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* This report was inserted on 2 September 2009.

▶ **Pandemic (H1N1) 2009 influenza: UK situation at 27 August 2009**

Pandemic (H1N1) 2009 influenza: UK situation at 27 August 2009

The HPA Weekly National Influenza Report of 27 August 2009 (week 35) [1] has summarised the UK (and international) situation as follows:

- ▶ Pandemic influenza activity continued to decrease across most regions of the UK and in all age groups, while remaining at levels higher than expected for the time of year;
- ▶ In week 34 (week ending 23 August), the GP consultation rates decreased in England and Wales remaining below the normal winter seasonal baseline thresholds. In Northern Ireland the rate decreased (thresholds not set in NI) and the rate in Scotland increased slightly though remained below the baseline level;
- ▶ The National Pandemic Flu Service (NPFS) continued to issue antiviral drugs to people in England with an influenza-like illness who called or logged on to the internet site. There was a general decrease in the number of assessments, and antiviral collections, over the previous week;
- ▶ Interpretation of data to produce estimates on the number of new cases continued to be subject to a considerable amount of uncertainty with the move to NPFS. HPA modelling gave an estimate of 5000 (range 3000 – 12, 000) new cases in England in week 34 compared to an estimated 11,000 (range 6000 – 25, 000) cases in the previous week. The estimated number of new cases had decreased in all regions and age groups;
- ▶ The main influenza virus circulating in the UK continued to be the pandemic (H1N1) 2009 strain, with few influenza H1 (non-pandemic), H3 and B viruses detected through sentinel and non-sentinel surveillance. At 27 August 2009, in the UK, no pandemic viruses had been found to be resistant to the antiviral drugs oseltamivir or zanamivir;
- ▶ The majority of pandemic influenza cases continued to be mild. The cumulative number of deaths reported due to pandemic (H1N1) 2009 in the UK was 65. A total of 413 new patients were hospitalised with suspected pandemic influenza in week 34 (up to 8am Monday 24 August); a decrease of 196 from the previous week. The highest hospitalisation rates have consistently been in the under-5-year age group. Hospitalisation rates decreased over the previous week in all age groups;
- ▶ According to the European Centre for Disease Prevention and Control (ECDC), by 25 August, 254,947 laboratory confirmed cases of pandemic influenza (H1N1) had been reported globally with 2594 deaths. In week 33 Ireland and Northern Ireland reported medium levels of influenza activity while all other European countries reported low levels.

Reference

1. HPA Weekly National Influenza Report: week 35 (27 August 2009, PDF 108 KB), HPA website: www.hpa.org.uk/swineflu/surveillance&epidemiology.
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Infection reports

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Laboratory reports of hepatitis A and C infection in England and Wales, data for 2008

Laboratory reports of hepatitis A infection: 2008

In 2008, 356 laboratory reports of confirmed hepatitis A virus infection in England and Wales were made to the Health Protection Agency compared to 400, and 359, reports in 2006, and 2007, respectively (table 1). This continues the downward trend in the overall number of hepatitis A cases reported annually. The downward trend is most notable in men aged between 15-44 years but is noted in all age groups.

Table 1. Laboratory reports of hepatitis A infection by region, England and Wales 2008

Age group (years)	Q1			Q2			Q3			Q4			Total
	Jan - Mar			Apr - Jun			Jul - Sept			Oct - Dec			
	Male	Female	n/k	Male	Female	n/k	Male	Female	n/k	Male	Female	n/k	
Less than 1	–	–	–	1	–	–	–	–	–	–	–	–	1
01-04	2	2	1	3	2	–	–	–	1	3	4	–	18
05-09	2	–	–	3	–	–	5	5	–	4	7	–	26
10-14	–	–	–	1	–	–	5	4	–	3	6	–	19
15-24	4	4	1	4	5	–	13	8	–	16	6	–	61
25-34	4	–	1	3	3	–	7	7	–	15	6	1	47
35-44	3	3	2	4	1	–	10	6	–	7	2	–	38
45-54	2	2	–	2	4	–	7	5	–	10	2	–	34
55-64	4	4	–	3	5	–	5	4	–	2	5	–	32
>=65	5	7	2	5	12	–	5	11	1	10	5	1	64
nk	–	–	–	5	3	8	–	–	–	–	–	–	16
Total	26	22	7	34	35	8	57	50	2	70	43	2	356

In 2008, 43% (146/340) of cases of hepatitis A were in those aged between 15-44 years compared to 49% in 2007. The ratio of male to female cases of HAV infection in 2008 was 1.2:1 and has been consistently above 1 since the early 1990s (figure 1). In 2006 the South East region and the West Midlands region accounted for the majority of reports (table 2).

Figure 1. Male/female ratio of hepatitis A laboratory reports by year, England and Wales 2008

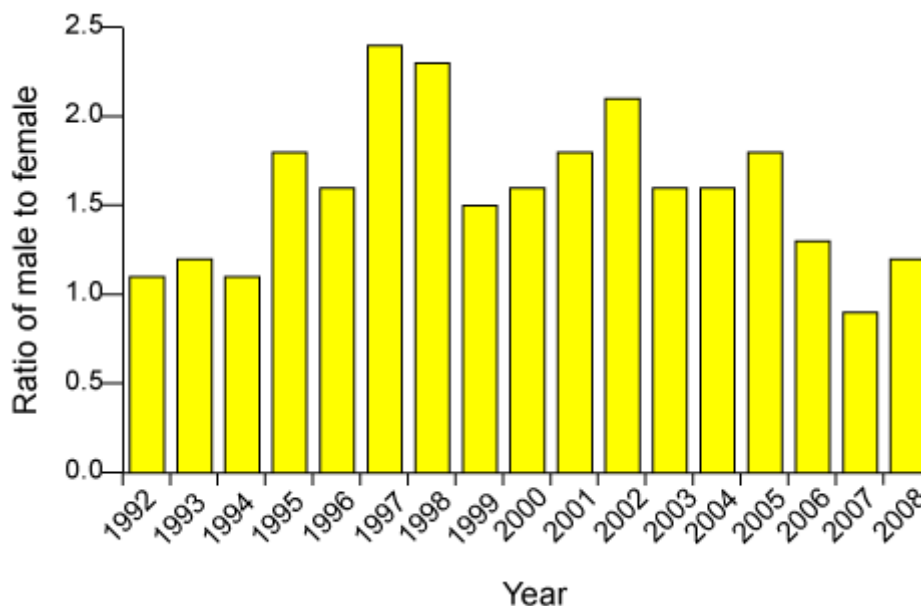


Table 2. Laboratory reports of hepatitis A infection by region, England and Wales 2008

Region	Laboratory reports (year)				
	2005	2006	2007	2008	Total
East Midlands	25	13	13	16	67
Eastern	40	39	26	25	130
London	29	47	45	57	178
North East	33	12	14	5	64
North West	136	71	63	49	319
South East	28	32	37	68	165
Souht West	52	41	35	30	158
West Midlands	58	66	70	67	261
Wales	16	24	19	10	69
Yorkshire & Humberside	68	55	37	29	189
Total	485	400	359	356	1600

Over the years, there has been an increasing proportion of hepatitis A reports containing no information on risk factors. This is reflected in the fact that in 2008, less than 1% of reports had information on a recent history of travelling abroad being associated with hepatitis A acquisition. Reporting of risk factor information has also continued to decline. In the early part of the decade there had been a number of outbreaks of hepatitis A that were associated with injecting drug use and homelessness.

Improved reporting of risk factor information is required as it is not possible to draw any major conclusions when the majority of reports lack information on how the infection was acquired.

Laboratory reports of hepatitis C infection: 2008

There were 8673 confirmed laboratory cases of hepatitis C reported to the Health Protection Agency in 2008 (table 3) The data for 2008 is provisional as hepatitis C laboratory reports are subject to late reporting. It is expected that late reports of hepatitis C will be received throughout 2009. Of those with a reported age, the majority of cases (62%; 5299/8603) were in individuals aged between 25 and 44 years, lower than the proportion (73%) reported in 2007. As observed in previous years the number of cases reported in males exceeded those reported in females in each quarter of 2008. The annual male to female ratio was 2.1:1. Laboratory reports confirm that most infections were in young adult males. Laboratory reports are not reliable in differentiating acute from long-standing infections. Laboratory reports of confirmed hepatitis C therefore reflect current laboratory testing patterns.

