



Public Health  
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# **Annual report from the sentinel surveillance study of blood borne virus testing in England: data for January to December 2017**

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## Background

This report provides summary data for individuals who had tests reported to the sentinel surveillance programme during 2017. Sections 1 to 7 describes testing and demographic information for individuals tested by venepuncture for hepatitis A to E, HIV, and HTLV.

The sentinel surveillance of blood borne virus testing began in 2002, with the aim of supplementing the routine surveillance of hepatitis. Information on the testing carried out in participating centres is collected irrespective of test result and can therefore also be used as a basis for estimating prevalence among those tested. These data have enhanced our knowledge and understanding of hepatitis testing, in terms of who is being tested and from which service types individuals are accessing testing, and also in interpreting trends in the number of positive individuals identified over time. In 2017, sentinel surveillance captured front-line testing for hepatitis A, B, C and HIV, covering approximately 40% of the population, and over 80% of the population from all 9 PHECs tested for hepatitis D, E and HTLV (*Supplementary Figure 1*).

Changes to data processing means that we are now able to present the number of tests conducted alongside the number of individuals tested within a year, The proportion positive is calculated among individuals tested.

The supplementary tables referred to in this report are available on the GOV.UK website page "[Sentinel surveillance of blood borne virus testing in England: 2017](#)".

## 1. Hepatitis A IgM testing

In 2017, 18 participating centres supplied hepatitis A-specific IgM antibody (anti-HAV IgM) testing data (a marker of acute infection). Overall 46,078 individuals were tested for anti-HAV IgM, of whom 452 (0.9%) tested positive (*Supplementary Table 1*). The age and gender of individuals tested was well reported (>99.9% complete). Where known, more males (52.6%) were tested than females. Over half of all individuals tested and of those who tested positive were aged between 25 and 54 years old (56.0% and 69.1% respectively) (*Supplementary Table 2*). The median age of individuals undergoing testing was 44 years (IQR 31 – 59) whereas the median age of individuals testing positive was 35 years (IQR 28– 49). The greatest proportion positive was among persons aged 25-34 years (1.7%), and children aged 1-14 years (1.6%).

The type of service which requested the hepatitis test was identified using the record location of the requestor (table 1). Where known, general practice tested the greatest proportion of individuals for anti-HAV IgM (48.3%), with a further 18.6% tested in other known hospital wards, and 7.4% tested in accident and emergency. The highest proportion of positive tests were from accident and emergency (3.7%), unspecified wards (3.5%), and GUM services (2.6%).

A combination of self-reported ethnicity and name analysis software was used to classify most individuals tested for anti-HAV IgM as belonging to one of four broad ethnic groups (n=46,058) (*Supplementary table 3*). Where known, the majority of individuals were classified as being of white or white British ethnic origin (80.7%), a further 12.7% were classified as Asian or Asian British origin, 3.4% were classified as black or black British origin and 3.3% were classified as other and/or mixed ethnic origin. The greatest proportion positive was among individuals of White or White British and of Other and/or mixed origin (0.9%).

**Table 1. Number of individuals tested, and testing positive for anti-HAV IgM in participating centres by service type, January – December 2017\***

Service type	Number of individuals tested	Number positive (%)
<b>Primary Care</b>		
Accident and emergency	3,427	136 (4.0)
Drug dependency services	84	0 (0.0)
General practitioner	22,301	112 (0.5)
GUM clinic	1,795	48 (2.7)
Occupational health	100	0 (0.0)
Prison services	154	0 (0.0)
Pharmacy	1	0 (0.0)
Total primary care	27,862	296 (1.1)
<b>Secondary Care</b>		
Antenatal	1,620	3 (0.2)
Fertility services	276	0 (0.0)
General medical / surgical departments	3,081	47 (1.5)
Obstetrics and gynaecology	805	3 (0.4)
Other ward type (known service) <sup>†</sup>	8,582	55 (0.6)
Paediatric services	886	8 (0.9)
Renal	508	3 (0.6)
HIV	73	1 (1.4)
Specialist infectious disease services	1,860	13 (0.7)
Unspecified ward <sup>§</sup>	630	23 (3.7)
Total secondary care	18,321	156 (0.9)
Unknown <sup>#</sup>	34	0 (0.0)

\* Excludes 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. An individual can test in more than one service type.

