHE is legally covered to collect HIV data without consent from outside of trusts. Statutory Instrument 2002 No. 1438 in The Health Service (Control of Patient Information) Regulations 2002 provides the legal basis for the handling of HIV data. Public Health England is registered under the Data Protection Act 1998 (registration number Z7749250) to handle data for diagnostic, public health and other purposes.

**Abstract**

**Aims:** We report on measures used to monitor the response to the UK HIV epidemic.

**Methods:** Analyses of routine data on HIV testing, diagnoses and care. CD4 back-calculation models to estimate country of HIV acquisition and incidence.

**Results:** Over the past decade, HIV and AIDS diagnoses and deaths declined while HIV testing coverage increased. Linkage into care, retention in care, and viral suppression was high with few socio-demographic differences. However, in 2013, incidence among MSM, and undiagnosed infection, also remained high, and more than half of heterosexuals newly diagnosed with HIV (the majority of whom were born-abroad) probably acquired HIV in the UK and were diagnosed late.

**Discussion:** HIV care following diagnosis is excellent in the UK. Improvements in testing and prevention are required to reduce undiagnosed infection, incidence and late diagnoses. Routinely collected laboratory and clinic data is a low cost, robust and timely mechanism to monitor the public health response to national HIV epidemics.

**Key words:** HIV surveillance; epidemiology; United Kingdom; men who have sex with men; heterosexuals; case reporting; monitoring

**INTRODUCTION**

To monitor progress towards controlling the HIV epidemic, in 2004 UNAIDS advocated for member countries to pursue a single HIV Action Framework (1). To examine progress towards controlling the epidemic, UNAIDS also highlighted strong consensus for the need of a single country-level monitoring and evaluation system (1). Ten years later, UNAIDS introduced three targets to limit new infections and ensure better health and care for HIV positive people by 2020. The three targets are that 90% of people living with HIV know their HIV status, that 90% of those diagnosed receive sustained antiretroviral therapy, and that 90% of all people receiving antiretroviral therapy have viral suppression (2).

The United Kingdom (UK) has a concentrated HIV epidemic with an estimated prevalence rate in 2013 of 2.8 per 1,000 population (3). A coalition of professional associations (in particular, the British HIV Association), charities (e.g. the National AIDS Trust), institutes (e.g. the National Institute for Health and Care Excellence), and government departments and executive agencies (including the Department of Health and Public Health England) are responsible for producing policies, guidelines, standards of care and frameworks for action (4-11).

The public health response to the HIV epidemic is primarily monitored using a national level monitoring system known as the HIV and AIDS Reporting System (HARS) held at Public Health England (PHE), an executive agency of the Department of Health (12, 13). These data are routinely collected from public health clinics and laboratories and linked to death data from the Office of National Statistics (14).

Data from HARS are used at the local, regional and national level to monitor trends in the epidemiological characteristics of persons newly diagnosed with HIV and seen for HIV-related care. Outputs from the system directly inform the commissioning of HIV services, thus ensuring comprehensive coverage and timeliness of data submissions. The data are also utilised by UK health professionals and HIV professional bodies, charities, and governmental / non-governmental organisations to design and evaluate strategies to reduce HIV transmission and HIV-associated morbidity and mortality, support the commissioning of prevention programmes, and assess the quality of HIV care provided through the National Health Service. In addition to use at the local, regional and national level, HARS data are used to describe the UK HIV epidemic to an international audience. For example, the UK response to UNAIDS Global AIDS Response Progress Reporting is based on HARS data (15).

We report on thirteen measures primarily derived from the HARS to assess the success of the public response of the HIV epidemic in the UK. We also determine whether the 90-90-90 targets, described above, have been met.

**METHODS**

In the UK, HIV testing and care through the National Health Service (NHS) is open access and free at point of contact. Public health England’s HARS collects information from NHS clinics and testing laboratories on persons newly diagnosed with HIV and persons attending HIV outpatient care in England, Wales and Northern Ireland (13). Reports are submitted on a voluntary basis and only laboratory confirmed cases of HIV are included. Scottish surveillance data are collected independently by Health Protection Scotland and integrated with PHE data annually to create a UK-wide dataset (16).