Table 3. Quarterly laboratory reports of hepatitis C Infection by age group and sex, England and Wales, 2008

Age group (years)	Q1			Q2			Q3			Q4			Total
	Jan - Mar			Apr - Jun			Jul - Sept			Oct - Dec			
	Male	Female	n/k	Male	Female	n/k	Male	Female	n/k	Male	Female	n/k	
01-04	1	1	–	1	–	–	1	3	–	–	1	–	8
05-09	–	2	–	2	–	–	1	1	–	2	–	–	8
10-14	1	1	1	2	1	–	5	2	–	1	–	–	14
15-24	83	57	5	65	69	7	71	70	6	67	67	4	571
25-34	376	194	27	395	205	45	424	208	36	395	200	29	2534
35-44	541	180	24	462	203	25	505	182	21	440	157	25	2765
45-54	302	115	13	269	135	24	347	124	23	256	105	20	1733
55-64	79	40	3	113	55	7	118	45	4	106	43	11	624
>=65	39	32	5	38	39	3	56	41	7	44	38	4	346
nk	3	3	14	4	3	7	11	4	9	8	3	1	70
Total	1425	625	92	1351	710	118	1539	680	106	1319	614	94	8673

Acute hepatitis B in England, annual report for 2008

Up until 2003, information on the national incidence of hepatitis B infection was derived from confirmed acute hepatitis B infections reported by laboratories in England to the HPA Centre for Infections. Since the implementation of automated reporting systems and an increase in diagnostic testing for chronic infection, a large number of reports have been received without information to allow classification of the case as an acute or chronic infection and with very incomplete data on exposure history. The implementation of the HPA Local and Regional Services surveillance standards for hepatitis [1], therefore provided an opportunity to collect more consistent data on cases of hepatitis B in each local Health Protection Unit. A system was established to report a minimum data set to the Centre for Infections on cases of acute infection ascertained by local HPUs. This scheme started as a pilot in January 2007 and involved quarterly submission of data on paper or via secure e-mail. In addition, efforts to improve laboratory reporting by collecting additional information on the anti-HBc IgM status of reported hepatitis B infections has occurred. This is the first report on hepatitis B since 2003, and includes data on acute infections confirmed during 2008 and reported both from laboratories and from HPUs.

Methods and results

The surveillance definition for acute hepatitis B, as outlined in the HPA Local and Regional Services surveillance standards for hepatitis [1], is as follows:

HBsAg positive *and* anti-HBc IgM* positive *and* abnormal liver function tests with a pattern consistent with acute viral hepatitis.

* IgM may remain positive in chronic hepatitis B and therefore the level of IgM may help determine whether case is acute or chronic. As different assays are used by different laboratories, the local consultant virologist should define whether IgM is low or high.

As information on liver function is not reported to CfI, for the purpose of this analysis, cases classified as acute hepatitis by the unit or the laboratory and with a documented positive anti-HBc IgM were classified as acute infections. Those classified as acute but without anti-HBc IgM status, or not classified but with positive anti-HBc IgM status were assumed to be probable acute cases. Cases classified as chronic or those not classified where anti-HBc IgM was negative or equivocal were assumed to be chronic infections. Data was enhanced by matching to anti-HBc IgM results available from the sentinel surveillance of hepatitis testing. Those cases that remained unclassified and without anti-HBc IgM results were excluded from further analysis. All cases classified as acute or probable acute infections in either source were then reconciled on the basis of soundex, sex and date of birth.

Data was received from all HPUs in each quarter, resulting in a total of 642 cases with a date of sample (or report) in 2008. A total of 479 cases were classified as acute (n=350) or probable (n=129) acute infections. A further 145 cases were classified as chronic infections with the remaining 14 of unknown status.

For the same period, a total of 4,943 newly diagnosed individuals were reported from laboratories. Including information provided at the time of report and by matching to data from the sentinel surveillance of hepatitis testing a total of 310 infections were defined as acute (n=163) or probable acute (n=147), 2,371 (48%) as chronic infections with 2,262 (46%) not classified.

A total of 620 acute (n=422) or probable acute (n= 198) cases were reported in 2008; 232 only by the HPUs, 141 only by laboratories and 247 (52%) by both sources. Of these 247 cases reported to both sources, all were classified acute or probable acute by the HPUs but only 169 of these were also classified as acute or probable acute by the laboratories. Of the remaining 79, 18 were classified as chronic infections and 61 were not classified suggesting that misclassification has occurred in around 10% of cases.

The overall incidence of reported infection was therefore 1.21 per 100,000, ranging from 0.70 in the North East to 1.83 in London (table 1). The contribution of the different sources also varied by region (table 1) suggesting differing levels of completeness of reporting by laboratories and by local clinicians.

Table 1. Confirmed cases of acute hepatitis B by region and source of report, 2008

Region	HPU	Laboratory	Both	Total	Incidence of reported hepatitis B per 100,000 population
East Midlands	28	6	23	57	1.30
East of England	4	18	33	55	0.97
London	95	12	31	138	1.83
North East	7	1	10	18	0.70
North West	27	33	63	123	1.79
South East	18	17	48	83	1.00
South West	12	23	9	44	0.85
West midlands	29	5	7	41	0.76
Yorkshire & Humberside	12	26	23	61	1.18
Total	232	141	247	620	1.21

Overall incidence was higher in males (1.56 per 100,000) than females (0.73 per 100,000) with peak incidence in males aged 35-44 years and females aged 25-34 years (table 2) The male to female ratio increased with age group and was particularly high in those aged 55-64 years. The incidence in children was very low.

Table 2: Age and sex breakdown of hepatitis B acute reports, 2008

	Female		Male		Not known	Total	
	N	Incidence of reported hepatitis B per 100,000 population	N	Incidence of reported hepatitis B per 100,000 population		N	Incidence of reported hepatitis B per 100,000 population
< 15 year	5	0.11	5	0.11	–	10	0.11
15 - 24 years	50	1.51	51	1.45	3	104	1.53
25 - 34 years	54	1.62	86	2.57	3	143	2.14
35 - 44 years	36	0.92	118	3.05	4	158	2.03
45 - 54 years	20	0.60	71	2.16	1	92	1.39
55 - 64 years	9	0.29	49	1.66	–	58	0.96
>= 65 years	12	0.26	22	0.62	1	35	0.43
Not known	3	–	14	–	3	20	–
Total	189	0.73	416	1.66	–	620	1.21

Of these 620 cases, 242 (39%) had associated exposure information. The commonest reported risk factor for acute cases was heterosexual exposure reported in 140 (58%) of cases with known exposure. Injecting drug use (IDU) and homosexual exposure were the next most common factors, both implicated in 25 cases (around 10%). Twenty two cases had health care related exposures including transfusion, but only three cases were reported to have been exposed in the UK (although for thirteen cases country of exposure was not specified). The single case with a history of transfusion in the UK is under investigation by the blood service but is thought not to have been transmitted through blood. Other exposures included skin piercing or tattooing in 11, vertical/familial in 9 with the remaining 10 having another potential exposure.

Discussion

This initiative demonstrates that reporting from HPUs is feasible and provides a reasonable yield of cases with fairly complete risk factor information. The number of reports submitted from HPUs was more than the number reported as acute infections from laboratories in this year, but the total is lower than in 2003 [2]. The large number of unclassified cases and the identification of acute cases reported by laboratories to CfI but not identified by the HPUs suggests that there may be substantial under-ascertainment in both systems. This interpretation is made more complex, however, due to potential misclassification of chronic cases as acute infections in both data sets. Given the large number of chronic infections diagnosed each year, a small proportion of cases misclassified as acute infection would substantially increase the estimated incidence of hepatitis B.

It was encouraging that cases reported by units had fairly complete information on risk exposures. In 2003, IDU was reported in 124 of cases (37% of those with known exposure history) [2], compared to only 95 cases (29% of those with exposure history) with heterosexual exposure. Data from 2008 suggests that the incidence of infection has declined dramatically in IDUs. Such a decline could be explained by improvements in the vaccination of this group (mainly via prisons) [3], possibly combined with other prevention measures, including getting more injectors into treatment [4]. The age and sex breakdown of cases in younger people is consistent with heterosexual exposure, but the male excess amongst older cases would also fit with the recent patterns for other STIs in men who have sex with men [5], suggesting that this exposure category may be less well reported in recent data. As such cases are more likely to be diagnosed in GUM clinics and therefore investigation and contact tracing conducted by GUM clinic staff, it is plausible that information reported to HPUs may be less complete for this group. In addition, if misclassification of chronic cases is a major issue in the reporting to units, this is likely to skew the collection of information on exposure history. Most chronic infections are likely to be acquired prior to migration to the UK, and therefore may be wrongly attributed to recent heterosexual transmission or exposure through medical procedures. Trends in the major exposure categories therefore need to be interpreted with extreme caution.

The HPA regional and local hepatitis leads are continuing to work with laboratory colleagues to try and address these issues and to improve the quality of surveillance data for hepatitis B. Members of the Hepatitis Programme Board have also recently met with representatives of the British Association for Sexual Health and HIV to try and improve data flows from GUM clinics to the HPA with respect to hepatitis.

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Annual neonatal hepatitis B vaccine coverage data in England: 2006/07- 2008/09*

Infants born to mothers who are chronically infected with hepatitis B are at high risk of acquiring infection perinatally [1]. Infection acquired at birth leads to chronic infection in about 80% of cases, with the consequent risk of chronic liver disease, cirrhosis or primary hepatocellular carcinoma [2]. Immunisation can prevent the development of chronic hepatitis B infection in over 90% of such infants [3]. Since 1988, it has been recommended that such infants receive active vaccination against hepatitis B, with the additional use of hepatitis B immunoglobulin in infants born to anti-HBe negative women. Unlike many other vaccinations, where children can be caught up at a later date, the window of opportunity for intervening to prevent neonatal hepatitis B infection is narrow. The potential health gain is significant and the potential for harm from failing to vaccinate on time is very real.