<sup>†</sup> Other ward types includes cardiology, coroner, dermatology, haematology, ultrasound, x-ray.

<sup>§</sup> 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.

<sup>#</sup> These services are currently being investigated to identify specific service type, where possible.

## 2. Hepatitis B surface antigen testing

Sentinel surveillance collects data on testing for hepatitis B surface antigen (HBsAg). All pregnant women in the UK are offered hepatitis B screening as part of their antenatal care. Data from the test request location and freetext clinical details field accompanying the test request were reviewed to distinguish individuals tested for HBsAg as part of routine antenatal screening (section 2a) from those tested in other settings and for other reasons (section 2b). It is possible that some women undergoing antenatal screening may not be identified as such and may therefore be included in section 2b as non-antenatal testing.

### a. Antenatal HBsAg screening

In 2017, 139,240 women aged between 12 and 49 years old were identified as undergoing antenatal screening for HBsAg, representing 28.0% of all individuals tested for HBsAg in participating sentinel centres (*Supplementary Table 4*). Overall 384 (0.3%) of these women tested positive. The median age of women tested was 30 years (IQR 26 – 34) and the median age of women testing positive was 30 years (IQR 27 – 34).

A HBeAg result was available for 97.3% (363) of HBsAg positive women, and of these, 6.6% were HBeAg positive (table 2). Most women who underwent antenatal screening were classified as belonging to one of four broad ethnic groups (n= 135,933) (table 2). Where known, the majority of individuals were classified as being of white or white British ethnic origin (79.2%), a further 14.1% were classified as Asian or Asian British origin, 3.5% were classified as other and/or mixed ethnic origin, and 3.3% were classified as black or black British origin. The proportion testing positive was higher among women of other and/or mixed origin and black or black British origin (1.2% and 1.2% respectively) than women of Asian or Asian British origin and white or white British origin (0.4% and 0.3% respectively).

The proportion of HBeAg positive women also differed by ethnic group with 16.1% of other and/or mixed ethnic origin women testing positive, 8.7% of Asian or Asian British women and 5.4% of white or white British women.

**Table 2. Number of antenatal women (12-49 years) tested and testing positive for HBsAg, and number of HBsAg positive women tested and testing positive for HBeAg by ethnic group, January – December 2017\***

Ethnic group	Number of individuals tested	Number HBsAg positive (%)	Number HBsAg positive tested for HBeAg	% HBsAg positive tested	Number HBeAg positive (%)
Asian or Asian British origin	19,133	69 (0.4)	69	100	6 (8.7)
Black or black British origin	4,418	54 (1.2)	53	98.1	0 (0.0)
Other and/or mixed origin	4,770	57 (1.2)	56	98.2	9 (16.1)
White or white British origin	107,612	185 (0.2)	166	89.7	9 (5.4)
Unknown ethnic origin	3,307	19 (0.6)	19	100.0	0 (0.0)
<b>Total</b>	<b>139,240</b>	<b>384 (0.3)</b>	<b>363</b>	<b>94.5</b>	<b>24 (6.6)</b>

\* Excludes dried blood spot testing, oral fluid testing, reference testing and testing from hospitals referring all samples. Only women aged 12-49 years old are included. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional

## **b. Non-antenatal HBsAg testing**

In 2017, 436,365 samples were tested for HBsAg, excluding antenatal screening, in 20 participating sentinel centres, equating to 355,585 individuals. Overall, 3,543 (1.0%) individuals tested positive, with the highest proportion of positive tests in the West Midlands (1.8%) (*Supplementary Table 5*). This may reflect more targeted testing of risk groups and/or genuinely higher prevalence of hepatitis B in people being tested in this PHEC.

