



# Health Protection Report

weekly report

Volume 2 Number 30 Published on: 25 July 2008

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## Nanotoxicology research centre to be established at Chilton

The Health Protection Agency's Centre for Radiation, Chemical and Environmental Hazards (CRCE) at Chilton, Oxfordshire, is to be the site of a new centre for experimental toxicology research examining possible health effects of human exposure to nanoparticles: the National Nanotoxicology Research Centre (NNRC). The Agency is collaborating with five United Kingdom universities [1] and the Medical Research Council's (MRC) Toxicology Unit to develop the centre and its research programme. The Agency is adapting its existing aerosol inhalation research facilities, at a cost of over £300,000, to allow a programme of experimental work on nanomaterials.

Knowledge of the possible interactions between nanomaterials – those of dimensions measured in nanometers (0.000001 millimetres) – and the human body is developing rapidly. NNRC will focus, initially, on the physical chemistry of nanoparticles and the behaviour of nanomaterials that enter the body via the lung and skin. State-of-the-art methods for producing aerosols of nanomaterials and measuring their properties, such as size distribution and concentration in air, will be developed and subsequent work will examine biological pathways taken by nanomaterials within the body.

A CRCE paper presented to the HPA Board in June described some of the industrial and toxicological developments underpinning the new centre's creation [2]. On the one hand, the CRCE paper explains, nanotechnology is likely to be one of the most important technological developments of the present century, yielding materials with physico-chemical properties that are valuable in electronics, in opto-electronics, in imaging systems used for medical diagnostic work, in cosmetics and in food preparations. While questions about the safety of these materials has led to the rapid growth of the new discipline of nanotoxicology, "... nanomaterials do not have entirely new toxicological properties," the paper points out. "The key discoveries [of nanotoxicology research] have been that nanomaterials may reach parts of the body inaccessible to larger particles and that they tend to be more active than larger particles when activity is expressed on a 'per unit mass' basis."

On the other hand, "[T]he problem is not quite as simple as this", the paper states. "The effort needed to characterize adequately nanomaterials under investigation and to identify the most appropriate measurement to express dose should not be underestimated. ... [N]ano-materials may be able to gain access to parts of the body which larger particles cannot reach and thus might produce novel effects". Experimental work involving injection of carbon nano-tubes into the peritoneal cavity of rats, for example, has already given rise to speculation that long, thin, insoluble carbon nano-tubes that are biopersistent may have toxicological properties similar to those of asbestos fibres, the CRCE paper notes.

A programme of international collaborative work on the safety of manufactured nanomaterials, being carried out as part of the OECD Chemicals Programme [3], is being coordinated in the UK by the Department for Environment, Food and Rural Affairs with input from other agencies including the Health and Safety Executive (HSE), the Environment Agency (EA) and the HPA.

### References

1. The universities of Birmingham, Cardiff, Edinburgh, Imperial College and King's College London.
  2. Nanotoxicology Research at HPA Chilton, downloadable at:  
[http://www.hpa.org.uk/web/HPAwebFile/HPAweb\\_C/1213083209055](http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1213083209055).
  3. See: [www.oecd.org/sti/nano](http://www.oecd.org/sti/nano)
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## Fifth report on antimicrobial resistance

The Health Protection Agency has published its fifth report providing a detailed overview of antimicrobial resistance in a range of pathogens (bacteria, viruses, and protozoa) of public health importance for the year covering 2007 [1]. *Antimicrobial Resistance and Prescribing in England, Wales and Northern Ireland, 2008* also includes, for the first time, community antimicrobial prescribing data.

The majority of the data presented in this report relate to England, Wales and Northern Ireland, although some data from other European countries are included reflecting the participation of the HPA in the European Antimicrobial Resistance Surveillance Scheme (EARSS). Although this report focuses on data collected during 2007, where possible, trend data over a longer period of time are also presented in order to put the most recent data into context.

### Reference

1. HPA. Antimicrobial Resistance and Prescribing in England, Wales and Northern Ireland, 2008. London: Health Protection Agency, 2008. Available at: [http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb\\_C/1216798080755](http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1216798080755)

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## Pneumococcal polysaccharide vaccine (PPV) uptake in over-65-year-olds

Results of the fifth annual PPV uptake survey in the elderly [1] has shown that, in most PCTs, high levels of coverage have been achieved. The overall uptake of PPV ever received is now 69% in all those 65 years and over. It is 77.3% amongst 75-79-year-olds.

The survey undertaken by the HPA on behalf of the Department of Health (DH) has been calculating the uptake of the 23-valent pneumococcal polysaccharide vaccine (which protects against more than 90% of the serotypes that cause serious pneumococcal disease in the UK) since the Chief Medical Officer recommended that all over-65-year-olds should receive it, in 2003.

The fifth annual survey calculated the proportion of the relevant age group in England that received the vaccine both between 1 April 2007 to 31 March 2008, and at anytime up to 31 March 2008. Since 2004/05 data has been collected using a DH web-based reporting system known as the Health Protection Informatics (HPI) website, which allows GP practices and their respective PCTs to upload data on-line.

### References

1. HPA. Annual Pneumococcal Polysaccharide Vaccine Uptake Report in 65 years old and over for England, available at: [http://www.immunisation.nhs.uk/files/HPA\\_pnuemoReport\\_June08.pdf](http://www.immunisation.nhs.uk/files/HPA_pnuemoReport_June08.pdf)

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## Infection reports

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### Immunisation

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  - ▶ Laboratory reports of hepatitis A and C infection in England and Wales: January to March 2008
  - ▶ *Corrigendum*: Laboratory reports of hepatitis A infection, October- December 2007
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### Invasive meningococcal infections, England and Wales, laboratory reports: weeks 14-26/2008

	Method of diagnosis						Cumulative* totals to week to week	
	CSF and blood Culture		Non-culture		Other sites		26/2008	26/2007
	2008	2007	2008	2007	2008	2007		
Group A	–	–	–	–	–	–	1	1
B	73	102	115	113	16	15	559	641
C	4	6	1	2	1	–	12	24
W135	2	2	–	2	1	1	9	17
X	–	1	–	–	–	–	–	1
Y	6	8	3	1	1	1	17	24
Z/29E	–	–	–	–	–	–	2	–
Ungroupable	–	1	–	–	–	–	1	2
Ungrouped	–	–	8	15	–	–	32	38
<b>Total</b>	<b>85</b>	<b>120</b>	<b>127</b>	<b>133</b>	<b>19</b>	<b>17</b>	<b>633</b>	<b>748</b>

\*Latex antigen, microscopy, polymerase chain reaction combined Health Protection Agency Centre for Infections data and Meningococcal Reference Unit data.