Following the introduction of universal antenatal testing for hepatitis B in April 2001, the Health Protection Agency Centre for Infections (Cfi) has been attempting to collate coverage data on infants born to hepatitis B positive mothers at their first and second birthdays. Since April 2005, this data collection has been integrated into the routine COVER programme [4].

The data presented below (tables 1 and 2) represents coverage for three doses of hepatitis B vaccine in those infants born to HBsAg positive mothers who reached the age of one year, and coverage of four doses of vaccine in infants who reached two years of age in the year being evaluated (2006-07, 2007-08, 2008-09). Data from 2005-06 is not included as this was the first year of collection hence data was very incomplete.

Table 1. Annual neonatal hepatitis B coverage of three doses at 12 months, England: 2006/07, 2007/08 and 2008/09

Region	2006/07			2007/08			2008/09		
	Returns with 12 month data	12 month denominator	Cov'ge at 12 months	Returns with 12 month data	12 month denominator	Cov'ge at 12 months	Returns with 12 month data	12 month denominator	Cov'ge at 12 months
North East	8(12)	43	60.5	9(12)	39	76.9	6(12)	23	91.3
North West	17 (24)	152	72.4	18(24)	207	72.9	15(24)	99	83.8
Yorkshire & the Humber	13(14)	107	86.0	13(14)	125	77.6	13(14)	126	92.9
East Midlands	6 (9)	89	71.9	6 (9)	54	83.3	5 (9)	62	71
West Midlands	15 (17)	260	73.8	13(17)	123	63.4	10(17)	68	51.5
East of England	12(14)	124	71.8	12(14)	194	58.2	12(14)	167	67.7
London	18 (31)	444	84.7	19(31)	634	67.2	24 (31)	816	76.1
South Central	6 (9)	81	84.0	7 (9)	46	78.3	7 (9)	115	93.9
South East Coast	7 (8)	27	33.3	7 (8)	33	72.7	6 (8)	21	85.7
South West	11 (14)	45	51.1	10 (14)	50	36	11 (14)	54	22.2
Total	113 (152)	1372	76.5	114 (152)	1505	67.6	109 (152)	1551	75.6

* This report was inserted on 2 September 2009.

Despite these data becoming a central requirement, data were received from only 110/152 (72%) PCTs in 2008-09; no improvement on the previous two years. Some of these returns may relate to only part of the PCT due to mergers [5]. National coverage for three doses in those aged one year has recovered to around 76% in 2008-09, having fallen to 68% in 2007-08 (table 1). In 2008-09, 12 month coverage by region ranged between 33 and 86%; similar to the range in previous years. Coverage at 12 months has remained similar or improved over the past three years in seven regions with declines in the West Midlands, London and the South West region (table 1).

National coverage for four doses in those aged 24 months for 2008-09 is low (regional range 8 to 81%) and has decreased around 5% since 2006-07 (table 2) Coverage at 24 months has remained similar or improved over the past three years in six regions, whilst declining in the West Midlands, London, the South West and Yorkshire and Humber regions (table 2).

Table 2. Annual neonatal hepatitis B coverage of four doses at 24 months, England: 2006/07, 2007/08 and 2008/09

Region	2006/07			2007/08			2008/09		
	Returns with 12 month data	12 month denominator	Cov'ge at 12 months	Returns with 12 month data	12 month denominator	Cov'ge at 12 months	Returns with 12 month data	12 month denominator	Cov'ge at 12 months
North East	8(12)	35	37.1	9(12)	44	38.6	6(12)	40	40
North West	18 (24)	122	56.6	18(24)	186	45.7	16(24)	64	68.8
Yorkshire & the Humber	12(14)	107	76.6	13(14)	126	59.5	13(14)	96	65.6
East Midlands	6 (9)	76	40.8	6(9)	64	75	5(9)	51	60.8
West Midlands	15 (17)	167	46.7	12(17)	157	33.8	10(17)	76	21.1
East of England	12(14)	100	41	13(14)	199	44.7	12(14)	212	63.7
London	20 (31)	457	66.3	18(31)	379	50.1	24(31)	808	46.5
South Central	6 (9)	83	39.8	7(9)	35	40	7(9)	88	80.7
South East Coast	7 (8)	30	3.3	7(8)	28	10.7	6(8)	37	43.2
South West	11 (14)	33	30.3	10(14)	32	25	11(14)	64	7.8
Total	115 (152)	1210	54.6	113 (152)	1250	46.6	110 (152)	1536	50.3

Discussion

Although 12 month coverage is lower than obtained for routine antigens at this age, the population at risk are highly mobile and high uptake is difficult to achieve (6-10). The largest number of infants at risk are in London, and in 2008-09, coverage in London region was the same as the national average at 76%. A recent report of factors in London associated with incomplete vaccination of babies at risk of perinatal hepatitis B transmission found that the majority of mothers with hepatitis B delivered in the trust where they received antenatal care and few families were lost to follow-up after 15 months, and that the main determinant of complete vaccination was the organisation of the health services [11].

Around a quarter of PCTs are still unable to provide data and many PCTs that sent in returns had zero children at risk in this period. In 2008-09, 36/109 PCTs had zero children at risk aged 12 months and 39/110 PCTs had zero children at risk aged 24 months. It is unclear whether these returns represent valid data for areas with a low prevalence of infection or missing data – PCTs reporting no infants at risk are

asked to review their data to ensure that information is being correctly recorded, as this is unlikely to be true in many areas. It should be possible to estimate the expected number of infants at risk from the HBsAg prevalence in the local antenatal population.

Some PCTs are also unable to link children that have received HepB vaccination with maternal hepatitis B status and hence cannot provide the data requested. This trend is concerning as monitoring is an essential part of ensuring that at-risk infants are vaccinated, and is an integral component of the UK's selective approach to control of hepatitis B. As the UK's policy diverges from WHO recommendations, there is an additional responsibility to demonstrate that the policy is well implemented and effective. PCTs that were unable to submit data are asked to urgently review the systems for obtaining this data so that this important group of infants can be monitored prospectively. It is hoped that PCTs will increasingly give these returns the priority level to match their status.

Annual neonatal hepatitis B vaccine coverage figures for each PCT will shortly be available to view on the COVER website at: http://www.hpa.org.uk/infections/topics_az/cover/default.htm.

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Sentinel surveillance of hepatitis in England, annual report for 2008

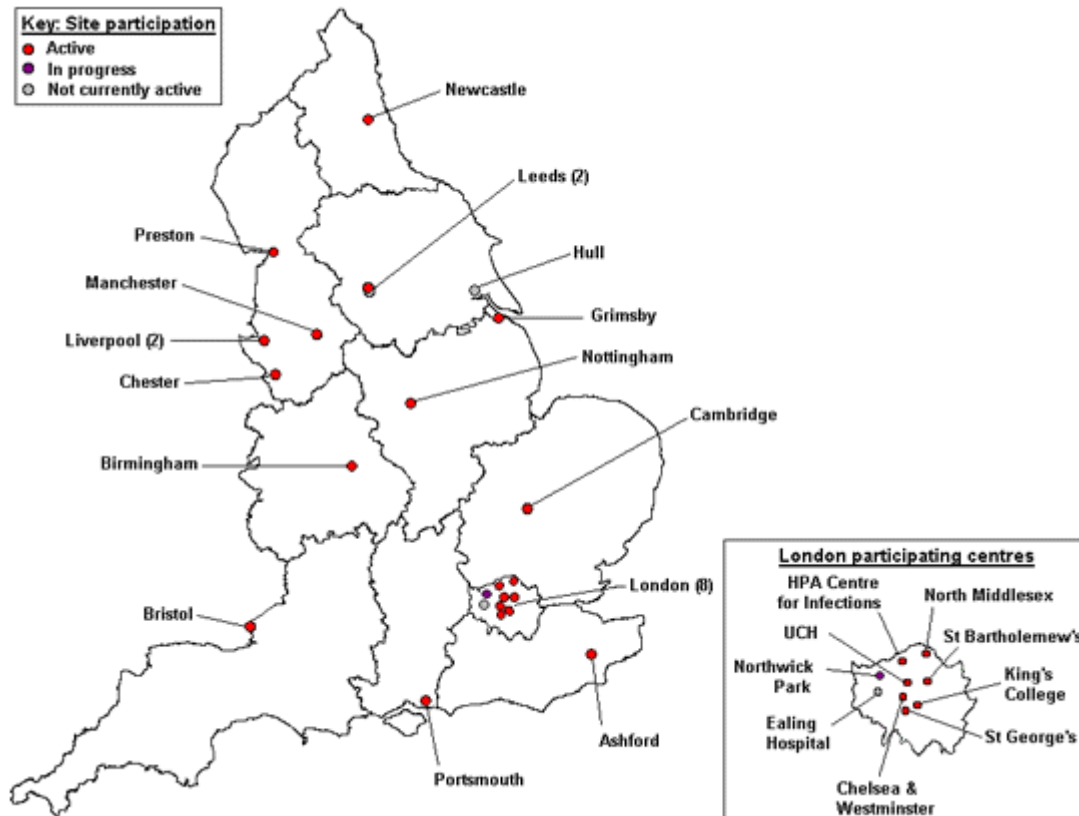
The sentinel surveillance study of hepatitis testing, which began in 2002, aims to supplement routine surveillance of hepatitis A, B and C infections in England by providing information on trends in testing, individual risk exposures and clinical symptoms. The study collects information on hepatitis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

This report provides summary data for 2008.

