



Public Health
England

Hepatitis B in London 2016 data

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Notes on the report

Intended audience

This report is aimed at healthcare professionals involved in the diagnosis and/or treatment of patients with hepatitis B, commissioners, providers and public health professionals involved in planning and provision of preventative and treatment services for hepatitis B services, and other stakeholders working in the field of hepatitis B.

Aim of report

The aim of this report is to describe the epidemiology of hepatitis B in London up to 2016. The report provides an update on trends, areas of high burden of disease and at-risk population groups and identifies opportunities for interventions to reduce disease burden.

Data sources

This report presents data from a number of sources including: laboratory data and sentinel surveillance data collated by PHE's blood safety, hepatitis, sexually transmitted infections (STI) and HIV service including data from the unlinked anonymous monitoring survey of HIV and hepatitis in people who inject drugs; neonatal vaccination data from NHS digital; vaccination data from the National Drug Treatment Monitoring System (NDTMS)

Useful references

Data tables of the Unlinked Anonymous Monitoring Survey of HIV and Hepatitis in People Who Inject Drugs available at: www.gov.uk/government/publications/people-who-inject-drugs-hiv-and-viral-hepatitis-monitoring

Public Health England Liver Disease Profiles available at: <https://fingertips.phe.org.uk/profile/liver-disease>

Executive summary

Hepatitis B is a vaccine preventable infection and is an important cause of chronic liver disease and liver cancer (hepatocellular carcinoma). Globally, the primary transmission routes for hepatitis B infection are vertical (from infected mother to newborn) or through unsafe medical practices. However, in the UK hepatitis B is mainly transmitted by contact with blood and other infected bodily fluids, particularly during sex or by needle sharing in people who inject drugs (PWIDs). The majority of chronic infections are acquired abroad in people who were born or have lived in endemic countries but are now resident in the UK. Prevention strategies in the UK include vaccination of all babies (born since August 2017) and individuals at an increased risk, along with interventions aimed at reducing sharing of needles and injecting equipment amongst PWIDs. Public Health England (PHE) health protection teams (HPTs) follow-up individuals with acute hepatitis B infection in order to promote vaccination of close contacts and prevent further transmission. London has a higher burden of hepatitis B compared to the rest of the UK.

The incidence rate of acute hepatitis B in London has increased slightly to 1.70 per 100,000 population (149 cases) in 2016 compared to 1.53 in 2015 (133 cases) in 2015. While the slight increase in 2016 compared to 2015 is likely to be due to chance variation, the incidence rate in London is still higher compared to the rate in England in 2016 of 0.82 per 100,000. For comparison, the incidence rate in London in 2008 was 1.83 per 100,000. The highest number of acute hepatitis B infections were reported in Tower Hamlets, Hackney and Southwark.

Chronic hepatitis B infections, the majority of which are acquired abroad, have the most substantial impact on morbidity and mortality. Among 6,845 new laboratory reports of Hepatitis B among London residents in 2016, chronic hepatitis B infection constituted the overwhelming majority (97.8%). Number of tests conducted at sentinel surveillance laboratories has remained relatively stable since 2012, however the proportion of hepatitis B positive tests declined to 1.3% in 2016 compared to 1.7% in 2015. Among the sentinel surveillance laboratories, the majority of hepatitis B testing is being conducted in general practice (31.6%) and GUM clinics (19.1%). The highest positivity was in patients tested in specialist liver services (4.7%), prisons (3.4%) and HIV specialist services (3.1%).

Men aged 25-44 years have a higher burden of hepatitis B compared to other age groups and women. Compared to those who identified as white ethnicity, those who identified as other or mixed ethnicity who were tested for hepatitis B were over 5 times more likely to test positive, black ethnicity were almost 5 times more likely to test positive and Asians more than twice as likely to test positive. Testing among South

Asians continues to increase at sentinel surveillance sites; this coincides with a year-on-year decrease in the percentage of positive tests.

PWIDs continue to experience a high burden of Hepatitis B. In 2016, anti-HBc prevalence among PWIDs in London increased to 27%, compared to 20% in 2015. This is more than double the prevalence among PWIDs in England (13%). However, direct or indirect sharing of injecting equipment, an important risk factor for transmission, has decreased to 30% in 2016 down from 36% in 2015.

From the National Antenatal Infections Screening Monitoring data, the percentage of pregnant women attending antenatal services testing positive for hepatitis B infection in London has declined from 1.07% in 2012 to 0.78% in 2016. Of these positive women in London, 26% were newly diagnosed. Among those testing positive, the largest groups were of white (39.5%) and other/mixed ethnicity (23.9%).

While uptake of antenatal screening for hepatitis B in England in 2016 remains very high at 98%, figures for London were not available at the time of production of this report. COVER data show that of the babies born to mothers with hepatitis B infection in London, 74% received 3 doses of hepatitis B vaccine by 12 months in 2016/2017, a decrease from 88% in 2015/2016. Thirteen local authorities reported a 100% uptake of 3 doses of vaccine at 12 months. Due to data issues, we are unable to report on any difference between the number of antenatal women known to be positive for hepatitis B in London and the number of babies that needed vaccination in the corresponding period. Data in previous years indicated that a significant number of eligible babies are not reported as fully vaccinated, suggesting that there are data reporting issues or that some areas might lack robust pathways for vaccination of babies at risk.

Vaccination uptake in PWIDs has increased overall over the past decade, with 76% of people in the unlinked anonymous survey reported as having received hepatitis B vaccination in 2016, compared to 66% in 2005. Of the people entering drug misuse treatment centres in London, only 11% of those eligible were offered and completed a course of the hepatitis B vaccinations. However, this figure does not indicate whether people have already had a previous course of the vaccine.

1. Recommendations

Healthcare practitioners should be aware of those at greater risk of hepatitis B infection, including those who were born in or have lived in endemic areas, and have a low threshold for testing. GPs should offer testing to new registrants who are at increased risk.

Healthcare providers should have appropriate measures in place to identify patients at high risk of hepatitis B infection and ensure that they are vaccinated accordingly. This includes those who may be at risk through sexual activity, PWID, those with chronic liver diseases and household contacts of a case with acute and/or chronic infection.

Providers of antenatal care and vaccination of at-risk babies should ensure that information materials on hepatitis B are available in languages most frequently spoken by their local clients. Other than English, the most common languages spoken by antenatal women testing positive for hepatitis B in London in 2016 were Chinese, Somali, Romanian, Albanian and Portuguese.

Commissioners, providers and public health professionals should work together to ensure that there are robust pathways for the identification of babies born to hepatitis B positive mothers to ensure effective use of post-exposure prophylaxis with hepatitis B vaccine and immunoglobulin. Guidance and promotional material are available from the PHE website (1).

Commissioners and providers in local areas where the neonatal vaccination information was incomplete, or uptake of vaccination was below 100%, should work to improve completeness and uptake.

Commissioners and providers of prison health services where the reported uptake of hepatitis B vaccination was less than 80% should work to improve reported uptake.

Commissioners and providers of drug treatment services should work to increase further hepatitis B vaccination uptake in former and current injecting drug users.

Commissioners and providers of drug treatment services should ensure that household contacts and children of PWID are offered vaccination through primary care.

Commissioners and providers should continue to ensure that injecting drug users have good access to needle exchange services, and that a full set of clean injecting equipment is provided for every injecting episode to reduce further transmission.

All services diagnosing chronic hepatitis B are advised to ensure that GPs are aware of their patients' diagnosis. All services managing patients with hepatitis B should be aware of guidelines and referral pathways for management of patients and their close and household contacts who require screening and vaccination.

Individuals with chronic Hepatitis B infection should be referred to hepatology or gastroenterology for expert management

Commissioners, providers and public health professionals should work together to ensure that systems exist to support clinical practitioners in detecting chronic hepatitis B infection in patients at increased risk. This should include being able to identify the country of birth, a key risk factor for hepatitis B infection.

Diagnostic laboratories and PHE should continue to work closely to improve reporting of acute and chronic infections.

Commissioners and providers of prison health services who did not report hepatitis B vaccination data should work to ensure that data are reported.

2. Background

Hepatitis B is a vaccine preventable infection that can cause chronic liver disease and liver cancer (hepatocellular carcinoma). The virus is transmitted via contact with blood and other infected bodily fluids. Although the incidence in the UK is low, hepatitis B is of public health concern. Virtually all the morbidity and mortality associated with hepatitis B is a result of the long-term consequences of chronic infection. Symptoms of acute infection include general malaise, nausea, abdominal pain, inflammation of the liver (hepatitis) and jaundice at later stages of disease. Acute infection can be asymptomatic, especially among younger children. Clearance of the virus is highly related to the age at which the infection is acquired. Chronic infection is more likely in those infected at a very young or at an older age with 70% to 90% of those infected within the first year of life developing chronic infection(2). In contrast, around 3-5% of adults acquiring hepatitis B will fail to clear the virus and develop a chronic infection. Many people with chronic infection are asymptomatic and unaware of their infection. Unless they are tested, they will remain undiagnosed until they present with late stage disease. Around 20-25% chronic carriers develop progressive liver disease (3). Liver disease is the only disease group with an increasing mortality rate in England and hepatitis B is an important contributory cause for this increase (4).

While the incidence of acute hepatitis B is generally low in the UK, certain groups are at an increased risk. The majority of cases who acquire hepatitis B in the UK and London acquire it through either heterosexual contact or sex between men. People who have an increased potential for coming into contact with blood and other body fluids of infected individuals through their occupations e.g. healthcare workers, or through tattooing, piercing and/or acupuncture and sharing of injecting equipment including needles and associated paraphernalia are also at higher risk. Infants born to infected mothers and those in prisons are other key at-risk groups for acute hepatitis B(3).

The prevalence of chronic infection in the UK estimated from the sentinel surveillance programme is 1.1%; this remains low by international standards (5, 6) . Globally, estimated prevalence of chronic infection in the general population is 3.5%, and an estimated 257 million people are living with HBV. HBV prevalence is higher in the Western Pacific regions (6.2%), Africa region (6.1%), Eastern Mediterranean region (3.3%) and South-East Asia region (2.0%).(7). Annual deaths worldwide from hepatitis B was estimated to be 900,000 people in 2015 and were predominantly due long term complications of hepatocellular carcinoma or cirrhosis (7).

Sentinel surveillance and survey of UK blood donors suggest non-UK born residents are disproportionately affected by chronic hepatitis B (8). The majority of these non-UK born residents with chronic infection probably acquired their infection at birth or during

childhood where infection risks are considerably higher than the UK. Uninfected UK residents visiting friends and relatives in endemic countries who may access healthcare while abroad are also at risk. Hence, pre-travel vaccination is recommended for this group.

Interventions to prevent transmission of hepatitis B include vaccination of at risk groups, reducing sharing of needles and injecting equipment among people who inject drugs (PWID), health care infection control policies including vaccination of staff, identifying and removing common sources of infection, screening contacts and providing infection control information to newly diagnosed cases.

Since August 2017, the UK routine childhood immunisation programme includes hepatitis B to protect against future exposure risks. Hepatitis B vaccine is also offered to those at higher risk of contracting the virus and for those at risk of liver related complications (Table 1) (3).

PHE Health Protection Teams (HPTs) coordinate the public health response to newly reported cases of acute hepatitis B, as per the agreed standards for surveillance and follow-up (9). For acute infections, HPTs attempt to identify the most likely transmission route(s), provide infection control advice to the case and recommend appropriate testing and vaccination of close contacts. HPTs support local partners in developing systems to improve detection and management of undiagnosed hepatitis B infection.