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## Laboratory reports of hepatitis A and C infection in England and Wales: January to March 2008

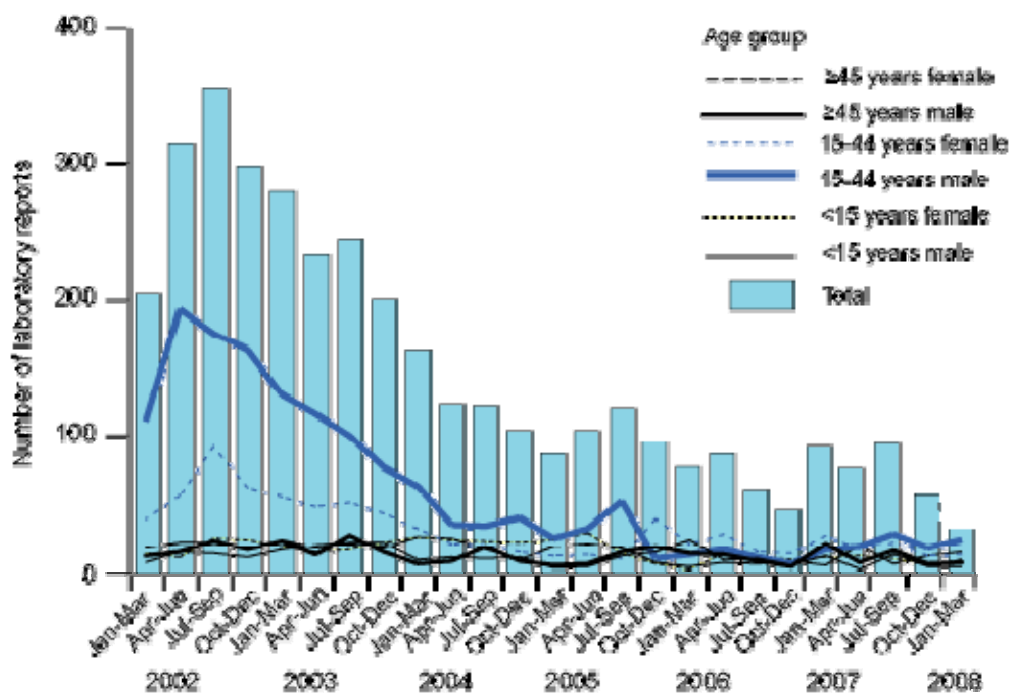
### Laboratory reports of hepatitis A infection in England and Wales

During the first quarter of 2008, 55 cases of hepatitis A were reported to the Health Protection Agency Centre for Infections. This is lower than any of the previous number of cases reported in each quarter of 2007. In this quarter, 23% of the cases were men aged 15-44 years (table 1) and females accounted for 15% of the cases in this age group. Of those aged 45 years and over 23% of cases were males and 27% females. In those aged under 15, males and females accounted for 8% and 0.04% of cases respectively. The overall decline in the number of hepatitis A cases has been mainly due to the decline in the number of reports in all age groups (see figure).

**Table 1. Laboratory reports of hepatitis A infection in England and Wales: January to March 2008**

Age group	Male	Female	Unknown	Total
<1 year	–	–	–	–
1-4 years	2	2	1	5
5-9 years	2	–	–	2
10-14 years	–	–	–	–
15-24 years	4	4	1	9
25-34 years	4	–	1	5
35-44 years	3	3	2	8
45-54 years	2	2	–	4
55-64 years	4	4	–	8
≥65 years	5	7	2	14
Unknown	–	–	–	–
<b>Total</b>	<b>26</b>	<b>22</b>	<b>7</b>	<b>55</b>

**Figure 1. Laboratory reports of hepatitis A infection in England and Wales by age group and sex: 2002 to March 2008**



### Laboratory reports of hepatitis C infection in England and Wales

A total of 2,142 cases of hepatitis C infection were reported to the Health Protection Agency Centre for Infections in the first quarter of 2008 (table 2). The majority of reports were as in previous quarters amongst those aged 25-44 years. Sixty seven percent (1431/2142) of cases were in this age group. The ratio of males to females is 2.3:1.

**Table 2. Laboratory reports of hepatitis C infection in England and Wales: January to March 2007**

Age group	Male	Female	Unknown	Total
1-4 years	1	1	–	2
5-9 years	–	2	–	2
10-14 years	1	1	1	3
15-24 years	83	57	5	145
25-34 years	376	194	27	597
35-44 years	541	180	24	745
45-54 years	302	115	13	430
55-64 years	79	40	3	122
≥65 years	39	32	5	76
Unknown	3	3	14	20
<b>Total</b>	<b>1425</b>	<b>625</b>	<b>92</b>	<b>2142</b>

### Corrigendum: Laboratory reports of hepatitis A infection, October- December 2007

*Hepatitis A* figures for the fourth quarter of 2007 – first reported in the Health Protection Report Volume 2, Number 17, 25 April 2008 – have been amended (see below). A number of laboratory reports that should have been included in the analysis had not loaded into the national surveillance database. This has since been addressed.

During the fourth quarter of 2007, 74 cases of hepatitis A were reported to the Health Protection Agency Centre for Infections. In quarter four, 33% of the cases were men aged 15-44 years and females

accounted for 18% of the cases in this age group. Of those aged 45 years and over 13% of cases were males and 21% females. In those aged under fifteen, males and females accounted for 10% and 6% of cases respectively.

**Laboratory reports of hepatitis A infection in England and Wales: October to December 2007 (revised, 25 July 2008)**

Age group	Male	Female	Unknown	Total
<1 year	–	–	–	–
1-4 years	2	1	–	3
5-9 years	4	3	–	7
10-14 years	1	–	–	1
15-24 years	8	5	–	13
25-34 years	11	4	–	15
35-44 years	5	4	–	9
45-54 years	2	3	1	6
55-64 years	2	6	–	8
≥65 years	5	6	1	12
Unknown	–	–	–	–
<b>Total</b>	<b>40</b>	<b>32</b>	<b>2</b>	<b>74</b>

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**Quarterly report from the sentinel surveillance study of hepatitis testing in England: data for January to March 2008 (quarter 1)**

The sentinel surveillance study of hepatitis testing, which began in 2002, aims to supplement routine surveillance of viral hepatitis in England by providing information on trends in testing, individual risk exposures and clinical symptoms.

The study collects information on all hepatitis A, B and C testing carried out in participating centres regardless of test result and therefore can also be used to estimate prevalence in those individuals tested.

**Hepatitis A IgM testing**

The sentinel surveillance study collects data on testing for hepatitis A-specific IgM antibody (anti-HAV IgM), a marker of acute hepatitis A infection. Table 1 shows the number of individuals tested, and testing positive, for anti-HAV IgM in sentinel laboratories between January and March 2008.

**Table 1. Number of individuals tested, and testing positive, for anti-HAV IgM in participating centres, January to March 2008**

Region (number of centres)	Number tested	Number positive
East Midlands (1)	889	4 (0.4)
East of England (1)	515	4 (0.8)
London* (5)	838	5 (0.6)
North East**(1)	2	0 (0.0)
North West (5)	1,031	8 (0.8)
South Central (1)	238	1 (0.4)
South East Coast (1)	323	0 (0.0)
South West (1)	837	5 (0.6)
Wales#	18	0 (0.0)
West Midlands (1)	383	4 (1.0)

Yorkshire & the Humber (2)	771	1 (0.1)
<b>Total, all regions (19)</b>	<b>5,845</b>	<b>32 (0.5)</b>

\*Data from one London laboratory was not available for January due to data extraction issues.

\*\*The low number of individuals tested in the North East is due to changes in sample referral patterns which mean that most of the testing carried out by the sentinel laboratory in this region is referred from other hospitals and is therefore excluded from these quarterly analyses.