As part of our ongoing programme to improve quality a newly designed and implemented de-duplication process has enabled additional checks of patient records to identify and exclude duplicate patients within the existing dataset. All reporting from this point forward will exclude these duplicate patient records. This has led to a slight decrease in the number of patients tested and reported as positive. The removal of duplicate patients has allowed us to produce even more accurate data.

In 2008, approximately one third of the population was covered by these sentinel laboratories. Each region in England was included. (Figure 1 shows a map of all sentinel laboratories which have taken part in the study.)

Figure 1. Map of sentinel laboratories



1. 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.

During 2008, a total of 27,163 individuals were tested at least once for anti-HAV IgM in 20 participating sentinel centres (table 1). This is the first time these individuals had been reported to the sentinel surveillance scheme.

Overall, 0.6% of individuals tested for anti-HAV IgM were positive, though this varied by region with the highest proportion of positive tests in West Midlands (table 1).

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

Region (number of centres)	Number tested	Number positive (%)
East Midlands (1)	3902	11 (0.3)
East of England (1)	2035	11 (0.5)
London (6)	5955	48 (0.8)
North East (1) †	18	– (–)
North West (5)	4226	26 (0.6)
South Central (1)	1069	4 (0.4)
South East Coast (1)	1362	11 (0.8)
South West (1)	3864	17 (0.4)
Wales * †	49	– (–)
West Midlands (1)	1633	14 (0.9)
Yorkshire & the Humber (2)	3050	15 (0.5)
Total, all regions (20)	27,163	157 (0.6)

* Excludes reference and confirmatory testing. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

† 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.

Table 2 shows the age and gender of individuals tested, and testing positive, for anti-HAV IgM in sentinel laboratories January to December 2008. Gender was reported for the majority of people tested (99.1%); the ratio of males to females tested was 1.3:1. The mean age of those tested was 45.8 years (range 0 – 100.3) where as the mean age of those tested positive was 38.2 years (range 1.9 – 91.4). The highest overall percentage of individuals testing positive was among children aged 1-14 years (2.7%); however, only a small number of people were tested in this age group.

Table 2. Age and gender of individuals tested for anti-HAV IgM in participating centres, January – December 2008*

Age group	Female		Male		Unknown		Total	
	Number tested	Number positive (%)	Number tested	Number positive (%)	Number tested	Number positive (%)	Number tested	Number positive (%)
Under 1 yr	94	– (–)	136	– (–)	1	– (–)	231	– (–)
1-14 yrs	313	11 (3.5)	382	8 (2.1)	6	– (–)	701	19 (2.7)
15-24 yrs	1339	11 (0.8)	1434	18 (1.3)	48	– (–)	2821	29 (1.0)
25-34 yrs	1911	9 (0.5)	2786	27 (1.0)	64	1 (1.6)	4761	37 (0.8)
35-44 yrs	1932	7 (0.4)	3229	11 (0.3)	55	– (–)	5216	18 (0.3)
45-54 yrs	1959	5 (0.3)	2740	13 (0.5)	32	– (–)	4731	18 (0.4)
55-64 yrs	1924	7 (0.4)	2124	6 (0.3)	18	– (–)	4066	13 (0.3)
≥65 yrs	2299	14 (0.6)	2288	9 (0.4)	16	– (–)	4603	23 (0.5)
Unknown	7	– (–)	23	– (–)	3	– (–)	33	– (–)
Total, all age groups	11,778	64 (0.5)	15142	92 (0.6)	243	1 (0.4)	27,163	157 (0.6)

* Excludes reference and confirmatory testing. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

Table 3 shows the number of individuals tested, and testing positive, for anti-HAV IgM in sentinel laboratories by service type January to December 2008. General practice accounts for 53.6% of all anti-HAV IgM testing (n=14,565). The highest overall percentage of individuals testing positive from paediatric services (2.2%); however, only a small number of people were tested in this age group.

Table 3. Number of individuals tested, and testing positive for anti-HAV IgM in participating centres by service type, January – December 2008*

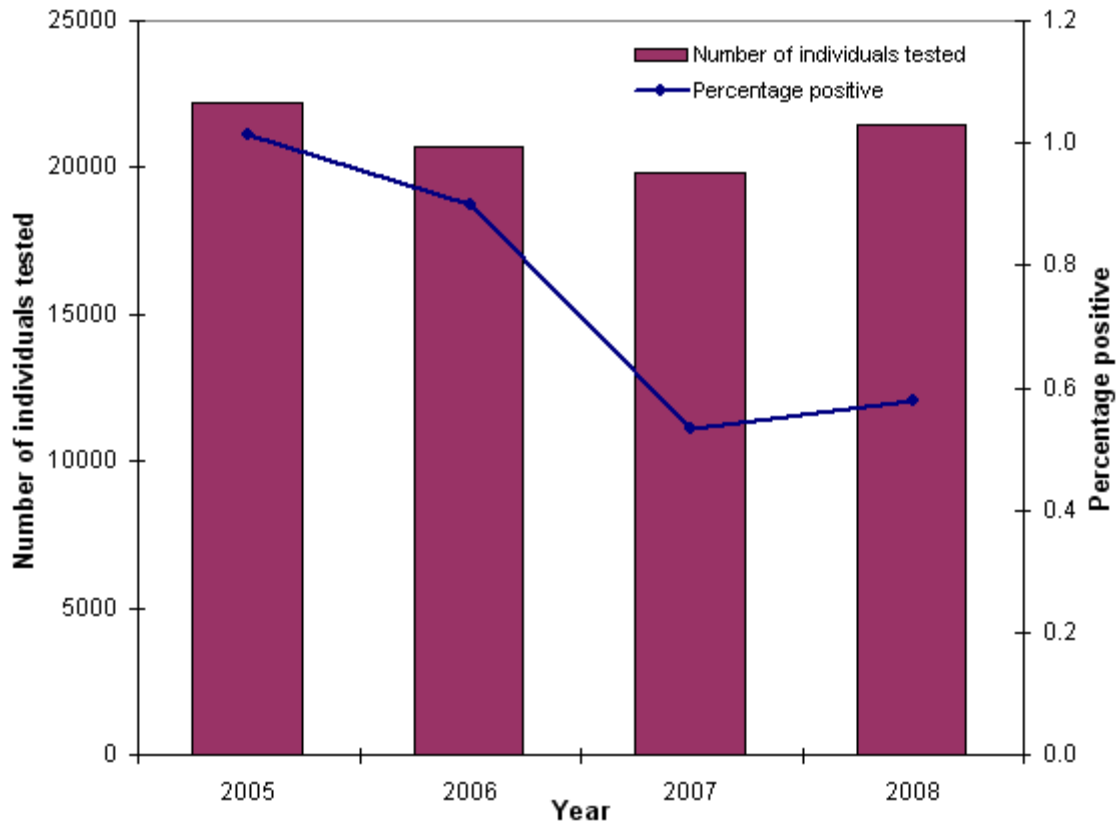
Service type	Number tested	Number positive (%)
Primary care		
Accident and emergency	616	8 (1.3)
Drug dependency services	182	– (–)
General practitioner	14,565	62 (0.4)
GUM clinic	363	4 (1.1)
Occupational health	63	1 (1.6)
Prison services	509	– (–)
Secondary care		
Antenatal	328	1 (0.3)
General medical / surgical	2481	22 (0.9)
Fertility services	18	– (–)
Obstetrics and gynaecology	285	– (–)
Other ward type (known service)†	4648	30 (0.6)
Paediatric services	673	15 (2.2)
Renal	367	1 (0.3)
Specialist liver services	1107	9 (0.8)
Unspecified ward	660	4 (0.6)
Unknown	298	– (–)
Total	27,163	157 (0.6)

* Excludes reference and confirmatory testing. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

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

To provide an indication of trends in testing, figure 2 shows the number of people tested for anti-HAV IgM and percentage positive over the last year four years (January to December inclusive) for the 18 centres from which full data were available. This shows a gradual decline in the number of people tested from 2005 to 2007, with an increase in testing in 2008. The proportion of positive shows a similar decline in those testing positive from 2005 to 2007, and a very slight increase in 2008.