The age and gender of individuals tested for HBsAg was well reported (>99.7% complete). Where known, almost the same number of males (49.0%) were tested as females (51.0%) (*Supplementary Table 6*). The number of females tested may include some undergoing routine antenatal screening who could not be identified as such from the information provided. Males had a greater proportion testing positive compared to females (1.3% vs 0.7%  $p < 0.001$ ). Almost half of all individuals tested (47.7%) and three fifths (57.7%) of individuals testing positive were aged between 25 and 44 years old. The median age of individuals tested and positive were similar with 38 years (IQR 29 – 54) and 37 years (IQR 30 – 48) respectively.

Where known (n=436,085), the greatest proportion of samples tested for HBsAg were from general practice (24.4%), with a further 20.0% tested in other known hospital wards and 12.2% tested in renal services (table 3). The highest proportion of positive tests were among individual tested in specialist liver services, HIV services, unspecified wards and prisons (3.1%, 1.9%, 1.4% and 1.3% respectively).

**Table 3. Number of individuals tested, and testing positive for HBsAg in participating centres by service type (excluding antenatal testing), January – December 2017\***

Service type	Number of tests	Number of individuals tested	Number positive (%)
<b>Primary Care</b>			
Accident and emergency	23,180	20,538	147 (0.7)
Drug dependency services	1,440	1,311	6 (0.5)
General practitioner	106,452	99,731	1,108 (1.1)
GUM clinic	42,530	40,255	490 (1.2)
Occupational health	18,108	17,383	82 (0.5)
Prison services	9,345	8,575	115 (1.3)
Pharmacy	25	17	0 (0.0)
Total primary care	201,080	187,810	1,948 (1.0)
<b>Secondary Care</b>			
Fertility services	22,892	20,270	117 (0.6)
General medical / surgical departments	16,005	12,589	84 (0.7)
Obstetrics and gynaecology	22,558	20,576	82 (0.4)
Other ward type (known service) <sup>†</sup>	86,884	72,592	612 (0.8)
Paediatric services	5,951	5,123	54 (1.1)
Renal	52,999	17,058	99 (0.6)
Specialist HIV services	778	692	13 (1.9)
Specialist liver services	16,227	13,114	402 (3.1)
Unspecified ward <sup>§</sup>	10,284	8,801	127 (1.4)
Total secondary care	235,005	170,815	1,592 (0.9)
Unknown <sup>#</sup>	280	259	3 (1.2)

\* 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. An individual can test in more than one service type. The proportion positive is calculated using number of individuals. Number of tests includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

<sup>†</sup> Other ward types includes cardiology, coroner, dermatology haematology, ultrasound, x-ray.

<sup>§</sup> 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.

<sup>#</sup> These services are currently being investigated to identify specific service type, where possible

86.2% of individuals tested for HBsAg were classified as belonging to one of four broad ethnic groups (n=306,596) (table 4). Most individuals of unknown ethnic origin were tested by GUM clinics, from which only minimal demographic data are available, resulting in poor ethnic classification. The majority of individuals were classified as being of white or white British ethnic origin (78.7%), a further 13.6% were classified as Asian or Asian British origin, 4.1% were classified as black or black British origin and 3.6% were classified as other and/or mixed ethnic origin. The proportion positive varied by ethnic group; 5.0% of individuals of other and/or mixed ethnicity tested positive compared to 3.6% of black or black British origin individuals, 1.5% of Asian or Asian British origin individuals and 0.5% of white or white British origin individuals.

