Public Health England

Protecting and improving the nation's health

Hepatitis B in the West Midlands

2017 data

About Public Health England

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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About the Field Service

The Field Service (FS) supports Public Health England (PHE) Centres and partner organisations through the application of epidemiological methods to inform public health action. FS does this in 2 main ways, firstly by providing a flexible expert resource, available, as and when needed, to undertake epidemiological investigations for key health protection work and secondly through the expert analysis, interpretation and dissemination of surveillance information to PHE Centres, local health partners, service providers and commissioners of services. Within the FS network, excellence and innovation is encouraged, we foster academic collaborations and take active part and lead in research, development and training.

Contents

Executive summary

Hepatitis B is a vaccine preventable blood borne viral infection that causes inflammation of the liver. Globally the infection is a significant public health concern. Like many European countries, the UK is an area of comparatively low endemicity with 9,774 confirmed hepatitis B cases reported to Public Health England (PHE) from laboratories in 2017. Of all hepatitis B infections reported to PHE in 2017, 445 were acute or probable acute infections [(1)].

The virus is transmitted by exposure to infected blood or bodily fluids through the sharing of needles or contaminated equipment during injecting drug use, mother-to-child during the perinatal period, unprotected vaginal or anal intercourse, infected blood products, needle stick or sharps injuries or bites from infected persons [(2)].

Viral hepatitis is a leading cause of premature death globally. As a result, in 2016, the World Health Organization (WHO) adopted a Global Health Sector Strategy (GHSS) with the first global targets for viral hepatitis, including a 30% reduction in new cases of hepatitis B virus (HBV) and a 10% reduction in HBV-related mortality by 2020 and 90% prevention of mother-to-child transmission by 2030, achieved through vaccination or other means [(3)].

In response to the World Health Assembly recommendation that every country implements a universal hepatitis B vaccination programme, all babies born after the 1 August 2017 in the UK are routinely vaccinated against hepatitis B as part of their primary immunisation schedule through the use of a new hexavalent vaccine [(4)].
This report is part of a series of annual updates that summarise the progress made by the West Midlands in reducing the risk of infection, preventing further transmission of HBV, and improving the health outcomes of people with hepatitis B. It is produced to support local and regional action towards hepatitis B prevention, testing, treatment and care. Furthermore, as this report summarises the 2017 picture of HBV in the West Midlands, it can be used to monitor progress towards GHSS goals and to identify gaps where action is needed to meet these goals.

Testing and diagnosis

The number of laboratory reported cases of acute and chronic HBV in the West Midlands has been broadly stable between 2015 and 2017 (2015: 864, 2016: 891 and 2017: 896) following a general increase in numbers from 2008 to 2015. Due to the limitations of laboratory data, it is not possible to determine the reasons for the higher numbers reported over the last few years, although greater testing, reporting, and local initiatives to identify those at risk may be possible reasons. It is important to note that HBV laboratory reporting from the West Midlands remains significantly lower than that

seen in England overall – this may be due to a lower number of cases or poorer detection of cases.

Within the West Midlands, Birmingham, Coventry and Sandwell had a higher rate of laboratory reporting than the West Midlands overall. This may be due to increased testing and reporting rather than higher incidence, although these areas do have a greater proportion of high-risk populations.

The incidence of acute HBV in the West Midlands increased from 0.50 per 100,000 in 2016 to 0.82 per 100,000 in 2017. The West Midlands rate in 2017 was similar to the rate for England overall (0.80 per 100,000). From the data available, it was not possible to determine the reason for this increase in incidence in the West Midlands.

In the West Midlands, laboratory reports for HBV (acute and chronic) were more common in men and in individuals aged between 25 and 34 years. The West Midlands had a higher test positivity than other parts of England in 2017. Between 2013 and 2017, 1.4% of individuals tested at sentinel laboratories were positive for hepatitis B surface antigen (HBsAg), compared to 0.9% in England overall.

It has been estimated that 95% of people with chronic hepatitis B in the UK are migrants, with most acquiring the infection in early childhood in their country of birth [(5)]. Between 2013 and 2017, the proportion of individuals tested at sentinel laboratories who were positive for HBsAg was highest among those of other/mixed and black ethnicity, although both groups represented a relatively small number of tests. The number of South Asians tested in the West Midlands increased by 9% in 2017 to reach a 5-year high, while the proportion testing positive increased from 2.2% in 2016 to 2.4% in 2017.

The prevalence of previous HBV infection in people who inject drugs (PWID) who responded to the Unlinked Anonymous Monitoring (UAM) survey remained stable at 5% in the West Midlands in 2017 and was considerably lower than in England overall (17%).

Morbidity and mortality

Hospital admissions data for individuals infected with HBV are not available for 2017 due to technical difficulties with the incorrect classification of HBV codes, which has affected data across England and is not unique to the West Midlands. From the latest data available, admissions for individuals with acute or chronic hepatitis B increased in 2016 by 41%, compared to 2015. The number of admissions for individuals with HBV-related end stage liver disease (ESLD) decreased in 2016 (2015: 32 and 2016: 25). Although the number of individuals admitted to hospital with HBV-related hepatocellular carcinoma (HCC) increased in 2016 compared in 2015, it was similar to figures reported from 2010 to 2013. However, because the numbers are small, it is difficult to draw robust conclusions.

During the 5 years from 2013 to 2017, 466 West Midlands residents received a liver transplant in England – of these, 9.4% were patients where post-hepatitis B cirrhosis and acute hepatitis B were given as the primary, secondary or tertiary indication for transplant at registration and were HBV positive at transplant. Nationally, death rates from ESLD or HCC in individuals with HBV mentioned on their death certificate are ranked into 4 groups – from 2010 to 2017 the death rate in the West Midlands was in the second highest group.

Prevention and vaccination

In the West Midlands, the screen positive rate for pregnant women tested by the Infectious Diseases in Pregnancy Screening (IDPS) Programme was 2.50 per 1,000 women tested in 2016/17 and the rate of newly diagnosed women was 0.63 per 1,000 – both rates were lower than rates for England overall.

Women of South Asian ethnicity were slightly more likely to have a positive HBsAg test during pregnancy than women of non-south Asian origin and were also more likely to have an active infection, as determined by hepatitis B e antigen (HBeAg). Where ethnicity was known, pregnant women of ‘other/mixed’ and ‘black’ ethnicities had the highest proportion of positive HBsAg tests and were also more likely to have an active infection, as evidenced by a higher proportion of HBeAg positive women.

Vaccination coverage for eligible neonates in the West Midlands in 2017/18 was 99% at both 12 and 24 months. Where data were not suppressed due to small numbers, 9 upper tier local authorities in the West Midlands achieved 100% coverage at 12 and 24 months.

Among PWID responding to the UAM survey in the West Midlands, self-reported uptake of at least one dose of HBV vaccine was 62% in 2017 – this was the second lowest uptake of all English regions and below the 73% uptake reported in England overall. However, sharing of injecting equipment in this high-risk group was lower in the West Midlands than in England overall (direct sharing: West Midlands = 16%, England = 18%, direct and indirect sharing: West Midlands = 33% and England = 36%).

Recommendations

Testing and diagnosis

The incidence of acute HBV infection in the West Midlands increased in 2017. While this increase in incidence may be due to normal fluctuation, there remains a need for continued investment and awareness-raising to limit the number of new cases of HBV and detect those living with chronic disease.

The prevalence of HBV infection in PWID who responded to the UAM survey was stable in the West Midlands in 2017. To ensure that prevalence does not begin to increase, commissioners should continue to ensure that a broad range of prevention services (including harm reduction advice and needle exchange services) are available for PWID and that there are high levels of hepatitis B testing and vaccination at drug treatment services.

Testing of high-risk populations is an essential step in reducing the burden of disease. The number of south Asians tested increased in 2017. Local authorities should continue with awareness raising activities both in high-risk groups and in the general population. Primary and secondary care providers should continue to ensure that those at increased risk of infection are identified, tested and referred in line with existing National Institute for Health and Care Excellence (NICE) guidance.

Those of black or mixed/other ethnicity consistently have the highest proportion of positive tests. While this conclusion is based on a relatively small number of individuals tested, more should be done to identify, test and treat all individuals within these ethnic groups.

Morbidity and mortality

Hospital admissions data for 2017 are not available. Hospital admissions for individuals with HBV increased in 2016 although the number of patients admitted with ESLD decreased slightly, and the number of patients admitted with HCC increased to levels reported from 2010 to 2013. Clinical commissioning groups should consider innovative ways of delivering hepatitis specialist treatment in community settings to improve access and outcomes.

Prevention and vaccination

Commissioners should also continue to improve the uptake of HBV vaccination among key risk groups including PWID. It is worrying that the West Midlands had the second lowest self-reported uptake of hepatitis B vaccine among PWID of all English regions in 2017. Action is required to bring vaccine uptake among this high-risk group up to the levels achieved in other parts of England.

Introduction and background

Hepatitis B is a vaccine preventable blood borne viral infection that causes hepatitis (inflammation of the liver). Globally, the infection is a significant public health concern with an estimated 257 million people infected with hepatitis B virus (HBV). In 2015, the virus resulted in 887,000 deaths [6]. Although hepatitis B is found throughout the world, areas of high endemicity are sub-Saharan Africa, east and southeast Asia, the Pacific Islands, parts of South America, southern parts of eastern and central Europe, the Middle East and the Indian subcontinent [7]. The UK is a very low prevalence country with 9,774 confirmed hepatitis B cases reported to Public Health England (PHE) from laboratories in 2017. Of all hepatitis B infections reported to PHE in 2017, 445 were acute or probable acute infections [1].

The virus is transmitted through exposure to infected blood or bodily fluids contaminated with blood (saliva, semen, vaginal fluid), which can occur as a result of unprotected sexual contact, through injecting drug use and during delivery (perinatal transmission). The main routes of transmission of HBV include:

- sharing of needles or contaminated equipment during injecting drug use
- vertical transmission (mother-to-child during the perinatal period)
- sexual transmission (unprotected vaginal or anal intercourse)
- receipt of infectious blood (via transfusion) or blood products
- needle stick or sharps injuries
- bites from infected persons [2]

Globally, there are geographical differences in the transmission of HBV. In high prevalence countries, infection is generally acquired at birth (vertical transmission) or in childhood. However, in many low endemicity countries including the UK most infections are acquired in adulthood, particularly through the sharing of injecting equipment by people who inject drugs (PWID) and through sexual exposure [2].

Many people with hepatitis B are asymptomatic for up to 6 months following infection. This can lead to infected individuals unknowingly transmitting the virus to others. Infection can be acute, with around 1% of people developing acute liver failure, or it can be chronic [8]. The likelihood of developing chronic hepatitis B diminishes with age, with up to 10% of those infected as an adult going on to develop a chronic infection, compared up to 95% of individuals infected during childhood [8]. Chronically infected individuals can be inactive carriers, transmitting the virus but not suffering from any significant liver damage. Conversely, individuals can be chronically ill with an active infection, with around a quarter of people going on to develop serious complications such as liver cirrhosis and hepatocellular carcinoma (HCC) [8].

Despite the significant worldwide burden of hepatitis, it has not been treated as a public health priority until recently. As a result, in 2016, WHO adopted a Global Health Sector Strategy (GHSS) with the first global targets for viral hepatitis, including a 30% reduction in new cases of HBV and a 10% reduction is HBV-related mortality by 2020 and 90% prevention of mother-to-child transmission by 2030, achieved through vaccination or other means [3]. In response to the World Health Assembly recommendation that every country implements a universal hepatitis B vaccination programme, all babies born after the 01 August 2017 in the UK are routinely vaccinated against hepatitis B as part of their primary immunisation schedule through the use of a new hexavalent vaccine [4].

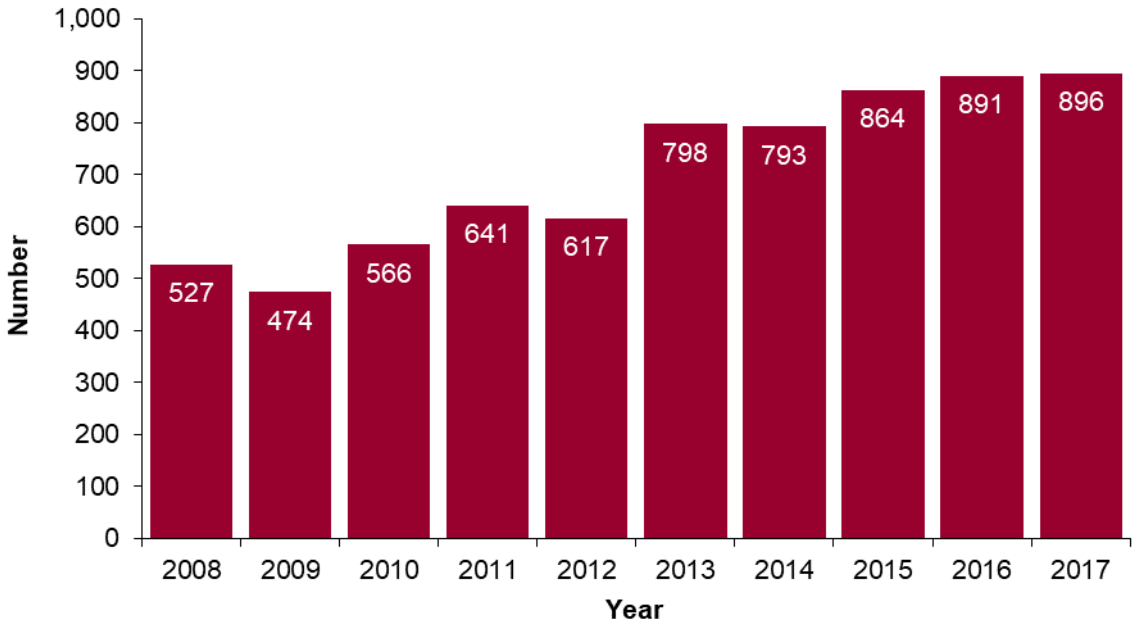
This report is part of a series of annual updates that summarise the progress made by the West Midlands in reducing the risk of infection, preventing further transmission of HBV, and improving the health outcomes of people with hepatitis B. It is produced to support local and regional action towards hepatitis B prevention, testing, treatment and care. Furthermore, as this report summarises the 2017 picture of HBV in the West Midlands, it can be used to monitor progress towards GHSS goals and to identify gaps where action is needed to meet these goals.

Testing and diagnosis of hepatitis B

Laboratory reports of hepatitis B (acute and chronic)

In 2017, there were 896 laboratory reports of hepatitis B infection (both acute and chronic) in the West Midlands – this was similar to 2016 (n=891) and 2015 (n=864) (Figure 1). This period of stability follows a general increase in numbers that was observed from 2008 to 2015. The West Midlands has had a crude laboratory reporting rate (per 100,000 population) consistently below the England rate for the last 10 years, with this rate significantly lower in all years apart from 2010 (Figure 2). It is important to note that laboratory reporting generally reflects trends in testing and reporting rather than trends in disease prevalence.