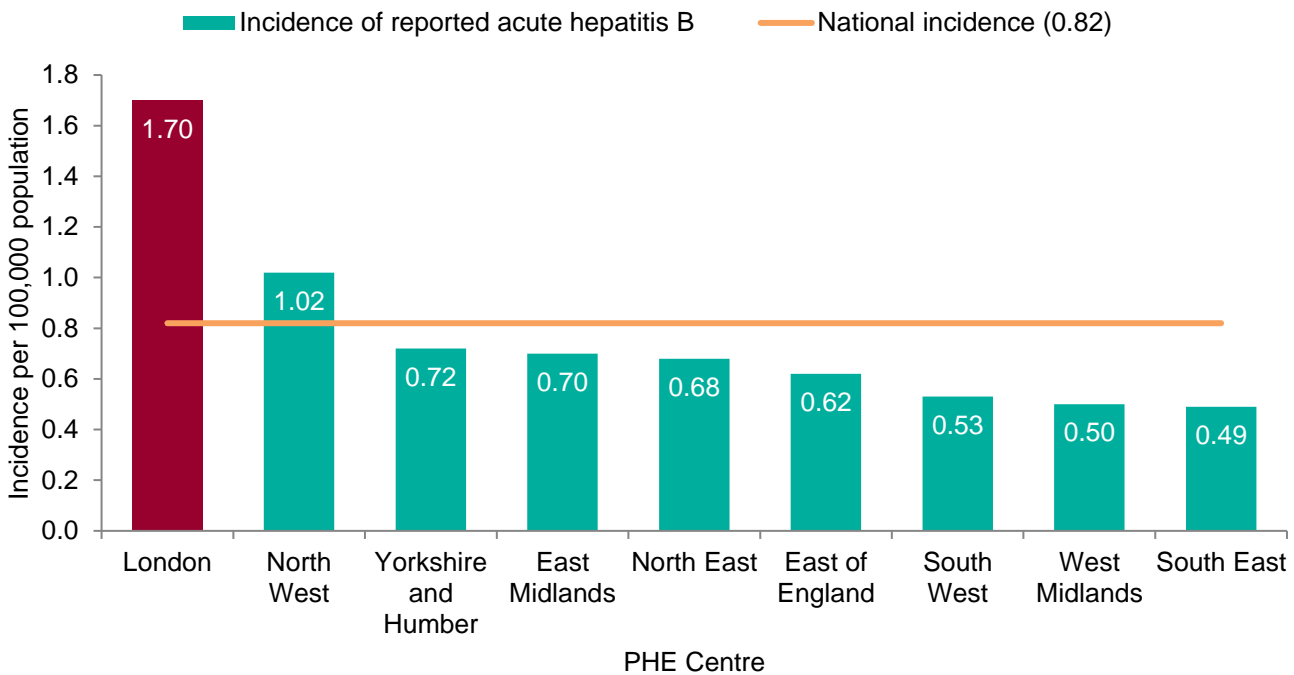
In line with the World Health Organisation (WHO) ambition to eliminate hepatitis B and C by 2030, efforts should be targeted on prevention through universal vaccination in the childhood programme and targeted vaccination of groups at higher risk as well as effective treatment of those infected with hepatitis B (10).

3. Acute hepatitis B

Information on acute hepatitis B is derived mainly from the national PHE acute hepatitis B surveillance system, which combines data from diagnostic laboratories and HPZone, a case management system that captures all cases reported to PHE HPTs. Further details are available in Appendix 1.

National surveillance data shows that London had an incidence rate of acute hepatitis B of 1.70 per 100,000 population in 2016 (149 cases), notably higher than the national rate (England rate 0.82 per 100,000)(5) (Figure 1). For comparison, the incidence rate in London in 2008 was 1.83 per 100,000.

Figure 1: Incidence of acute hepatitis B by region of residence per 100,000 population, 2016



Source: PHE Acute Hepatitis B surveillance

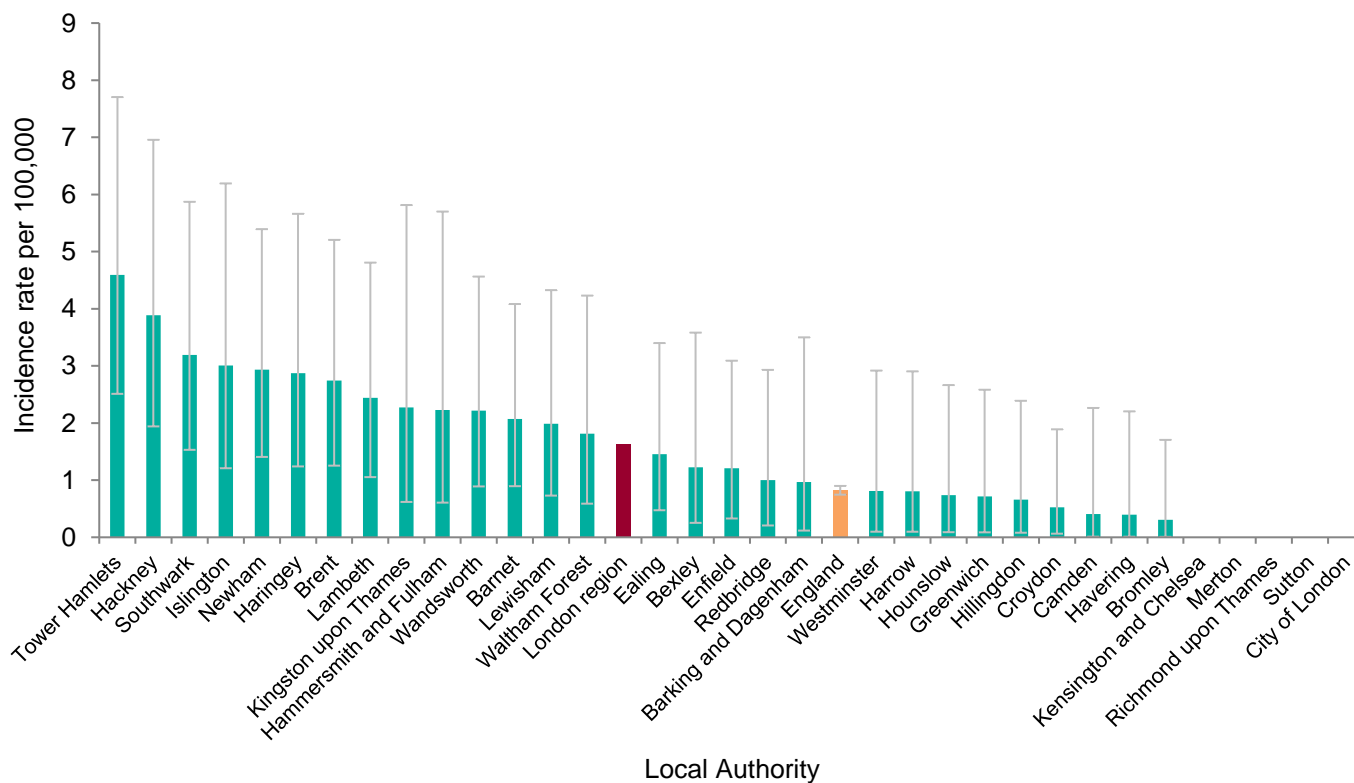
Incidence of acute hepatitis B was estimated at 1.70 per 100,000 population in 2016, which is similar to the rate of 1.83 per 100,000 in 2008. (Figure 2). Tower Hamlets, Hackney, and Southwark local authorities reported the highest incidence of acute hepatitis B in 2016 (Figure 3).

Figure 2: Incidence of reported acute hepatitis B per 100,000 population in London and England, 2008-2016(11)



Source: PHE Acute Hepatitis B surveillance

Figure 3: Acute hepatitis B incidence rate per 100,000 by local authority, 2016



Source: PHE Acute Hepatitis B surveillance

4. Chronic hepatitis B and trends in testing

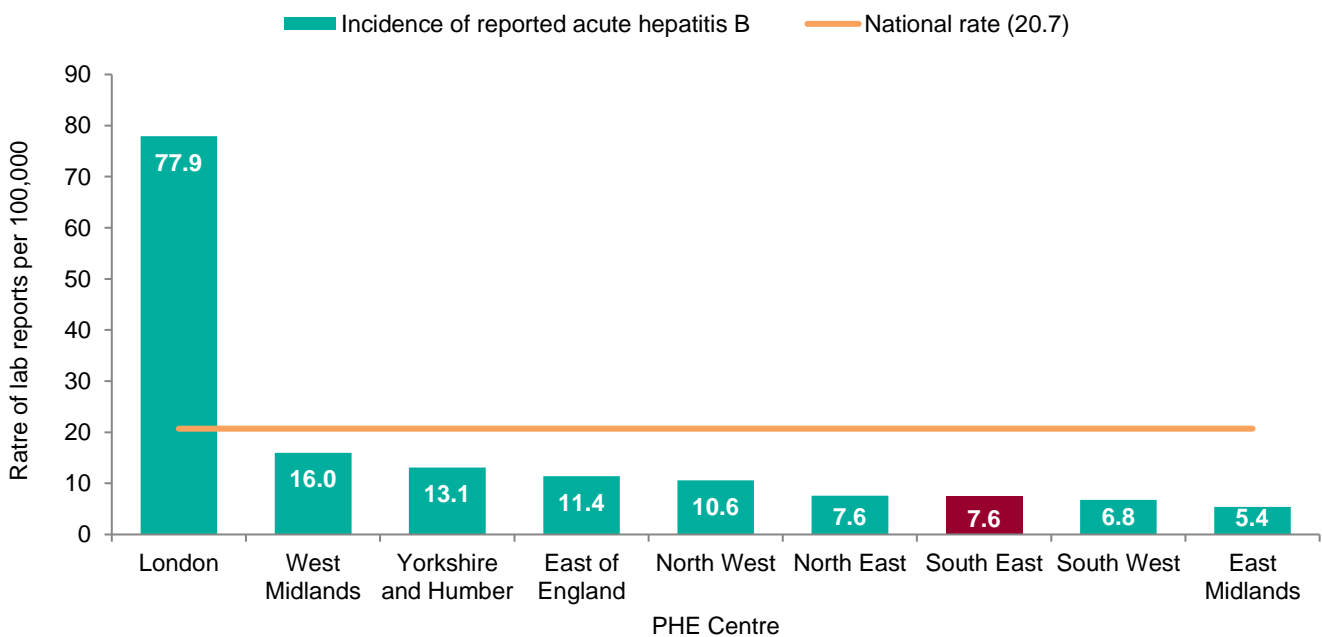
Information on chronic hepatitis B is derived from a range of PHE data sources, including the laboratory surveillance, the sentinel surveillance of blood-borne virus testing, unlinked anonymous monitoring survey of PWID, the national antenatal infections screening monitoring and enhanced surveillance of antenatal hepatitis B. Further details are available in Appendix 1.

4.1 Laboratory reports

There are certain caveats to note when interpreting data on laboratory reports. If patient postcode or GP information is unavailable, the patient is assigned to the postcode of the testing laboratory. In 2016, patient postcode was available in 73.1% of London laboratory reports compared to 79.9% in 2015 (12). Laboratory reporting arrangements vary across London and are likely to be incomplete.

There were 6,845 new laboratory reports of hepatitis B in London residents in 2016. London accounts for 60% of the laboratory reports in England in 2016. The corresponding rate of new laboratory reports per 100,000 residents in London (77.9) is considerably higher than other regions and much higher than the England rate overall, (Figure 4)(12)).