**Table 4. Number of individuals tested, and testing positive for HBsAg in participating centres by ethnic group (excluding antenatal testing), January – December 2017\***

Ethnic group	Number of tests	Number of individuals tested	Number positive (%)
Asian or Asian British origin	53,499	41,654	637 (1.5)
Black or black British origin	16,005	12,516	454 (3.6)
Other and/or mixed origin	13,021	11,140	554 (5.0)
White or white British origin	300,588	241,286	1,277 (0.5)
Unknown ethnic origin	53,252	48,989	621 (1.3)
<b>Total</b>	<b>436,365</b>	<b>355,585</b>	<b>3,543 (1.0)</b>

\* 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. The proportion positive is calculated using number of individuals. Number of tests includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

### 3. Hepatitis C antibody testing

Sentinel surveillance collects data on testing for hepatitis C-specific antibodies (anti-HCV), a marker of ever having a hepatitis C infection. It is important to note that no laboratory methods are currently available to distinguish definitively between acute or chronic hepatitis C virus infections. Therefore, positive anti-HCV results do not therefore necessarily represent incident or current infections, with a HCV PCR test required to identify a current infection.

In 2017, 418,199 samples were tested for anti-HCV in 18 participating sentinel centres, equating to 347,440 individuals. Overall, 4,982 (1.4%) individuals tested positive. This varied by PHEC with the highest proportion of positive tests were from the South West (1.8%) (*Supplementary Table 7*). This may reflect more targeted testing of risk groups and/or genuinely higher prevalence of hepatitis C in people being tested in this PHEC. Of those individuals testing positive for anti-HCV (n=4,982), 1,175 were tested for HCV RNA test by PCR before their anti-HCV positive test and 2,780 were tested for HCV RNA on the same day or after their anti-HCV positive test. Among persons HCV RNA tested after a positive anti-HCV test, 78.0% (n=2,167) were positive, of whom 49.1% (n=1063) had a HCV genotype recorded; 46.0% were genotype 1, with a further 44.2% genotype 3.

Age and gender were well reported (>99.7% complete). Where known, slightly more males (55.5%) were tested than females (*Supplementary Table 8*). Over half (61.7%) of all individuals tested and almost three quarters (75.4%) testing positive were aged between 25 and 54 years old. A greater proportion of males tested positive compared to females (1.8% vs 1.0% respectively,  $p<0.001$ ). The median age of those tested was 39 years (IQR 29 – 54 years), whereas the median age of those tested positive was 43 years (IQR 34 – 53 years).

Where known (n=417,968), the greatest proportion of samples tested for anti-HCV were from general practice (21.6%), with a further 19.5% from other known hospital wards and 17.9% from GUM clinics (table 5), . The highest proportion of positive tests were among individuals testing in specialist drug services (9.2%) and prison services (8.0%).

**Table 5. Number of individuals tested, and testing positive for anti-HCV in participating centres by service type, January – December 2017\***

Service type	Number of tests	Number of Individuals tested	Number positive (%)
<b>Primary Care</b>			
Accident and emergency	21,631	19,509	339 (1.7)
Drug dependency services	1,187	1,105	102 (9.2)
General practitioner	90,171	85,253	1,312 (1.5)
GUM clinic	74,887	62,652	673 (1.1)
Occupational health	16,506	15,307	34 (0.2)
Prison services	8,750	8,171	655 (8.0)
Pharmacy	19	15	0 (0.0)
Total primary care	213,151	192,012	3,115 (1.6)
<b>Secondary Care</b>			
Antenatal	6,644	6,208	54 (0.9)
Fertility services	20,077	18,342	52 (0.3)
General medical / surgical departments	14,419	11,707	216 (1.8)
Obstetrics and gynaecology	9,907	8,647	32 (0.4)
Other ward type (known service) <sup>†</sup>	81,342	70,434	909 (1.3)
Paediatric services	4,807	4,066	25 (0.6)
Renal	39,987	16,255	79 (0.5)
Specialist HIV services	2,633	2,099	49 (2.3)
Specialist liver services	15,176	12,430	287 (2.3)
Unspecified ward <sup>§</sup>	9,825	8,496	158 (1.9)
Total secondary care	204,817	158,684	1,861 (1.2)
Unknown <sup>#</sup>	231	216	6 (2.8)

\* Excludes dried blood spot, oral fluid, reference testing and testing from hospitals referring all samples. Individuals aged less than one year are excluded since positive tests in this age group may reflect the presence of passively-acquired maternal antibody rather than true infection. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional. An individual can test in more than one service type. The proportion positive is calculated using number of individuals. Number of tests includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

<sup>†</sup> Other ward types includes cardiology, coroner, dermatology haematology, ultrasound, x-ray

<sup>§</sup> 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.