Figure 2. Number of people tested for anti-HAV IgM, and percentage positive, between January 2002 and December 2008 (Note difference in scale of axes compared with figures 3, 4 and 5)



2. Hepatitis B surface antigen (HBsAg) testing

During 2008, a total of 62,031 individuals were identified as undergoing antenatal testing for HBsAg in 20 participating sentinel centres (table 4). Of these, 0.6% (n=376) were positive. This is the first time these individuals had been reported to the sentinel surveillance scheme.

Individuals identified as undergoing antenatal testing comprised 25.3% of all individuals tested for HBsAg in participating laboratories during 2008.

Variation in levels of testing by region will reflect local antenatal testing arrangements in each area; for example, in some areas such as East Midlands or West Midlands, the majority of antenatal screening was carried out by NHS Blood and Transplant (NHSBT) laboratories or other hospital laboratories which do not participate in sentinel surveillance.

a) Antenatal HBsAg testing

Table 4. Number of individuals tested, and testing positive, for HBsAg through antenatal screening in participating laboratories, January – December 2008*

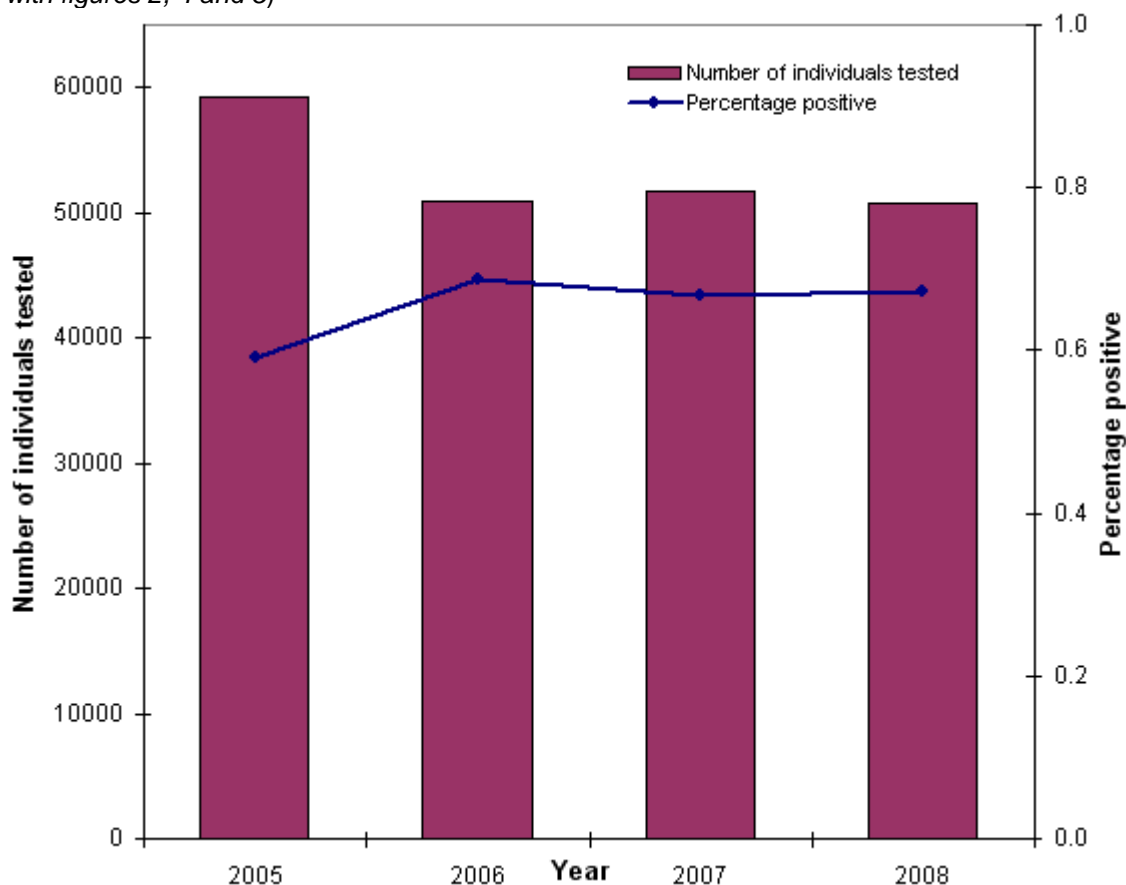
Region (number of centres)	Number tested	Number positive (%)
East Midlands (1)	69	15 (21.7)
East of England (1)	3002	13 (0.4)
London (6)	13669	183 (1.3)
North East (1)	0	0 (0.0)
North West (5)	12475	43 (0.3)
South Central (1)	3711	12 (0.3)
South East Coast (1)	5253	21 (0.4)
South West (1)	11054	29 (0.3)
West Midlands (1)	369	9 (2.4)
Yorkshire & the Humber (2)	12232	50 (0.4)
Total, all regions (20)	61834	375 (0.6)

* Excludes reference and confirmatory testing. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

Of the 375 HBsAg positive women identified, data on e-antigen status was available for 362 (96.5%); 51 (14.1%) were HBeAg positive.

To provide an indication of trends in antenatal testing figure 3 shows the number of people tested for HBsAg and percentage positive over the last year four years (January to December inclusive) for the 18 centres from which full data were available. This shows a decline in the number of people tested from 2005 to 2006, with similar levels of testing from 2006 to 2008. The proportion positive shows a slight increase from 2005 to 2006 and then remains constant from 2006 to 2008.

Figure 3. Number of people tested for HBsAg, and percentage positive through antenatal screening, between January 2002 and December 2008 (Note difference in scale of axes compared with figures 2, 4 and 5)



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 2008, a total of 183,412 individuals were tested for HBsAg in 20 participating sentinel centres, excluding antenatal testing (table 5). Of these, 1.8% (n=3,384) were positive. This is the first time these individuals had been reported to the sentinel surveillance scheme.

London had the highest proportion of individuals testing positive (2.7%) (excluding Wales due to the small number of samples). This may reflect more targeted testing of risk groups and/or genuinely higher prevalence in people being tested in this region. Some of the HBsAg positive individuals may have acute infection; these data are currently being reviewed. However, 3119 (92.2%) of these HBsAg positive individuals were also tested for anti-HBcIgM, of which 626 (18.5%) were anti-HBcIgM positive.

Table 5. Number of individuals tested, and testing positive, for HBsAg in participating centres (excluding antenatal testing), January – December 2008*

Region (number of centres)	Number tested	Number positive (%)
East Midlands (1)	17,080	180 (1.1)
East of England (1)	9841	116 (1.2)
London (6)	63,200	1714 (2.7)
North East (1)	2232	13 (0.6)
North West (5)	29,536	615 (2.1)
South Central (1)	5612	50 (0.9)
South East Coast (1)	12,441	77 (0.6)
South West (1)	19386	179 (0.9)

Wales†	88	1 (1.1)
West Midlands (1)	6097	144 (2.4)
Yorkshire & the Humber (2)	17,899	295 (1.6)
Total, all regions (20)	183,412	3384 (1.8)

* 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.

† 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.

Excluding individuals identified from the test request location or clinical details as undergoing antenatal testing, the ratio of males to females tested for HBsAg (table 6) was 1:1. It is possible this included some women undergoing antenatal testing that cannot be identified as such from the information provided.

The proportion testing positive for HBsAg was higher among men than women (2.3% v 1.4%). The percentage of individuals overall testing positive was highest among people aged 35-54 years (2.3%). The mean age of those tested was 38.2 years (range 0.0 – 100.4) where as the mean age of those tested positive was 37.6 years (range 0.0 – 93.9). The relatively high prevalence of HBsAg among tested individuals of unknown gender (2.8%) may reflect testing of individuals in settings such as prisons, drug services and GUM clinics where few demographic details on patients (such as gender) were available and where service users may be at higher risk of hepatitis B infection.

Table 6. Age and gender of individuals tested for HBsAg in participating centres (excluding antenatal testing), January – December 2008*

Age group	Female		Male		Unknown		Total	
	Number tested	Number positive (%)	Number tested	Number positive (%)	Number tested	Number positive (%)	Number tested	Number positive (%)
Under 1 year	236	3 (1.3)	304	1 (0.3)	7	– (–)	547	4 (0.7)
1-14 yrs	1367	17 (1.2)	1421	12 (0.8)	52	– (–)	2840	29 (1.0)
15-24 yrs	22,420	247 (1.1)	15,005	240 (1.6)	632	17 (2.7)	38,057	504 (1.3)
25-34 yrs	28,189	453 (1.6)	23,610	672 (2.8)	919	33 (3.6)	52,718	1158 (2.2)
35-44 yrs	17124	295 (1.7)	19,658	542 (2.8)	583	20 (3.4)	37,365	857 (2.3)
45-54 yrs	8429	158 (1.9)	11,478	291 (2.5)	267	8 (3.0)	20,174	457 (2.3)
55-64 yrs	6228	53 (0.9)	7917	153 (1.9)	121	2 (1.7)	14,266	208 (1.5)
≥65 yrs	7676	63 (0.8)	9055	98 (1.1)	89	1 (1.1)	16,820	162 (1.0)
Unknown	192	1 (0.5)	255	4 (1.6)	178	– (–)	625	5 (0.8)
Total, all age groups	91,861	1290 (1.4)	88,703	2013 (2.3)	2848	81 (2.8)	183,412	3384 (1.8)

* Excludes reference and confirmatory testing. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

Table 7 shows the number of individuals tested, and testing positive, for HBsAg in sentinel laboratories by service type January to December 2008. The highest overall percentage of individuals testing positive were from specialist liver services (6.4%). General practice accounted for the highest proportion of individuals tested (23.2%).