# Although there are no sentinel centres outside England, limited first-line testing from general practices in Wales is carried out by sentinel centres in the North West and is therefore included here.

Excludes reference and confirmatory testing. Individuals aged less than one year are included. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

Table 2 shows the age and sex of individuals tested, and testing positive, for anti-HAV IgM in sentinel laboratories between January and March 2008.

**Table 2. Number of individuals tested, and testing positive, for anti-HAV IgM in participating centres, January to March 2008**

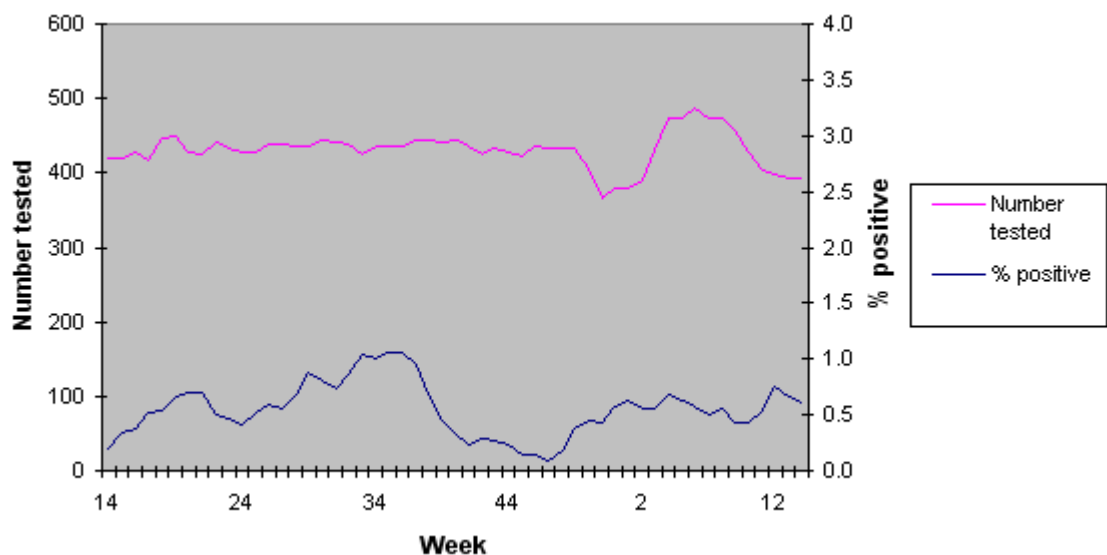
Age group	Female		Male		Unknown		Total	
	Number tested	No +ive (%)	Number tested	No +ive (%)	Number tested	No +ive (%)	Number tested	No +ive (%)
Under 1 year	31	0 (0.0)	33	0 (0.0)	0	0 (-)	64	0 (0.0)
1-14 years	63	0 (0.0)	85	1 (1.2)	1	0 (0.0)	149	1 (0.7)
15-24 years	298	1 (0.3)	314	5 (1.6)	16	0 (0.0)	628	6 (1.0)
25-34 years	361	1 (0.3)	574	5 (0.9)	10	1 (10.0)	945	7 (0.7)
35-44 years	415	1 (0.2)	679	3 (0.4)	8	0 (0.0)	1,102	4 (0.4)
45-54 years	430	1 (0.2)	611	1 (0.2)	6	0 (0.0)	1,047	2 (0.2)
55-64 years	427	3 (0.7)	474	2 (0.4)	4	0 (0.0)	905	5 (0.6)
≥65 years	480	6 (1.3)	513	1 (0.2)	3	0 (0.0)	996	7 (0.7)
Unknown	1	0 (0.0)	7	0 (0.0)	1	0 (0.0)	9	0 (0.0)
<b>Total, all age groups</b>	2,506	13 (0.5)	3,290	18 (0.5)	49	1 (2.0)	5,845	32 (0.5)

Excludes reference and confirmatory testing. Individuals aged less than one year are included. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

To provide an indication of trends in testing, data from the 18 sentinel centres for which full data were available were compared for the first quarters of 2007 and 2008. In the period January to March 2008, 32 of 5629 (0.6%) people tested positive for anti-HAV IgM compared to 31 of 5634 (0.6%) for the same period in 2007. There seems, therefore, very little difference in the number of individuals tested and the proportion positive between these two quarters.

Figure 1 shows the five-weekly moving average for number of people tested for anti-HAV IgM and percentage positive over the last year (April 2007 to March 2008 inclusive) for the 18 centres from which full data were available. Again, this shows little variation in the number of individuals tested, apart from a trough during the holiday period and a small peak shortly after. There does not appear to be any clear relationship between the number of individuals tested and the proportion positive, in contrast to the data on anti-HCV testing (figure 3).

**Figure 1. Five-weekly moving average of number of people tested, and percentage positive, for anti-HAV IgM between April 2007 and March 2008**



### Hepatitis B surface antigen (HBsAg) testing

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 individuals undergoing antenatal screening may not be identified as such and may therefore be included in section 2b as non-antenatal testing.

#### a) Antenatal HBsAg testing

During the first quarter of 2008, a total of 17,528 individuals were identified as undergoing antenatal testing for HBsAg in 19 participating sentinel centres (table 3). Of these, 0.7% (n=117) were positive. This is the first time these individuals had been reported to the sentinel surveillance scheme.

Variation in levels of testing by region will reflect local antenatal testing arrangements in each area; for example, in some areas the majority of antenatal screening is carried out by National Blood Service laboratories or other hospital laboratories which do not participate in sentinel surveillance.

Individuals identified as undergoing antenatal testing comprised 30.5% of all individuals tested for HBsAg in participating laboratories during the last quarter of 2007.

**Table 3. Number of individuals tested, and testing positive, for HBsAg through antenatal screening in participating laboratories, January to March 2008**

Region (number of centres)	Number tested	Number positive (%)
East Midlands (1)	20	4 (20.0)
East of England (1)	849	2 (0.2)
London * (5)	3,434	66 (1.9)
North East (1)	0	0 (-)
North West (5)	4,099	12 (0.3)
South Central (1)	849	4 (0.5)
South East Coast (1)	1,493	10 (0.7)
South West (1)	3,220	5 (0.2)

West Midlands (1)	84	3 (3.6)
Yorkshire & the Humber (2)	3,480	11 (0.3)
<b>Total, all regions (19)</b>	17,528	117 (0.7)

\*Data from one London laboratory was not available for January due to data extraction issues. Excludes reference and confirmatory testing. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

#### b) Non-antenatal HBsAg testing

This includes all individuals tested for HBsAg at participating centres who are not identified from the test request location or the clinical details accompanying the test request as undergoing antenatal screening.

During the first quarter of 2008, a total of 39,978 individuals were tested for HBsAg in 19 participating sentinel centres, excluding antenatal testing (table 4). Of these, 2.2% (n=881) were positive. This is the first time these individuals had been reported to the sentinel surveillance scheme.

The proportion of individuals testing positive was highest in London: this may reflect more targeted testing of risk groups and/or genuinely higher prevalence in people being tested in this region.