<sup>#</sup> These services are currently being investigated to identify specific service type, where possible

Most individuals tested for anti-HCV were classified as belonging to one of four broad ethnic groups (n=282,042) (table 6). The majority of individuals were classified as being of white or white British ethnic origin (78.8%), a further 13.5% were classified as Asian or Asian British origin, 4.1% were classified as black or black British origin and 3.6% were classified as other and/or mixed ethnic origin. The proportion positive varied slightly by ethnic group: 1.6% in white or white British origin individuals, 1.2% in individuals of Asian or Asian British ethnic origin tested positive, 0.9% in other or mixed ethnic origin individuals and 0.5% in black or black British origin individuals.

**Table 6. Number of individuals tested, and testing positive for anti-HCV in participating centres by ethnic group, January – December 2017\***

Ethnic group	Number of tests	Number of Individuals tested	Number positive (%)
Asian or Asian British origin	45,547	38,116	471 (1.2)
Black or black British origin	14,150	11,462	57 (0.5)
Other and/or mixed origin	11,425	10,082	90 (0.9)
White or white British origin	269,776	222,382	3,630 (1.6)
Unknown ethnic origin	77,301	65,398	734 (1.1)
<b>Total</b>	<b>418,199</b>	<b>347,440</b>	<b>4,982 (1.4)</b>

\* Excludes dried blood spot testing, oral fluid testing, reference testing and testing from hospitals referring all samples. Excludes individuals aged less than one year, in whom positive tests may reflect the presence of passively-acquired maternal antibody rather than true infection. Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional. The proportion positive is calculated using number of individuals. Number of tests includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

## 4. Hepatitis D total antibody testing

Sentinel surveillance collects data on testing for hepatitis D-specific total antibody (HDV TA) and A-specific IgM antibody (anti-HDV IgM), a marker of acute hepatitis D infection. Seven sentinel laboratories provide hepatitis D testing facilities. Given the small number of tests individuals tested for HDV TA and/or HDV IgM are aggregated, and therefore do not necessarily represent incident infections, and be interpreted accordingly. Data are shown by region of the requesting service.

In 2017, 4,255 individuals were tested at least once for HDV TA and/or HDV IgM, and 129 (3.0%) individuals tested positive, this varied by PHEC with the highest proportion of positive tests in the North West (5.0%) and West Midlands (5.0%), (*Supplementary table 9*).

The age and gender of individuals tested for hepatitis D was well reported (>99.0% complete). Where known, slightly more males were tested than females (53.5%). The proportion of males and females testing positive was similar (3.3% and 2.6% respectively,  $p=0.2$ ). Three-fifths of all individuals tested (62.3%) and three-quarters of individuals positive (69.8%) were aged between 25 and 44 years old. The median age of individuals tested was 37 years (IQR 30 – 47) and the median age of individuals testing positive was 36 years (IQR 30 – 44).

Where known ( $n=4,324$ ), four-fifths of individuals were tested by a hospital which referred all hepatitis D samples to a sentinel centre (81.4%). In these cases the service that originally requested the test could not be determined.

Most individuals tested for hepatitis D were classified as belonging to one of four broad ethnic groups ( $n=3,845$ ). Almost half of individuals were classified as being of white or white British ethnic origin (45.5%), a further 23.8% were classified as Asian or Asian British ethnic origin, 19.0% were classified as other and/or mixed origin, and 11.7% were classified as black or black British origin (table 7). The proportion positive varied by ethnic group; 0.3% of other or mixed ethnic origin individuals tested positive compared to 4.4% of persons Asian or Asian British, 3.4% of white or white British origin individuals, and 2.0% of individuals of black or black British ethnic origin.