Table 7. Number of individuals tested, and testing positive for HBsAg in participating centres by service type (excluding antenatal testing), January – December 2008*

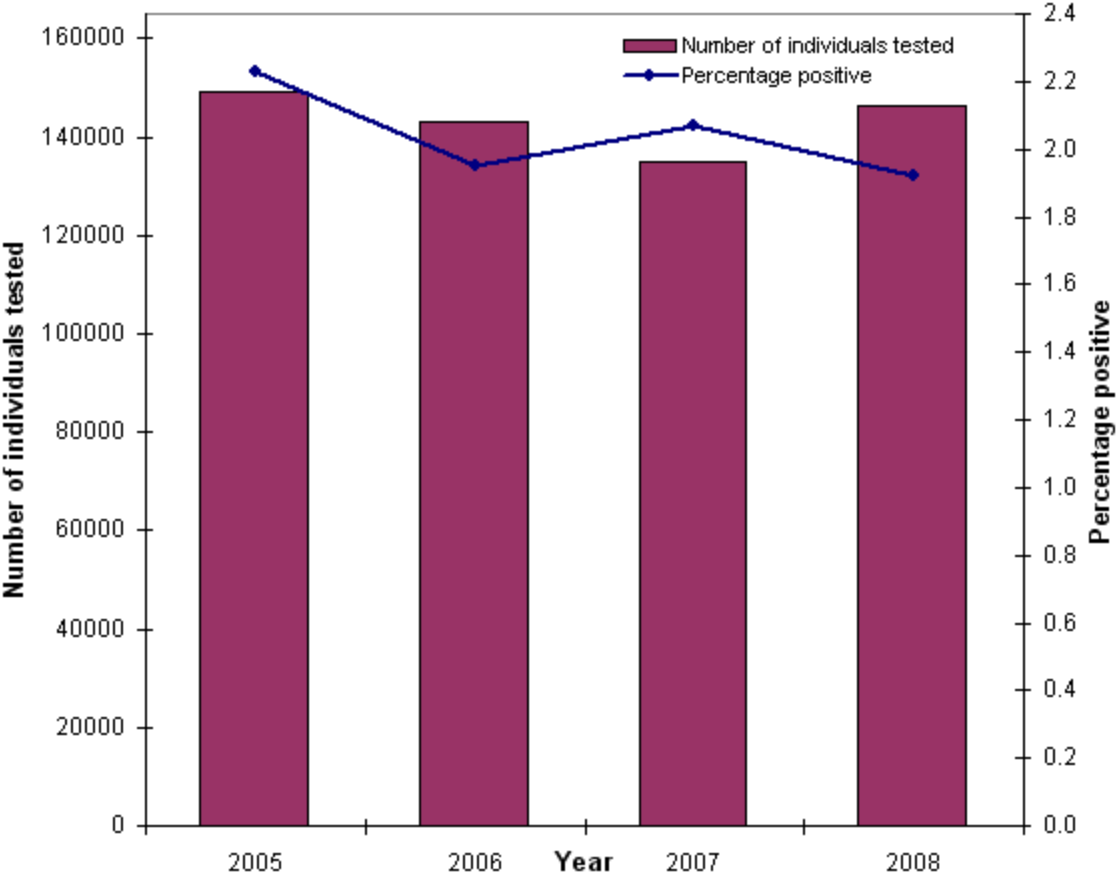
Service type	Number tested	Number positive (%)
Primary care		
Accident and emergency	1558	47 (3.0)
Drug dependency services	1586	19 (1.2)
General practitioner	53,357	1159 (2.2)
GUM clinic	42,642	597 (1.4)
Occupational health	16699	118 (0.7)
Prison services	2406	39 (1.6)
Secondary care		
General medical / surgical	5835	173 (3.0)
Fertility services	9976	90 (0.9)
Obstetrics and gynaecology	4653	61 (1.3)
Other ward type (known service)†	28,202	719 (2.5)
Paediatric services	2098	10 (0.5)
Renal	6363	45 (0.7)
Specialist liver services	3943	251 (6.4)
Unspecified ward	2210	24 (1.1)
Unknown	1884	32 (1.7)
Total	183,412	3384 (1.8)

* Excludes reference and confirmatory testing. Some duplication of individual patients may occur due to limitations of the information supplied. All data are provisional.

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

Figure 4 shows trends in testing and percentage positive from 2005 – 2008 (January to December inclusive) for the 17 centres for which full data are available. The number of individuals tested has remained fairly constant over the last four years with a very slight decrease noted in 2007. Overall the percentage of individuals tested positive has declined. The increased of percentage positive individuals in 2007 may reflect reduced tested of individuals at lower risk of infection.

Figure 4. Number of people tested for HBsAg, and percentage positive, (excluding antenatal testing) between January 2005 and December 2008 (Note difference in scale of axes compared with figures 2, 3 and 5)



3. Hepatitis C testing

During 2008, a total of 150,775 individuals were tested at least once for hepatitis C-specific antibodies (anti-HCV) in 20 participating sentinel centres (table 8). This is the first time these individuals had been reported to the sentinel surveillance scheme.

Overall, 3.7% of individuals tested for anti-HCV were positive, though this varied by region with the highest proportion of positive tests in the North West (table 8). This may reflect more targeted testing of risk groups and/or genuinely higher prevalence in people being tested in this region.

It is important to note that no laboratory methods are currently available to distinguish between acute or chronic hepatitis C virus infections. These positive anti-HCV results do not therefore necessarily represent incident infections.

Over recent months, dried blood spot testing [5] has started to be rolled out in several at some of the laboratories that participate in the sentinel surveillance study. We are currently working to collect these data and plan to present these data in future reports.

Table 8. Number of individuals tested, and testing positive, for anti-HCV in participating centres, January – December 2008*

Region (number of centres)	Number tested	Number positive (%)
East Midlands (1)	14,761	377 (2.6)
East of England (1)	6543	209 (3.2)
London (5)	47,007	1654 (3.5)
North East (1)	1612	67 (4.2)
North West (6)	28,044	1480 (5.3)
South Central (1)	3777	80 (2.1)
South East Coast (1)	12,170	184 (1.5)
South West (1)	15,609	750 (4.8)
Wales†	77	2 (2.6)
West Midlands (1)	5357	139 (2.6)
Yorkshire and Humberside (2)	15,818	625 (4.0)
Total, all regions (20)	150,775	5567 (3.7)

* 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.

† 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.

Of the 5,567 individuals testing positive for anti-HCV during 2008, 3,721 (66.8%) were also tested for HCV RNA by PCR (qualitative and/or quantitative). Of these individuals, 2,552 were PCR positive (68.6%).

Gender was reported for the majority of people tested. Similar numbers of males and females were tested (table 9); the ratio of males to females tested was 1.1:1 but the proportion of males testing positive was higher (4.7% vs 2.6%). The mean age of those tested was 40.0 years (range 1 – 100.4) and the mean age of those tested positive was 41.2 years (range 1.7 – 100.3). The largest group tested were aged 25-34 years (n=39,496). The percentage of individuals overall testing positive was highest among 45-54 year olds (6.2%). The high proportion of individuals with unknown age testing positive (5.0%) may reflect testing of individuals in settings such as prisons, drug services and GUM clinics where few demographic details on patients were available and where service users may be at high risk of hepatitis C infection.

Table 9. Age and gender of individuals tested for anti-HCV in participating centres, January – December 2008*

Age group	Female		Male		Unknown		Total	
	Number tested	Number positive (%)	Number tested	Number positive (%)	Number tested	Number positive (%)	Number tested	Number positive (%)
1-14 yrs	1102	8 (0.7)	1053	10 (0.9)	21	1 (4.8)	2176	19 (0.9)
15-24 yrs	15,592	139 (0.9)	12,041	129 (1.1)	472	1 (0.2)	28,105	269 (1.0)
25-34 yrs	18,706	562 (3.0)	20,092	963 (4.8)	698	20 (2.9)	39,496	1545 (3.9)
35-44 yrs	13,899	521 (3.7)	18,426	1336 (7.3)	486	17 (3.5)	32811	1874 (5.7)
45-54 yrs	7673	327 (4.3)	10528	804 (7.6)	223	17 (7.6)	18,424	1148 (6.2)
55-64 yrs	5947	136 (2.3)	7158	311 (4.3)	88	2 (2.3)	13,193	449 (3.4)
≥65 yrs	7492	113 (1.5)	8460	119 (1.4)	75	4 (5.3)	16,027	236 (1.5)
Unknown	150	7 (4.7)	227	15 (6.6)	166	5 (3.0)	543	27 (5.0)
Total, all age groups	70,561	1813 (2.6)	77,985	3687 (4.7)	2229	67 (3.0)	150,775	5567 (3.7)

* 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.