**Table 4. Number of individuals tested, and testing positive, for HBsAg in participating centres (excluding antenatal testing), January to March 2008**

Region (number of centres)	Number tested	Number positive (%)
East Midlands (1)	4,206	41 (1.0)
East of England (1)	2,398	38 (1.6)
London * (5)	10,623	358 (3.4)
North East (1)	571	6 (1.1)
North West (5)	7,881	215 (2.7)
South Central (1)	1,313	9 (0.7)
South East Coast (1)	2,982	22 (0.7)
South West (1)	4,310	52 (1.2)
Wales #	24	0 (0.0)
West Midlands (1)	1,441	35 (2.4)
Yorkshire & the Humber (2)	4,229	105 (2.5)
<b>Total, all regions (19)</b>	39,978	881 (2.2)

\*Data from one London laboratory was not available for January due to data extraction problems.

#Although there are no sentinel centres outside England, limited first-line testing from general practices in Wales is carried out by sentinel centres in the North West and is therefore included here.

Excludes reference and confirmatory testing. Individuals aged less than one year are included. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

Excluding individuals identified from the test request location or clinical details as undergoing antenatal testing, slightly more women than men were tested for HBsAg (table 5). This may represent antenatal testing that cannot be identified as such from the information provided, or may reflect genuinely higher levels of testing among women.

The proportion testing positive for HBsAg was higher among men than women (2.7% v 1.7%). The relatively high prevalence of HBsAg among tested individuals of unknown sex may reflect testing of individuals in settings such as prisons, drug services and GUM clinics where few demographic details on patients (such as sex) were available and where service users may be at high risk of hepatitis B infection.

**Table 5. Age and sex of individuals tested for HBsAg in participating centres (excluding antenatal testing), January to March 2008**

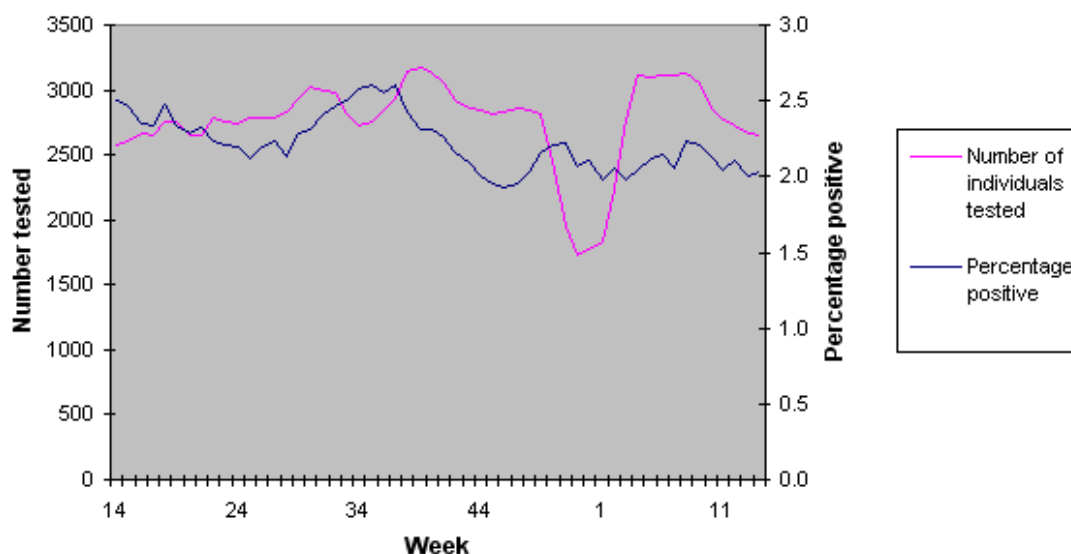
Age group	Female		Male		Unknown		Total	
	Number tested	No +ive (%)	Number tested	No +ive (%)	Number tested	No +ive (%)	Number tested	No +ive (%)
Under 1 year	69	1 (1.4)	77	0 (0.0)	2	0 (0.0)	148	1 (0.7)
1-14 years	333	5 (1.5)	317	0 (0.0)	8	0 (0.0)	658	5 (0.8)
15-24 years	4,681	71 (1.5)	2,966	73 (2.5)	122	4 (3.3)	7,769	148 (1.9)
25-34 years	6,179	127 (2.1)	4,700	171 (3.6)	229	10 (4.4)	11,108	308 (2.8)
35-44 years	3,823	76 (2.0)	4,210	120 (2.9)	136	4 (2.9)	8,169	200 (2.4)
45-54 years	1,925	31 (1.6)	2,514	78 (3.1)	56	1 (1.8)	4,495	110 (2.4)
55-64 years	1,443	11 (0.8)	1,823	39 (2.1)	27	1 (3.7)	3,293	51 (1.5)
≥65 years	1,888	25 (1.3)	2,279	32 (1.4)	21	1 (4.8)	4,188	58 (1.4)
Unknown	32	0 (0.0)	54	0 (0.0)	64	0 (0.0)	150	0 (0.0)
<b>Total, all age groups</b>	20,373	347 (1.7)	18,940	513 (2.7)	665	21 (3.2)	39,978	881 (2.2)

Excludes reference and confirmatory testing. Individuals aged less than one year are included. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

To provide an indication of trends in testing, data from the 18 sentinel centres for which full data were available were compared for the first quarters of 2007 and 2008. In the period January to March 2008, 770 of 37,123 (2.1%) people tested positive for HBsAg (excluding antenatal testing), compared to 742 of 33,358 (2.2%) for the same period in 2007.

Figure 2 shows the five-weekly moving average for number of people tested for HBsAg and percentage positive over the last year (excluding antenatal testing; April 2007 to March 2008 inclusive) for the 18 centres from which full data were available.

**Figure 2. Five-weekly moving average of number of people tested, and percentage positive, for HBsAg between April 2007 and March 2008 (excluding antenatal testing). (Note difference in scale of axes to Figures 1 and 3 )**



### Hepatitis C testing

During the first quarter of 2008, a total of 32,274 individuals were tested at least once for hepatitis C-specific antibodies (anti-HCV) in 19 participating sentinel centres (table 6). This is the first time these individuals had been reported to the sentinel surveillance scheme.

Overall, 4.4% of individuals tested for anti-HCV were positive, though this varied by region (table 6).

It is important to note that no laboratory methods are currently available to distinguish between acute, chronic or resolved hepatitis C virus infections. Positive anti-HCV results do not therefore necessarily represent incident infections and the data presented here should be interpreted with care.

**Table 6. Number of individuals tested, and testing positive, for anti-HCV in participating centres, January to March 2008**

Region (number of centres)	Number tested	Number positive (%)
East Midlands (1)	3,611	90 (2.5)
East of England (1)	1,501	63 (4.2)
London (5)*	7,537	282 (3.7)
North East (1)	385	14 (3.6)
North West (5)	6,955	456 (6.6)
South Central (1)	772	22 (2.8)
South East Coast (1)	2,893	41 (1.4)
South West (1)	3,581	224 (6.3)
Wales **	23	1 (4.3)
West Midlands (1)	1,300	55 (4.2)
Yorkshire and Humberside (2)	3,716	174 (4.7)
<b>Total, all regions (19)</b>	<b>32,274</b>	<b>1,422 (4.4)</b>

\*Data from one London laboratory was not available for January due to data extraction issues.