To reduce potential underreporting, both laboratories carrying out HIV tests and/or CD4 cell counts and HIV clinics are encouraged to report to HARS. Strict attention to confidentiality is maintained at every stage of data collection, analysis and storage. All personal health information is stored at PHE on secure servers and all databases are password-protected. Limited patient identifiers (soundex code of surname, date of birth and sex) are used to ensure patients attending multiple clinics are included only once, and to link information over time to create a national cohort. Where information is missing or inaccurate, follow-up is undertaken with clinicians, health advisors, or data managers.

Thirteen measures to assess the public health response to HIV have been created. Table 1 presents a description and summary results for each measure. Ten of these are derived directly from HARS data. Of the remaining measures, two are based on modelling work informed by HARS data. First, estimates of undiagnosed HIV are attained via Multi-Parameter Evidence Synthesis (MPES) statistical modelling, which fits a range of surveillance and survey data (3, 17, 18). Second, for MSM, estimates of HIV incidence are attained using a back-calculation analysis based upon CD4 count at diagnosis (19). The final measure is based on data from the Genitourinary Medicine Clinic Activity Dataset (GUMCAD), also held at PHE (20). The GUMCAD is a mandatory patient-level dataset collecting information on diagnoses made and services provided by genito-urinary medicine clinics and other commissioned sexual health services.

Data are presented for 2013 and 2004 or 2009 (to present trends over a ten year or five year period). Results derived directly from HARS data are as among persons for whom data were available and are for persons of all ages and for the UK as a whole, unless stated otherwise. An adult is defined as being ≥15 years of age at diagnosis. In 2013 (latest year for which data were analysed) and 2015 (year analysis was conducted), British treatment guidelines recommended patients with chronic infection start ART if their CD4 cell count was <350 cells/mm3 (21). In line with these guidelines we calculate antiretroviral treatment (ART) coverage among people diagnosed with HIV with a CD4 cell count <350 cells/mm3, as well as among all persons diagnosed with HIV.

Confidence intervals presented for estimated figures are at the 95% level. We focus primarily on the two main affected groups in the UK: that is men who have sex with men (MSM) and people of black African ethnicity.

**RESULTS**

Table 1 presents a description of the thirteen measures used to monitor the HIV epidemic in the UK. Summary results are also presented in Table 1.

**Measure 1: Undiagnosed and diagnosed HIV**

Of the 107,800 people of all ages estimated to be living with HIV in the UK in 2013, 24% (CI: 20%–29%) or 26,110 (CI: 20,260–33,810) remained undiagnosed. Based on the central estimate of 26,110 people remaining undiagnosed, 76% (81,690/107,800) of people living with HIV know their HIV status.

Men who have sex with men and black African women and men accounted for eight in ten (78%, CI: 62%–94%; 20,268, CI: 12,622–31,718) people living with undiagnosed HIV. Among MSM living with HIV, 16% (7,179/43,510; CI: 10%–25%) remained undiagnosed. Among heterosexual men the figure was 34% (8,129/23,980; CI: 27%–42%) and heterosexual women 29% (10,299/35,450; CI: 23%–36%).

The overall undiagnosed number and percentage have remained relatively stable over recent years. In 2009, it was estimated that 26% (20,760/80,800; CI: 22% – 30%) of people living with HIV were unaware of their infection (HPA, 2010).

**Measure 2: HIV diagnoses**

In 2013, 6,000 people were newly diagnosed with HIV in the UK. Of these, 54% (3,250) probably acquired their infection through sex between men. Of these, the majority were white (81%; 2,642/3,250) and born in the UK (60%; 1,959). Two in five (42%, 2,490) of the 6,000 people diagnosed with HIV in 2013 probably acquired their infection heterosexually. Of these, the majority were black African (50%; 1,246/2,490) and born in sub-Saharan Africa (52%; 1,292).

Over the past decade, the annual number of HIV diagnoses has fallen from a peak of 7,900 in 2005. This decline is primarily due to a decrease in diagnoses among black African men and women (from 3,936 in 2004 to 1,260 in 2013). While the overall number of new HIV diagnoses declined among persons aged 49 years or below (from 7,113 in 2004 to 5,026 in 2013) among those aged ≥50 years the number of diagnoses increased (from 587 in 2004 to 974 in 2013).

**Measure 3: Recent HIV infection**

In 2013, 22% (430/1,910) of persons newly diagnosed with HIV, and for whom a recency test result was available, were estimated to have acquired their infection in the previous six months. In 2009 and 2010 (first two years for which data were available) the figure was 14%. Among MSM in 2013, an estimated 30% (320/1,080) recently acquired their infection whereas among heterosexual men and women the figure was 13% (80/660).

