



Health Protection Report

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News

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Eye of the Needle: surveillance of significant occupational exposures to bloodborne viruses in healthcare workers, 2000-2007

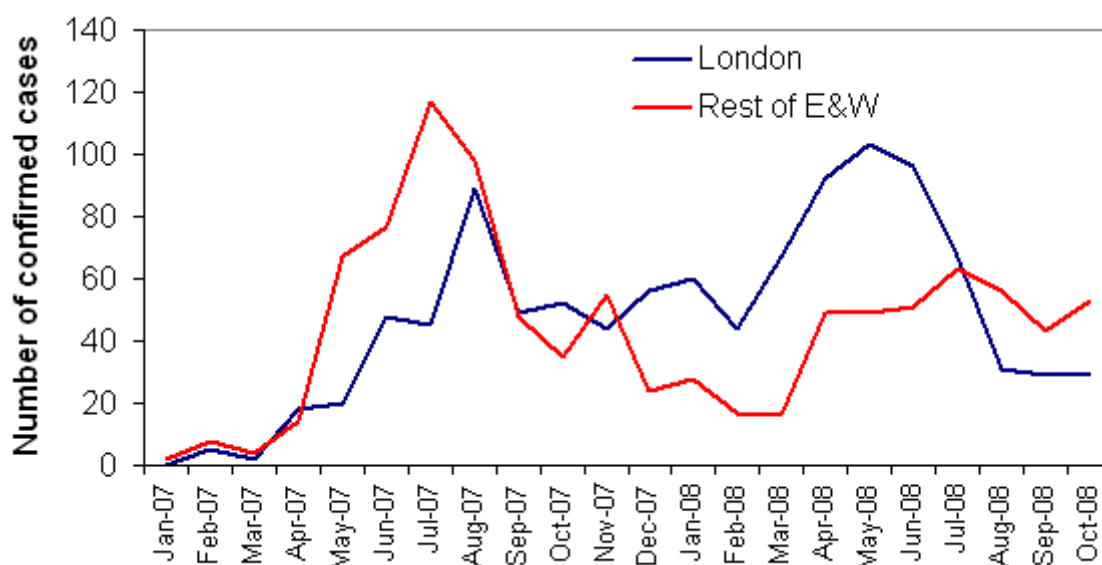
NHSBT/HPA Infection Surveillance Programme annual report, 2007

Confirmed measles cases in England and Wales – an update to the end of October 2008

This article describes measles activity in October 2008 in England and Wales; routine data on laboratory confirmed measles, mumps and rubella for the third quarter of 2008 are summarised in the Infection Reports section of this issue [1].

In October, 83 cases of measles were confirmed in England and Wales (see figure 1), marginally higher than the previous month (72 cases), and attributable to an increase in reports from outside London. The number of cases in London remained similar to the number reported in September (table). The number of laboratory confirmed cases since the start of the year is now 1049, exceeding the total of 990 for the whole of last year. During October, 9% of oral fluid tests on notified cases of measles were positive, however, in London 15% of all samples tested were confirmed whereas in the rest of England and Wales the proportion was 7%.

Figure 1: Number of laboratory confirmed cases in England and Wales by month of onset: January 2007 to October 2008



The North West region reported further 11 cases linked to outbreaks in schools in Cheshire [2]. Outbreaks in Wales, South East, East and West Midlands reported previously are continuing [3]. The number of confirmed cases in London remained constant for the third consecutive month with cases reported from all four Health Protection Units in London. A small outbreak was investigated in patients from the Polish community in London.

Both D4 (MVs/Enfield/14.07 and MVs/Chester/38.08) are continuing to circulate in different parts of England and Wales.

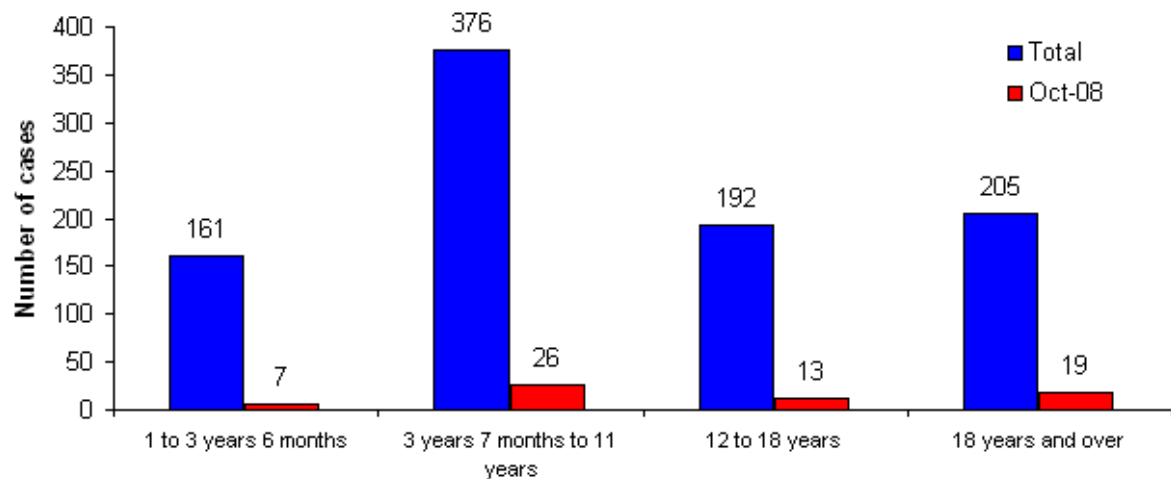
Over 50% of all confirmed cases this year have occurred in children of nursery and primary school age (figure 2).