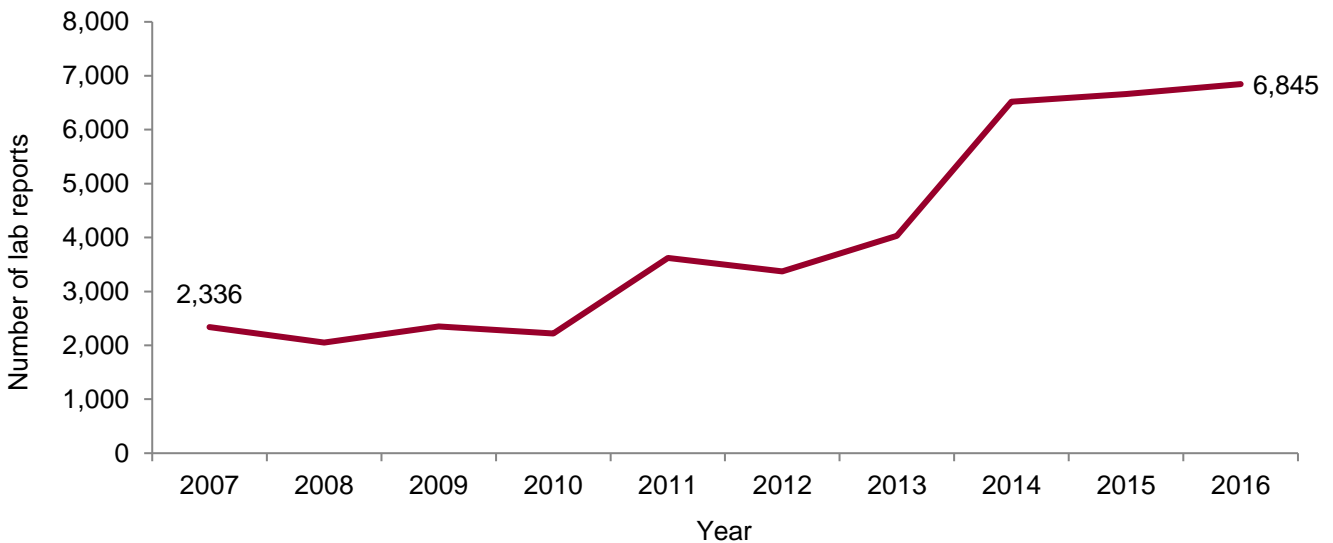
Figure 4: Rate of laboratory reports of hepatitis B (acute and chronic), by PHE centre of residence, 2016



Source: PHE Laboratory Surveillance. These data include laboratory reports for both acute and chronic hepatitis B infections and therefore cannot be used to estimate incidence.

The number of reports in 2016 has increased slightly since 2015 and considerably since 2013 (Figure 5)(12). Trends in laboratory reports may reflect more testing or reporting since laboratory reporting became a statutory requirement in 2010. The majority of reports are chronic infections, with only 2.2% of reports being identified as acute infections, which has declined since 2012 (4.4%)(12).

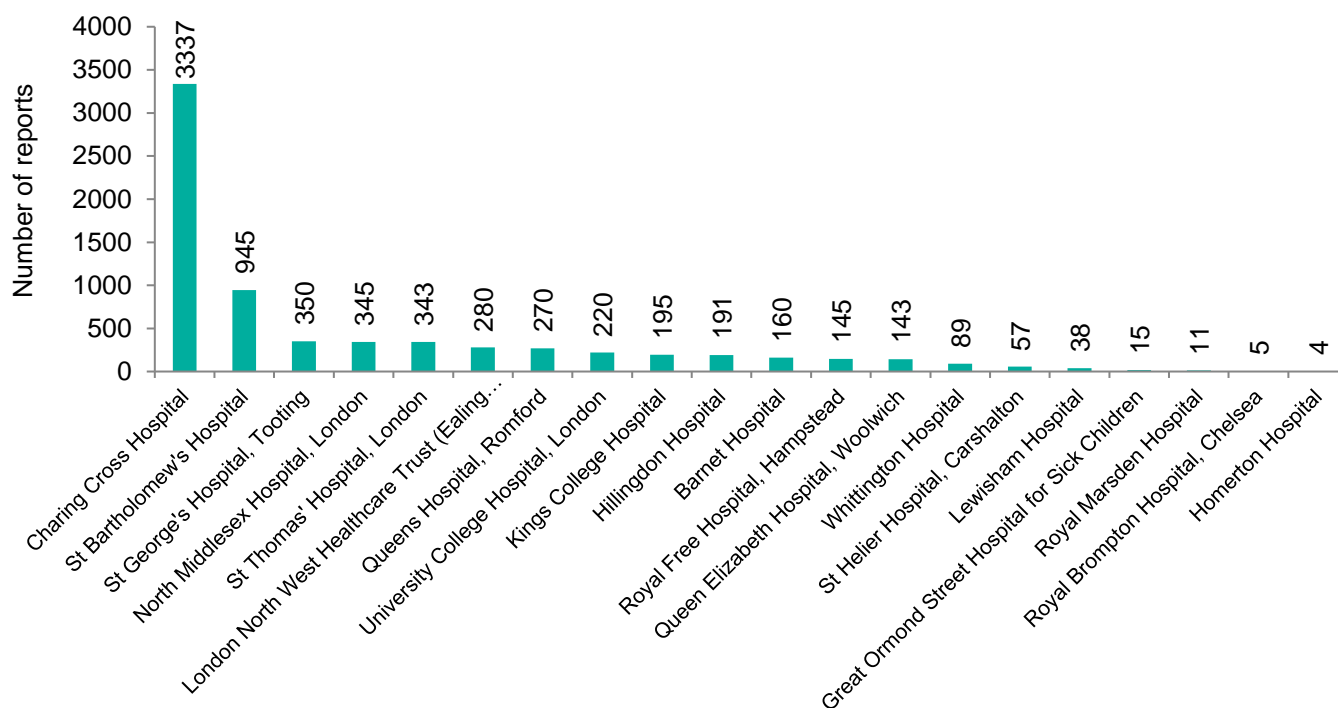
Figure 5: Number of laboratory reports of hepatitis B (acute and chronic), with London PHE as centre of residence, 2007-2016



Source: PHE Laboratory Surveillance. These data include laboratory reports for both acute and chronic hepatitis B infections and therefore cannot be used to estimate incidence.

In 2016, Charing Cross Hospital reported significantly more HBV infections (47%) than any other laboratory in London (Figure 6)(12). It is important to note that laboratory testing arrangements are determined by the NHS commissioning process and therefore, the figures provided below do not reflect the burden by laboratory catchment or geography.

Figure 6: Number of hepatitis B (acute and chronic) reports, by reporting laboratory in London PHE centre, 2016

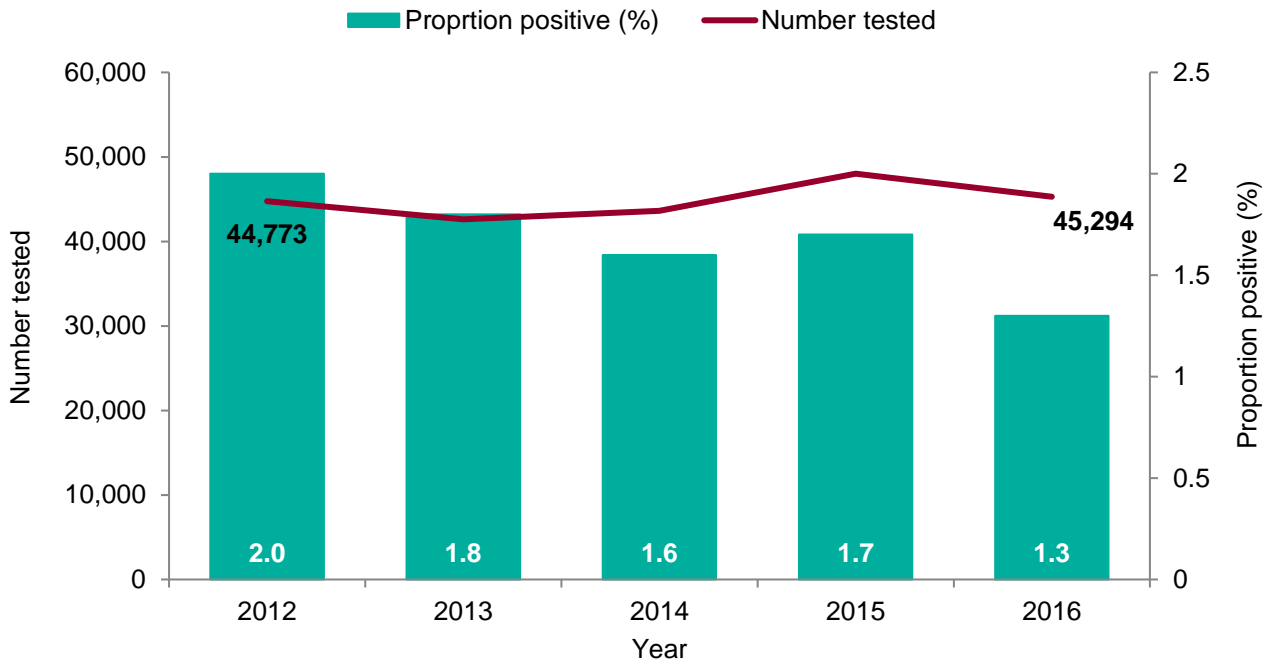


Source: PHE Laboratory Surveillance. Please note this also includes reports from non-London residents. These data include laboratory reports for both acute and chronic hepatitis B infections and therefore cannot be used to estimate incidence.

4.2 Trends in testing

The number of hepatitis B tests conducted at the sentinel surveillance laboratories in London has remained relatively stable since 2012 (Figure 7). During this time, the positivity rate has declined from 2.0% in 2012 to 1.3% in 2016 (Figure 7)(5).

Figure 7: Number of tests in sentinel surveillance laboratories in London (excluding routine antenatal testing) and proportion positive for hepatitis B, by year, 2012-2016