**Table 7. Number of individuals tested, and testing positive, for HDV-TA and/or HDV IgM in participating centres by ethnic group, January – December 2017\***

<b>Ethnic group</b>	<b>Number of individuals tested</b>	<b>Number positive (%)</b>
Asian or Asian British origin	917	40 (4.4)
Black or black British origin	451	9 (2.0)
Other and/or mixed origin	729	2 (0.3)
White or white British origin	1,748	60 (3.4)
Unknown ethnic origin	410	18 (4.4)
<b>Total</b>	<b>4,255</b>	<b>129 (3.0)</b>

\* Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

## 5. Hepatitis E IgM testing

Sentinel surveillance collects data on testing for hepatitis E-specific IgM antibody (anti-HEV IgM), a marker of acute hepatitis E infection. Recent HEV testing guidelines and increased disease awareness have resulted in more sentinel laboratories testing for HEV.

In 2017, 20,861 individuals were tested at least once for anti-HEV IgM. Overall, 614 (2.9%) individuals tested positive, although this varied by PHEC with the highest proportion of positive tests in the North West (25.8%)(*Supplementary Table 10*).

The age and gender of individuals tested for anti-HEV IgM was well reported (>99.3% complete). Where known, a similar number of males and females were tested (52.3% male). A greater proportion of males tested positive compared to females (3.5 % vs. 2.4% respectively,  $p<0.001$ ). Almost half (47.2%) of all individuals tested and one third (38.5%) of individuals testing positive were aged between 25 and 54 years old. The median age of individuals tested was 50 years (IQR 33 – 64) and the median age of individuals testing positive was 58 years (IQR 43 – 68).

Overall 4.6% (252/5,463) of males aged 50 or over tested positive for HEV, compared to 2.2% (117/5,225) among those under the age of 50. A similar pattern was seen among females, where 3.1% (149/4836) of females aged 50 or over tested positive compared to 1.7% (81/4901) among those under the age of 50.

Where known ( $n=20,736$ ), most individuals were tested by a hospital which referred all anti-HEV IgM samples to a sentinel centre (64.2%). In these cases the original service that initially requested the test could not be determined.

Most individuals tested for anti-HEV IgM were classified as belonging to one of four broad ethnic groups ( $n=19,938$ ). The majority of individuals were classified as being of white or white British ethnic origin (83.8%), a further 12.9% were classified as Asian or Asian British origin, 1.9% were classified as other and/or mixed ethnic origin, and 1.5% were classified as black or black British origin (table 8). The proportion positive varied by ethnic group; 3.0% of individuals of white or white British origin tested positive compared to 2.8% of Asian or Asian British origin individuals, 1.6% of other or mixed ethnic origin and 1.0% of black or black British origin.

**Table 8. Number of individuals tested, and testing positive, HEV IgM in participating centres by ethnic group, January – December 2017\***

<b>Ethnic group</b>	<b>Number of individuals tested</b>	<b>Number positive (%)</b>
Asian or Asian British origin	2,568	71 (2.8)
Black or black British origin	298	3 (1.0)
Other and/or mixed origin	370	6 (1.6)
White or white British origin	16,702	504 (3.0)
Unknown ethnic origin	743	30 (4.0)
<b>Total</b>	<b>20,681</b>	<b>614 (2.9)</b>

\*Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

## 6. HIV testing

Sentinel surveillance collects data on testing for HIV. All pregnant women in the UK are offered HIV screening as part of their antenatal care. Data from the test request location and free-text clinical details field accompanying the test request were reviewed to distinguish individuals tested for HIV as part of routine antenatal screening (section 6a) from those tested in other settings and for other reasons (section 6b). It is possible that some women undergoing antenatal screening may not be identified as such and may therefore be included in section 6b as non-antenatal testing.

### a. Antenatal HIV screening

In 2017, 122,060 women aged between 16 and 49 years old were identified as undergoing antenatal screening for HIV, representing 17.0% of all individuals tested for HIV in participating sentinel centres (*Supplementary Table 11*). Overall, 122 (0.1%) of these women tested positive. The median age of women tested was 30 years (IQR 26 – 34) and the median age of women testing positive was 33 years (IQR 27 – 37).