Table. Confirmed cases of measles by region and month of onset, England and Wales: January 2008 to October 2008

Month	Lond-on	East Mids	East of Engl'd	North East	North West	South East	South West	West Mids	Wales	York & Humber
Jan	60	1	8	1	1	1	–	3	1	11
Feb	44	–	4	3	–	7	–	–	–	3
Mar	67	1	1	–	–	6	1	1	1	5
Apr	94	–	8	3	1	6	15	2	–	15
May	103	1	6	–	23	4	7	3	–	4
Jun	100	–	10	1	22	7	3	5	–	3
Jul	68	1	10	–	22	17	3	8	–	2
Aug	31	8	8	–	14	17	–	6	–	2
Sep	29	3	3	–	7	3	–	7	20	–
Oct*	30	8	4	1	16	8	–	5	10	–
Total	626	23	62	9	106	76	29	40	32	45

*Does not include one sample with unknown region

Figure 2: Confirmed cases by age groups targeted by the MMR catch-up programme, England and Wales: January 2008 to October 2008



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1. Laboratory confirmed cases of measles, mumps and rubella, England and Wales: July to September 2008. *Health Protection Report* [serial online] 2008, **2**(48): immunisation (*Infection Reports* section of this issue).
2. Fears rise over measles outbreak. *BBC Website* [online] Wednesday, 29 October 2008. <http://news.bbc.co.uk/1/hi/england/manchester/7697269.stm>.
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The fourth year of the Department of Health's mandatory surveillance of surgical site infection in orthopaedic surgery in NHS hospitals in England

The surveillance of surgical site infections (SSI) began in 1997 for 13 surgical categories, four of which are orthopaedic categories: hip prosthesis, knee prosthesis, open reduction of long bone fracture and hip hemiarthroplasty. The surveillance of SSIs in the four orthopaedic categories became mandatory in England from 1 April 2004 [1]. This was in response to the action plan on healthcare associated infections in the Chief Medical Officer's strategy to combat infectious diseases, *Getting ahead of the Curve* [2].

The fourth report of the mandatory surveillance of SSI has been published on the Health Protection Agency's website on:
<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1191942150156?p=1191942150156>

This report presents data on the participation of hospital Trusts in the surveillance, the incidence of surgical site infection (SSI) by each of the four categories of procedure, differences between the first year (2004-05) and the fourth year (2007-08), the incidence by risk groups and summary data on the most common causative micro-organisms recovered from surgical site infections.

The key points of the report are:

- Data on 69,200 procedures were collected from 155 participating Trusts including six independent NHS treatment centres during the fourth year of mandatory surveillance of surgical site infection (2007/08). This represented almost 8,000 more procedures than the previous year (2006/07).
- Most Trusts have been undertaking surveillance in hip and knee replacement categories.
- Participation is mandatory for at least one three-month surveillance period; 40% of Trusts undertook continuous surveillance throughout the fourth year in at least one category of orthopaedic procedure.
- There was a significant decrease in the rate of SSI between the first (2004/05) and fourth year (2007/08) of the mandatory surveillance in each of the four categories. In 2007/08, the proportion of operations that resulted in SSIs was 0.5%, 0.3%, 2.4% and 0.9% for hip prosthesis, knee prosthesis, open reduction of long bone fracture and hip hemiarthroplasty, respectively.
- In most NHS Trusts the rates of SSI in orthopaedic surgery were low.
- The rate of SSI increases as the Risk Index score increases. (The Risk Index measures the presence of up to three risk factors in each patient: pre-operative health score of three or more (indicating severe underlying condition), duration of operation above the 75th percentile and a surgical wound class that is contaminated or dirty).
- The rate of SSI is highest in the hip hemiarthroplasty category. This is partly explained by the fact that this category comprises an older group of patients (median age is 84 years compared to 70 to 75 years in the other categories). Older patients are more likely to have a longer post-operative stay in hospital thus increasing the chance that SSIs will be detected during the inpatient stay.
- Most of the SSIs reported affected the superficial layers of the wound, but approximately a quarter involved the deeper tissues.
- *Staphylococcus aureus* is recognised as a major cause of SSIs and over the four years of the mandatory surveillance, it accounted for 44% of all surgical site infections. Of all SSIs caused by *S. aureus*, 60% were methicillin-resistant (MRSA). Just over a quarter of all SSIs (26%) were caused by MRSA.
- Only four Trusts had higher than expected rates of infection in the fourth year, and none were found to be a high outlier in more than one surgical category. These Trusts are investigating possible causes for their higher rates.
- The length of post-operative stay in hospital decreased from seven days in 2004/05 to five days in 2007/08 for both hip and knee prosthesis surgery. In hip hemiarthroplasty the median length of post-operative stay has reduced by one day to 13 days. The decreasing length of post-operative stay means that the surveillance based on SSIs detected in inpatients is increasingly likely to underestimate the true rate of SSI, affecting the interpretation of changes in rates over time.