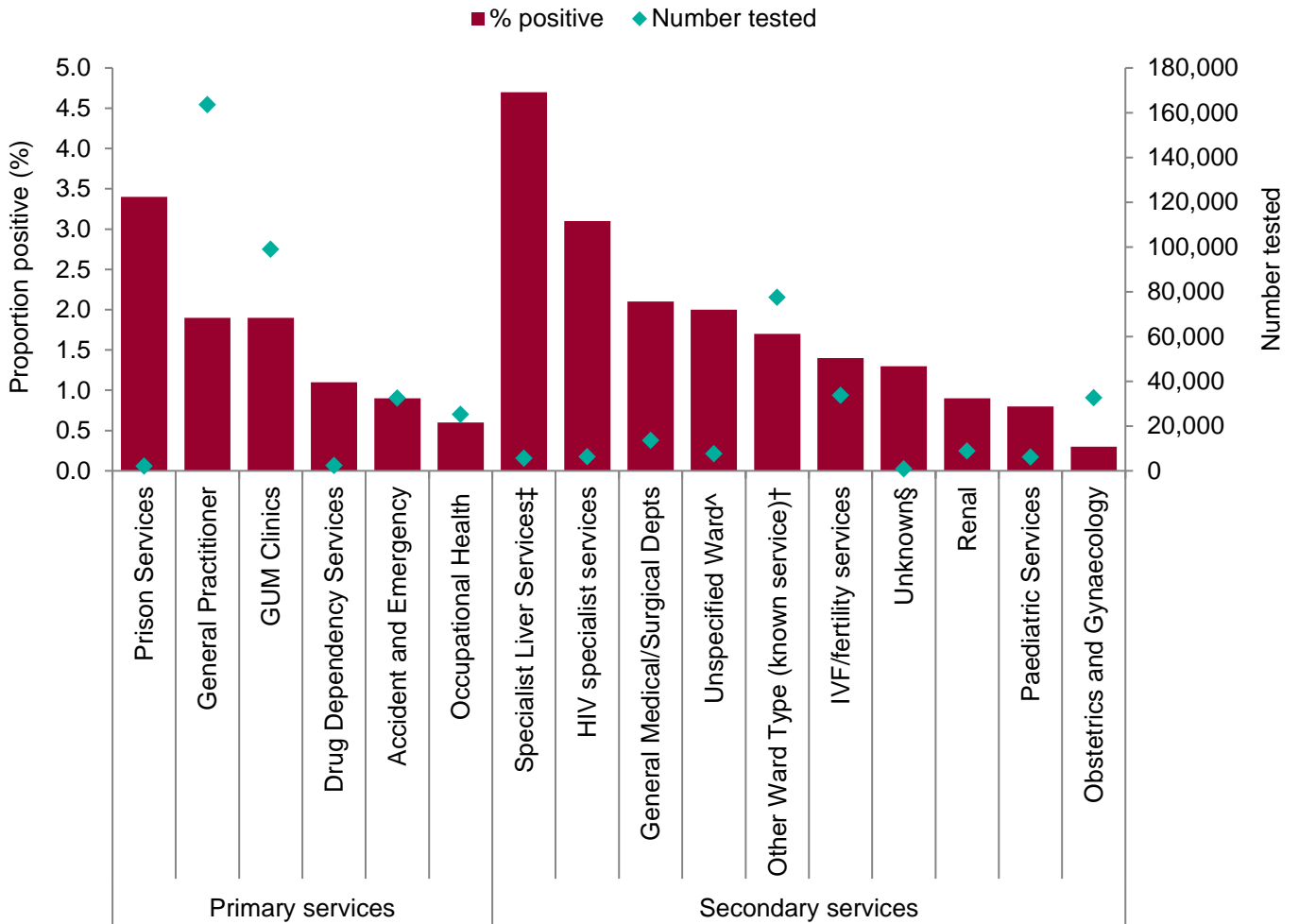
Source: PHE Sentinel Surveillance of Blood-borne Virus testing. Excludes dried blood spot, oral fluid, reference testing, and testing from hospitals referring all samples.

4.3 Hepatitis B positivity by clinical setting

The National Institute for Health and Care Excellence (NICE) guidance on hepatitis B recommends that people at increased risk of infection should be offered testing for hepatitis B in primary care, prisons and youth offender institutions, immigration removal centres, drug services, and in sexual health and genitourinary medicine clinics(13).

Outside of routine antenatal screening, the majority of hepatitis B testing in London was conducted in General Practice (31.6%) and GUM clinics (19.1%) (Figure 8)(5).

Figure 8: HBsAg positivity by service type in sentinel surveillance laboratories in London PHE centre, 2012-2016 (excludes antenatal screening)



† Other ward types include cardiology, dermatology haematology, ultrasound, x-ray.
 ‡ This refers to infectious disease services, hepatology departments and gastroenterology departments.
 ^ These are hospital services that are currently being investigated to identify specific service type and may include any of the secondary care services mentioned.
 § These services are currently being investigated to identify specific service type, where possible.
 Source: PHE Sentinel Surveillance of Blood-borne Virus testing. Excludes dried blood spot, oral fluid, reference testing, and testing from hospitals referring all samples.

Results from sentinel laboratories in London indicate that 1.6% of all tested samples was positive for HBsAg(5). This included 1.9% tested by GPs and 1.9% tested in GUM clinics (Figure 8). The highest positivity was in patients tested in specialist liver services (4.7%), prisons (3.4%), and HIV specialist services (3.1%)(5). People undergoing occupational health testing in a low risk population drives down the overall positivity.

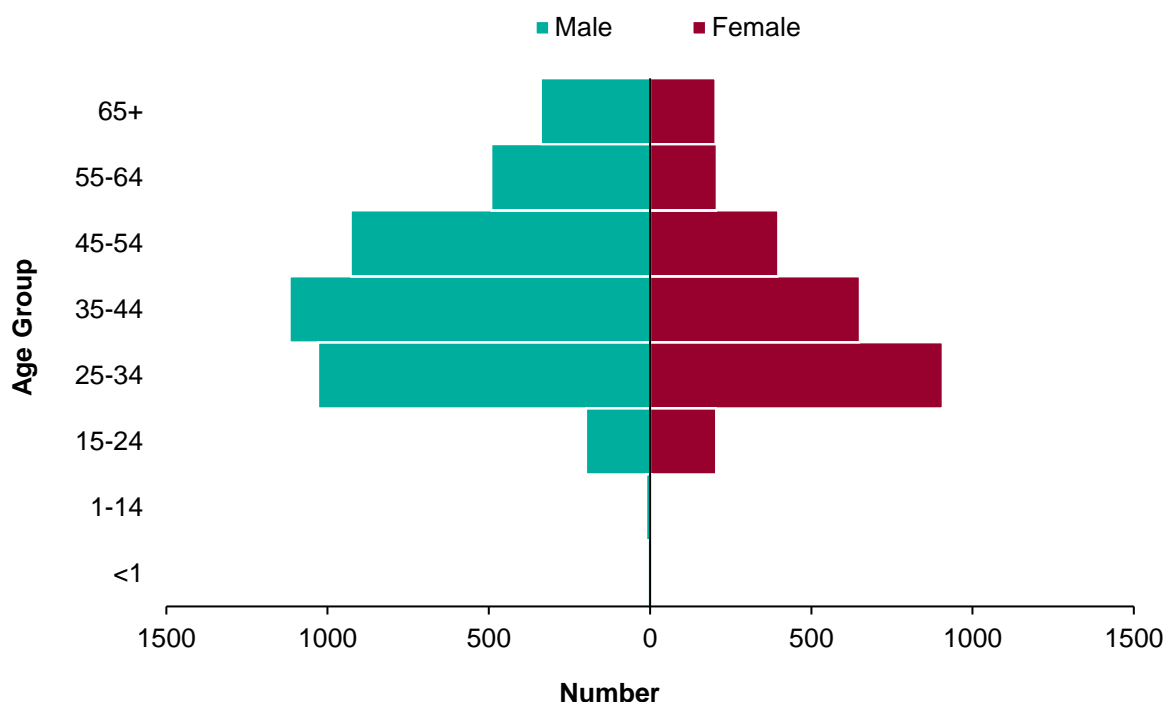
The majority of the positive tests came from General Practice (36.4%) and GUM clinics (22%) (2012 to 2016 data, excluding routine antenatal screening)(5). Roughly a fifth of positive tests were from secondary care (21.4%)(5).

5. Population groups at increased risk

5.1 Age and sex of people testing positive for hepatitis B

Information on age group and gender of acute and chronic hepatitis B cases in London from laboratory reports shows that the burden of disease is higher in adults, particularly among men (Figure 9).

Figure 9. Age group and gender of laboratory reported cases of hepatitis B (acute and chronic), residents of London PHE centre*, 2016

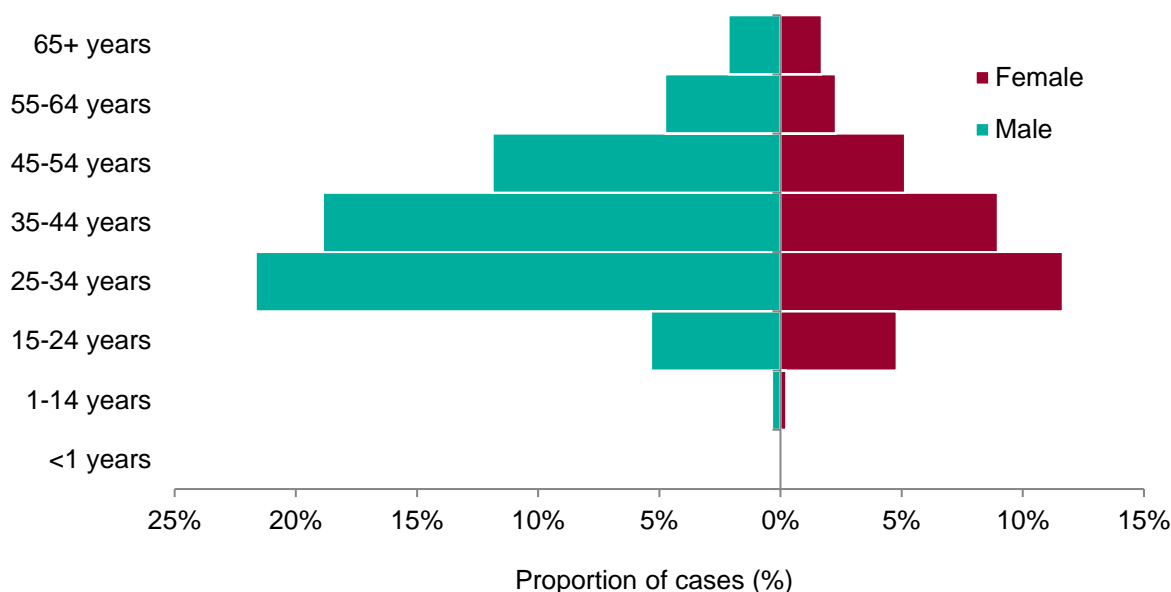


*Data are summarised by PHE centre of residence, not PHE centre of laboratory. Data are assigned to PHE centre by patient postcode where present; if patient postcode is unknown, data are assigned to PHE centre of registered GP practice; where both patient postcode and registered GP practice are unknown data are assigned to PHE centre of laboratory. These data include laboratory reports for both acute and chronic hepatitis B infections and therefore cannot be used to estimate incidence. Chart excludes cases of unknown gender and/or age.

Source: SGSS

Information from the 8 sentinel surveillance laboratories in London shows that two-thirds of people testing positive for HBsAg were male (65%) and those aged 25 to 44 years predominated (Figure 10)(5).

Figure 10: Age and sex of those testing positive for HBsAg in sentinel surveillance laboratories in London*, 2012-2016, n=8362



*Excludes dried blood spot, oral fluid, reference testing and testing from hospitals referring all samples. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional. Chart excludes cases of unknown gender and/or age. Samples from relatively few women who underwent antenatal screening in this region were sent to a sentinel laboratory. It is likely that routine antenatal screening was performed by another laboratory that does not participate in the sentinel surveillance study and that the sentinel laboratory is performing a combination of first-line and reference testing. Therefore samples sent to the sentinel laboratory in this region may not be representative of women undergoing antenatal screening in the region as a whole. See data from NHS Infectious Diseases in Pregnancy Screening Programme.