**Measure 4: HIV incidence among MSM**

Using a back-calculation technique based upon CD4 count at HIV diagnoses, an estimated 2,820 (CI: 1,660-4,775) MSM acquired HIV in 2013. Between 2004 and 2013, an average of 2,600 new infections were acquired each year among MSM, with no indication of a decrease (figure 1). In addition to presenting annual estimates of incidence, for context figure 1 also provides estimates of undiagnosed HIV among MSM.

**Measure 5: Probable country of acquisition**

Three in four MSM newly diagnosed with HIV in 2013 probably acquired their infection whilst living in the UK (76%; 2,470/3,250). The number of MSM probably acquiring HIV whilst living in the UK has increased steadily over the past decade from 2,014 in 2004 to 2,470 in 2013 (figure 2).

The annual number of heterosexuals newly diagnosed with HIV who probably acquired their infection in the UK has remained stable over the past decade at around 1,500 (figure 2). However, between 2004 and 2013, the number of heterosexuals who probably acquired their infection abroad (the majority of whom were black African and/or born in sub-Saharan Africa; see measure 2) more than halved, from 3,400 to 1,030 (figure 2). While the number has remained steady, the percentage of heterosexuals diagnosed with HIV who probably acquired their infection within the UK has increased from 32% (1,550/4,890) in 2004 to 57% (1,420/2,490) in 2013 (figure 2).

**Measure 6: HIV testing coverage**

Among the 1.37 million people attending sexual health clinics in England in 2013, 71% (973,620) tested for HIV infection. Among MSM this figure was 86% (79,250/92,040), among heterosexual men 77% (386,080/503,070), and among heterosexual women 67% (470,760/705,690). Overall there was a small increase in coverage from 69% (827,740/1,201,410) in 2009 (first year data were available).

**Measure 7: Late HIV diagnosis**

Four in ten (42%; 2,504/5,967) adults newly diagnosed with HIV in 2013 were diagnosed with advanced infection (CD4 cell count <350 cells/mm3 at diagnosis). In 2004, 57% (4,290/7,530) of all people newly diagnosed with HIV were diagnosed late.

Among MSM in 2013, less than a third were diagnosed late (31%; 910/2,950). Although the rate of HIV diagnosis among MSM has declined from 43% (1,050/2,450) in 2004, the absolute number of late diagnoses among this group remained high at around 1,000.

In 2013, among heterosexual men six in ten were diagnosed late (62%; 600/970) and among heterosexual women the figure was half (51%; 600/1,170). In 2004, 68% (1,200/1,760) of heterosexual men and 62% (1,900/3,070) of heterosexual women were diagnosed late. Although both the proportions and number of heterosexuals diagnosed late has declined over time, rates remain unacceptably high. Among heterosexuals diagnosed with HIV in 2013, late diagnosis was higher among black African men (66%; 215/337) and women (56%; 289/519) than white men (61%; 195/320) and women (42%; 93/219).

**Measure 8: First AIDS diagnoses**

The number of persons diagnosed with HIV who were diagnosed with an AIDS-defining illness for the first time reduced from 1,018 in 2004 to 319 in 2013. Of the 1,470 AIDS-defining illnesses reported among 1,160 people between 2011 and 2013, the four most common were *Pneumocystis jirovecii pneumonia* (32%; 470), *Mycobacterium tuberculosis* (14%; 200), *Kaposi’s sarcoma* (9%; 130), and *oesophageal candidiasis* (9%; 130).

**Measure 9: Short-term mortality**

Between 2004 and 2013, both the number and percentage of people newly diagnosed with HIV who died within one year of diagnosis remained stable (2004: 2.9%; 225/7,700 [CI: 2.6-3.3%]; 2013: 3.2%; 193/6,000 [CI: 2.8-3.7%]). The highest short-term mortality rate in 2013 was observed among people aged ≥50 years at diagnosis. Among those aged ≥50 years, 14% (136/974; CI: 12-16%) died within one year of diagnosis whereas among those aged <50 years the figure was 1.1% (57/5,026; CI: 0.9-1.5%).

**Measure 10: Prompt integration into HIV care**

Nine in ten (90%; 4,323/4,778) adults newly diagnosed with HIV in the UK in 2013 had a CD4 count taken within one month of diagnosis, compared to 85% (4,831/5,683) in 2009. Little variation was observed in this proportion by sex, age group, ethnicity, exposure or year.