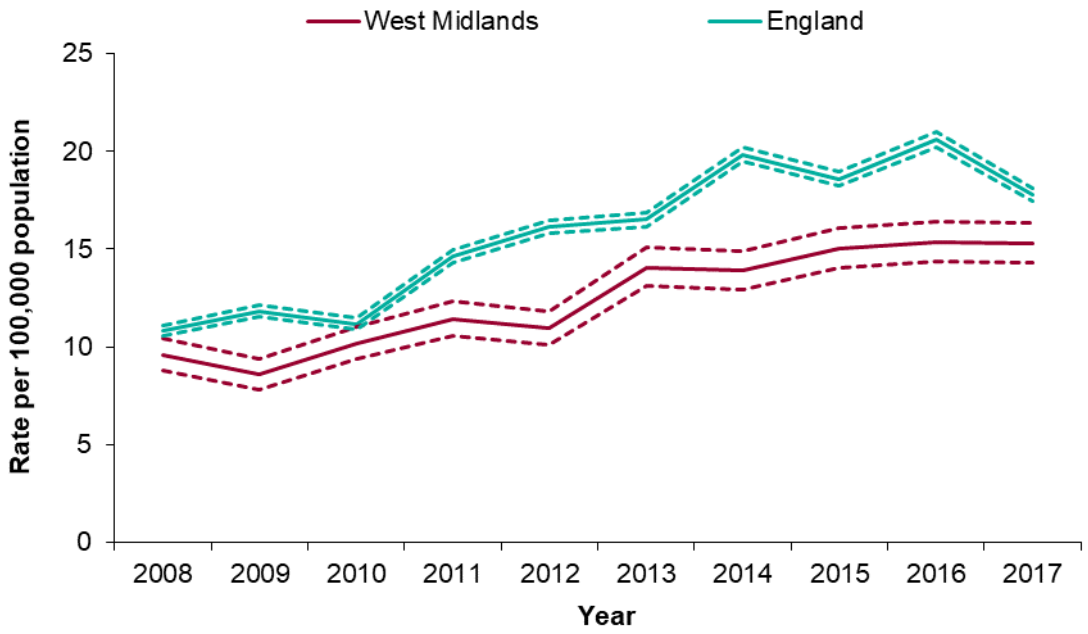
Figure 1: Number of laboratory reports of hepatitis B (acute and chronic), residents of West Midlands PHE Centre, 2008 to 2017[i]



Source: Public Health England, Second Generation Surveillance System (SGSS)

[i] 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.

Figure 2: Laboratory reports of hepatitis B (acute and chronic) per 100,000 population, residents of West Midlands PHE Centre and England, 2008 to 2017[ii]



Source: Public Health England, Second Generation Surveillance System (SGSS)

Key findings

Laboratory reporting of hepatitis B (acute and chronic) has been broadly stable since 2015, following a general upward trend from 2008 to 2015. The rate of laboratory reporting in the West Midlands remains lower than that of England. Due to the limitations of laboratory data it is not possible to determine the reasons for these trends in the West Midlands. Greater testing, reporting and local initiatives to identify those at risk may have contributed to the general increase in numbers from 2008 to 2015.

[ii] 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. Rates per 100,000 population have been calculated using mid-year population estimates supplied by the Office for National Statistics (ONS).

In the West Midlands, the rate of laboratory confirmed hepatitis B infection (acute and chronic combined) varies by upper-tier local authority (Table 1 and Figure 3). In 2017, the directly standardised rate (DSR) per 100,000 population showed that Birmingham, Coventry and Sandwell upper-tier local authorities had significantly higher rates of laboratory reporting than the West Midlands average – for Birmingham and Coventry this was also the case in 2016 (Figure 3). 9 local authorities – Warwickshire, Telford and Wrekin, Walsall, Herefordshire, Solihull, Staffordshire, Shropshire, Worcestershire and Dudley – had DSRs that were significantly lower than the West Midlands average in 2017.

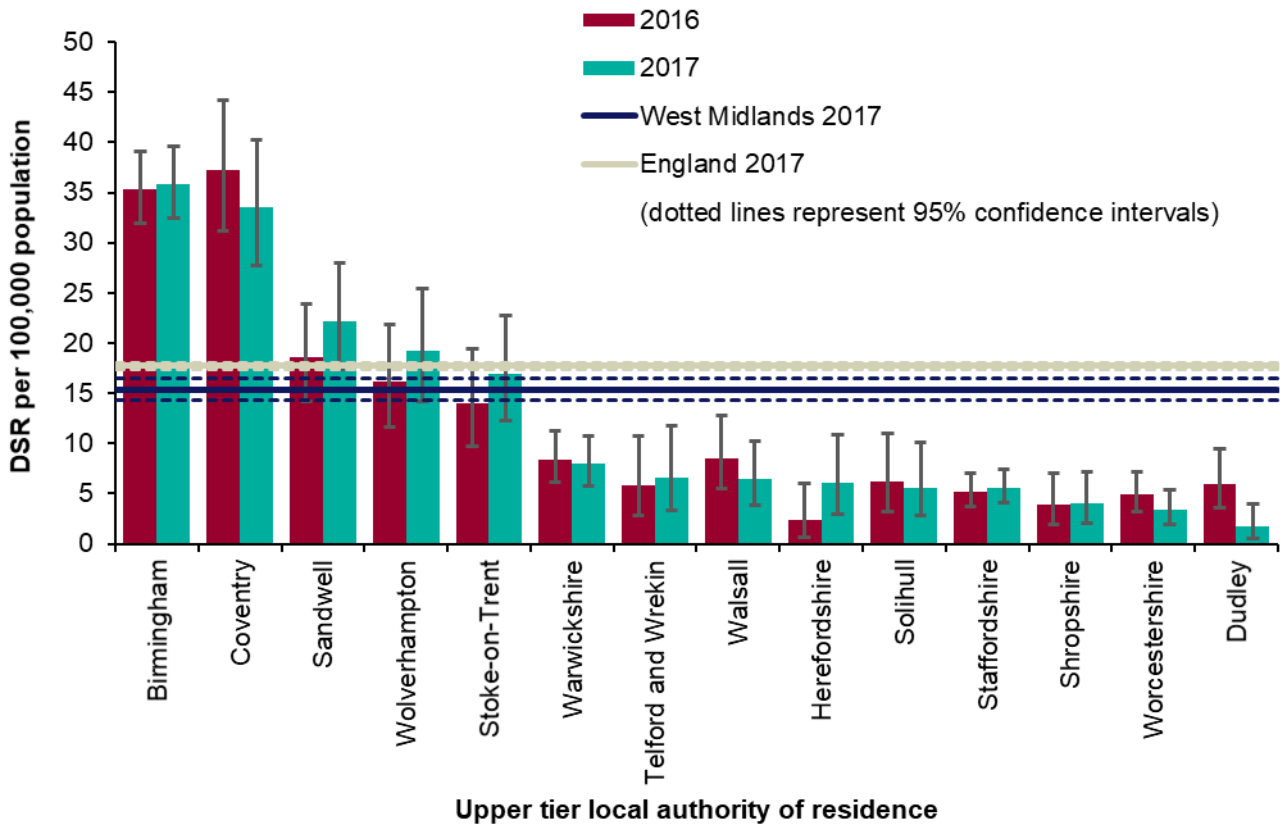
Table 1: Number of laboratory reports of hepatitis B (acute and chronic) by upper tier local authority of residence, West Midlands PHE centre, 2008 to 2017[iii]

Upper tier local authority of residence	Number of laboratory reports										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Trend
Birmingham	133	128	174	213	226	383	392	399	411	420	
Coventry	130	114	130	158	130	135	131	127	146	135	
Dudley	25	22	30	21	20	27	20	24	18	5	
Herefordshire	14	7	6	11	7	4	5	5	4	11	
Sandwell	4	11	3	9	8	26	37	31	61	73	
Shropshire	15	17	13	13	14	12	9	4	11	11	
Solihull	8	4	3	10	9	11	10	9	12	11	
Staffordshire	18	40	26	27	17	18	29	49	43	46	
Stoke-on-Trent	63	43	60	46	47	33	41	43	36	44	
Telford and Wrekin	12	4	10	11	14	17	14	11	10	11	
Walsall	33	28	25	24	15	25	29	27	24	18	
Warwickshire	44	28	39	36	56	35	27	51	46	43	
Wolverhampton	3	3	14	44	33	46	35	52	44	50	
Worcestershire	25	25	33	18	21	26	14	32	25	18	
Total	527	474	566	641	617	798	793	864	891	896	

Source: Public Health England, Second Generation Surveillance System (SGSS)

[iii] Data are summarised by local authority of residence, not local authority of laboratory. Data are assigned to local authority by patient postcode where present; if patient postcode is unknown, data are assigned to local authority of registered GP practice; where both patient postcode and registered GP practice are unknown data are assigned to local authority of laboratory. These data include laboratory reports for both acute and chronic hepatitis B infections and therefore cannot be used to estimate incidence.

Figure 3: Laboratory reports of hepatitis B (acute and chronic), directly standardised rate (DSR) per 100,000 population by upper tier local authority of residence, West Midlands PHE centre, 2016 and 2017[iv]

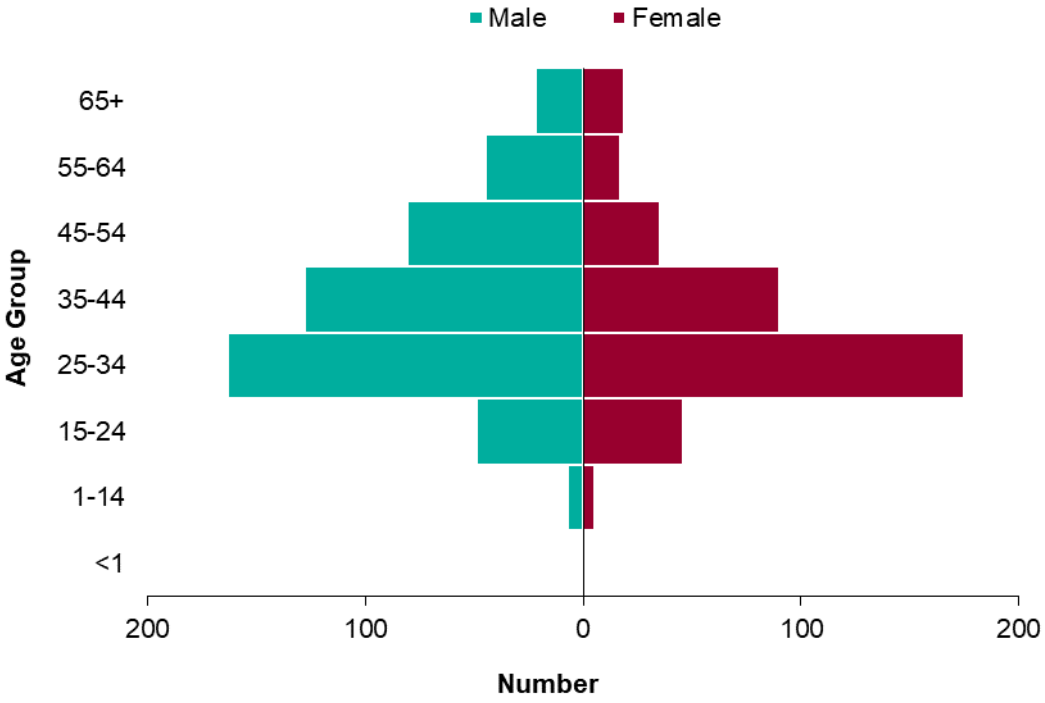


Source: Public Health England, Second Generation Surveillance System (SGSS)

In the West Midlands, where gender was recorded (99% of reports) over half (56%) of laboratory reports were in males (Figure 4). Reports of HBV were most common in persons aged between 25 and 44 years in the West Midlands, with 68% of females and 59% of males within this age range, with the highest number of reports in the 25 to 34 years age group for both genders (Figure 4).

[iv] 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. Excludes cases where age and/or gender are unknown. DSRs per 100,000 population have been calculated using mid-year population estimates supplied by the Office for National Statistics (ONS).

Figure 4: Age group and gender of laboratory reported cases of hepatitis B (acute and chronic), residents of West Midlands PHE centre, 2017[v]



Source: Public Health England, Second Generation Surveillance System (SGSS)

Key findings

Laboratory reports varied by local authority, with Birmingham, Coventry and Sandwell showing a higher rate of laboratory reporting than the West Midlands overall. The higher rate of laboratory reporting in these areas may be due to increased detection of chronic cases because of increased testing, or it may be due to increased incidence of acute cases. Laboratory reports of hepatitis B were most common in individuals aged between 25 and 44 years, with males representing 56% of all cases.

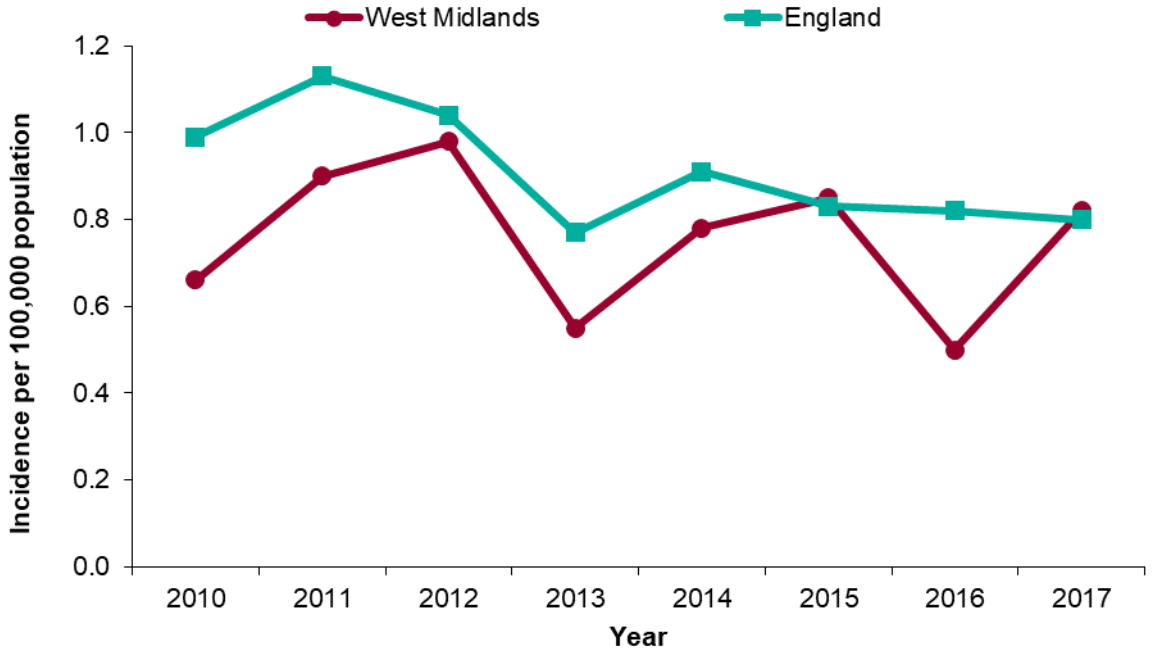
[v] Data are summarised by PHE centre of residence, not PHE centre of laboratory. Data are assigned to PHE centre by patient postcode where present; if patient postcode is unknown, data are assigned to PHE centre of registered GP practice; where both patient postcode and registered GP practice are unknown 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.