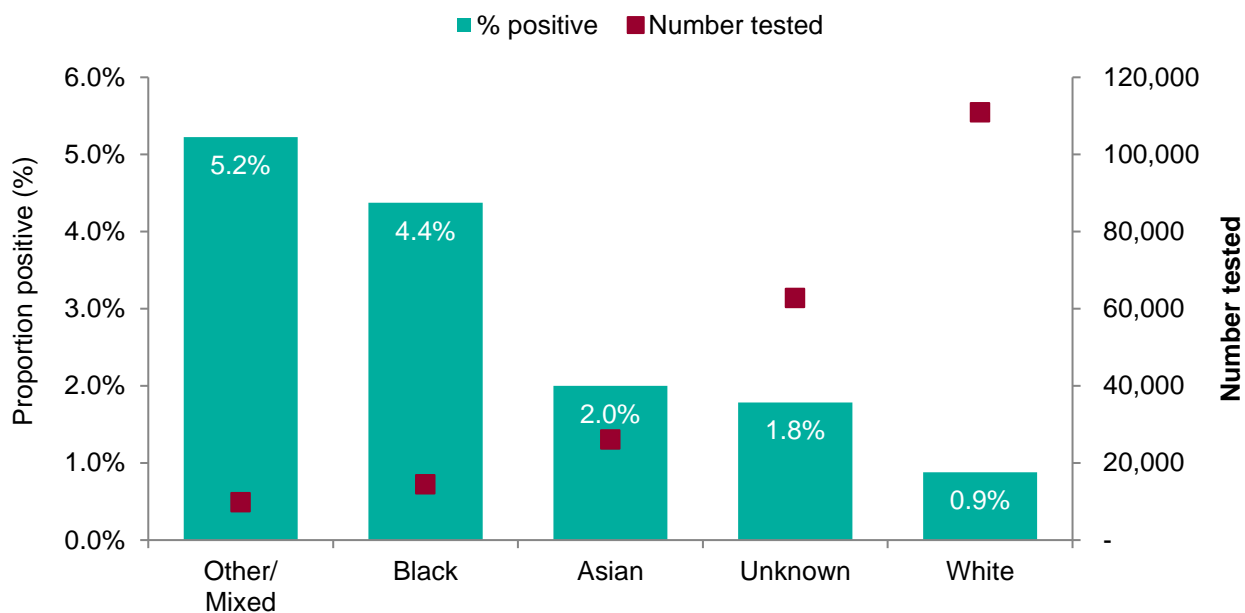
Source: PHE Sentinel Surveillance of Blood-borne Virus testing) Unknown age and sex not included in figure

5.2 Black and minority ethnic groups

As ethnicity is not routinely available from the participating sentinel laboratory information systems, a combination of self-reported ethnicity and name analysis software have been used to classify individuals as belonging to a broad ethnic group(5).

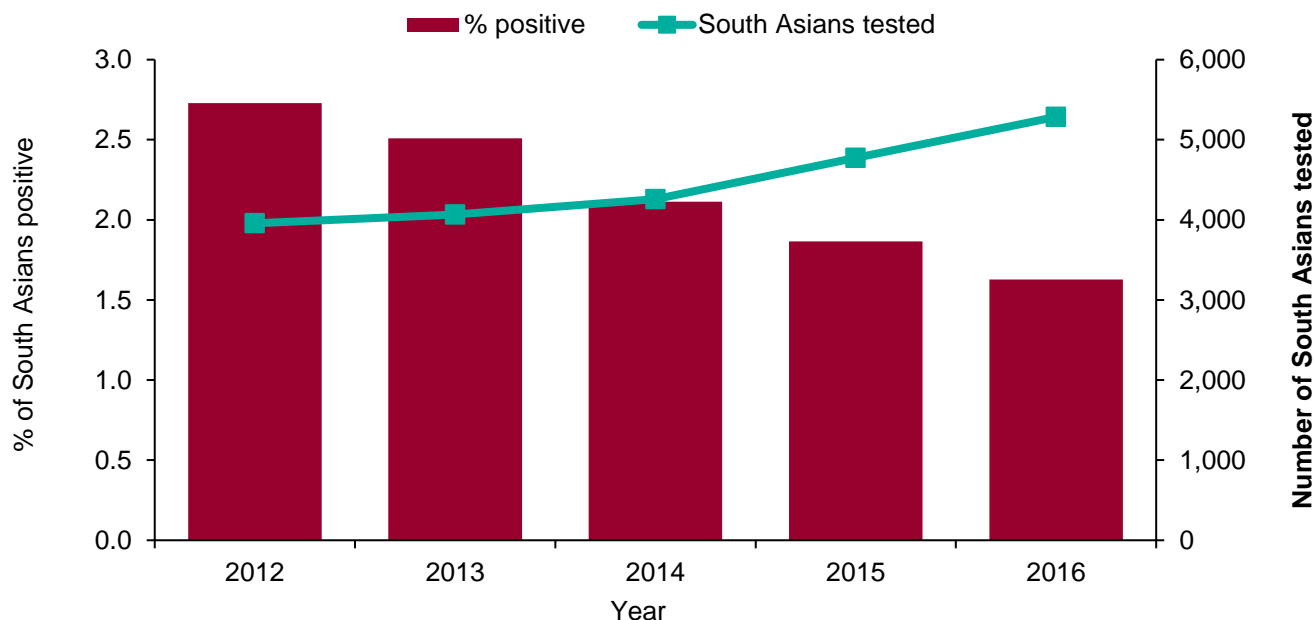
Analysis of sentinel surveillance data shows that hepatitis B positivity is higher in certain minority ethnic groups in London (Figure 11). Compared to those who identified as white ethnicity (positivity 0.9%), those who identified as other or mixed ethnicity who were tested for hepatitis B were over 5 times more likely to test positive (5.2%), black ethnicity were almost 5 times more likely to test positive (4.4%) and Asians more than twice as likely to test positive (2.0%)(5). Testing among South Asians continues to increase at sentinel surveillance sites; this coincides with a year-on-year decrease in the percentage of positive tests (Figure 12).

Figure 11: HBsAg positivity by ethnic group in sentinel surveillance laboratories in London, 2012-2016 (excludes antenatal screening)



Source: PHE Sentinel Surveillance of Blood-borne Virus testing. Excludes dried blood spot, oral fluid, reference testing, and testing from hospitals referring all samples.

Figure 12: Number of South Asian individuals tested and testing positive for HBsAg in sentinel laboratories in London PHE centre (excluding antenatal testing), 2012-2016

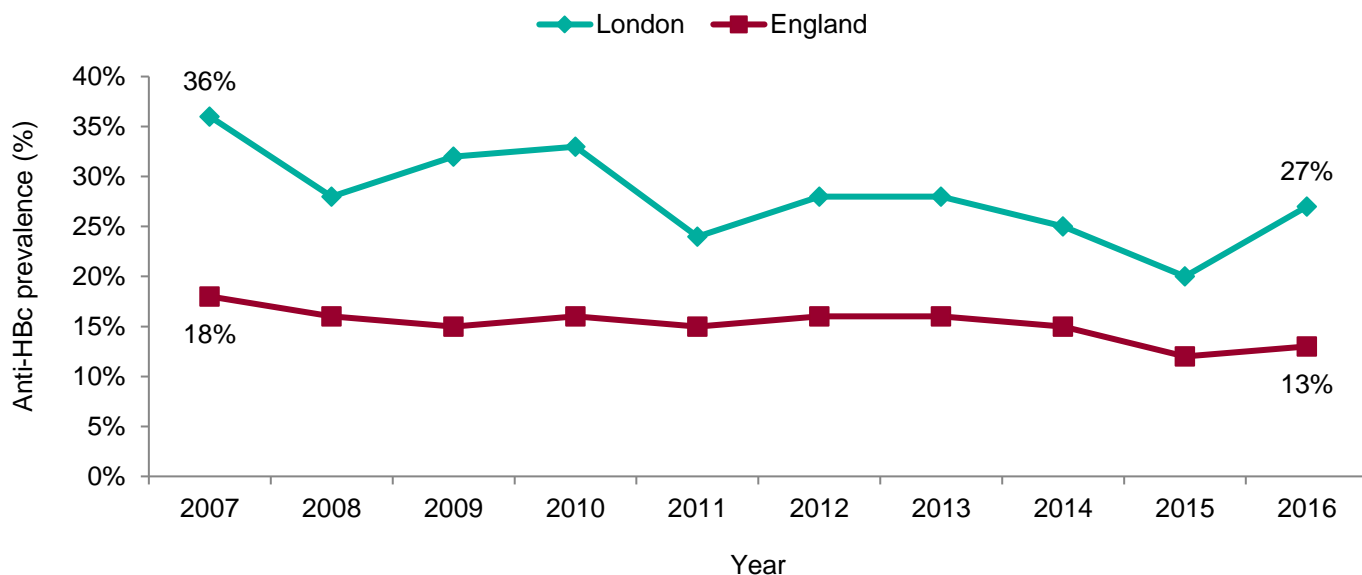


Source: PHE Sentinel Surveillance of Blood-borne Virus testing. Excludes dried blood spot, oral fluid, reference testing, and testing from hospitals referring all samples.

5.3 People who inject drugs (PWID)

Anti-HBc is a marker for past or current hepatitis B infection. In London, 27% of PWID surveyed in 2016 had evidence of past or current hepatitis B infection, which is higher than that seen in England (13%) (Figure 13)(14). Similar to national trends, anti-HBc prevalence in PWID in London has decreased since 2007 (14).

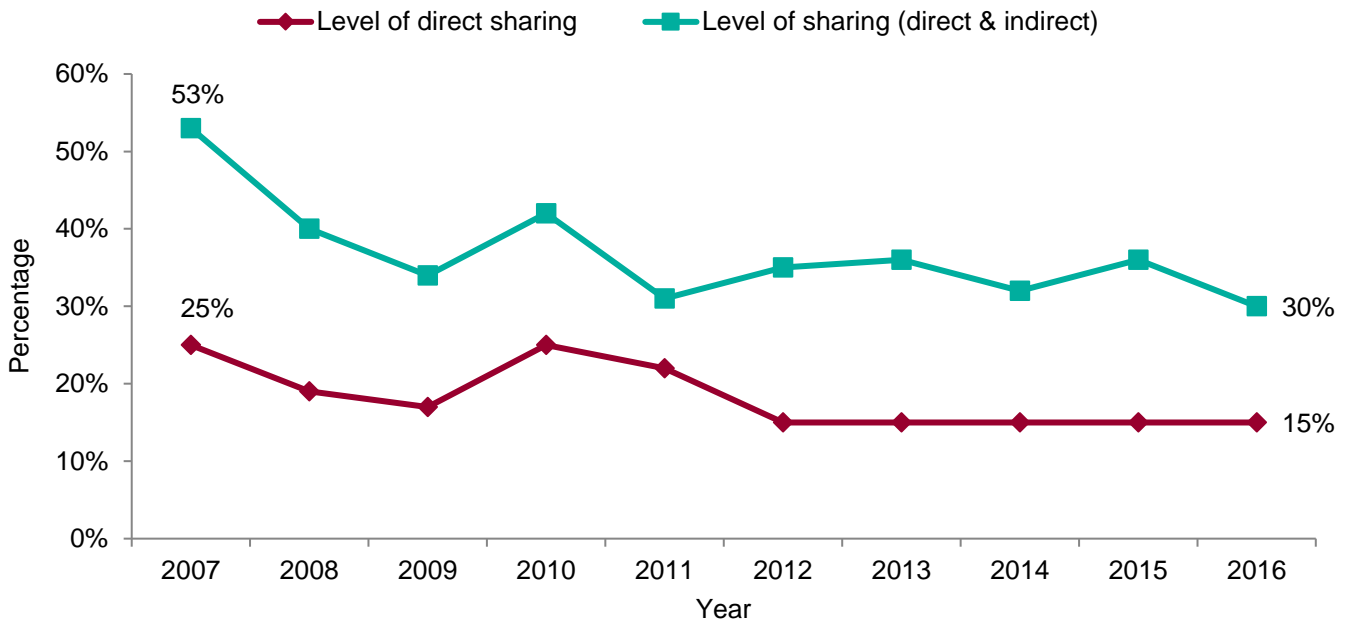
Figure 13: Anti-HBc prevalence among PWID in London and England, 2007-2016



Source: PHE Unlinked Anonymous Monitoring Survey of People Who Inject Drugs. For comparison to England, data for 2008/2009 are aggregated as some regions only report joint years.