\*\*Although all sentinel centres are in England, a small amount of first-line testing from general practices in Wales is carried out by laboratories in the North West and West Midlands.

Excludes reference and confirmatory testing. Excludes individuals aged less than one year, in whom positive tests may reflect the presence of passively-acquired maternal antibody rather than true infection. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

Of the 1,422 individuals testing positive for anti-HCV during the first quarter of 2008, 495 (34.8%) were also tested for HCV RNA by PCR. Of these individuals, 337 were PCR positive (68.1%).

Sex was reported for the majority of people tested. As in previous quarters, similar numbers of males and females were tested (table 7); the ratio of males to females tested was 1.1:1. The ratio of males to females testing positive was 2.0:1. The majority (63.9%) of people tested were aged 15-44 years, while the percentage of individuals overall testing positive was highest among people aged 35-54 years.

**Table 7. Age and sex of individuals tested for anti-HCV in participating centres, January to March 2008**

Age group	Female		Male		Unknown		Total	
	Number tested	No +ive (%)	Number tested	No +ive (%)	Number tested	No +ive (%)	Number tested	No +ive (%)
1-14	280	3 (1.1)	245	3 (1.2)	3	1 (33.3)	528	7 (1.3)
15-24	3,054	32 (1.0)	2,352	36 (1.5)	81	1 (1.2)	5,487	69 (1.3)
25-34	3,870	144 (3.7)	4,021	239 (5.9)	169	4 (2.4)	8,060	387 (4.8)
35-44	3,039	148 (4.9)	3,935	361 (9.2)	109	3 (2.8)	7,083	512 (7.2)
45-54	1,739	83 (4.8)	2,268	190 (8.4)	49	3 (6.1)	4,056	276 (6.8)
55-64	1,397	35 (2.5)	1,631	84 (5.2)	23	0 (0.0)	3,051	119 (3.9)
≥65	1,785	24 (1.3)	2,084	26 (1.2)	17	0 (0.0)	3,886	50 (1.3)
Unknown	21	0 (0.0)	54	2 (3.7)	48	0 (0.0)	123	2 (1.6)
<b>Total, all age groups</b>	15,185	469 (3.1)	16,590	941 (5.7)	499	12 (2.4)	32,274	1,422 (4.4)

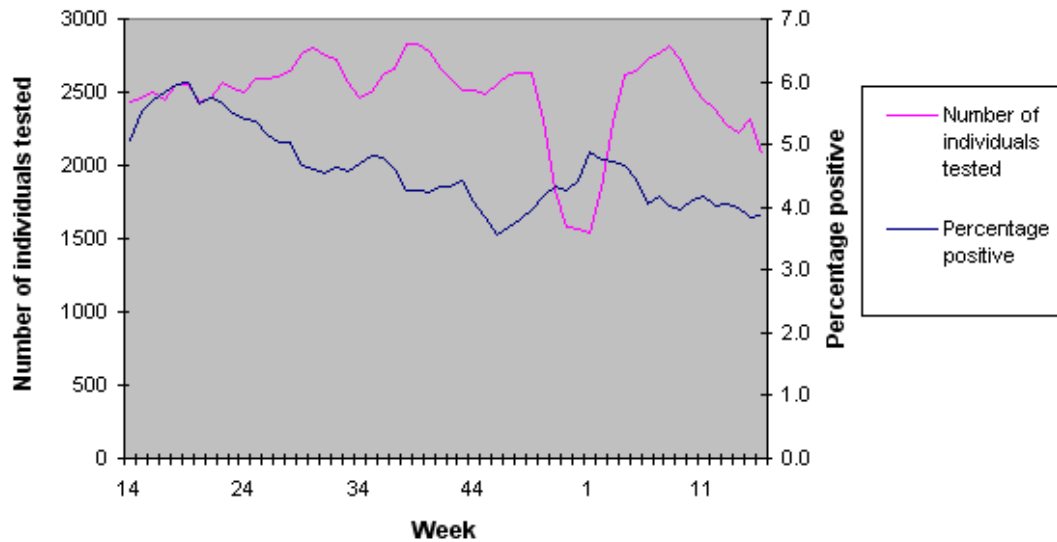
Excludes reference and confirmatory testing. Individuals aged less than one year are excluded since positive tests in this age group may reflect the presence of passively-acquired maternal antibody rather than true infection. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

To provide an indication of trends in testing, data from the 18 sentinel centres from which full data were available were compared for the first quarters of 2007 and 2008. In the period January to March 2008, 1,381 of 30,151 (4.6%) people tested were positive for anti-HCV, compared to 1,351 of 27,185 (5.0%) for the same period in 2007. This suggests increased testing of people at lower risk of infection.

It should be noted that these data relate to different sentinel centres to those for whom trends data were presented in the last quarterly report and therefore comparisons should not be made between reports. However, figure 3 shows the five-weekly moving average for number of people tested for anti-HCV and percentage positive over the last year (April 2007 to March 2007 inclusive) for the 18 centres from which full data were available.

Apart from a trough during the Christmas and New Year holiday period (weeks 51 to 2), levels of anti-HCV testing appear to remain fairly steady. As observed last quarter, several peaks in testing correspond to simultaneous troughs in the percentage positive, perhaps suggesting increased testing of people at low risk of infection. An overall decline in the percentage positive over the past year is apparent, confirming the long-term trend in declining percentage positive among individuals tested for anti-HCV observed over the course of the study.

**Figure 3. Five-weekly moving average of number of people tested, and percentage positive, for anti-HCV between April 2007 and March 2008. ( Note difference in scale of axes to Figures 1 and 2)**



### Surveillance of viral infections in donated blood: England and Wales, 2007

Donated blood is collected from volunteer (unpaid) adult donors who do not acknowledge any medical conditions, travel histories, or behaviours, that are known to be associated with an increased risk of blood-borne infections. In 2007, all blood donations made in England and Wales were tested for antibodies to HIV, hepatitis C virus (HCV) and human T-cell lymphotropic virus (HTLV), hepatitis B surface antigen (HBsAg), hepatitis C RNA on pools of up to 48 donations (and in some instances HIV RNA, testing having been extended to all areas of England and Wales in October 2007) and antibodies to syphilis. In addition, some donations were tested for antibodies to hepatitis B core antigen (anti-HBc), malaria and *Trypanosoma cruzi* (Chagas disease) depending on the donor's history. A donation found positive for any of these markers is excluded from the blood supply. The donor is informed of their infection, told to stop donating and referred to specialist services to receive appropriate care.

In 2007, a total of 168 out of 2 093 677 donations collected by the English and Welsh blood services were positive for markers of viral infections (table 1). Of these infected donations, 68 (41%) were positive for HBsAg, 61 (36%) were positive for anti-HCV, 24 (14%) were positive for anti-HIV, and 15 (9%) were positive for anti-HTLV (table 1).