Incidence of acute and probable acute hepatitis B infections

In 2017 in England, 9,774 confirmed hepatitis B infections were reported from laboratories to PHE's Second Generation Surveillance System (SGSS) – 317 of these infections (3.2%) were classified as acute cases, 36 (0.4%) as probable acute cases and the remainder were classified as chronic or excluded. When combined with infections reported directly to PHE's Health Protection Teams, but not reported to SGSS, a total of 445 cases of acute or probable acute hepatitis B were reported in England in 2017 [(1)]. As a result, the annual incidence of acute hepatitis in England was 0.80 per 100,000 population in 2017 – similar to the incidence rate in 2016 (0.82 per 100,000) and 2015 (0.83 per 100,000) (Figure 5).

In the West Midlands, incidence of acute or probable acute hepatitis B varies from year to year with 48 cases reported in 2017. The incidence rate in the West Midlands increased from 0.50 per 100,000 in 2016 to 0.82 per 100,000 in 2017 – this was similar to the rate for England overall in 2017 (West Midlands 0.82 per 100,000 and England 0.80 per 100,000) (Figure 5 and Figure 6). The West Midlands had the joint second highest incidence rate in England along with the East Midlands, with only London having a higher rate (Figure 5 and Figure 6).

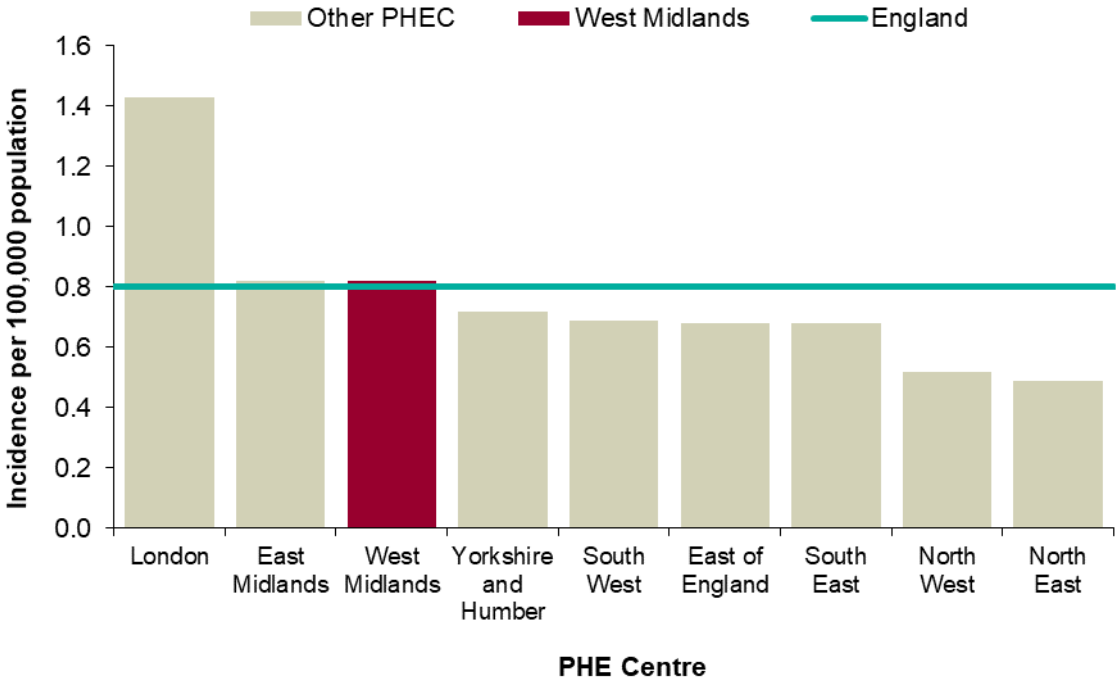
Figure 5: Incidence of acute or probable acute hepatitis B per 100,000 population, West Midlands PHE Centre and England, 2010 to 2017[vi]



Source: Public Health England, Second Generation Surveillance System (SGSS) and HPZone

[vi] The surveillance definition for acute hepatitis B is: "HBsAg positive and anti-HBc IgM positive and abnormal liver function tests with a pattern consistent with acute viral hepatitis."

Figure 6: Incidence of acute or probable acute hepatitis B per 100,000 population by PHE centre, 2017[vii]



Source: Public Health England, Second Generation Surveillance System (SGSS) and HPZone

Key findings

The West Midlands had the joint second highest incidence rate of acute or probable acute hepatitis B in 2017, although this was similar to the rate for England overall (England 0.80 per 100,000 and West Midlands 0.82 per 100,000).

Sentinel surveillance of hepatitis B testing

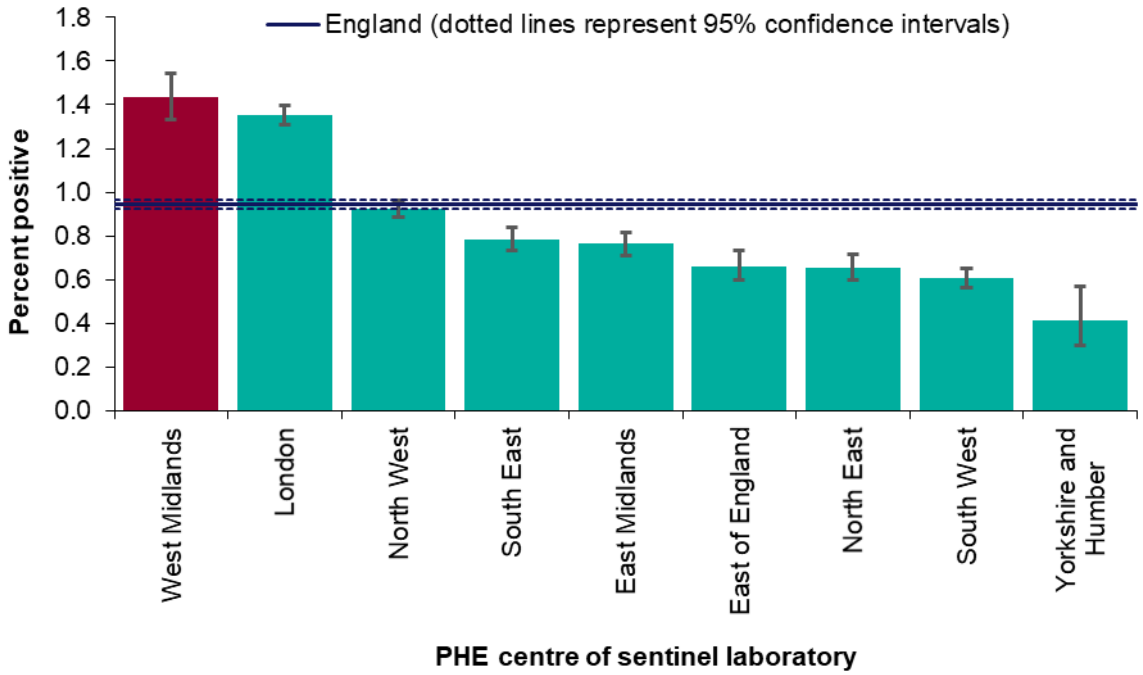
Sentinel surveillance of hepatitis testing aims to supplement routine laboratory surveillance of hepatitis viruses in England by monitoring trends in testing [(9)]. Trends in HBV testing are useful for monitoring the impact of awareness-raising and prevention activities. The West Midlands has only one laboratory (Birmingham Heartlands) which participates in PHE's sentinel surveillance of hepatitis testing scheme. As a result, caution should be exercised when interpreting sentinel surveillance data as the dataset may not be representative of trends in the West Midlands overall.

Between 2013 and 2017, a total of 50,311 individuals were tested for Hepatitis B

[vii] The surveillance definition for acute hepatitis B is: "HBsAg positive and anti-HBc IgM positive and abnormal liver function tests with a pattern consistent with acute viral hepatitis."

(excluding antenatal screening) in sentinel laboratories for the West Midlands. Of these individuals, 721 (1.4%) were HBsAg positive. This was the highest proportion of positive tests nationally and was significantly higher than the proportion of positive tests in England overall (0.9%). The lowest positivity was observed in Yorkshire and Humber (0.4%) (Figure 7).

Figure 7: Percentage of individuals testing positive for HBsAg in sentinel laboratories by PHE centre of laboratory (excluding antenatal testing), 2013 to 2017[viii]



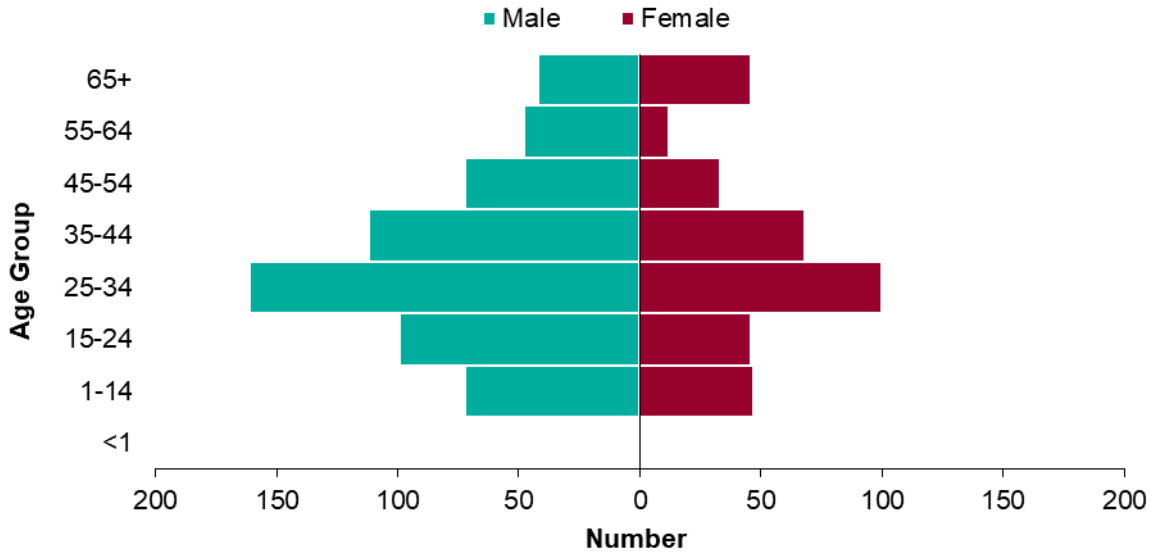
Source: Public Health England, Sentinel surveillance of hepatitis B testing

The age and sex distribution of HBsAg positive individuals reported by the sentinel laboratory between 2013 and 2017 (Figure 8) was comparable to the age and sex distribution of HBsAg positive individuals from all laboratory reports (Figure 4). From sentinel surveillance in the West Midlands, where gender was reported (97%), 52% of individuals tested were males, with 2.2% of males testing positive, and 48% of individuals tested were females, with 1.3% of females testing positive. A higher proportion of males than females tested positive in all age groups apart from the youngest (less than one year) and oldest (65 years and over). In both genders the highest number of individuals testing positive was in the 25 to 34 years age group.

[viii] 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. Trend data will not necessarily balance back to cumulative data because only locations that have been consistently reported in each of the 5 years can be included in trend data.

However, the highest proportion of positive tests was in individuals aged 1 to 14 years (males 9.8% and females 7.2% – this might be the result of targeted testing in high-risk individuals within this age group.

Figure 8: Number of individuals testing positive for HBsAg by age group and gender in sentinel laboratories, West Midlands PHE centre (excluding antenatal testing), 2013 to 2017[ix]



Source: Public Health England, Sentinel Source: Public Health England, Sentinel surveillance of hepatitis B testing

Key findings

From 2013 to 2017, the West Midlands had the highest proportion of positive tests for HBsAg at sentinel laboratories in England (West Midlands: 1.4% and England 0.9%). Males were more likely to test positive than females (males: 2.2% and females: 1.3%). The highest number of positive tests were in individuals aged 25 to 34 years.

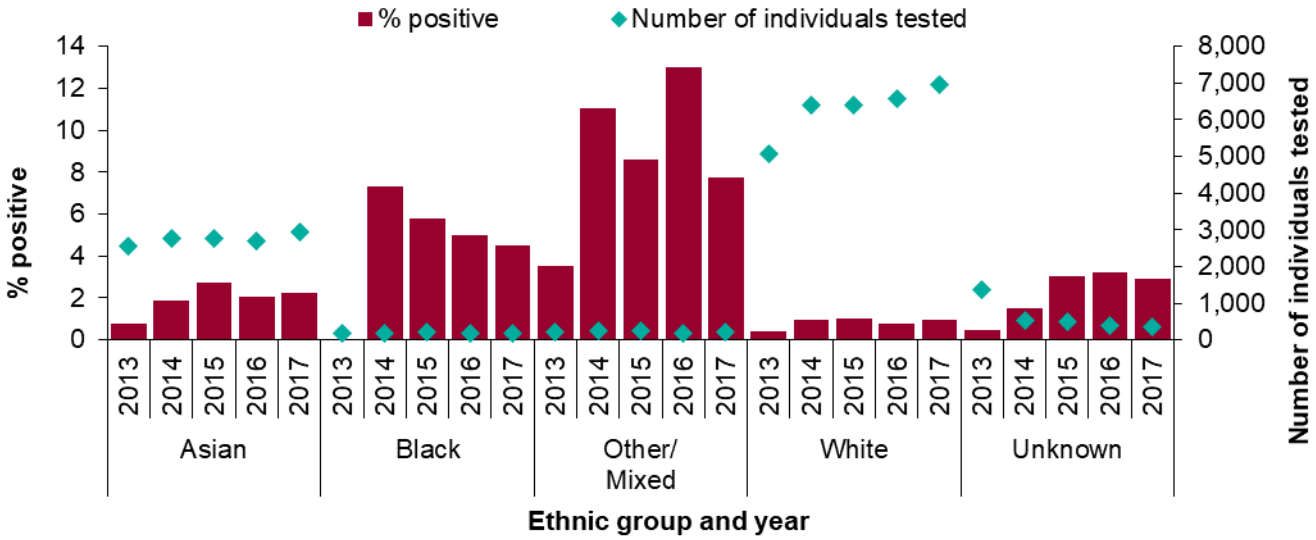
2.4 Testing and diagnosis in black and minority ethnic populations

Sentinel surveillance allows analysis of testing and positivity by broad ethnic group. Due to a lack of self-reported ethnicity on laboratory forms, ethnicity was predominantly determined using computer software tools (Onomap [10] and Nam Pehchan [11]) which allocate ethnicity based on surname. The number of individuals tested was highest in those of white ethnicity, reflecting the relative size of this population in the West Midlands, followed by those of Asian ethnicity (Figure 9).

[ix] 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. Cumulative data will not necessarily balance back to trend data because only locations that have been consistently reported in each of the 5 years can be included in trend data. Chart excludes cases of unknown gender and/or age.

Where ethnicity was determined, the proportion of individuals tested who were positive for HBsAg was highest in those of other/mixed and black ethnicity, with 8.6% of individuals in the other/mixed ethnic group and 4.7% of individuals in the black ethnic group testing positive from 2013 to 2017 combined, although these proportions were based on a relatively small number of tests. The proportion of positive tests in those of black ethnicity decreased year on year from 2014 to 2017. Meanwhile, the proportion of people within the other/mixed ethnic group who tested positive has been variable and decreased from 13.0% in 2016 to 7.8% in 2017. Persons of white ethnicity had the lowest proportion of tests that were positive from 2013 to 2017 combined (0.8%) (Figure 9).