The UAM survey measures the level of needle and syringe (direct) sharing and the level of sharing of mixing containers and filters (indirect sharing) among those who injected during the 4 weeks preceding participation in the survey. The proportion of PWID who directly or indirectly share injecting equipment in London fell from 53% in 2007 to 30% in 2016 (Figure 14)(14). This is likely to be due to increased access to needle exchange services.

Figure 14: Levels of direct and indirect sharing of injecting equipment in PWID in London, 2007-2016



Source: PHE Unlinked Anonymous Monitoring Survey of People Who Inject Drugs

In 2016, in England, Wales and Northern Ireland 91% of people who have ever injected drugs reported using needle and syringe programmes (NSP)(15). Adequate provision of injecting equipment is important, not only to reduce sharing of injecting equipment, but also to reduce the re-use of equipment by the same individual which could lead to accidental sharing in situations where people store injecting equipment together (16). Needle and syringe provision is considered ‘adequate’ when the reported number of needles and syringes received met or exceeded the number of times the individual injected. In 2016, the proportion of PWID in the UK reporting adequate needle/syringe provision was sub-optimal; around half (46%) of PWID who had injected during the preceding 28 days reported adequate needle/syringe provision in England, Wales and Northern Ireland (17).

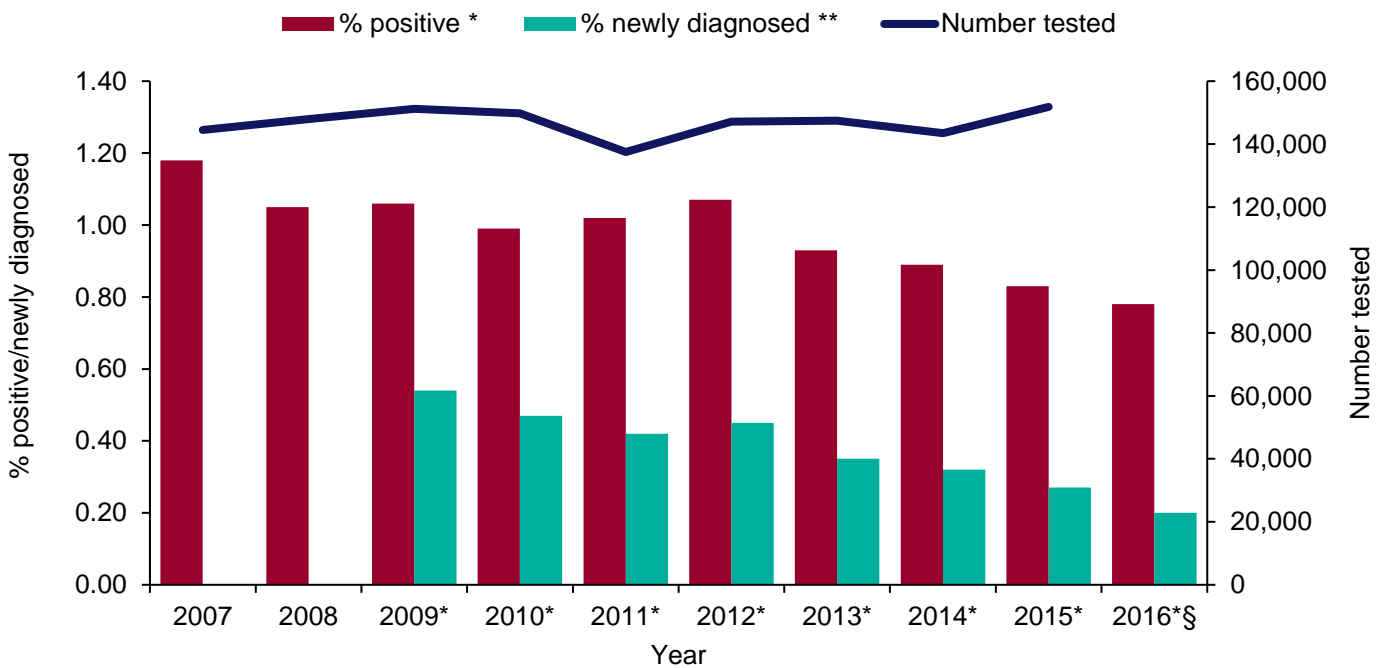
5.4 Antenatal testing in women

The aim of antenatal screening is to prevent perinatal transmission of hepatitis B from mother to child. Infection acquired in the neonatal period results in 90% of those infected becoming chronically infected (usually lifelong) compared to only 10% of those who acquire hepatitis B in adulthood. The risk of infection to the newborn is dependent on the mother’s infectivity. Without interventions and preventative measures, between 70-90% of mothers who are hepatitis B e-antigen (HBeAg) positive will transmit hepatitis B virus to their infants. This figure drops to approximately 10% when there is maternal antibody to HBeAg.

In 2016, the percentage of women attending antenatal services who tested positive for hepatitis B was 0.78% compared to 1.18% in 2007 (Figure 15). Of the women testing positive in this setting in London in 2016, 26% were new diagnoses. In England the percentage of hepatitis B positive women attending antenatal services was 0.36% in 2016, half the rate of London, with 31% of women tested being newly diagnosed (18). The largest groups of those testing positive were white (39.5%) and 23.9% were other/mixed (Figure 16)(19).

In 2016, 1026 notifications were received for the London based Enhanced Surveillance of Hepatitis B database. From this data, women testing positive were majority of black ethnicity (36%) and white other ethnicity (32%) and Chinese (9%). The percentage of women testing positive was 2.5%, 1.9%, 0.7% and 0.5% for Other/mixed, Black, Asian and White ethnicity, respectively. Other than English, the most common languages spoken by antenatal women testing positive for hepatitis B were Chinese, Somali, Romanian, Albanian and Portuguese.

Figure 15: Number of pregnant women tested during the antenatal period and testing positive for hepatitis B

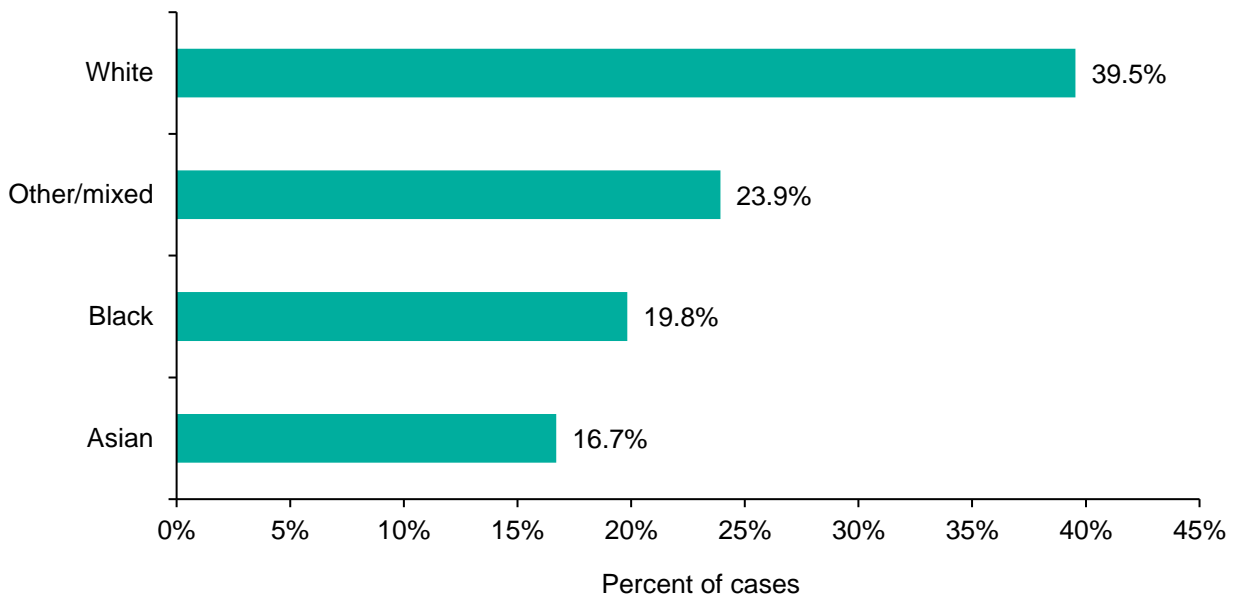


* Beginning in 2009, additional data were collected regarding women who were previously diagnosed with hepatitis B. From 2009, the % positive refers to those previously diagnosed and not retested in the current pregnancy, those who were previously diagnosed and retested in this pregnancy and newly diagnosed women.

** Percentage of women for whom information is available as to whether their diagnosis was made previous to or during this pregnancy

§ Figures for 2016 only account for Q1 due to a change to reporting between Q1 and Q2, please interrupt with caution Source: PHE National Antenatal Infections Screening Monitoring). Data for 2016 only account for Q1 2016, due to a change to reporting between Q1 and Q2 2016

Figure 16: Ethnicity of antenatal women testing positive for hepatitis B, London 2012-2016, n=832(19)



Source: PHE Enhanced surveillance of antenatal hepatitis B in London. Cases where ethnicity was unknown have been excluded.

6. Vaccination and other public health interventions

Vaccination is the most effective method in the control of hepatitis B. Pre-exposure immunisation is offered to infants born after August 2017 as part of the routine childhood immunisation programme and to individuals at an increased risk of infection or complications of the disease (Table 1). Post-exposure immunisation is given to individuals who have been exposed to hepatitis B virus, including infants born to hepatitis B infected mothers(3). In the following sections, data on targeted vaccination of babies born to hepatitis B positive mothers and PWID are presented.

Table 1: Groups where pre-exposure hepatitis B vaccination is recommended in the UK

Infants born after August 2017
Injecting drug users, non-injecting drug users who live with injectors and children of injectors
Individuals who change sexual partners frequently
Household and family contacts of a case or individual with acute and chronic hepatitis B
Families adopting children from countries with a high or intermediate prevalence of hepatitis B
Foster carers and their household contacts
Individuals receiving regular blood or blood products and their carers
Patients with chronic renal failure
Patients with chronic liver disease
Inmates of custodial institutions
Individuals in residential accommodation for those with learning difficulties
People travelling to or going to reside in areas of high or intermediate prevalence
Individuals at high risk of requiring medical or dental procedures in such countries
Individuals at occupational risk, including: healthcare workers in the UK and overseas; staff of residential and other accommodation for those with learning difficulties; laboratory staff; other occupational risk groups including morticians, embalmers, prison service staff who are in regular contact with people in prisons

7.1 Infants born after August 2017

In late 2019, coverage data is expected for infants receiving hepatitis B vaccine as part of routine childhood immunisation for the first time. This data is likely to show that around 90-95% received the vaccine in the year 2018/19.

7.2 Babies born to hepatitis B positive mothers

Vaccination of the new born at birth (within 24 hours) and at 1, 2 and 12 months of age from mothers positive for surface antigen (HBsAg) is highly effective at preventing transmission of the infection at birth. Vaccination alone will reduce the risk of infection by 70% and the addition of hepatitis B immunoglobulin (HBIG) in high-risk infants further reduces the risk of infection to 10%. All babies born to hepatitis B mothers should receive a complete course of vaccine on time and where appropriate, a dose of HBIG; the first dose of vaccine and HBIG (where appropriate) should be given as soon as possible, ideally within 24 hours of birth. Arrangements should be in place to ensure that information is shared with appropriate local agencies to facilitate follow up(3). Child health information departments in England have a statutory duty to report data by local authority within the range of childhood immunisations monitored by the COVER programme. The COVER programme collected data by former PCT area up to April 2016, despite changes to the NHS health structures. This is because it allows historical comparison of PCT coverage data and allows monitoring for long-term trends. In addition, it will take time for the COVER return for LA resident population to be accurate and complete, and therefore, the PCT output remains the most reliable dataset (20, 21).