**Table 1: Infections detected in 2,093,677 blood donations collected in England and Wales during 2007**

Donations with confirmed marker of infection	HPV (HBsAg)	HCV (anti-HCV/HCV RNA)	HIV (anti-HIV)	HTLV (anti-HTLV)	Any of these four markers markers‡
All donations	68	61	24	15	168
- per 100,000 donations tested	3.25	2.91	1.15	0.72	8.02
- 1 in x donations	30,789	34,323	87,237	139,578	12,462
Donations from new donors*	65	57	12	14	148
- per 100,000 donations tested	33.89	29.71	6.26	7.30	77.15
- 1 in x donations	2,951	3,365	15,985	13,702	1,296

Donations from repeat donors†	3	4	12	1	20
- per 100,000 donations tested	0.16	0.21	0.63	0.05	1.05
- 1 in x donations	633,951	475,463	158,488	1,901,852	95,093

\* New donors are classified by blood centres as donating for the first time

† Repeat donors are classified by blood centres to have previously donated. Some donations from repeat donors may be newly tested for markers of infection.

‡ Two donors had markers of two infections: one HIV/acute HBsAg, one HIV/*T pallidum*

In 2007, new donors contributed 9% of all blood donations, but 96% of HBsAg, 93% of anti-HCV and 93% of anti-HTLV infected donors. In contrast, only 50% of anti-HIV positive donations were donated by new donors.

### Infections in blood donors in England and Wales 2007

The frequency of HBsAg, anti-HCV, anti-HIV and anti-HTLV in donations collected from new donors during 2007 by age group and sex of donors is shown in figure 1. There was a higher frequency among donations from male donors than females for all markers of infection, except for HTLV. There were much lower numbers of repeat donors compared to new donors for all infections except HIV and so frequency in repeat donors was low and sporadic although there were more males overall. The frequency of marker by age group and sex of repeat donors is only shown for anti-HIV (figure 2).

#### HBV

Sixty-five HBV infections were detected among new donors. Of these, 63 were chronic while two donors under 25 years of age of Chinese ethnicity had acute infection. The frequency of HBsAg in male donors peaked in the 25-34 age group and declined in older age groups, whilst among females it was low and variable between age groups. Where known, 42/56 of new donors were non-white and of these where country of birth was known 30/34 were born abroad. Of the white donors 10/14 were born in countries with intermediate or high endemicity (six from Eastern Europe). The main route of HBV infection, where known – in 35/46 – was assigned to being born in an endemic country in the absence of any specific risk identified after a full post test discussion. Even where a risk was assigned, the majority of donors or their contacts were from endemic countries. For example, 5/6 donors with chronic HBV infections reported heterosexual sex as their probable risk factor but were also born in an endemic country.

Three repeat donors in 2007 had a positive donation for HBsAg. All three were white males born in the UK or Ireland with acute infection. There was a low frequency in males across every age group except the 25-34 year-olds (no infections detected in this age group). It was likely that one donor with white-other ethnic background from a non-endemic country, became infected in the UK via heterosexual contact. Two other white-British donors were infected via possible blood contact (one in the UK and one in Australia).

#### HCV

Fifty seven HCV infections were detected in new donors. The frequency of HCV in males and females increased with age, peaking in the 45-and-over age group. Where known, the majority – 36/47 – of anti-HCV positive donations were from white donors, most of whom were white-British (six white-other). The second largest group, 8/47, with HCV-positive donations were from South Asia. Risk exposures were unknown in one donor despite full interview and a further 11 had incomplete follow up. Where known, the main risk factors were: injecting drug use (10/45); piercing (8/45), of which seven had a previous tattooing and seven donors (15%) whose only possible risk identified was being born in or to parents from an endemic country. There were a range of other factors in the remaining donors such as snorting drugs (n=4); nosocomial (n=3), transfusion (n=2, both in the UK in the 1970s), occupational or other possible blood contact (n=5); household (n=3) and heterosexual contact (n=3).

There were four HCV-positive repeat donors, all of whom had evidence of becoming infected in the period since the previous donation which ranged between 7 and 44 months. There was a low frequency in males in the under-25s and the 35-44 year-old age groups while in females the frequency was zero except in the over-45s. Three out of four repeat donors were white-British. Possible risk factors were unknown despite full interview in two cases and one case had incomplete follow up. The remaining case was a white British donor thought to have been infected heterosexually by a partner who injected drugs.

## **HIV**

Twelve infections were seen in new donors. The frequency of HIV peaked in male donors in the 35-44 year olds, whilst among females it was low and variable. Where known (n=11), the majority, 7/11, of HIV infected donations were from white donors, six of whom were white-British. Where known, the risk exposure most commonly reported was sex, with 6/11 probably due to heterosexual sex and 5/11 due to sexual contact between males. Eight donors were thought to have been infected in the UK, of which 3/3 were probably via heterosexual partners who had had sex in sub-Saharan Africa (SSA).

Twelve infections were identified in repeat donors all of whom had evidence of becoming infected in the period since the previous donation, which ranged between three and 46 months. One donation was detected by HIV NAT testing only - ie anti-HIV negative, tested in the window period for anti-HIV assay - in a donation from a repeat donor who had given a negative donation three months previously. Among males, there was a higher frequency in 25-34 year olds which then declined with age. Among females, there was a low frequency seen above 35 years old. No incident infections were seen in the under-25s. Ethnicity was known for all repeat donors. Most (11/12) of HIV infected donations were from white donors, eight of whom were British. Where known, like new donors, 6/11 were probably infected via heterosexual contact and 5/11 were probably infected via sex between men. Eight were probably infected in the UK including 2/2 with heterosexual partners who had had sex in SSA.

## **HTLV**

Fourteen infections were identified in new donors, two males and 12 females. HTLV in male donors was only seen in 25-34 year olds, in contrast to HTLV in female donors, where frequency increased with age, peaking in the 45 and over age group. Ethnicity was known for all 12 donors; six were black-Caribbean, two were of South Asian origin, three were white-British and one was Black-other. Where known (n=10), five were born in the UK, two in Europe while three were born outside Europe, one in Jamaica. Where a probable risk factor was known, 5/11 were thought to have acquired HTLV as adults via heterosexual contact in the UK. Five had being born in, or to parents from, an endemic country as their risk although four had continuing risks into adulthood, therefore may have acquired their infection either as a child or an adult. One donor with HTLV type II was infected as an adult via injecting drug use in the UK .

There were no donations detected with HTLV markers from male repeat donors and only one infection among female repeat donors. This was a confirmed HTLV seroconversion made by a repeat Asian donor, born in the UK, who had previously been tested for anti-HTLV and is the second HTLV seroconversion identified since testing was introduced in 2002.