**Measure 11: Retention in care**

Among the 76,820 adults seen for HIV care in the UK in 2012, 95% (72,280) were also seen for care in 2013. The figure of 76,820 adults seen for care in 2012 excludes 556 persons diagnosed with HIV and reported as having died in 2012 (of HIV and non HIV related causes). Across all sex, age, ethnicity and exposure groups, retention in care exceeded 90%. The percentage of adults retained in care has remained stable over time; of 67,990 adults seen for HIV care in 2010, 96% were also seen in 2011.

**Measure 12: Treatment coverage**

The percentage of adults diagnosed with HIV in the UK in need of treatment (CD4 cell count <350 cells/mm3) and in receipt of ART increased from 76% (13,776/18,144) in 2009 to 92% (13,281/14,410) in 2013. In 2013, treatment coverage among adults with a CD4 cell count <350 cells/mm3 was similar by sex, ethnicity and exposure (≥90% in all groups). However, treatment coverage was higher among people aged ≥50 years (96%; 3,700/3,850) than among younger people (79%; 266/464 among those aged 15-24 years). As of all adults seen for HIV care in 2013, 90% were in receipt of ART (73,292/81,512). However, when calculated as among all adults living with HIV (diagnosed and undiagnosed), the percentage in receipt of ART reduces to 68% (73,292/107,134).

Among all people estimated to be living with HIV in 2013, 68% were in receipt of ART (73,292/107,800). (authors to update numerator and coverage % as 73,292 is adults only, while the numerator is all ages [per page 5]).

Of the 107,800 people of all ages estimated to be living with HIV in the UK in 2013, 24% (CI: 20%–29%) or 26,110 (CI: 20,260–33,810) remained undiagnosed

**Measure 13: Viral load suppression**

Among the 73,292 adults in receipt of ART in the UK in 2013, 90% (65,960/73,290) were virally suppressed (<200 viral copies/ml). As with treatment coverage, variation in viral load suppression was only observed by age. Viral load suppression was highest among persons aged 40-49 years (92%; 24,950/27,230) and lowest among those aged 15-24 years (74%; 1,290/1,740).

**DISCUSSION**

We present thirteen measures used to monitor the public health response to the HIV epidemic in a high income country with a concentrated HIV epidemic. In combination, measures 1 (undiagnosed and diagnosed HIV), 10 (prompt integration into care), 11 (retention in care), 12 (treatment coverage), and 13 (viral load suppression) capture key aspects of the HIV care continuum / quality of care in the UK. Of these measures, 1, 12 and 13 directly correspond with the 90-90-90 targets. Measures 2 (HIV diagnoses), 3 (recent HIV infection), 4 (HIV incidence), and 5 (country of infection) provide a summary of risk and transmission dynamics, whereas, measures 6 (testing coverage), 7 (late diagnosis), 8 (first AIDS diagnosis), and 9 (short-term mortality) indicate whether at risk groups are being tested and diagnosed promptly.

Measure 7 (late HIV diagnosis) is of particular importance for monitoring HIV in the UK as it indicates timeliness of diagnosis and is the strongest predictor of short-term mortality (22). Late HIV diagnosis is the only HIV related indicator included in the Public Health Outcomes Framework for England (11). Measure 9 (short-term mortality) is also important as it is closely linked to late diagnosis and is a crucial marker of the success of not only HIV testing programmes but also HIV clinical programmes in the first year following diagnosis.

All the measures we present are calculated using routinely collected case reports of people first diagnosed with HIV or subsequently seen for HIV care with the exception of measure 1, which relies on statistical modelling of a range of census, surveillance and survey data to estimate the number of undiagnosed infections (3, 17, 18). The survey data used to estimate undiagnosed HIV include the National Survey of Sexual Attitudes and Lifestyles (NATSAL) (23), the Gay Men’s Sexual Health Survey (GMSHS) (24, 25), and the African Health and Sex Survey (26). The measures presented in this paper are part of a suite of epidemiological, behavioural and clinical indicators used to monitor and evaluate public health interventions and assess the quality of HIV care delivered in the UK.

We report evidence of the UK missing the first 90-90-90 target with 76% of people living with HIV knowing their HIV status, and of on-going HIV transmission within the UK in key population groups, namely MSM and heterosexual men and women of black African ethnicity. However, our measures also indicate that the overwhelming majority of adults living with diagnosed HIV in the UK are promptly integrated and retained in care, and that 90% of adults seen for HIV care in 2013 were in receipt of ART and that 90% of these adults were virally suppressed.