Figure 9: Number of individuals tested and percent positive for HBsAg by ethnic group (excluding antenatal testing), sentinel laboratories, West Midlands PHE centre, 2013 to 2017[x,xi]



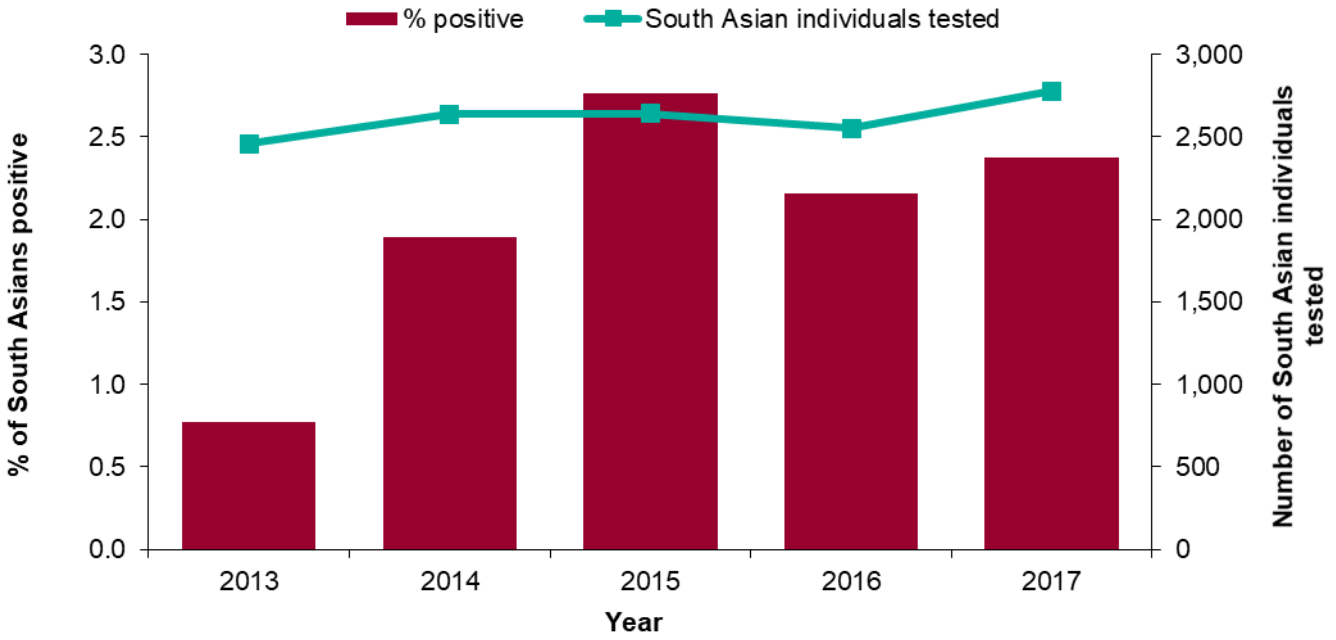
Source: Public Health England, Sentinel surveillance of hepatitis B testing

Trends in the number of hepatitis B tests and the proportion of positive tests among South Asians are of interest as this population is a high-risk group for HBV infection. The number of South Asians tested in the West Midlands increased by 9% in 2017 to reach a 5-year high (2016: 2,552 and 2017: 2,779). The proportion of tests that were positive was highest in 2015 at 2.8%, falling to 2.2% in 2016 and increasing to 2.4% in 2017 (Figure 10).

[x] 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. Trend data will not necessarily balance back to cumulative data because only locations that have been consistently reported in each of the 5 years can be included in trend data.

[xi] A combination of self-reported ethnicity, and Onomap[10] and Nam Pehchan[11] name analyses software were used to classify individuals according to broad ethnic group.

Figure 10: Number of South Asian individuals tested and testing positive for HBsAg in sentinel laboratories, West Midlands PHE centre (excluding antenatal testing), 2013 to 2017[xii,xiii]



Source: Public Health England, Sentinel surveillance of hepatitis B testing

Key findings

Between 2013 and 2017, the proportion of tests that were positive was highest in individuals of other/mixed and black ethnicity, however, this high positivity was based on a relatively small number of tests. Individuals of white ethnicity had the highest number of tests in each of the last 5 years, but had the lowest positivity throughout most of this period.

[xii] 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. Trend data will not necessarily balance back to cumulative data because only locations that have been consistently reported in each of the 5 years can be included in trend data.

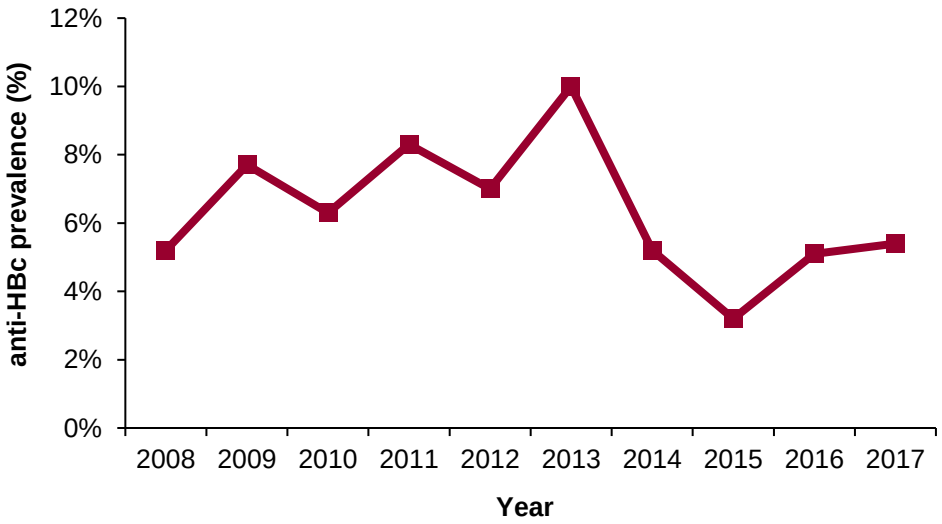
[xiii] NamPehchan was used to identify individuals of South Asian origin as ethnicity is not routinely available from the participating laboratory information systems.

People Who Inject Drugs

People who inject drugs (PWID) are at increased risk of hepatitis B because the virus can be transmitted through the sharing of needles, syringes and other injecting equipment. The proportion of PWID who have ever been infected with HBV in England, Wales and Northern Ireland has declined over the past 10 years, falling from 20% in 2007 to 16% in 2017 [12]. During 2017, 0.19% of the UAM Survey participants had a current hepatitis B infection [12], a proportion which has remained stable in recent years. This suggests that around 1 in every 500 PWID is currently living with an HBV infection.

In the West Midlands, the prevalence of ever having been infected with HBV has been variable over the last decade, ranging from 3% in 2015 to 10% in 2013, and stood at 5% in 2017 (Figure 11). The proportion in the West Midlands in 2017 was considerably lower than that of England (West Midlands: 5% and England: 17%). This suggests that fewer injecting drug users in the West Midlands may be becoming infected with HBV. However, it is important to note that there may be responder bias in the data obtained from the UAM survey.

Figure 11: Anti-HBc prevalence[xiv] among PWID, West Midlands, 2008 to 2017



Source: Public Health England, Unlinked Anonymous Monitoring Survey of PWID

Key findings

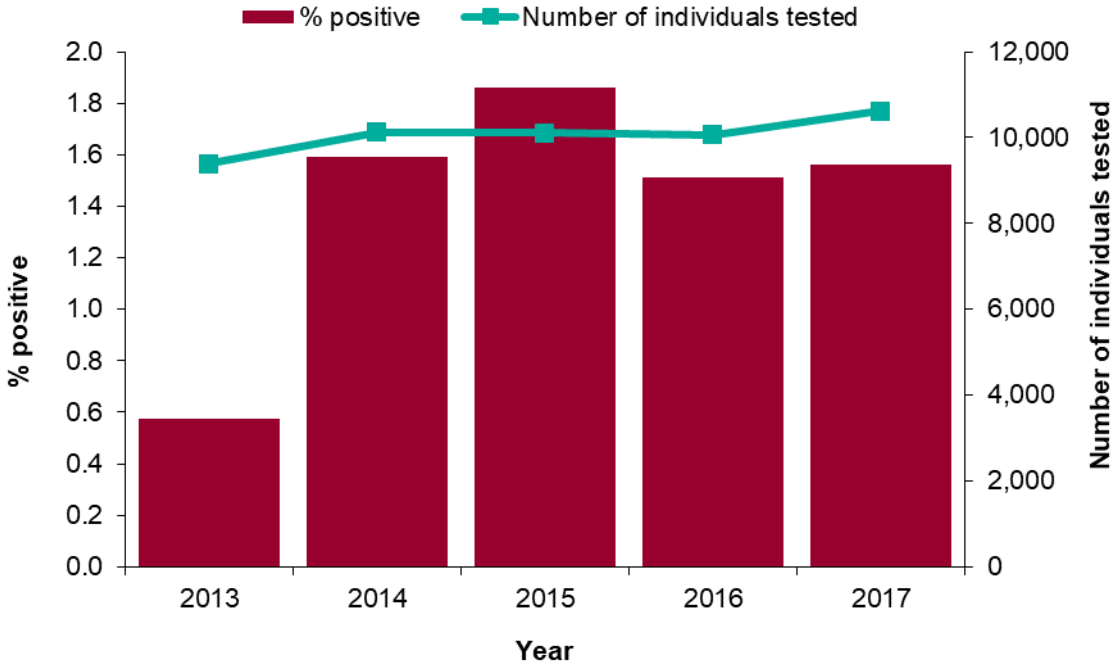
Anti-HBc prevalence among PWID in the West Midlands was 5% in 2017, but has varied over the last 10 years from a low of 3% in 2015, to a high of 10% in 2013.

[xiv] During 2009-2010 the biological sample collected by UAM survey changed from an oral fluid sample to a dried blood spot (DBS). From 2011 onwards, only DBS samples have been collected. The sensitivity of testing for hepatitis B core antigen in each sample type differ, being close to 100% in DBS samples and around 75% in oral fluid samples. Data prior to 2011 have been adjusted to account for the lower sensitivity of oral fluid samples allowing for comparison of trends over time.

Trends in testing

Trends in testing provide a good indication of the impact of awareness raising activities and efforts aimed at reducing undiagnosed infections. Sentinel surveillance data show that the number of individuals tested in the West Midlands (excluding antenatal testing) reached a 5-year high in 2017, increasing by 6% in 2017 (n=10,623) compared to 2016 (n=10,060). The proportion of tests that were positive increased slightly from 1.5% in 2016 to 1.6% in 2017 (Figure 12).

Figure 12: Number of individuals tested and proportion testing positive for HBsAg in sentinel laboratories, West Midlands PHE centre (excluding antenatal testing), 2013 to 2017[xv]



Source: Public Health England, Sentinel surveillance of hepatitis B testing

Key findings

The number of individuals tested for HBsAg by sentinel laboratories increased by 6% between 2016 and 2017, while positivity increased slightly from 1.5% to 1.6% in the same period.

[xv] 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. Trend data will not necessarily balance back to cumulative data because only locations that have been consistently reported in each of the 5 years can be included in trend data.

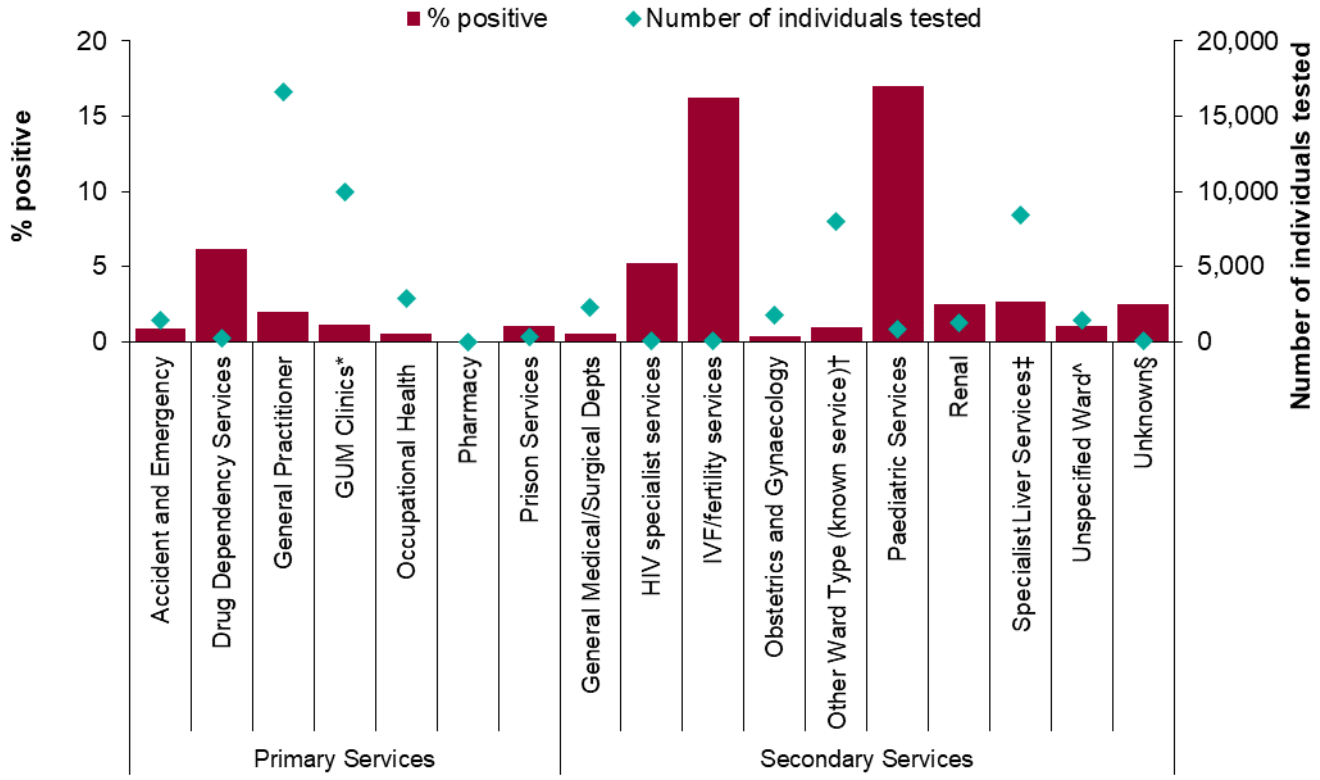
Site of testing and reason for testing

From 2013 to 2017, 30% of individuals tested for HBsAg through sentinel surveillance in the West Midlands had their samples taken at a general practice, 18% were from genitourinary medicine (GUM) clinics and 15% were from specialist liver services (Figure 13). General practice also accounted for the highest number of positive tests (n=327 – 33%), followed by specialist liver services (n=222 – 22%). Although only 2% of tests were from paediatric services, these services accounted for 14% of all positive tests. Positivity was highest in tests performed in paediatric services (17%) and in vitro fertilisation (IVF)/fertility services (16%), although this was based on a relatively small number of tests.

Testing appeared to be low in drug dependency services, however the data presented in Figure 18 do not include dried blood spot testing or oral fluid testing, which are more commonly used by drug services. Where tests were performed in drug services, 6% were positive for HBV, the third highest proportion reported by any service. Despite representing just 0.1% of individuals tested, HIV specialist services reported the fourth highest proportion of positive tests (5%), possibly because of targeted testing within this high-risk population (Figure 13). It is important to note that these numbers relate to HBsAg testing at sentinel laboratories and do not represent all laboratories and test sites across the West Midlands.