## **Cumulative frequency in blood donations in England and Wales to December 2007**

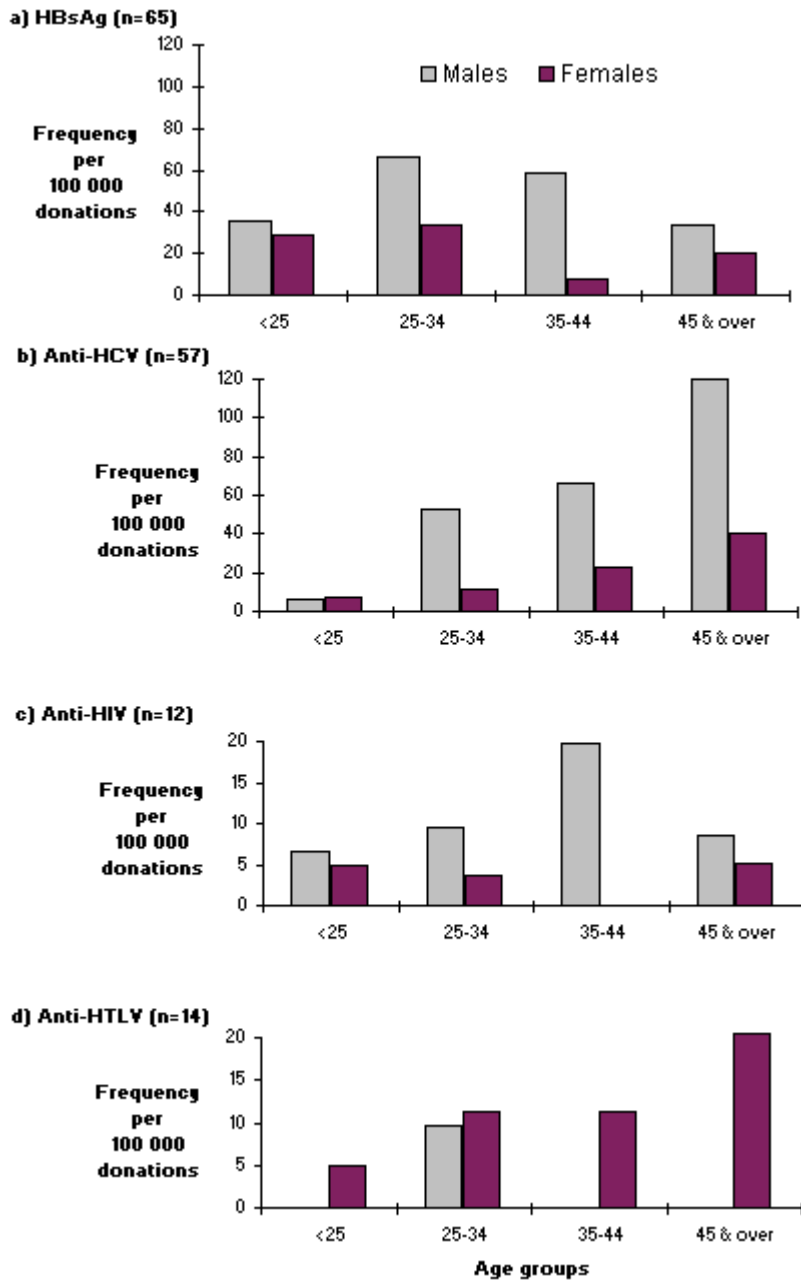
Blood donations have been tested for HBsAg since 1972 and national surveillance data have been available since 1995. Annual frequency of HBsAg in donations from new and repeat donors are shown in figure 3. The frequency of HBsAg which had been decreasing in new donors since 1995 has been gradually rising again since 2002. Between 1995 and 2001, where known, 49% of HBsAg positive new donors were of non-white ethnicity compared to 71% in 2002-2007. Where known, the proportion of non-white HBsAg positive new donors had been steadily increasing each year since 2002 from 59% to 77% in 2006. Although that proportion dipped slightly to 75% (42/56) in 2007, this data suggested that the increase in HBsAg frequency since 2002 may be due to an increase in HBsAg-positive donations made by non-white donors, whose infections are associated with endemic countries. However, the 2007 data shows that infection is also associated with white donors born in endemic countries.

Anti-HCV testing of blood donations began in 1991. Since that time the frequency of anti-HCV has declined each year in blood donations from both new and repeat donors (figure 4).

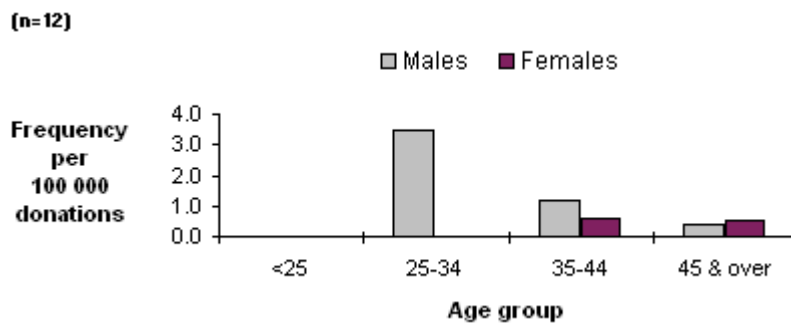
The frequency of anti-HIV in blood donations has been low since testing was introduced in 1985 in England and Wales. Recently there has been evidence of a higher frequency in new donors compared to all previous years of surveillance due to the peaks in 2003 and 2005, however, the number of infections is small and fluctuations are to be expected (figure 5).

Blood donations have been screened for HTLV since 2002. Since that time the frequency of infection in new donors has remained low and variable. When screening was first introduced in 2002 all repeat donors would have been tested for HTLV for the first time. Consequently the frequency of infection among repeat donors decreased sharply over the first two years (2002-2004) as all donors with chronic HTLV infections were removed from the donor panel (figure 6). The current low-to-zero frequency in repeat donors reflects the low incidence in the UK. Indeed, only two seroconversions have been identified in our repeat donors (in 2005 and 2007). The percentage of non-white newly tested HTLV-infected donors has increased each year from 33% in 2002 to 75% in 2007, reflecting chronic infection in donors from endemic countries.

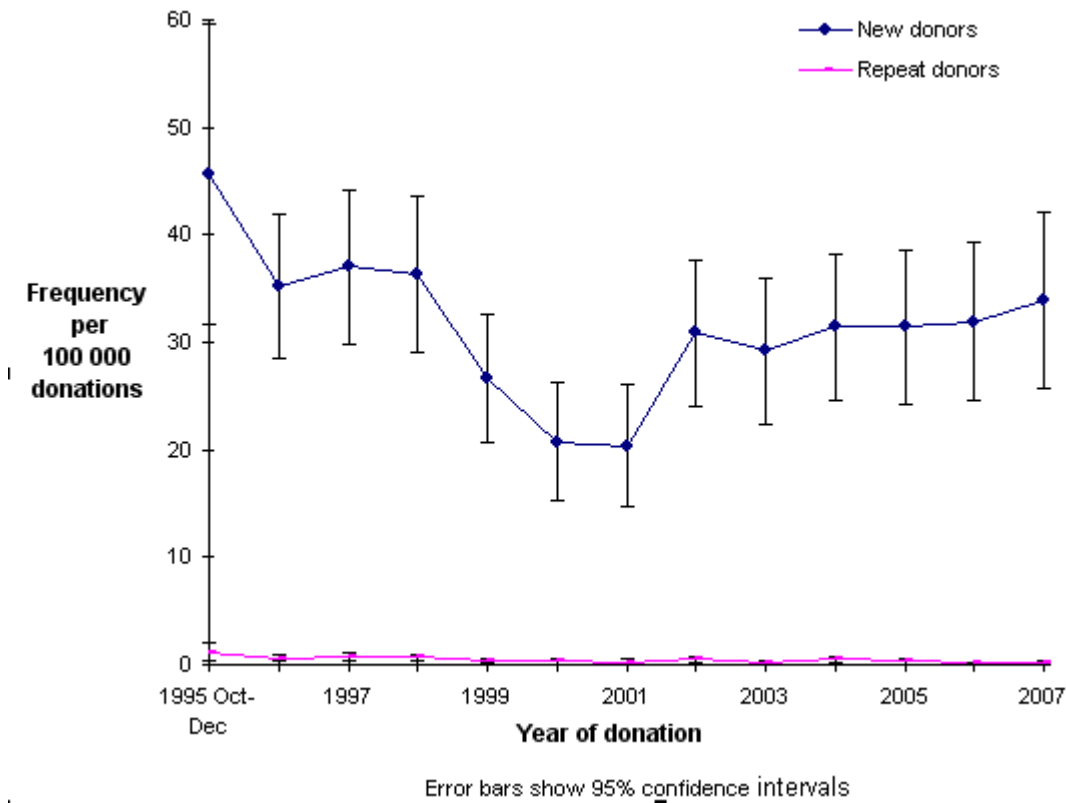
**Figure 1: Age and sex of infected blood donors: newly tested donors. Donations collected during 2007. (Note different scales)**