Table 10 shows the number of individuals tested, and testing positive, for anti-HCV in sentinel laboratories by service type January to December 2008. General practice accounted for 27.0% of all anti-HCV testing (n=40,244). The highest overall percentage of individuals testing positive was from drug dependency services (27.6%) and prison services (21.3%).

Table 10. Number of individuals tested, and testing positive for anti-HCV in participating centres by service type, January – December 2008*

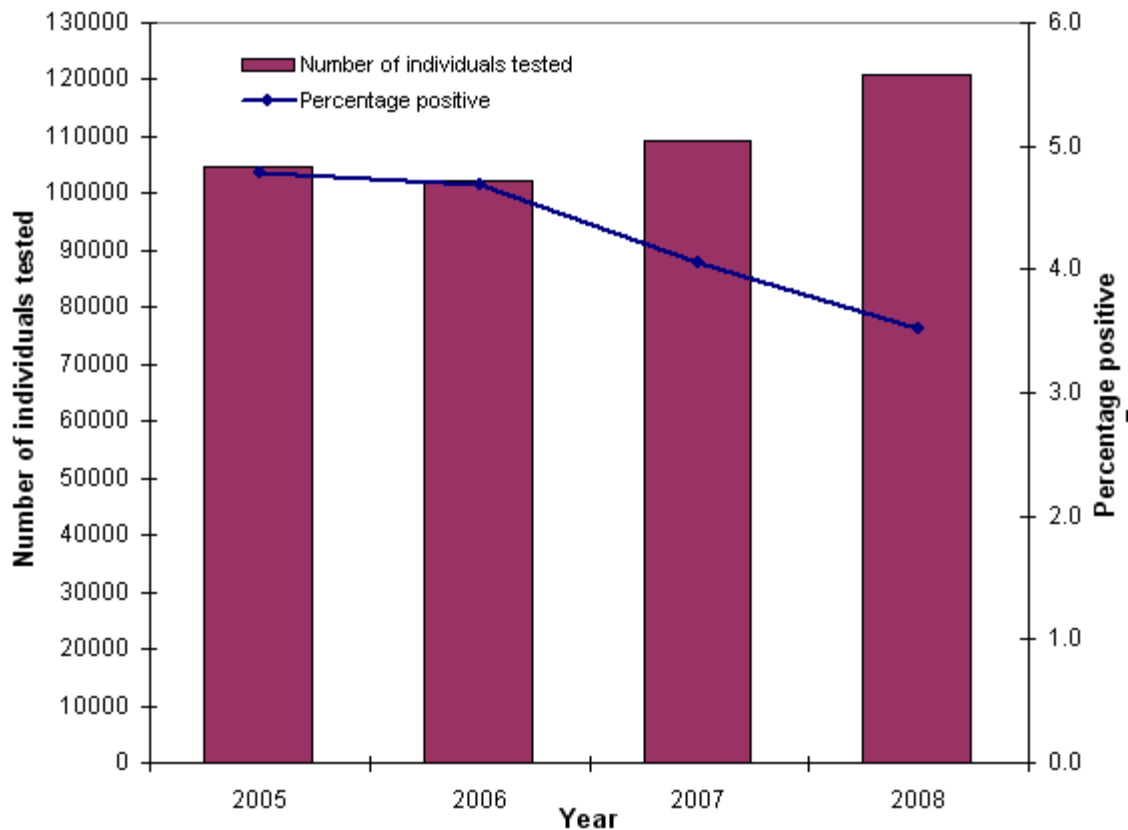
Service type	Number tested	Number positive (%)
Primary care		
Accident and emergency	1408	77 (5.5)
Drug dependency services	1931	533 (27.6)
General practitioner	40,744	1697 (4.2)
GUM clinic	29,237	561 (1.9)
Occupational health	13,843	50 (0.4)
Prison services	2984	635 (21.3)
Secondary care		
Antenatal	1470	67 (4.6)
General medical / surgical	5814	267 (4.6)
Fertility services	11,774	72 (0.6)
Obstetrics and gynaecology	2100	81 (3.9)
Other ward type (known service)	23,899	905 (3.8)
Paediatric services	1535	16 (1.0)
Renal	6485	117 (1.8)
Specialist liver services	3955	387 (9.8)
Unspecified ward	2429	69 (2.8)
Unknown	1167	33 (2.8)
Total	150,775	5567 (3.7)

* 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.

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

Figure 5 shows the number of people tested for anti-HCV and percentage positive over the last year four years (January to December inclusive) for the 18 centres from which full data were available. There were similar levels of testing in 2005 and 2006 with a gradual increase in testing between 2006 and 2008. An overall decline in the percentage positive over the past four years is apparent, in line with the long-term trend of a declining percentage positive since the study started in 2002. This suggests either increased tested of people at lower risk of infection.

Figure 5. Number of people tested for anti-HCV, and percentage positive, between January 2005 and December 2008 (Note difference in scale of axes compared with figures 2, 3 and 4)



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Laboratory-confirmed cases of pertussis reported to the enhanced surveillance programme, England and Wales: January to March 2009

There were 137 laboratory confirmed cases of pertussis reported to the pertussis enhanced surveillance programme in the first quarter of 2009 (table 1). This is a decrease in the number of cases reported in the previous quarter (177 in October to December 2008 [1]) and the same quarter last year (177 in January to March 2008) [2] (figure 1). Confirmed cases remain higher than those reported during January to March 2007 (93 cases) [3] but in younger age groups the epidemiological pattern is consistent with recognised 3-4 yearly cyclical increases in pertussis (figure 2). Recent overall increases in laboratory confirmed cases are largely in the older age groups and subsequent to the introduction of new laboratory methods in 2006. More detailed explanations are provided in previous HPR articles [3].

Table 1. Age distribution and method of laboratory confirmation of pertussis cases in England and Wales, January to March 2009*

Age group	Culture	PCR only	Serology only	Total
<3 months	12	8	1	21
3-5 months	4	5	1	10
6-11 months	–	–	–	–
1-4 years	1	–	4	5
5-9 years	2	–	1	3
10-14 years	–	–	22	22
15+ years	1	–	75	76
Total	20	13	104	137

* Data are provisional

Figure 1. Total number of laboratory confirmed pertussis cases per evaluation quarter in England and Wales since 2005

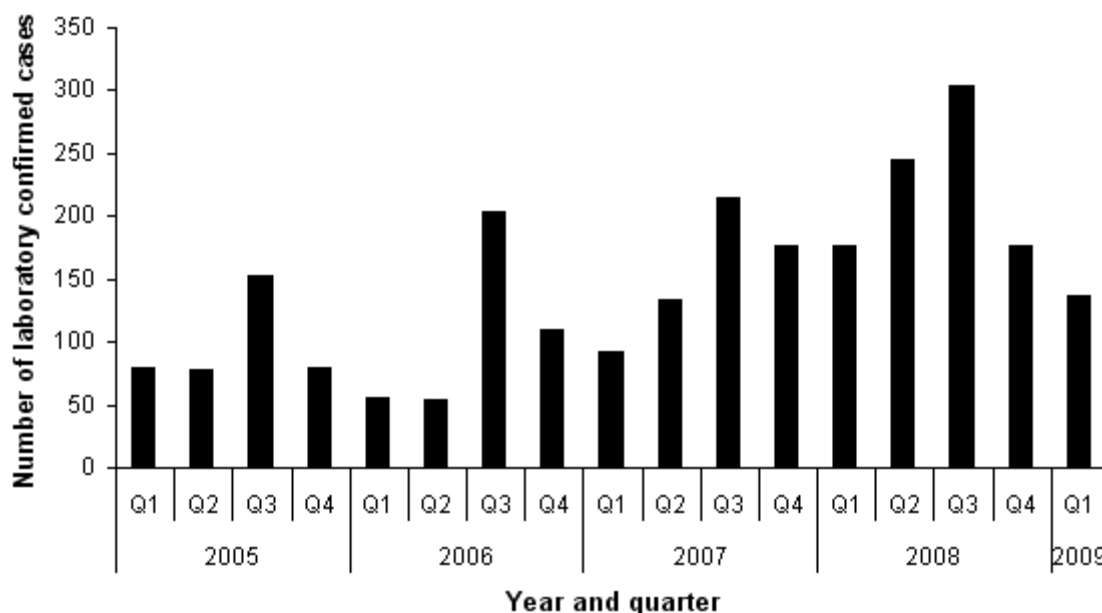
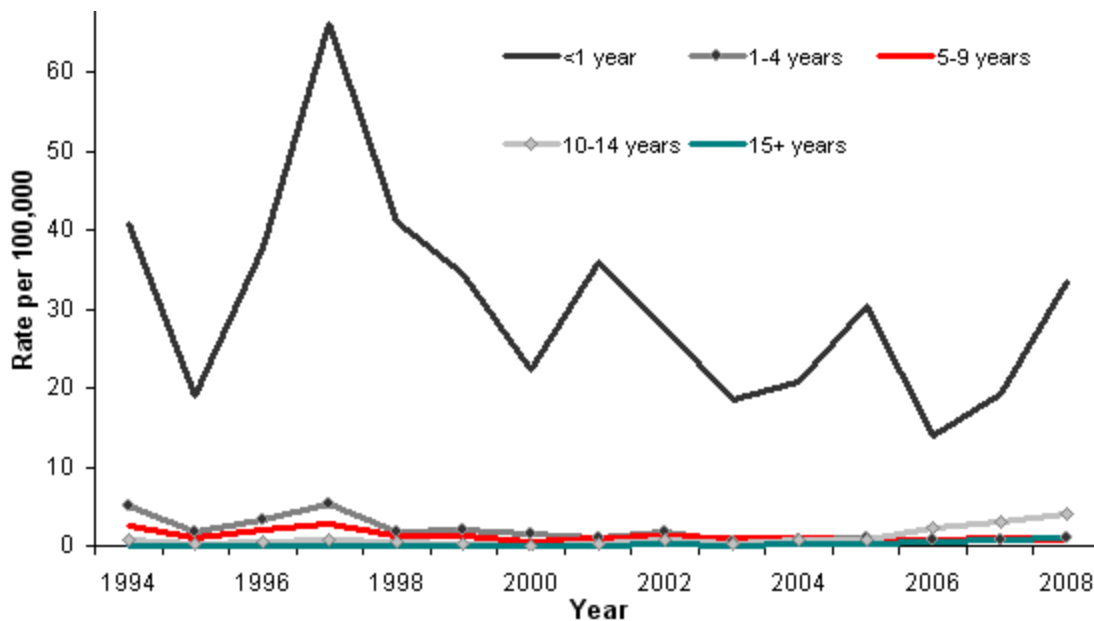