Reporting of risk factors/reason for testing is poor in sentinel surveillance data. In the West Midlands, 99% of individuals tested and 96% of those testing positive between 2013 and 2017 did not include information on risk factors or reason for testing.

Figure 13: Number of individuals tested for HBsAg and proportion positive by service type in sentinel laboratories, West Midlands PHE centre (excluding antenatal testing), 2013 to 2017[xvi]



* Due to the retendering of GUM testing, from January 2016 the main sentinel laboratory in the West Midlands now tests only a small number of GUM samples. This will result in lower numbers of GUM testing being reported for the 2013 to 2017 period.
† Other ward types includes cardiology, dermatology haematology, ultrasound, x-ray.
‡ This refers to infectious disease services, hepatology departments and gastroenterology departments.
^ These are hospital services which are currently being investigated to identify specific service type, and may include any of the secondary care services mentioned above.
§ These services are currently being investigated to identify specific service type, where possible.
Source: Public Health England, Sentinel surveillance of hepatitis B testing

Key findings

The highest proportion of individuals tested reported through sentinel surveillance from 2013 to 2017 were from general practice (30% of all tests) and GUM clinics (18% of all tests). Positivity was highest in paediatric services (17%) and IVF/fertility services (16%), although both services represented a very small proportion of all tests.

[xvi] 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. Cumulative data will not necessarily balance back to trend data because only locations that have been consistently reported in each of the 5 years can be included in trend data.

Reducing HBV-related morbidity and mortality

Hospital admissions for hepatitis B

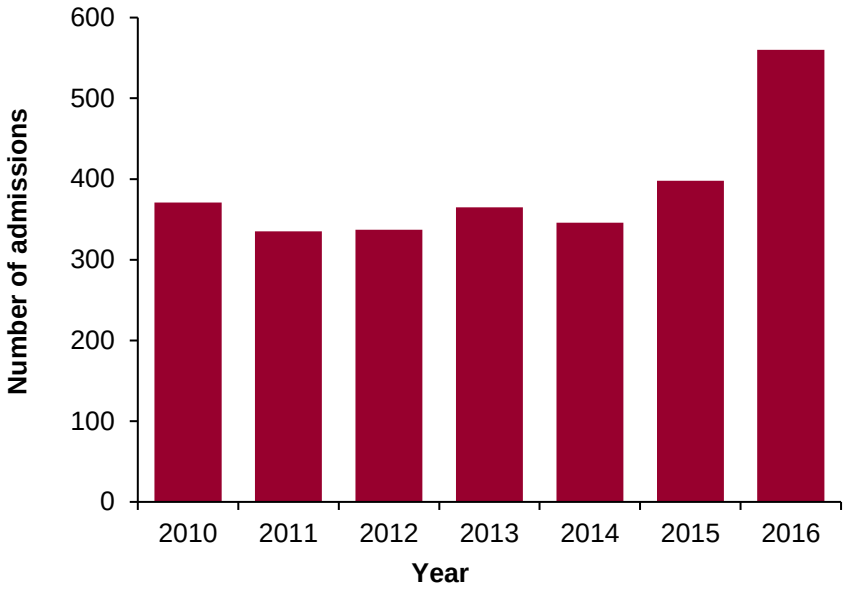
Progress needs to be made locally and nationally to reduce the numbers of people becoming infected and to reduce the numbers of infected people who become seriously ill or die from hepatitis B. Monitoring hospital admissions for HBV-related conditions gives an indication of morbidity and mortality associated with HBV, allowing the impact of infection to be monitored. Many infections are acute, with chronic infection most commonly developing in those infected perinatally (90% of perinatal infections). Around 20% to 25% of individuals with chronic HBV infection globally develop progressive liver disease, leading to the risk of developing liver cirrhosis and hepatocellular carcinoma [(2)].

The West Midlands performed better than England overall for hospital admission rates for HBV-related end stage liver diseases (ESLD) and hepatocellular carcinoma (HCC) between 2012 and 2013 and 2014 and 2015 (0.68 per 100,000 vs. 1.14 per 100,000) [(13)].

Hospital admissions data for hepatitis B are not available for 2017 due to technical difficulties with the incorrect classification of HBV codes, which has affected data across England and is not unique to the West Midlands. In 2016, 560 people in the West Midlands with acute or chronic hepatitis B were admitted to hospital. This was an increase of 41% compared to 2015 and the highest number in the period from 2010 to 2016 (Figure 14). In England, the overall trend in morbidity and mortality from hepatitis has been increasing as chronic undetected or untreated cases progress to end-strange liver disease or carcinoma. In 2016, there were 25 individuals hospitalised with HBV-related ESLD in the West Midlands, 7 fewer than in 2015 and consistent with the general downward trend noted in recent years (Figure 15).

The number of individuals hospitalised with HBV-related HCC in the West Midlands has varied over the last 3 years, with 20 cases reported in 2016, an increase compared to 2015 and similar to the figures reported from 2010 to 2013 (Figure 16). However the numbers are small, and it is, therefore, difficult to draw robust conclusions.

Figure 14: Number of hospital admissions[xvii] for individuals[xviii] with a diagnosis code for acute or chronic hepatitis B, West Midlands PHE centre[xix], 2010 to 2016



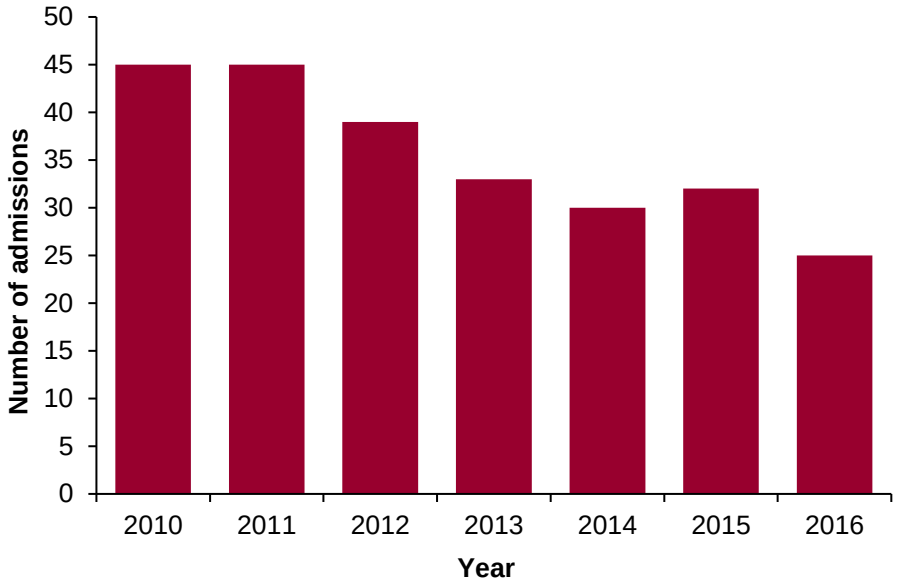
Source: NHS Digital, Hospital Episode Statistics (HES)

[xvii] Data based on Hospital Episode Statistics as at November 2017.

[xviii] Patient counts are based on the unique patient identifier, HESID. This identifier is derived from a patient's date of birth, postcode, sex, local patient identifier and NHS number, using a standard algorithm. Where data are incomplete, HESID might wrongly link episodes or fail to recognise episodes for the same patient. Care is therefore needed, especially where the data includes duplicate records. Patient counts must not be summed across a table where patients may have episodes in more than one cell.

[xix] Patients who have had more than one hospital episode with a diagnosis of HBV in any one year and who have moved residence within that year have been grouped into the PHEC of their latest hospital episode in that year.

Figure 15: Number of hospital admissions[xx] for individuals[xxi] with a diagnosis code for hepatitis B related end-stage liver disease (ESLD)[xxii], West Midlands PHE centre[xxiii], 2010 to 2016



Source: NHS Digital, Hospital Episode Statistics (HES)

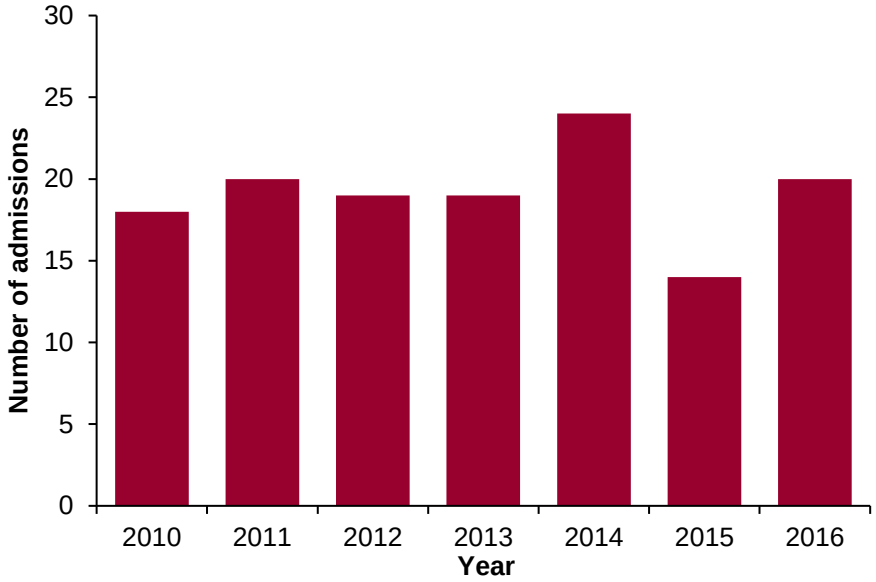
[xx] Data based on Hospital Episode Statistics as at November 2017.

[xxi] Patient counts are based on the unique patient identifier, HESID. This identifier is derived from a patient's date of birth, postcode, sex, local patient identifier and NHS number, using a standard algorithm. Where data are incomplete, HESID might wrongly link episodes or fail to recognise episodes for the same patient. Care is therefore needed, especially where the data includes duplicate records. Patient counts must not be summed across a table where patients may have episodes in more than one cell.

[xxii] Defined by codes for, ascites, bleeding oesophageal varices; hepato-renal syndrome, hepatic encephalopathy or hepatic failure.

[xxiii] Patients who have had more than one hospital episode with a diagnosis of HBV in any one year and who have moved residence within that year have been grouped into the PHEC of their latest hospital episode in that year

Figure 16: Number of hospital admissions[xxiv] for individuals[xxv] with a diagnosis code for hepatitis B related hepatocellular carcinoma (HCC), West Midlands PHE centre[xxvi], 2010 to 2016



Source: NHS Digital, Hospital Episode Statistics (HES)

Key findings

Between 2015 and 2016, the number of people from the West Midlands with acute or chronic hepatitis B who were admitted to hospital increased by 41% (2015: 398 and 2016: 560). Over the same period the number of admissions in individuals with HBV-related ESLD decreased and the number of admissions in individuals with HBV-related HCC increased, although numbers remain small.

[xxiv] Data based on Hospital Episode Statistics as at November 2017.

[xxv] Patient counts are based on the unique patient identifier, HESID. This identifier is derived from a patient's date of birth, postcode, sex, local patient identifier and NHS number, using a standard algorithm. Where data are incomplete, HESID might wrongly link episodes or fail to recognise episodes for the same patient. Care is therefore needed, especially where the data includes duplicate records. Patient counts must not be summed across a table where patients may have episodes in more than one cell.

[xxvi] Patients who have had more than one hospital episode with a diagnosis of HBV in any one year and who have moved residence within that year have been grouped into the PHEC of their latest hospital episode in that year.

Liver transplants

During the 5 years from 2013 to 2017, 466 West Midlands residents received a liver transplant in England – of these, 9.4% (n=44) were patients where post-hepatitis B cirrhosis and acute hepatitis B were given as the primary, secondary or tertiary indication for transplant at registration and were HBV positive at transplant (Table 2).

Table 2: Number* of first registrations and liver transplants in England, residents of West Midlands PHE centre, 2013 to 2017

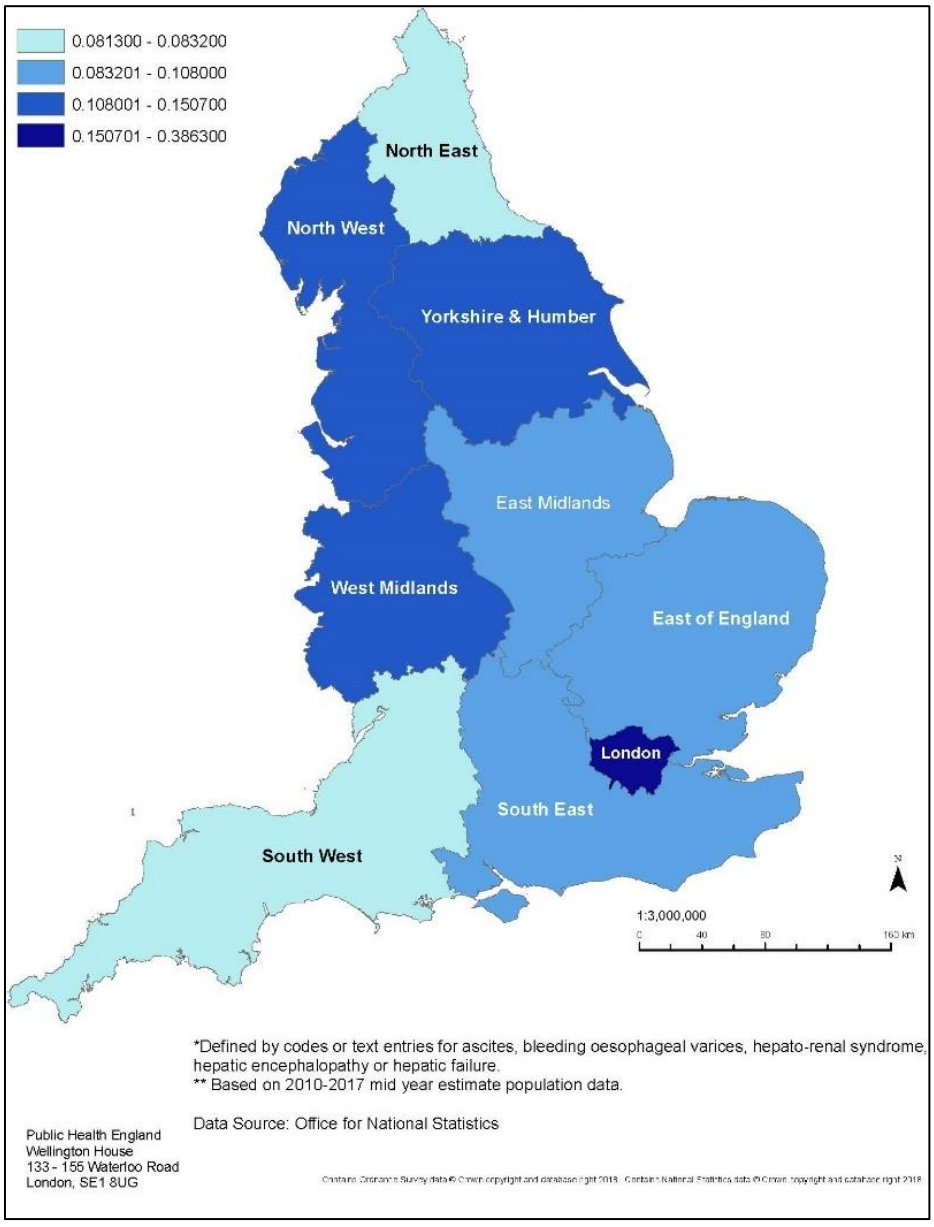
Indicator	2013-2017
Number* of first registrations for a liver transplant in England where post-hepatitis B cirrhosis and acute hepatitis B were given as either the primary, secondary or tertiary indication at registration	15
Number* of liver transplants	466
Number* of first liver transplants where post-hepatitis B cirrhosis and acute hepatitis B were given as primary, secondary or tertiary indication for transplant at registration and HBV*** positive at transplant	44
First liver transplants where post-hepatitis B cirrhosis and acute hepatitis B were given as primary, secondary or tertiary indication for transplant at registration and HBV*** positive at transplant as a percentage of all liver transplants	9.4

* These figures are based on registry data as at 5 August 2018.
** To protect patient confidentiality, figures between 1 and 5 have been suppressed and replaced with "**". Where it was possible to identify numbers from the total due to a single suppressed number in a row or column, an additional number (the next smallest) has been suppressed.
*** Hepatitis B status was ascertained by interpreting results for the following HBV markers HBV DNA, HBsAg, HBeAg, anti-HBc IgM, anti-HBs and anti-Hbe.
Source: UK Transplant Registry held by NHS Blood and Transplant

Deaths from hepatitis

Figure 17 shows the death rate per 100,000 population from ESLD or HCC in individuals with HBV mentioned on their death certificate for the 8-year period from 2010 to 2017. Nationally, death rates are grouped into 4 categories; the West Midlands was in the second highest category with a death rate that was broadly similar to both the North West and Yorkshire and Humber (0.11 to 0.15 per 100,000 population) (Figure 17).