In the UK, HIV care, as provided through the NHS, has been previously described as being of high quality and free of health inequalities (27). However, it is important to note that attaining high clinical outcomes is dependent on a person living with HIV being diagnosed promptly. Whilst the decline in people presenting with AIDS-defining illnesses at HIV diagnosis is encouraging, the persisting high rates of undiagnosed HIV and late HIV diagnosis are a cause for concern; and this is despite significant improvement in HIV testing among key populations over the past decade.

The success of the universal offer of an HIV test to women attending antenatal care in the UK explains the declining and lower rates of late diagnosis and undiagnosed HIV among women compared to men. The offer and recommendation of an HIV test to all antenatal clinic attendees has been universal since 1999 with 98% of pregnant women screened in 2013 (3). Testing coverage among MSM is also relatively high and has improved over time (28). This has resulted in lower rates of late diagnosis among MSM despite increases in new diagnoses. In contrast rates of undiagnosed HIV and late diagnosis remain high among heterosexual men suggesting a need for greater engagement with this group.

Whilst timely and vital in tracking the epidemic among key populations, trends in new diagnoses must be interpreted alongside trends in HIV testing and probable country of HIV transmission. In the UK, the overall decline in new HIV diagnoses is largely driven by fewer diagnoses among heterosexual men and women who most likely acquired HIV abroad, particularly in sub-Saharan Africa. This trend is associated with changing migration patterns to the UK from high HIV prevalence countries (22, 29). Importantly, we observe a continuing high number of diagnoses among heterosexuals who probably acquired their infection whilst living in the UK, suggesting within country transmission. We also present evidence of on-going HIV transmission among MSM.

It is also important for trends in new HIV diagnoses not to be interpreted as reflecting trends in HIV incidence as numbers include both people with acute and long-standing infection. New diagnoses are important nevertheless in tracking the overall success of testing and prevention programs when interpreted in the light of testing and migration patterns. Information on probable route of transmission, collected at the time of diagnosis, underpins the targeting of interventions at the most affected populations. Careful interpretation should be applied to all HARS data outputs as the information collected is limited as the HARS dataset has been kept to a minimum to promote reporting and encourage clinician co-operation.

The evaluation of HIV systems can be guided by the need to answer three questions: (i) Are we doing the right things? (ii) Are we doing them right? (iii) Are we doing them on a large enough scale to make a difference? (30). In relation to post HIV diagnosis care in the UK we believe the answer to these three questions is yes. However, in relation to HIV testing and reducing undiagnosed HIV and late diagnosis we provide a mixed response.

In the UK, there are specific guidelines for increasing the uptake of HIV testing and reducing undiagnosed HIV among MSM and black African communities (8, 9). There are also national testing guidelines which recommend expanding the universal and routine offer of an HIV test beyond sexual health services to a range of healthcare and community settings (4). In local areas where, according to HARS data, diagnosed HIV prevalence is equal or greater to two per 1,000 population aged 15-59 years it is also recommended an HIV test be offered to all new registrants in general practice and all general medical admissions (4).

These guidelines represent the right things being done right. However, to further reduce late diagnosis and its associated morbidity and mortality it is essential that the guidelines are comprehensively adhered to. In 2012, only in half of high prevalence areas (≥2/1,000 population) had testing in the community and/or general practice been commissioned and only in one third had testing in hospital departments been commissioned (31). Only one in ten areas had commissioned testing in all three settings, and in areas where testing in general practice was taking place it was typically in less than one in five of practices (31).

In conclusion, we present thirteen measures based on comprehensive, routinely collected, laboratory and clinical data. We show HIV care in the UK to be of high quality, and we report near universal access to ART among those diagnosed and in care (among all people living with HIV (diagnosed and undiagnosed), ART coverage was 68%). However, we also highlight the need for further improvements in HIV testing and primary prevention to reduce morbidity and onward transmission.