Figure 2. Annual rates of laboratory confirmed pertussis cases in England and Wales from 1994 to 2008 by age group



Bordetella pertussis PCR (for hospitalised cases <1 year old) and serological investigation by estimation of anti-pertussis toxin (PT) IgG antibody levels for older children and adults are provided by the Centre for Infection's Respiratory and Systemic Infection Laboratory (RSIL). The laboratory also encourages submission of all *Bordetella pertussis* isolates for confirmation and national surveillance purposes. Further information is available on the HPA website at: <http://www.hpa.org.uk/cfi/rsil/bordetella.htm>.

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Laboratory-confirmed cases of measles, mumps and rubella, England and Wales: April to June 2009

Data presented here is for the second quarter of 2009 (ie April to June 2009). Cases include those confirmed by Cfl oral fluid testing (IgM antibody tests and/or PCR) and national routine laboratory reports (table 1). Analyses are by date of onset. Regional breakdown figures relate to Government Office Regions rather than regional health authorities (pre-April 2002 definitions) .

Quarterly figures for cases confirmed by oral fluid antibody detection only from 1995 and annual total numbers of confirmed cases by health region and age are available from:

<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1191942172799?p=1191942172799>

<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1191942172913?p=1191942172913>

<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1191942172140?p=1191942172140>

Table 1 Total confirmed cases of measles, mumps and rubella, and oral fluid IgM antibody tests in notified cases: weeks 14-26/2009

	Cases			Oral fluid IgM antibody results		Confirmed cases		
	Notified cases	Number tested	% tested	Total positive	Recently vaccinated	Oral fluid	Other tests	Total
Measles	2133	1808	85	522	14	508	152	660
Mumps	7307	4329	59	2561	30	2531	740	3271
Rubella	388	280	72	6	4	2	1	3

Measles

Six hundred and sixty cases of confirmed measles with onset dates in the second quarter of 2009 were reported, compared to 382 in the first quarter of 2009 [1]. The overall proportion of confirmed measles amongst oral fluid samples tested continues to be 29% for the second quarter.

As in the previous quarter, the region with most cases between April and June 2009 remains South East (146), although Wales (115) and North East (108) regions also reported cases associated with outbreaks in travelling communities, primary and secondary schools as well as nurseries [3,4]. Cases were identified in the rest of the regions in England and Wales in all age groups and in various settings including nurseries, primary and secondary schools.

Over 80% of the cases reported in this quarter were in children aged less than 15 years (44 cases in under one year; 192 aged 1 to 4 years; 151 aged 5 to 9 years; and 147 aged 10 to 14 years); the remaining 125 cases were aged between 15 and 58 years. Twenty eight cases reported receiving a measles containing vaccine; 25 reported having had one dose of the measles containing vaccine and 3 had two doses of measles containing vaccine.

In this quarter, measles cases were identified in all regions in England and Wales (South East 146, Wales 115, North East 108, London 76, East of England 56, West Midlands 42, North West 36, South West 33, East Midlands 29 and Yorkshire and the Humber 20).

In the period between April and June, seven patients with confirmed measles infection were known to have travelled abroad. Of these, four have had history of travelling in Europe and two had acquired their measles in Africa.

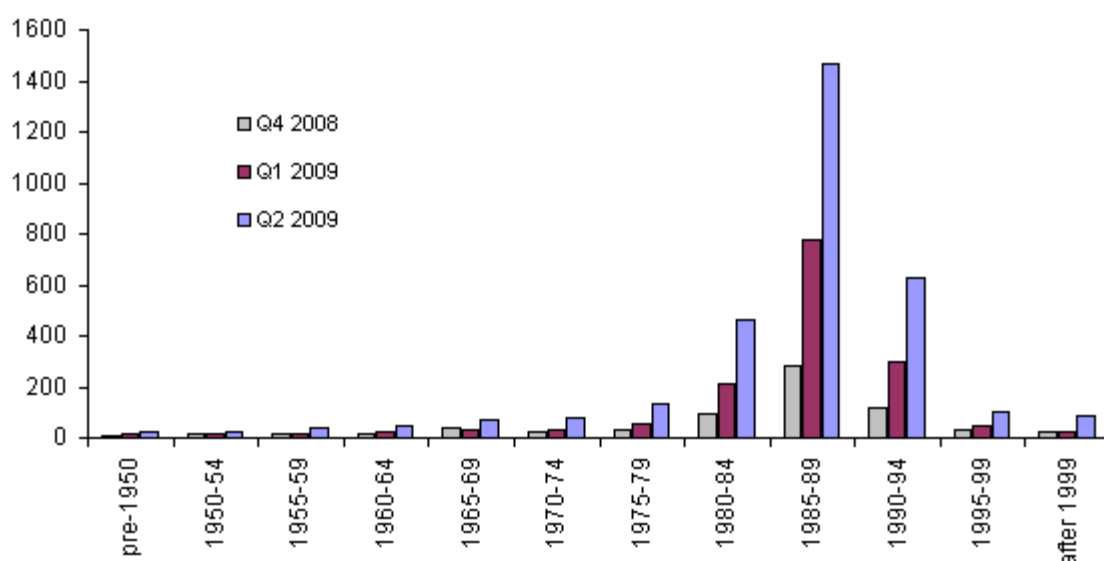
Mumps

The number of confirmed mumps cases with onset dates in the second quarter of 2009 is 3,271, a third consecutive quarter with a doubling of the number of cases (figure) [1,2]. In almost 60% of the oral fluid samples tested recent mumps infection is confirmed (IgM and/or PCR positive or high level of mumps IgG in capture assay which suggest mumps re-infection or mumps infection in previously immunised individual). Cases continue to occur predominantly in individuals born between 1980 and 1991 (72%) [5], the cohort known to be at highest risk due either to not having been routinely offered MMR vaccination in childhood, or having only received one dose (table 2).

Table 2: Confirmed cases of mumps by age group and region, England and Wales: weeks 14-26/2009

Region	Age group								Total
	<1	1-4	5-9	10-14	15-19	20-24	25+	NK	
North East	–	–	2	3	44	78	42	–	169
North West	2	3	6	12	181	216	128	2	550
Yorkshire & Humber	1	2	7	5	78	152	64	2	311
East Midlands	–	3	1	9	88	115	69	2	287
West Midlands	1	3	5	6	59	95	50	5	224
East of England	–	2	9	12	81	91	49	4	248
London	1	7	10	31	81	152	133	5	420
South East	–	5	2	20	132	214	103	3	479
South West	1	6	5	12	116	188	90	2	420
Wales	–	4	6	9	48	57	35	1	160
Not known	–	–	–	–	–	3	–	–	3
Total	6	35	53	119	908	1361	763	26	3271

Figure 1. Number of laboratory confirmed mumps cases in England and Wales by year of birth and quarter



Rubella

Three cases of rubella were confirmed in the second quarter of 2009, compared to five in the previous quarter [1]. Two of the cases are in females, none of whom was pregnant.

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