Figure 17: Number of deaths from ESLD* or HCC in those with HBV mentioned on their death certificate per 100,000 population by PHE centre, 2010-2017**[xxvii,xxviii]



[xxvii] Data is for both acute and chronic hepatitis B. We would like to thank the Office for National Statistics (ONS) for providing the data used in this report. ONS carried out the original collection and collation of the data but bear no responsibility for their future analysis or interpretation.

[xxviii] Methodology used to create this map is in line with that used in the "2nd Atlas of variation in risk factors and healthcare for liver disease in England" (numerator = aggregate numbers of deaths by PHEC, denominator = mid-year population estimates by PHEC for 2010 - 2017). Changes have been made to the way deaths are counted this year, moving away from monitoring deaths (registered in England) in the year they occurred to monitoring deaths according to the year they were registered where postcodes of individuals' usual place of residence were in England.

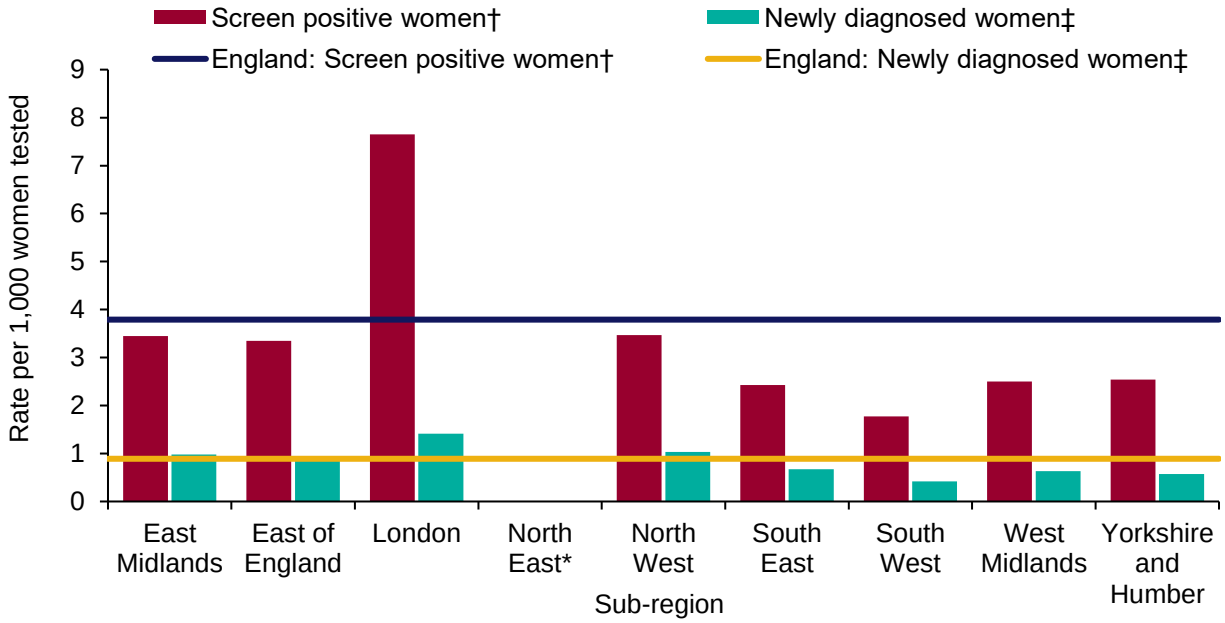
Prevention and vaccination

Antenatal screening

Hepatitis B infection can be transmitted from infected mothers to their babies at or around the time of birth (perinatal transmission). Babies acquiring infection perinatally have a high risk of becoming chronically infected with the virus. The development of chronic infection after perinatal transmission can be prevented in over 90% of cases by appropriate vaccination, starting immediately at birth [(2)]. The UK National Screening Committee recommends systematic population screening in pregnancy for HIV, hepatitis B and syphilis. The Infectious Diseases in Pregnancy Screening (IDPS) programme has responsibility for implementing this policy and has coordinated data collection in line with other antenatal and new born screening programmes since April 2016 [(14)].

In 2016/17, 26,846 pregnant women were tested for hepatitis B in the West Midlands. Of those women that were tested, 67 screened positive, including 17 who were newly diagnosed. The screen positive rate per 1,000 women tested in the West Midlands was 2.50, compared to 3.79 for England – the rate of newly diagnosed women per 1,000 women tested was also lower in the West Midlands (0.63) than in England (0.89) (Figure 18). These data are not comparable to historic data from the National Antenatal Infections Screening Monitoring (NAISM) programme due to changes in data collection and analysis processes [(15)].

Figure 18: Screen positivity rates per 1,000 women tested for hepatitis B in pregnancy by sub-region, 2016/17

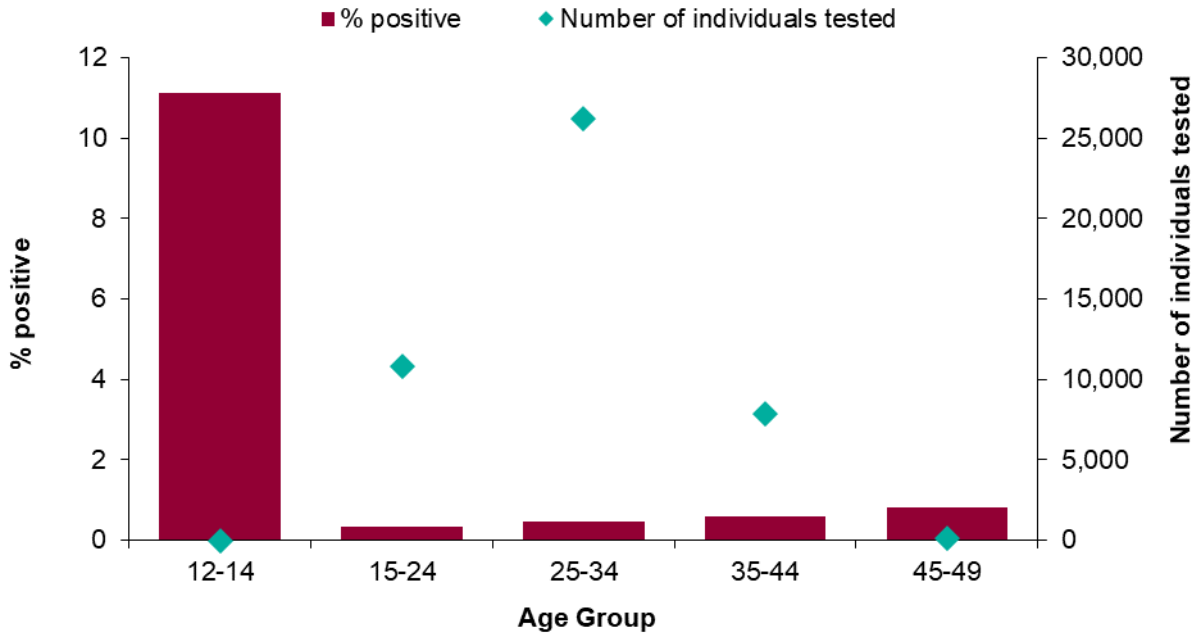


* Data are only included if trusts provided complete data on numbers tested and number of screen positives – for this reason, no data from the North East are included.
† The number positive is the total number of women who screened positive during antenatal screening which comprises: women newly diagnosed and those previously diagnosed. Previously known diagnosed women may not be retested in the pregnancy, but will still appear in the women tested and screen positive women totals. The rate of screen positive women is calculated based on the total number of women tested.
‡ The rate of women newly diagnosed is calculated based on the total number of women tested.
Source: Public Health England, Infectious Diseases in Pregnancy Screening Programme.

Data on the number of women undergoing antenatal screening for hepatitis B is also collected through sentinel surveillance. The West Midlands has only one sentinel laboratory, which receives relatively few routinely collected antenatal samples. As a result, the following data may not be representative of the true burden of hepatitis B among women undergoing antenatal screening in the region overall.

Of the 44,983 pregnant women aged 12 to 49 years whose tests were reported by sentinel surveillance in the West Midlands from 2013 to 2017, 58% were performed in women aged between 25 to 34 years, 24% were in women aged 15 to 24 years, and 17% were in women aged between 35 to 44 years, which may reflect the general frequency of pregnancy in each age group (Figure 19). Pregnant women were screened for the presence of the Hepatitis B surface antigen (HBsAg), a protein on the surface of the hepatitis B virus, which is detected during acute or chronic hepatitis B infections. HBsAg positivity in screened women varied from 0.3% to 11.1% by age group and was highest in the aged 12 to 14 years age group, although this was based on the testing of just 9 individuals. The age group with the lowest proportion of positive tests was 15 to 24 year olds (Figure 19).

Figure 19: Number of pregnant women undergoing routine antenatal screening and percent testing positive for HBsAg by age group, sentinel laboratories, West Midlands PHE centre, 2013 to 2017[xxix]

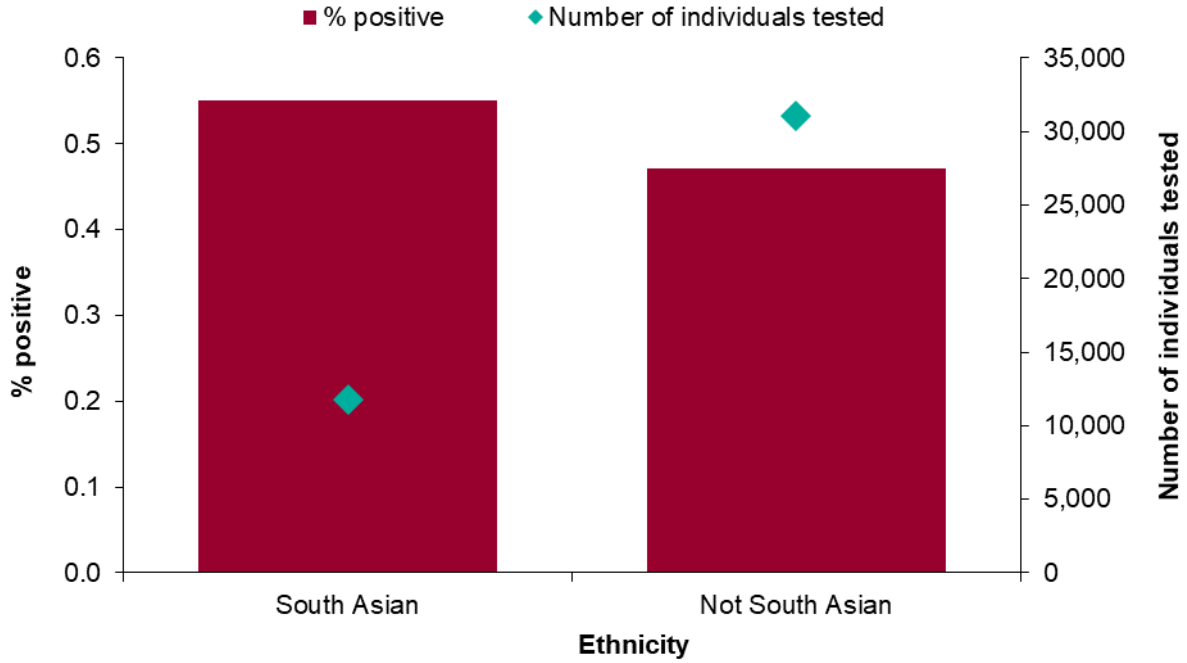


Source: Public Health England, Sentinel surveillance of hepatitis B testing

It has been estimated that 95% of people with chronic hepatitis B in the UK are migrants, with most acquiring the infection in early childhood in their country of birth [(5)]. Therefore, migrant populations are a major focus for case-finding in the UK. Women of South Asian ethnicity accounted for 28% of all individuals tested for HBsAg in the antenatal period in the West Midlands from 2013 to 2017, with a slightly higher proportion of positive tests observed in women of this ethnic group compared with non-South Asian women (0.6% vs. 0.5%) (Figure 20). All South Asian women and all but one non-South Asian woman who tested positive for HBsAg were subsequently tested for HBeAg, a marker of infectivity and disease severity indicating a high ability to transmit the virus. HBeAg positivity was 9.2% for women of South Asian origin and 6.9% for women of non-South Asian origin (Figure 21), suggesting South Asian women were more likely to have an active infection.

[xxix] Includes routine antenatal screening for HBsAg of women aged between 12 and 49 years. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional. Cumulative data will not necessarily balance back to trend data because only locations that have been consistently reported in each of the 5 years can be included in trend data.