Routinely collected public health data are critical in monitoring efforts to reduce HIV transmission, to diagnose persons promptly, and to ensure HIV care is optimal for all. To attain a cost efficient and timely description of HIV epidemiology at the national and sub-national level we advocate for the collection of routine laboratory and clinical surveillance data. We believe such data can be used as a low-cost but robust tool to monitor the HIV continuum or cascade of HIV care; similar approaches are likely to work in low-income countries (32). In particular, we advocate for the collection of routine information on CD4 cell counts and HIV viral load as these two variables facilitate the modelling of transmission dynamics monitoring and the monitoring of late diagnoses, entry to care, and quality of care. These data should not be a luxury only available to high resource countries.

**COMPLIANCE WITH ETHICAL STANDARDS**

**Ethical approval:** This article does not contain any studies with human participants or animals performed by any of the authors.

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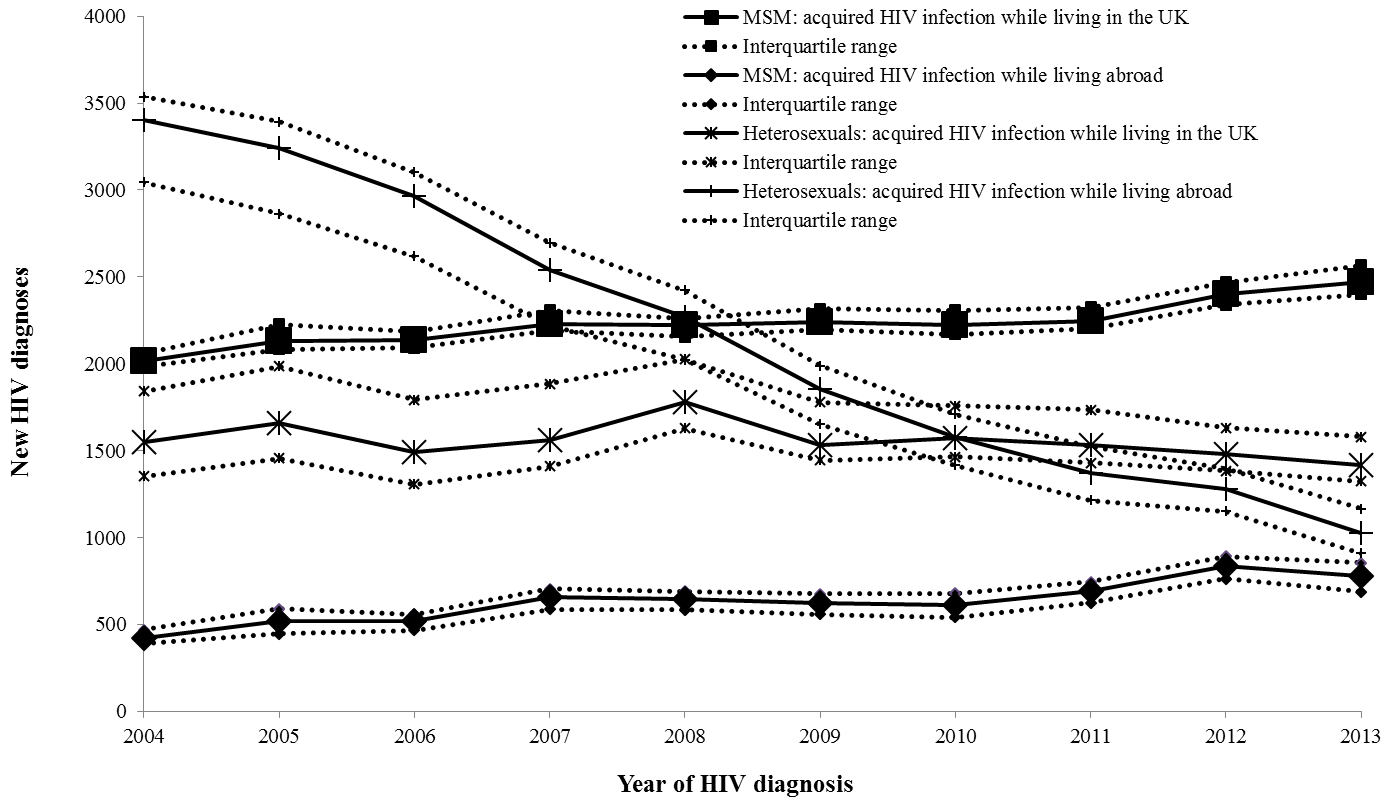
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**Figure 1: Back-calculation estimate of HIV incidence and prevalence of undiagnosed HIV infection among MSM: UK, 2004-2013**

**Figure 2: New HIV diagnoses among MSM and heterosexual men and women by probable country of infection: UK, 2004 to 2013**