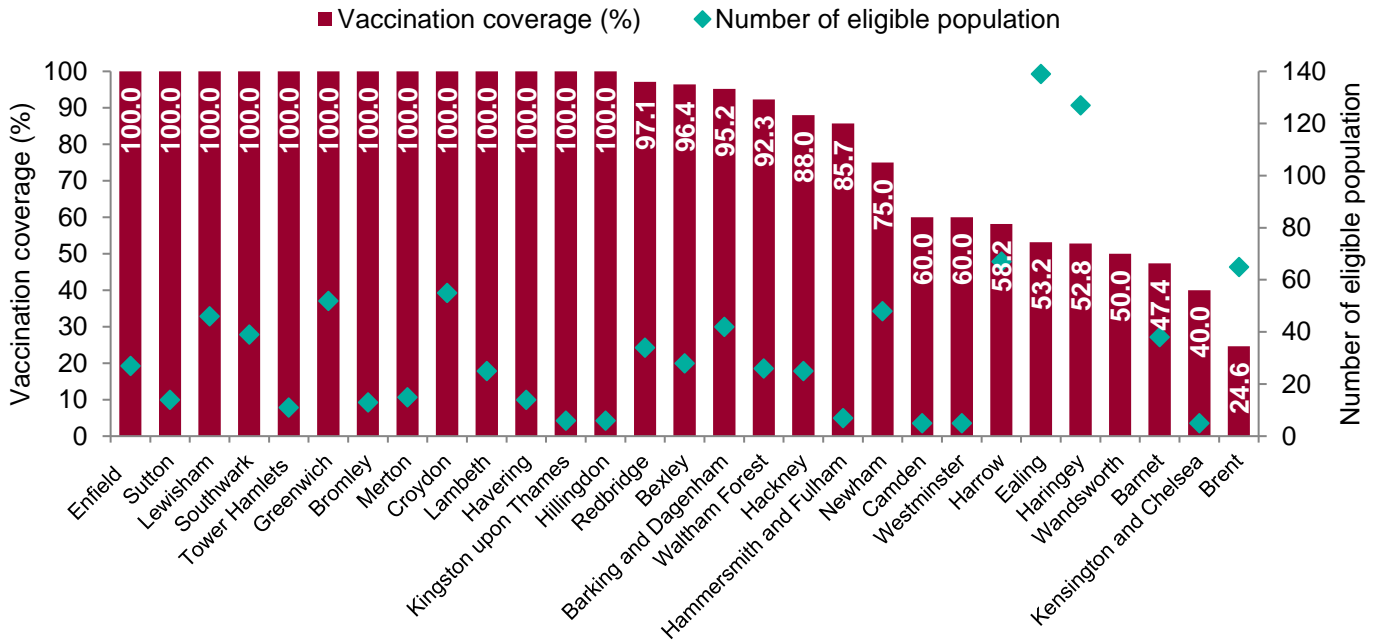
COVER data show that of the babies born to mothers known to health services as hepatitis B positive in London, 74.4% received 3 doses of hepatitis B vaccine by 12 months in 2016/2017 compared with 87.8% in 2015/2016. Thirteen local authorities reported 100% uptake of 3 doses of vaccine at 12 months. Three areas (Barnet, Kensington and Chelsea and Brent) reported an uptake of less than 50% (Figure 17)(21). Hounslow, Islington and Richmond upon Thames did not submit full data for 2016/2017. City of London and Wandsworth supplied data but had no eligible babies. It is important that commissioners and providers in areas where information is incomplete, or vaccination uptake is less than 100% work to improve this.

A problem with this vaccination programme has been ensuring commissioners and providers of vaccination know of all their babies requiring vaccination. In 2016/2017 the following areas reported identifying fewer than 10 babies eligible for vaccination: City of London (0), Camden (5), Kensington and Chelsea (5), Westminster (5), Hillingdon (6), Kingston upon Thames (6) and Hammersmith and Fulham (7)(21). Potential reasons for identifying only a few babies include having a low risk population, lacking robust information pathways from antenatal care to primary care or poor reporting.

It is important that commissioners, providers and HPTs work together to ensure there are robust pathways to transfer information from maternity services to community services to enable completion of the vaccination course in a timely manner. Providers of antenatal care and vaccination of at risk babies should ensure that information materials on hepatitis B are available in languages most frequently spoken by their local clients. ESAHB data has indicated that other than English, the most common languages spoken

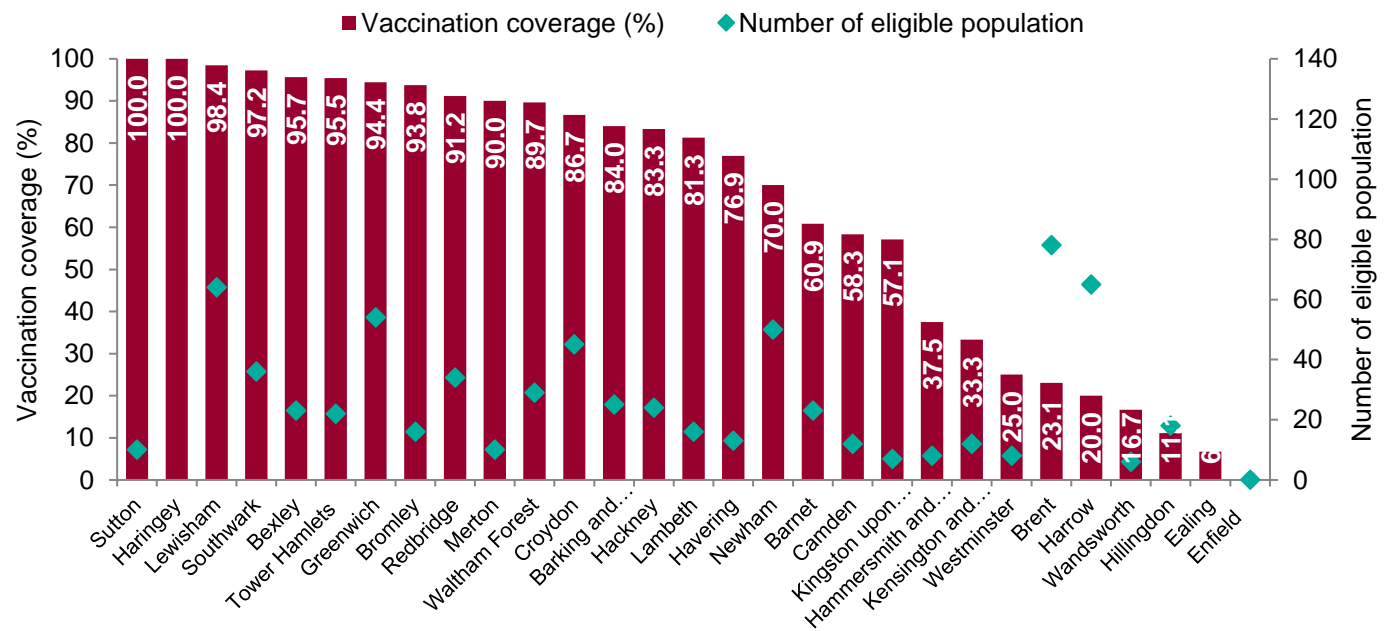
by antenatal women testing positive for hepatitis B in London in 2016 were Chinese, Somali, Romanian, Albanian and Portuguese.

Figure 17: Neonatal hepatitis B vaccine coverage of 3 doses at 12 months by Local Authority, London 2016/2017



Source: COVER. Please see Appendix 2 for information that is more detailed; some data are not shown due to suppression of small numbers, or where data was not available or was not applicable.

Figure 18: Neonatal hepatitis B vaccine coverage of 4 doses at 24 months by Local Authority, London 2016/2017

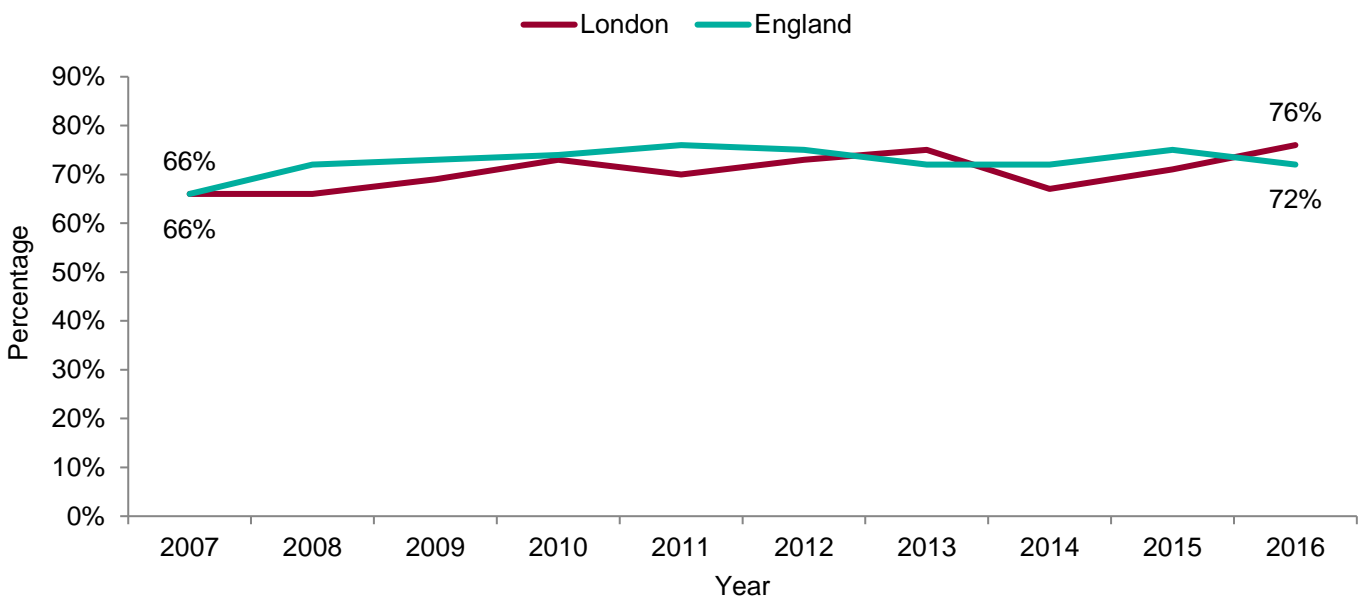


Source: COVER. Please see Appendix 2 for information that is more detailed; some data are not shown due to suppression of small numbers, or where data was not available or was not applicable.

7.3 People who inject drugs (PWID)

Hepatitis B vaccination uptake in PWID has increased overall over the past decade, with 76% of patients in unlinked anonymous survey reporting hepatitis B vaccination in 2016, compared to 66% in 2007. In 2016, London had a higher uptake than that seen in England (71%) (Figure 19)(14, 15). Injecting drug use is an important factor for hepatitis B infection. Therefore, it is encouraging that hepatitis B vaccination uptake in PWID has increased.