Figure 20: Number of pregnant women tested during the antenatal period and percent testing positive for HBsAg by ethnicity, sentinel laboratories, West Midlands PHE centre, 2013 to 2017[xxx,xxxi]

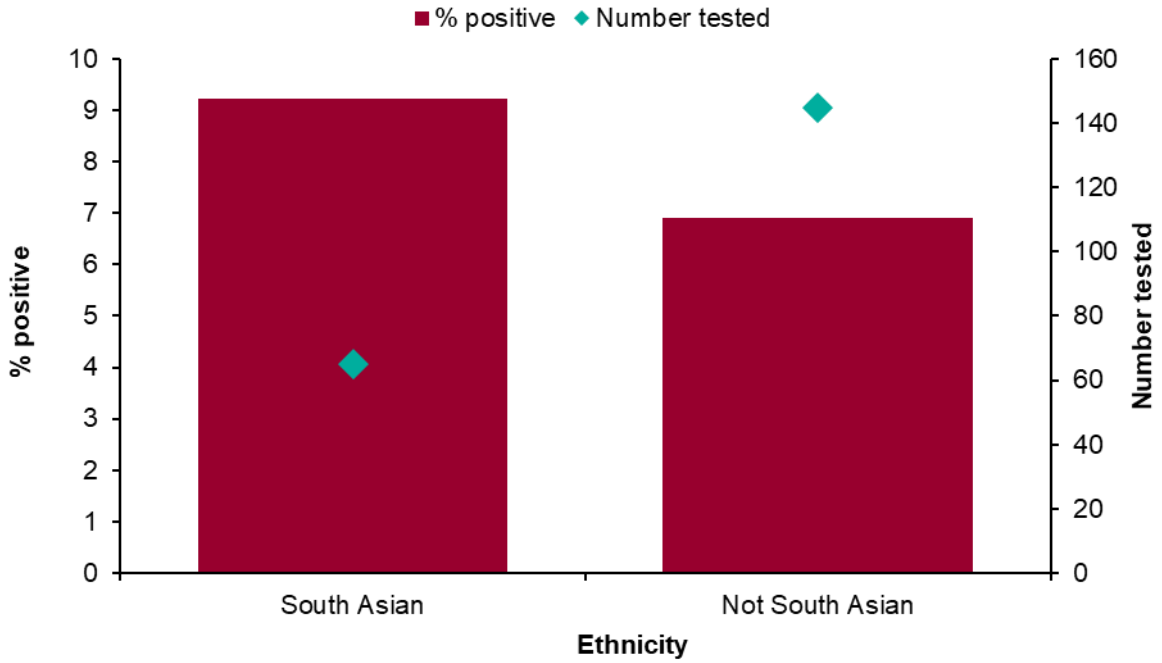


Source: Public Health England, Sentinel surveillance of hepatitis B testing

[xxx] Includes routine antenatal screening for HBsAg of women aged between 12 and 49 years. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional. Cumulative data will not necessarily balance back to trend data because only locations that have been consistently reported in each of the 5 years can be included in trend data.

[xxxi] Nam Pehchan[11] was used to identify individuals of South Asian origin as ethnicity is not routinely available from the participating laboratory information systems.

Figure 21: Number of HBsAg positive pregnant women tested during the antenatal period and percent testing positive for HBeAg by ethnicity, sentinel laboratories, West Midlands PHE centre, 2013 to 2017[xxxii,xxxiii]



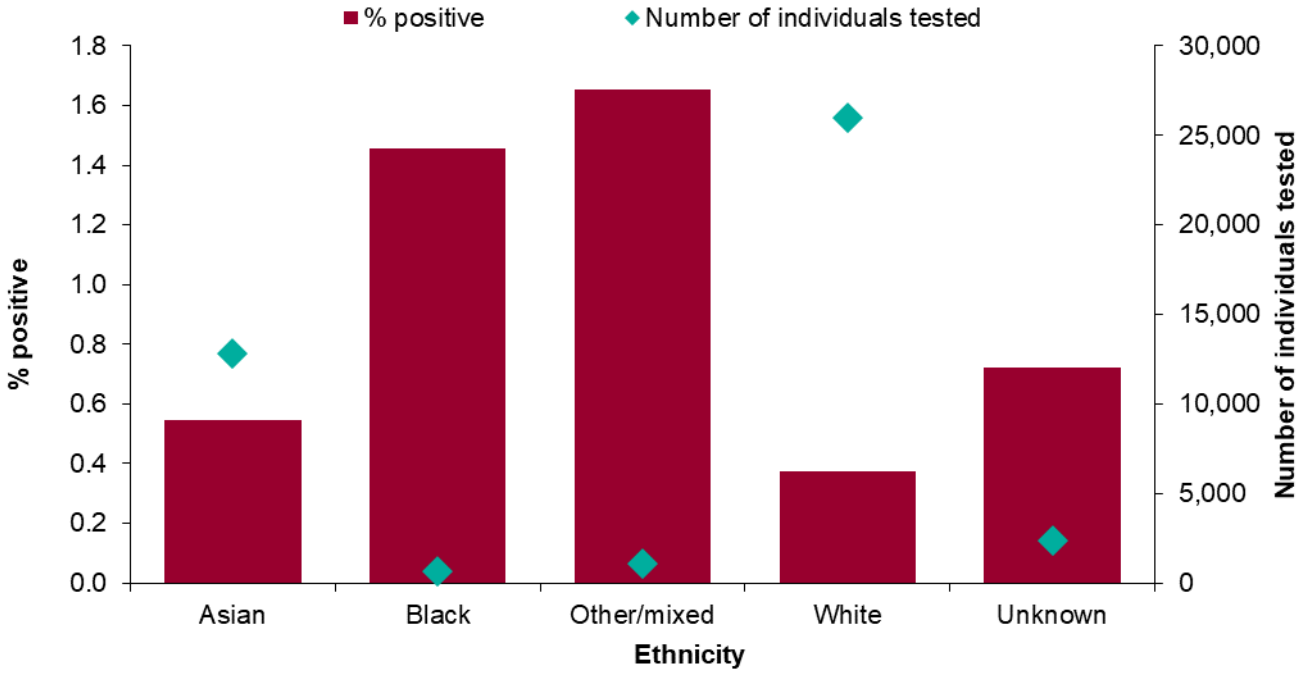
Source: Public Health England, Sentinel surveillance of hepatitis B testing

[xxxii] Includes routine antenatal screening for HBsAg of women aged between 12 and 49 years. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional. Cumulative data will not necessarily balance back to trend data because only locations that have been consistently reported in each of the 5 years can be included in trend data.

[xxxiii] Nam Pehchan[11] was used to identify individuals of South Asian origin as ethnicity is not routinely available from the participating laboratory information systems.

Pregnant women of other/mixed and black ethnicities had the highest positivity for HBsAg (1.7% and 1.5% respectively) from 2013 to 2017, although this was based on a relatively small number of tests (Figure 22). When HBsAg positive women from all ethnic groups were tested for HBeAg, the black and other/mixed groups had a higher proportion of positive tests (12.5% and 11.1% respectively) compared to other ethnic groups, although again this was based on a small number of tests and may, therefore, be due to the small number effect (Figure 23). Please note that the numbers relate to those tested in sentinel laboratories and do not represent all tests across West Midlands.

Figure 22: Number of pregnant women tested during the antenatal period and percent testing positive for HBsAg by ethnicity, sentinel laboratories, West Midlands PHE centre, 2013 to 2017[xxxiv,xxxv]

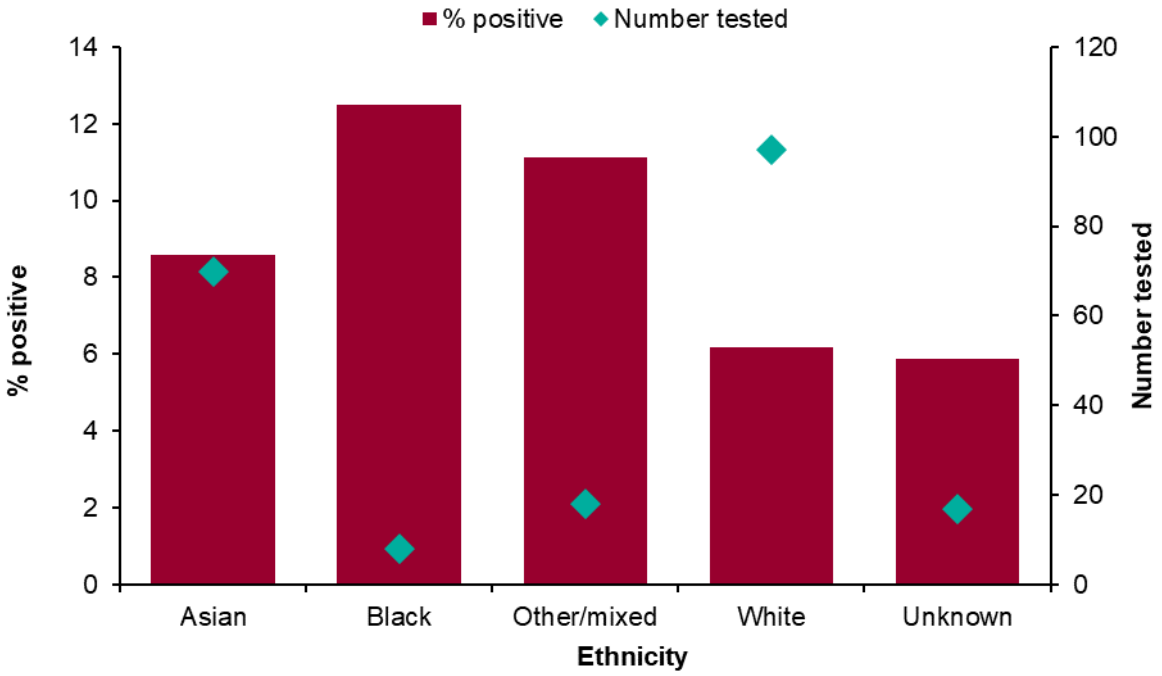


Source: Public Health England, Sentinel surveillance of hepatitis B testing

[xxxiv] Includes routine antenatal screening for HBsAg of women aged between 12 and 49 years. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional. Cumulative data will not necessarily balance back to trend data because only locations that have been consistently reported in each of the 5 years can be included in trend data.

[xxxv] A combination of self-reported ethnicity, and Onomap[10] and Nam Pehchan[11] name analyses software were used to classify individuals according to broad ethnic group.

Figure 23: Number of HBsAg positive pregnant women tested during the antenatal period and percent testing positive for HBeAg by ethnicity, sentinel laboratories, West Midlands PHE centre, 2013 to 2017[xxxvi,xxxvii]



Source: Public Health England, Sentinel surveillance of hepatitis B testing

Key findings

The screen positive rate for women tested for HBV under the Infectious Diseases in Pregnancy Screening Programmes was lower in the West Midlands than in England overall (West Midlands: 2.50 per 1,000 and England: 3.79 per 1,000), as was the rate of newly diagnosed women (West Midlands: 0.63 per 1,000 and England: 0.89 per 1,000).

From sentinel surveillance, women of south Asian origin were broadly as likely as non-south Asian women to test positive for HBsAg (0.6% vs. 0.5%) in 2013 to 2017, while south Asian women subsequently tested for HBeAg were slightly more likely to have an active infection than non-south Asian women (9.2% vs. 6.9%). By broad ethnic group, pregnant women from the other/mixed and black and ethnic groups had the highest proportion of positive HBsAg tests from 2013 to 2017, and were also more likely to have an active infection, indicated by a positive HBeAg result.

[xxxvi] Includes routine antenatal screening for HBsAg of women aged between 12 and 49 years. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional. Cumulative data will not necessarily balance back to trend data because only locations that have been consistently reported in each of the 5 years can be included in trend data.

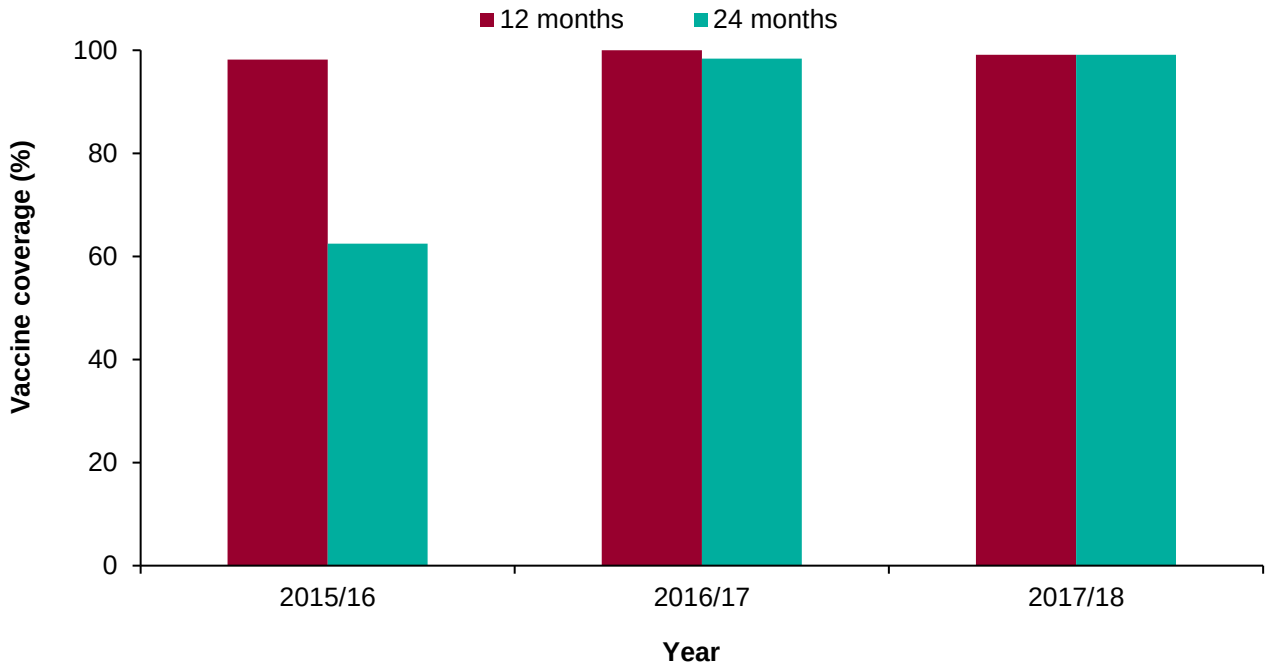
[xxxvii] A combination of self-reported ethnicity, and Onomap[10] and Nam Pehchan[11] name analyses software were used to classify individuals according to broad ethnic group.

Neonatal vaccine coverage

Since 1988, it has been recommended that infants born to hepatitis B positive women receive vaccination against hepatitis B. Data from the West Midlands region show that vaccination coverage was 99% at both 12 and 24 months in the 2017/18 financial year (Figure 24). However, these data should be interpreted with caution due to the small number of eligible neonates.

In 2017/18, where data were not suppressed due to potential disclosure issues associated with small numbers, 9 of the 14 upper tier local authorities in the West Midlands achieved 100% coverage at 12 months and 9 achieved 100% coverage at 24 months (Table 3). Again, however, these data should be interpreted with caution due to the small number of eligible neonates. Guidance issued by NICE recommends that PHE should conduct an annual audit of the hepatitis B neonatal vaccination programme and address any deficiencies found (16).

Figure 24: Neonatal hepatitis B vaccine coverage of 3 doses at 12 months and 4 doses at 24 months, West Midlands PHE Centre, 2015/16 to 2017/18[xxxviii]



Source: Public Health England, Cover of Vaccination Evaluated Rapidly (COVER)

[xxxviii] Data should be interpreted with caution due to variability in the number of local authorities reporting from year to year.