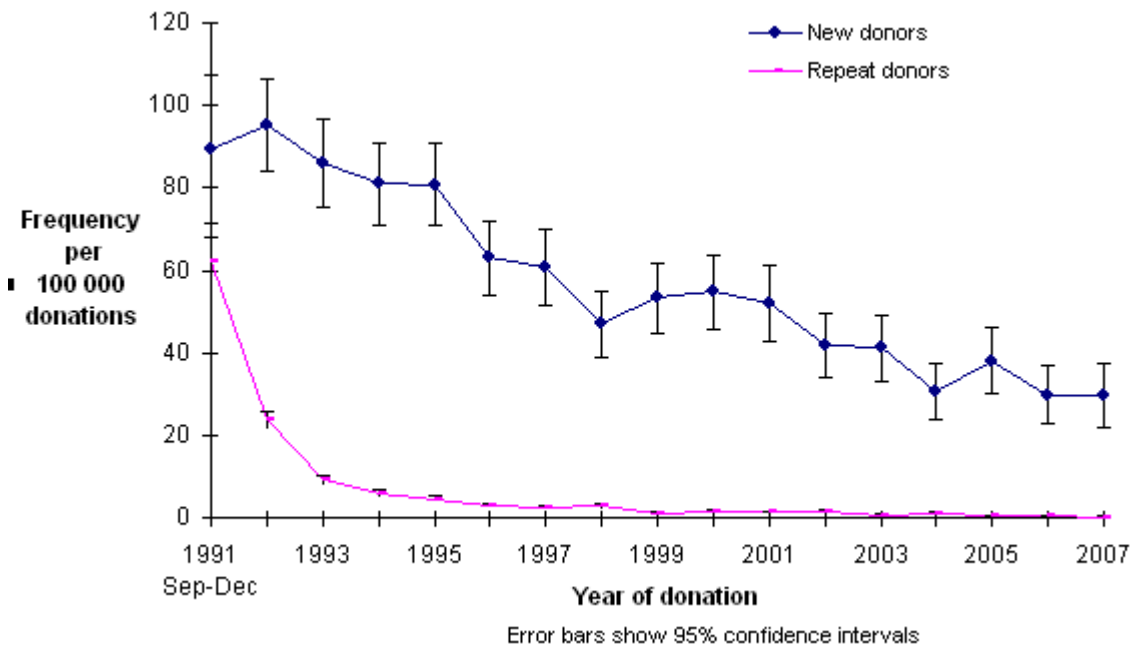
**Figure 2: Age and sex of HIV infected previously tested blood donors. Donations collected during 2007. (Note different scale from newly tested donors)**



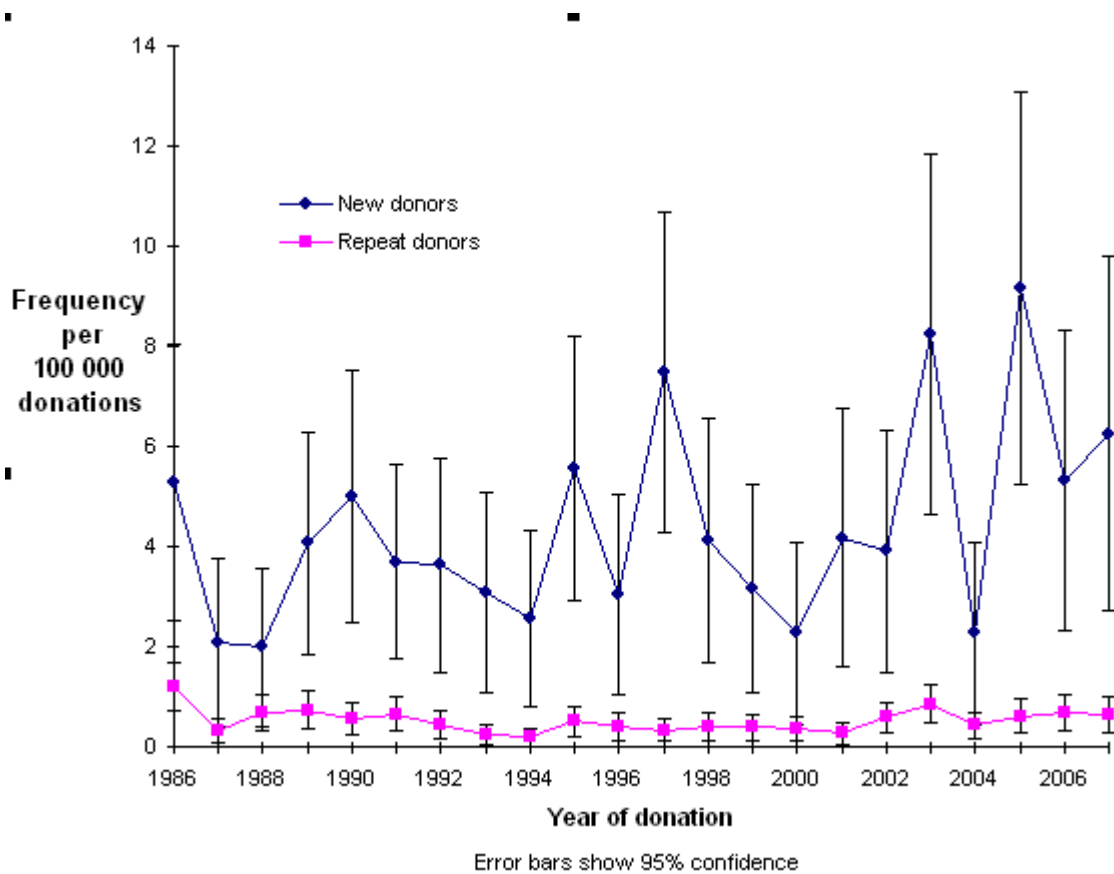
**Figure 3: HBsAg infected blood donations: England & Wales. Donations collected from 01/10/1995 to 31/12/2007 (Note change in scale)**



**Figure 4: HCV infected blood donations: England & Wales. Donations collected from 01/09/1991 to 31/12/2007 (Note change in scale)**



**Figure 5: HIV infected blood donations: England & Wales. Donations collected from 01/12/1986 to 31/12/2007**



**Figure 6: HTLV infected blood donations: England & Wales. Donations collected from 01/08/2002 to 31/12/2007 (Note change in scale)**