### b. Non-antenatal HIV screening

In 2017, 704,899 samples were tested for HIV, excluding antenatal screening, in 18 participating sentinel centres, equating to 597,720 individuals (adults aged 16 years and over). Overall, 3,273 (0.5%) individuals tested positive, although this varied by PHEC with the highest proportion of positive tests in the South West (14.3%), but only 7 persons were tested in this region (*Supplementary Table 12*). The age and gender of adults tested for HIV was well reported (>99.7% complete). Where known, similar numbers of females (52.3%) were tested compared to males (*Supplementary Table 13*). The number of females tested may include some undergoing routine antenatal screening who could not be identified as such from the information provided. A greater proportion of males tested positive compared to females (0.9% vs 0.3%  $p < 0.001$ ). A third of all individuals tested and over one quarter of individuals testing positive were aged between 25 and 34 years old. The median age of individuals tested was 33 years (IQR 25 – 45) and the median age of individuals testing positive was 39 years (IQR 30 – 49).

Where known (n=704,015), the greatest proportion of samples tested for HIV were from GUM clinics (38.0%), with a further 15.1% tested in general practice, and 11.7% tested in other known hospital wards (table 9). The highest proportion of positive tests were among individuals tested in specialist HIV services, specialist liver services and unspecified wards (20.5%, 1.4% and 0.8% respectively).

**Table 9. Number of adults (16+ years old) tested and testing positive for HIV in participating centres by service type (excluding antenatal testing), January – December 2017\*†.**

Service type	Number of tests	Number of individuals tested	Number positive (%)
<b>Primary Care</b>			
Accident and emergency	79,988	70,215	471 (0.7)
Drug dependency services	1,441	1,296	1 (0.1)
General practitioner	106,438	98,222	228 (0.2)
GUM clinic	267,273	224,393	1,390 (0.6)
Occupational health	15,819	14,920	31 (0.2)
Prison services	8,347	7,759	37 (0.5)
Total primary care	479,306	416,805	2,158 (0.5)
<b>Secondary Care</b>			
Fertility services	43,312	36,569	121 (0.3)
General medical / surgical departments	18,265	15,408	94 (0.6)
Obstetrics and gynaecology	22,421	20,466	27 (0.1)
Other ward type (known service)†	82,647	72,160	294 (0.4)
Paediatric services	3,978	3,444	11(0.3)
Renal	24,922	13,578	32 (0.2)
Specialist HIV services	1,480	1,410	289 (20.5)
Specialist liver services	11,574	9,550	130 (1.4)
Unspecified ward§	15,664	14,134	115 (0.8)
Total secondary care	224,263	186,719	1,113 (0.6)
<b>Unknown#</b>	1330	842	2 (0.2)

\* Excludes individuals aged under 16, antenatal screening, dried blood spot testing, oral fluid testing, 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. An individual can test in more than one service type. The proportion positive is calculated using number of individuals. Number of tests includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

† Other ward types includes cardiology, coroner, dermatology haematology, ultrasound, x-ray.

§ 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

Almost three fifths of adults tested for HIV were classified as belonging to one of four broad ethnic groups (n=364,808) (table 10). Where known, the majority of individuals were classified as being of white or white British ethnic origin (77.4%), a further 12.5% were classified as Asian or Asian British origin, 6.2% were classified as black or black British origin and 3.9% were classified as other and/or mixed ethnic origin. Most individuals of unknown ethnic origin were tested in GUM clinics, hence the lack of demographic information. The proportion positive varied by ethnic group; 1.3% of individuals of black or black British origin tested positive compared to 0.6% of individuals of white or white British origin, 0.5% of other and/or mixed origin individuals and 0.4% of Asian or Asian British origin individuals.