Table 3: Neonatal hepatitis B vaccine coverage at 12 and 24 months by upper tier local authority, West Midlands PHE Centre, 2017/18

Upper tier local authority	By 1st birthday				By 2nd birthday			
	Eligible population (1)	Number of children vaccinated (2)	Coverage (%)	Data type	Eligible population (1)	Number of children vaccinated (2)	Coverage (%)	Data type
Birmingham	119	119	100.0	*Full data submitted*	107	107	100.0	*Full data submitted*
Coventry	19	19	100.0	*Full data submitted*	25	25	100.0	*Full data submitted*
Dudley	8	8	100.0	*Full data submitted*	4	4	100.0	*Full data submitted*
Herefordshire	*	*	*	*Full data submitted*	6	6	100.0	*Full data submitted*
Sandwell	16	16	100.0	*Full data submitted*	18	18	100.0	*Full data submitted*
Shropshire	*	*	*	*Full data submitted*	*	*	*	*Full data submitted*
Solihull	0	0	N/A	*Full data submitted*	*	*	*	*Full data submitted*
Staffordshire	9	9	100.0	*Full data submitted*	7	6	85.7	*Full data submitted*
Stoke-on-Trent	9	9	100.0	*Full data submitted*	14	14	100.0	*Full data submitted*
Telford and Wrekin	6	5	83.3	*Full data submitted*	7	6	85.7	*Full data submitted*
Walsall	6	6	100.0	*Full data submitted*	8	8	100.0	*Full data submitted*
Warwickshire	6	6	100.0	*Full data submitted*	5	5	100.0	*Full data submitted*
Wolverhampton	15	14	93.3	*Full data submitted*	16	16	100.0	*Full data submitted*
Worcestershire	5	5	100.0	*Full data submitted*	*	*	*	*Full data submitted*

* Some figures in the above table have been suppressed due to potential disclosure issues associated with small numbers. Small number suppression is carried out on data in this table, using the following methodology:
a. Suppress all data (i.e. eligible population, number vaccinated and coverage) where the eligible population is 1 or 2.
b. Where the eligible population is greater than 2 and the number of children vaccinated is 0 or 1, suppress the number of children vaccinated and the coverage.
(1) Total number of children reaching their 1st/2nd birthday during the specified evaluation period with maternal Hep B positive status.
(2) Total number of children from (1) receiving 3 doses of Hep B before their 1st birthday or 4 doses before their 2nd birthday.

: = Data not available
N/A = not applicable (zero denominator)
Source: NHS Digital, Childhood Vaccination Coverage Statistics, England, 2017-18. Copyright © 2018. NHS Digital.

Key messages

Neonatal hepatitis B vaccine coverage at both 12 and 24 months was 99% in the West Midlands in 2017/18. Where data were not suppressed due to potential disclosure issues, 9 of 14 upper tier local authorities achieved 100% vaccine coverage at both 12 and 24 months. However, these data should be interpreted with caution due to the small number of eligible neonates.

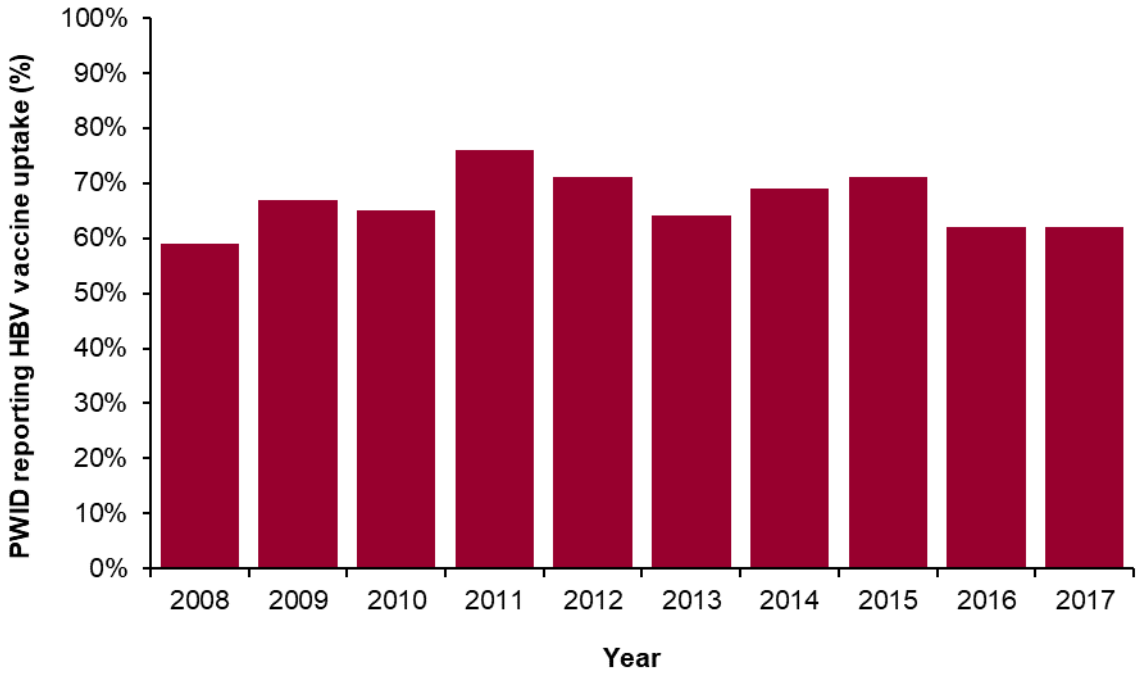
Vaccination in people who inject drugs

People who inject drugs are a priority group for HBV vaccination, this includes those who inject intermittently and those who are likely to 'progress' to injecting, for example those who currently smoke heroin and/or crack [(2)]. A course of 3 doses is recommended, with vaccine given at zero, one and 2 months, although an accelerated course may be appropriate for those exhibiting chaotic lifestyles or those who have difficulty engaging with services [(17)].

In England, Wales and Northern Ireland, self-reported uptake of at least one dose of the hepatitis B vaccine has plateaued at around 72% between 2008 and 2017. In 2017, self-reported HBV vaccine uptake was particularly low in the under-25 age group (64%) and those who began injecting less than 3 years ago (57%).

In the West Midlands, self-reported uptake of at least one dose of the HBV vaccine has been variable over the last decade, from a low of 59% in 2008 to a peak of 76% in 2011. In 2017 uptake was 62% (Figure 25) – this was the second lowest uptake of all English regions in 2017 and below the 73% uptake reported for England overall. Further efforts are required to increase vaccine uptake among PWID in the West Midlands.

Figure 25: Reported level of hepatitis B vaccine uptake[xxxix] among PWID, West Midlands, 2008 to 2017



Source: Public Health England, Unlinked Anonymous Monitoring Survey of PWID

[xxxix] Self-reported uptake of a minimum of one dose of the HBV vaccine

Key messages

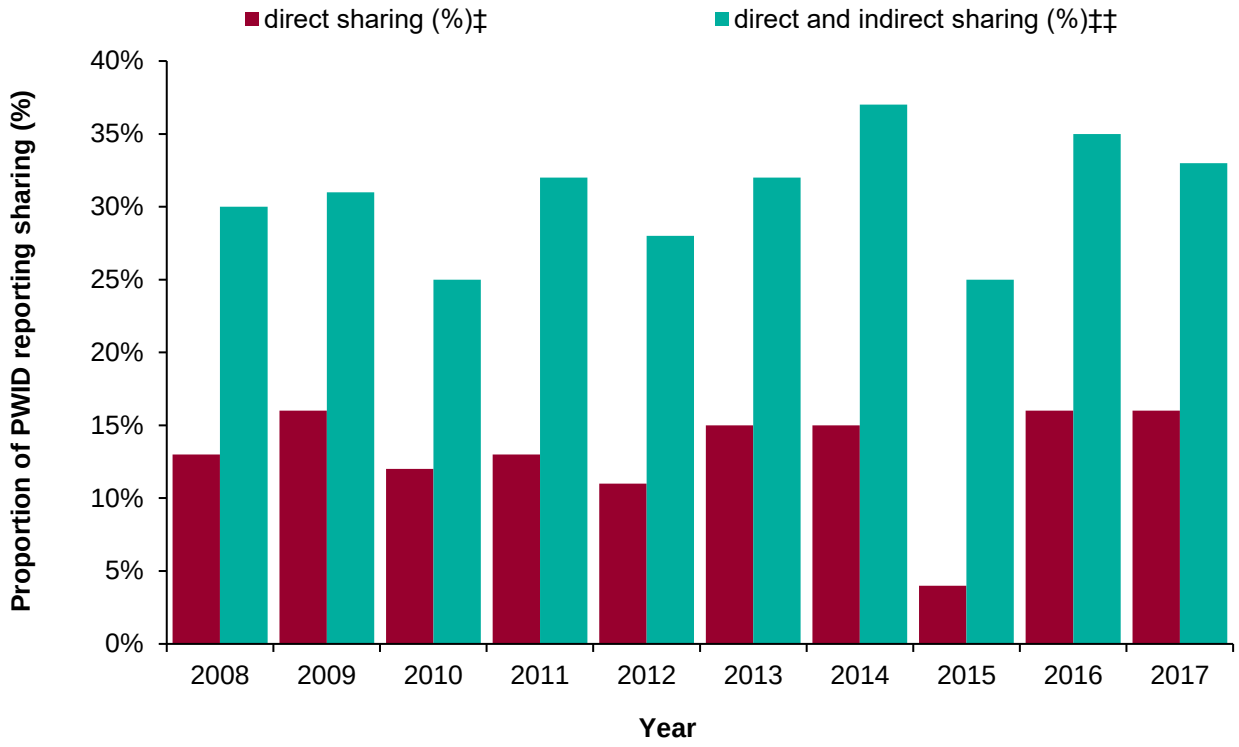
In 2017, the reported level of hepatitis B vaccine uptake in PWID in the West Midlands was stable at 62% – this was the second lowest rate of all English regions and below the 73% reported for England overall. Further efforts are needed to increase uptake in the West Midlands.

Needle sharing in people who inject drugs

Sharing of injecting equipment among PWID is the key reason why these individuals are at high risk of becoming infected with blood-borne viruses such as hepatitis B. Overall, the level of needle and syringe sharing (either receiving or passing on a used needle or syringe) among those currently injecting psychoactive drugs has fallen across the UK in the past decade. In England, Wales and Northern Ireland, the proportion of injectors reporting sharing needles and syringes ("direct sharing") in the past month fell from 23% in 2007 to 18% in 2017 [18]. When including the sharing of mixing containers or filters ("indirect sharing") as well as needles and syringes, the proportion of current injectors reporting sharing in the past month was 36% in 2017 in England, Wales and Northern Ireland, which is a decrease from 45% in 2007 [18].

In the West Midlands, the proportion of current injectors reporting direct sharing in the past month was 16% in 2017 – this was the same as the proportion reporting direct sharing in 2016 but much higher than the 4% reported in 2015. The proportion of current injectors reporting direct and indirect sharing in the past month was 33%. The proportions reporting direct and direct and indirect sharing in the West Midlands in 2017 were lower than in England overall (direct sharing: West Midlands = 16%, England = 18%, direct and indirect sharing: West Midlands = 33% and England = 36%) (Figure 26) (19).

Figure 26: Self-reported sharing of injecting equipment among PWID, West Midlands, 2008 to 2017



‡ Sharing of needles and syringes in preceding 4 weeks.
‡‡ Sharing of needles and syringes, mixing containers, or filters among those who had last injected during the 4 weeks preceding participation in the survey
Source: Public Health England, Unlinked Anonymous Monitoring Survey of PWID

Key messages

The proportions of PWID reporting both direct and direct and indirect sharing of equipment in the West Midlands in 2017 were lower than in England overall. However, caution should be exercised when interpreting these data from the UAM survey, as they may not be representative of all PWID in the West Midlands.

Conclusions

Despite national progress in decreasing the burden of hepatitis B infection through the successes of screening and vaccination programmes, HBV remains a key public health issue both within the West Midlands and in England overall, with acutely infected cases continuing to be diagnosed adding to the rising prevalence in chronic hepatitis B infection. Geographical variations in the occurrence of hepatitis B infection in the West Midlands still exist, with Birmingham, Coventry and Sandwell reporting significantly higher rates of hepatitis B infection (acute and chronic combined) compared to the West Midlands rate. Although the reasons for these geographic disparities are not fully understood, it is likely to partly represent increased testing and diagnosis in these areas and to reflect demographic factors such as the ethnic make-up of local populations.

The 2017 data presented in this report suggest that improvements still need to be made in the West Midlands. The incidence of acute infections increased and was higher than in most other English regions, while sentinel surveillance data showed that test positivity in the West Midlands was the highest of all English regions.

In addition to these geographic disparities, there are also ethnic and socio-demographic disparities which are reflected in the higher infection rates observed in black and minority ethnic groups and among people who inject drugs (PWID).

Although prevalence among PWID was lower in the West Midlands than in England overall, self-reported vaccine uptake among this high-risk group was the second lowest in England. This highlights the need to continue and possibly expand existing services aimed at preventing and controlling the spread of hepatitis B infection among PWID. Sub-national and local efforts to control HBV should be informed by the national guidance developed to assist healthcare commissioners, service providers and local authority Directors of Public Health. This guidance recommends evidence-based activities to increase testing and vaccination uptake amongst all at-risk populations.

Glossary of abbreviations

Anti-HBc	Hepatitis B core antibody – the IgG antibody subclass appears after the appearance of hepatitis B surface antigen and around onset of symptoms in acute symptomatic hepatitis B cases and persists for life – the presence of the IgM antibody subclass indicates acute infection and the IgM antibody clears as the acute infection resolves. However, IgM antibody may be found in in individuals who are chronically infected (in the presence of HBsAg) or in individuals who have a resolving infection.
Anti-HBc IgM	Hepatitis B core antibody
Anti-HBe	Antibody to hepatitis B e antigen
Anti-HBs	Antibody to hepatitis B surface antigen
COVER	Cover of Vaccination Evaluated Rapidly
DSR	Directly Standardised Rate
ESLD	End Stage Liver Disease
GHSS	Global Health Sector Strategy
GUM	Genitourinary Medicine
HBeAg	Hepatitis B e antigen (the presence of HBeAg is associated with relatively high infectivity and severity of disease)
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
HCC	Hepatocellular Carcinoma
HES	Hospital Episode Statistics
IDPS	Infectious Diseases in Pregnancy Screening
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
IVF	In Vitro Fertilisation
NAISM	National Antenatal Infections Screening Monitoring
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
ONS	Office for National Statistics
PCT	Primary Care Trust
PHE	Public Health England
PWID	People Who Inject Drugs
SGSS	Second Generation Surveillance System
UAM	Unlinked Anonymous Monitoring
UK	United Kingdom

Data sources

Office for National Statistics mortality data:
https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths

Unlinked Anonymous Monitoring Survey of HIV and Viral Hepatitis among People Who Inject Drugs:
https://www.gov.uk/government/statistics/people-who-inject-drugs-hiv-and-viral-hepatitis-monitoring

Hospital Episode Statistics, NHS Digital:
http://content.digital.nhs.uk/hes

NHS Blood and Transplant/PHE Epidemiology Unit:
http://www.gov.uk/guidance/blood-tissue-and-organ-donors-surveillance-schemes

PHE Sentinel Surveillance of Hepatitis B Testing:
http://www.gov.uk/government/publications/sentinel-surveillance-of-blood-borne-virus-testing-in-england-2016

Laboratory reporting, Second Generation Surveillance System (SGSS):
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739854/PHE_Laboratory_Reporting_Guidelines.pdf

Infectious Diseases in Pregnancy Screening Programme:
https://www.gov.uk/government/publications/infectious-diseases-in-pregnancy-screening-standards-data-report

Childhood vaccination Coverage statistics, NHS Digital:
https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics

Cover of Vaccination Evaluated Rapidly (COVER) programme:
https://www.gov.uk/government/publications/cover-of-vaccination-evaluated-rapidly-cover-programme-information-standards

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