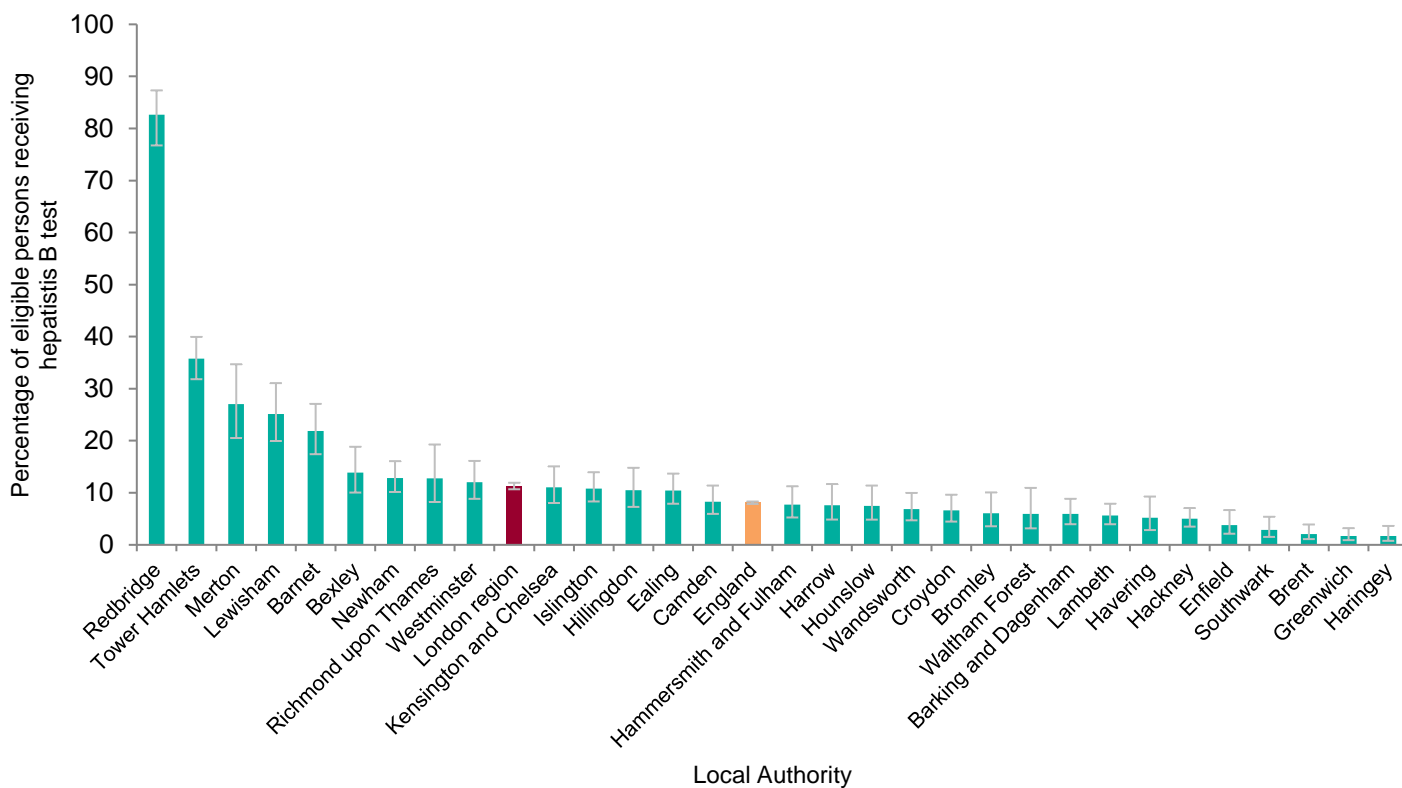
Figure 19: Hepatitis B vaccine uptake in PWID in London and England, 2007 to 2016



Source: PHE Unlinked Anonymous Monitoring Survey of People Who Inject Drugs

Of the people entering drug misuse treatment centres in London, only 11% of those eligible were offered and completed a course of the hepatitis B vaccinations. The London average is slightly higher than the England uptake (8%). Of note, in Redbridge, 83% of eligible people entering drug misuse treatment in 2016/2017 completed a course of hepatitis B vaccination (Figure 20). Figures of low uptake overall in London do not distinguish whether people entering treatment centres have already received the hepatitis B vaccine.

Figure 20: Persons entering drug misuse treatment - Percentage of eligible persons completing a course of hepatitis B vaccination, 2016-2017



Source: National Drug Treatment Monitoring System. Some data not included due to suppression of small numbers

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Abbreviations

Anti-HBc	Hepatitis B core antibody - appears at onset of symptoms in acute hepatitis B and persists for life; presence indicates resolving or resolved infection if the individual is HBsAg negative.
CIDSC	Centre for Infectious Disease Surveillance and Control
COVER	Cover of Vaccination Evaluated Rapidly
ESAHB	Enhanced Surveillance of Antenatal Hepatitis B
ESLD	End Stage Liver Disease
FES	PHE Field Epidemiology Service, National Infection Service
GP	General Practitioner
GUM	Genito-Urinary Medicine
HBcAb	Hepatitis B core Antibody – used in epidemiological studies as a marker of previous or current hepatitis B infection
HBeAg	Hepatitis B e antigen, the presence of HBeAg is associated with relatively high infectivity and severity of disease
HBIG	Hepatitis B Immunoglobulin
HBsAg	Hepatitis B surface Antigen (a protein on the surface of the hepatitis B virus) - detected during acute or chronic hepatitis B virus infection.
HBV	Hepatitis B virus
HPT	Health Protection Team
IgM	IgM antibody to hepatitis B core antigen (IgM anti-HBc); positivity indicates recent infection with hepatitis B virus; however, it may also remain positive in chronic infection
KPI	Key Performance and Quality Indicator
LA	Local authority
MSM	Men who have sex with men
Nam PehChan	A computer program used to identify individuals of South Asian origin based on their name. It has a sensitivity of 91% and a positive predictive value of 63.2% (Cummins, 1999)
NICE	National Institute for Health and Care
Onomap	Name analysis software
PCT	Primary Care Trust
PHE	Public Health England
PWID	People who inject drugs
SAO	(Individuals of) South Asian Origin
UK	United Kingdom
UTLA	Upper tier local authority
WHO	World Health Organization

Appendix 1: Information sources

This report uses several data sources to describe the epidemiology of hepatitis B. These are summarised below:

- Clinical hepatitis notifications: Acute viral hepatitis is a statutorily notifiable disease in the UK. Clinicians are required to report cases of acute viral hepatitis based on clinical suspicion to Public Health England (PHE):
<https://www.gov.uk/government/publications/hepatitis-b-annual-report-for-2013>
- Laboratory notifications of hepatitis B: Since 2010 laboratories have a statutory requirement to report all diagnoses of hepatitis B, both chronic and acute, to PHE. They usually differentiate between acute and chronic cases
- Sentinel Surveillance of Blood-borne Virus testing: Eight laboratories in the London region collected additional information on all hepatitis B testing in 2016 (Chelsea and Westminster Hospital, Dulwich Laboratory, PHE Centre for Infectious Disease Surveillance and Control, St Bartholomew's Hospital, St Georges Hospital, Homerton Hospital, Guys and St Thomas):
<https://www.gov.uk/government/publications/sentinel-surveillance-of-blood-borne-virus-testing-in-england-2017>
- Antenatal infection surveillance: the National Antenatal Infections Screening Monitoring (NAISM) programme monitored the uptake and test results of antenatal screening for hepatitis B susceptibility in England:
<https://www.gov.uk/government/publications/national-antenatal-infections-screening-monitoring-annual-data-tables>
- In London, a special surveillance system called Enhanced Surveillance of Antenatal Hepatitis B (ESAHB) has been in place for several years(19). Antenatal clinics in London provide information on every case of hepatitis B diagnosed during antenatal care to the PHE Field Service, South East and London office.
- The Unlinked Anonymous Monitoring Survey of HIV and Hepatitis in people who inject drugs (PWID) aims to measure the changing prevalence of HIV, hepatitis B and hepatitis C in PWID who are in contact with specialist drug agencies (e.g. needle exchange services and treatment centres). The programme also monitors levels of risk and protective behaviours among PWID. The data are used to assess and develop appropriate preventative and health education campaigns, evaluate the impact of such interventions, and to assist in the provision of

services for PWID in the United Kingdom:

<https://www.gov.uk/government/publications/people-who-inject-drugs-hiv-and-viral-hepatitis-monitoring>

- Infants born to hepatitis B positive mothers: Information on childhood immunisation coverage at ages 1, 2 and 5 years is collected through the Cover of Vaccination Evaluated Rapidly (COVER) data collection for Upper Tier Local Authorities (LAs): <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/childhood-vaccination-coverage-statistics-england-2016-17>
- Liver Disease Profiles: the website contains data health indicators relating to hepatitis B for Upper Tier Local Authorities. This includes hospital admission and mortality data from the Hospital Episode Statistics (HES) and Office for National Statistics (ONS). Data from the National Drug Treatment Monitoring System are also included. Further details on each data source can be found on the website: <https://fingertips.phe.org.uk/profile/liver-disease>

Due to a lack of routinely collected data sources, no information is available on the prevalence of hepatitis B in the general population and the proportion of infected persons who are receiving treatment for hepatitis B. Antenatal testing of pregnant women provides a good estimate of prevalence in women of childbearing age.

Appendix 2: Vaccination uptake

Hep B vaccination uptake in babies at risk by local authority, London 2016/17

Local Authority	Coverage at 12 months			Coverage at 24 months		
	Number immunised with 3 vaccines by 12 months	Number at risk (eligible population)	Uptake at 12 months (%)	Number immunised with 3 vaccines by 24 months	Number at risk (eligible population)	Uptake at 24 months (%)
Barking and Dagenham	40	42	95.2	21	25	84.0
Barnet	18	38	47.4	14	23	60.9
Bexley	27	28	96.4	22	23	95.7
Brent	16	65	24.6	18	78	23.1
Bromley	13	13	100.0	15	16	93.8
Camden	*	5	60.0	7	12	58.3
City of London	0	0	N/A	0	0	N/A
Croydon	55	55	100.0	39	45	86.7
Ealing	74	139	53.2	15	223	6.7
Enfield	27	27	100.0	0	0	N/A
Greenwich	52	52	100.0	51	54	94.4
Hackney	22	25	88.0	20	24	83.3
Hammersmith and Fulham	6	7	85.7	*	8	37.5
Haringey	67	127	52.8	174	174	100.0
Harrow	39	67	58.2	13	65	20.0
Havering	14	14	100.0	10	13	76.9
Hillingdon	6	6	100.0	*	18	11.1
Hounslow	N/A	N/A	N/A	N/A	N/A	N/A
Islington	N/A	N/A	N/A	N/A	N/A	N/A
Kensington and Chelsea	*	5	40.0	*	12	33.3
Kingston upon Thames	6	6	100.0	*	7	57.1
Lambeth	25	25	100.0	13	16	81.3
Lewisham	46	46	100.0	63	64	98.4
Merton	15	15	100.0	9	10	90.0
Newham	36	48	75.0	35	50	70.0
Redbridge	33	34	97.1	31	34	91.2
Richmond upon Thames	N/A	N/A	N/A	N/A	N/A	N/A
Southwark	39	39	100.0	35	36	97.2
Sutton	14	14	100.0	10	10	100.0
Tower Hamlets	11	11	100.0	21	22	95.5
Waltham Forest	24	26	92.3	26	29	89.7
Wandsworth	*	*	50.0	*	6	16.7
Westminster	*	5	60.0	*	8	25.0

Uptake refers to babies born to hepatitis B positive mothers (not all babies); – = Data not available; * = Data has been suppressed due to potential disclosure issues associated with small numbers; N/A= not applicable (zero denominator).