**Table 10. Number of adults (16+ years old) tested, and testing positive for HIV in participating centres by ethnic group (excluding antenatal testing), January – December 2017\***

<b>Ethnic group</b>	<b>Number of tests</b>	<b>Number of individuals tested</b>	<b>Number positive (%)</b>
Asian or Asian British origin	53,066	45,569	167 (0.4)
Black or black British origin	26,683	22,586	294 (1.3)
Other and/or mixed origin	16,173	14,290	71 (0.5)
White or white British origin	329,358	282,363	1,673 (0.6)
Unknown ethnic origin	279,619	232,912	1,068 (0.5)
<b>Total</b>	<b>704,899</b>	<b>597,720</b>	<b>3,273 (0.5)</b>

\* Excludes individuals aged under 16, antenatal screening, dried blood spot testing, oral fluid testing, 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. The proportion positive is calculated using number of individuals. Number of tests includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

## 7. HTLV testing

In 2017, 11,933 individuals were tested at least once for HTLV-1 specific antibodies in 11 participating sentinel centres. Overall, 111 (0.9%) individuals tested positive, although this varied by PHEC with the highest proportion of positive tests in the South West (9.8%), although very few individuals were tested from this region, it is likely they tested due to the presentation of HTLV-like symptoms (*Supplementary Table 14*).

The age and gender of individuals tested for HTLV-1 was well reported (>96% complete) (*Supplementary Table 15*). Where known, slightly more males were tested than females (54.9% male), with no significant difference in the proportion of females testing positive compared to males (1.0% vs. 0.8% respectively,  $p=0.3$ ). More than three-fifths of those testing, and testing positive, were aged 45 years and older. The median age of individuals tested was 51 years (IQR 35 – 63) and the median age of individuals testing positive was 54 years (IQR 37 – 63).

Where known ( $n=11,938$ ), a quarter of individuals were tested by a hospital which referred all HTLV-1 samples to a sentinel centre (24.4%). In these cases the original service that initially requested the test could not be determined.

Most individuals tested for HTLV-1 were classified as belonging to one of four broad ethnic groups ( $n=13,725$ ) (table 11). The majority of individuals were classified as being of white or white British ethnic origin (86.0%), a further 9.7% were classified as Asian or Asian British origin, 2.5% were classified as black or black British origin, and 1.8% were classified as other and/or mixed ethnic origin (table 11). The proportion positive varied by ethnic group; 2.2% of individuals of black or black British origin tested positive compared to 1.1% of Asian or Asian British origin individuals, 1.5% of other and/or mixed origin individuals and 0.9% of individuals of white or white British origin.

**Table 11. Number of individuals tested, and testing positive for HTLV in participating centres by ethnic group, January – December 2017\***

<b>Ethnic group</b>	<b>Number of individuals tested</b>	<b>Number positive (%)</b>
Asian or Asian British origin	1,069	12 (1.1)
Black or black British origin	278	6 (2.2)
Other and/or mixed origin	199	3 (1.5)
White or white British origin	9,511	81 (0.9)
Unknown ethnic origin	876	9 (1.0)
<b>Total</b>	<b>11,933</b>	<b>111 (0.9)</b>

\* Data are de-duplicated subject to availability of date of birth, soundex and first initial. All data are provisional.

## **8. Dried blood spot testing (DBS)**

Sentinel surveillance data on DBS testing for HIV, HCV and HBV mainly used in drug services and prisons are not presented this year due to the expansion of DBS testing in private laboratories that have not been consistently submitting data to PHE. Until 2015, these data were collected at an aggregate level by region, however, work is currently underway to determine whether additional information on testing facility can be collated and used to help understand recent changes in testing.

## 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-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health, and are a distinct delivery organisation with operational autonomy to advise and support government, local authorities and the NHS in a professionally independent manner.

### About Health Protection Report

*Health Protection Report* is a national public health bulletin for England and Wales, published by Public Health England. It is PHE's principal channel for the dissemination of laboratory data relating to pathogens and infections/communicable diseases of public health significance and of reports on outbreaks, incidents and ongoing investigations.

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