**Table 1: Measures of HIV epidemic dynamics, testing programmes, and quality of care**

|  |  |  |  |
| --- | --- | --- | --- |
| **Measure** | | **Description** | **2013 UK figure** |
| **Epidemic dynamics** | **1. Prevalence of HIV and undiagnosed HIV1** | Overall number living with HIV and number living with undiagnosed HIV based on a statistical model fitted to a range of surveillance and survey data (Goubar et al, 2008; Presanis et al, 2010; Yin et al 2014) | 107,800 (CI: 101,600-115,800) living with HIV of whom 26,110 (CI: 20,260-33,810) living with undiagnosed HIV |
| **2. HIV diagnoses2** | Annual number of new diagnoses reported to HARS by laboratories, sexual health clinics, primary care and other services where HIV testing takes place | 6,000 people newly diagnosed with HIV |
| **3. Recent HIV infections3** | Acquired infection within the previous six months according to the Recent Infection Testing Algorithm (RITA) which incorporates results from an HIV antibody assay modified for the determination of HIV avidity as well as clinical biomarkers (Aghaizu et al, 2014) | 22% of people newly diagnosed with HIV recently acquired their infection |
| **4 HIV incidence** | Back-calculation analysis based upon CD4 count at diagnosis (currently only national estimates among men who have sex with men (MSM) are available) (Birrell et al, 2013) | 2,820 (CI: 1,658-4,777) MSM newly acquired HIV |
| **5. Probable country of transmission4** | Acquired HIV in the UK or abroad based on clinic reports to HARS and modelling rates of CD4 cell count decline (Rice et al, 2012) | 67% of people newly diagnosed with HIV acquired their infection in the UK |
| **Testing programs** | **6. HIV testing coverage in sexual health clinics5** | Percentage of eligible new GUM attendees (attending a GUM clinic at least once in a calendar year and not known to be HIV positive) among whom an HIV test was accepted; as reported to GUMCAD | 71% coverage |
| **7. Late HIV diagnosis3** | CD4 count <350 cells/ml (the threshold at which ART should begin) within three months of HIV diagnosis reported to HARS by laboratories and other testing sites | 42% (CI: 40%-43%) of people newly diagnosed with HIV diagnosed late |
| **Morbidity and mortality** | **8. First AIDS diagnosis2** | Annual number of first AIDS diagnoses reported to HARS by services where HIV testing takes place and where HIV treatment and care is provided | 319 people diagnosed for the first time with an AIDS defining illness |
| **9. Short-term mortality4** | Death from any cause within one year of HIV diagnosis as reported to HARS and/or national death registrations (Office of National Statistics, 2015) | 3.2% (CI: 2.8%-3.7%) of people newly diagnosed with HIV in 2013 died within one year of their diagnosis |
| **Quality of HIV care** | **10. Prompt integration into HIV care6** | CD4 count within one month of HIV diagnosis as reported to HARS by laboratories and other testing sites | 90% of adults newly diagnosed with HIV promptly integrated into care |
| **11. Retention in care6** | Seen for HIV care at any NHS service in the UK in two consecutive years and reported to HARS | 95% of adults seen for HIV-related care in 2012 were also seen for care in 2013 |
| **12. Treatment coverage6** | CD4 cell count <350 cells/mm3 and in receipt of antiretroviral therapy, as reported to HARS | 92% of people in need of antiretroviral therapy were in receipt of treatment |
| **13. Viral load suppression6** | In receipt of antiretroviral therapy and viral load <200 copies/ml, as reported to HARS | 90% of adults in receipt of antiretroviral therapy achieved viral load suppression |
| 1 Presented nationally by sex, ethnicity and probable route of infection | | | |
| 2 Presented nationally, regionally, sub-regionally by sex, age, ethnicity, probable route of infection, probable country of infection, country of birth and CD4 cell count at diagnosis | | | |
| 3 Presented nationally, regionally, sub-regionally by sex, age, ethnicity, probable route of infection, probable country of infection and country of birth | | | |
| 4 Presented nationally by sex, age, ethnicity, probable route of infection, probable country of infection, country of birth and CD4 cell count at diagnosis | | | |
| 5 Presented nationally, regionally, sub-regionally by sex, age, ethnicity, probable route of infection and patient group | | | |
| 6 Presented nationally and regionally by sex, age, ethnicity and probable route of infection | | | |