Other data presented are SSI rates by Trust and year:

<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1191942150156?p=1191942150156>

The rates at Trust level should be interpreted with caution as some represent estimates based on small numbers of orthopaedic procedures and are therefore imprecise. The number of procedures on which rates are based varies according to the throughput of the given type of surgical procedure at the Trust and the number of surveillance periods they have chosen to participate in.

The possibility that an SSI will be detected depends on the length of time that the patient spends in hospital post-operatively. Some of the variation in rates may therefore be explained by differences in length of post-operative follow-up. In addition, the rates included in these tables have not been adjusted for underlying risk factors related to the patient or their operation that could affect the risk of developing an SSI, for example age, underlying illness, complexity of the operation.

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Eye of the Needle: surveillance of significant occupational exposures to bloodborne viruses in healthcare workers, 2000-2007

The 2008 Eye of the Needle report – surveying the extent of healthcare worker exposure to patients with hepatitis B, hepatitis C or HIV infections in England, Wales and Northern Ireland between 2000-2007 – has been published by the Health Protection Agency Centre for Infections [1].

A key finding of the report is that healthcare workers (HCW) exposed to hepatitis C positive source patients, in particular, are not routinely receiving follow-up testing in line with national guidance [2] – highlighting the need for greater awareness among healthcare workers of the importance of attending follow-up appointments to ensure they know the outcome of their exposure. Only 22% (40/184) of healthcare workers exposed to a hepatitis C positive source patient returned for the appropriate follow-up tests at the correct time points in 2007. This finding is of concern since the majority of hepatitis C infected cases show no symptoms of their infection. It can take up to 30 years before the symptoms of infection manifest, by which time chronic damage to the liver has already occurred. Microbiologists and virologists working with occupational health, infectious disease and GUM specialists are encouraged to ensure that appropriate and timely testing and follow-up arrangements are available and are consistent with national guidance.

In 2006-2007 there were four documented patient-to-healthcare worker hepatitis C transmissions following percutaneous exposure. This brings the total number of hepatitis C seroconversions in healthcare workers reported between 1997 and 2007 to 14 cases in England, with an additional case notified in Scotland in 2007. Fourteen healthcare workers have cleared the virus, with the 10 healthcare workers who were known to have started treatment achieving a sustained virological response. One healthcare worker is still undergoing treatment.

Encouragingly the report found that 78% of healthcare workers significantly exposed to an HIV-positive source patient did start HIV post-exposure prophylaxis (PEP) in 2007; also that the national guidance on the use of HIV PEP was followed in the majority of cases. It is recommended that HIV PEP should be started as soon as possible after such exposures, ideally within an hour, as detailed in guidelines from the Expert Advisory Group on AIDS [3]. Thirty-seven per cent of healthcare workers exposed to HIV who initiated HIV PEP did so within an hour of their exposure and 89% within 24 hours. Since 1999, there have been no new reported cases of HIV seroconversions following percutaneous exposures of healthcare workers to HIV positive source patients. This brings the total number of UK HIV documented seroconversions reported by 2007 to five.

A further 914 incidents were reported to the surveillance scheme between 2006 and 2007. The most commonly reported occupational exposures in the healthcare setting were percutaneous injuries involving hollowbore needles (68%), with a large proportion of percutaneous exposures involving hepatitis C positive source patients (48%). In 2007, for the first time, a higher number of occupational exposures were reported from medical professionals (doctors and dentists) than nursing professionals (200 compared to 191). This

suggests that medical professionals reported to the scheme have a higher injury rate, as doctors and dentists are a much smaller group of healthcare workers compared to nursing professionals.

Over a third of incidents in the ward or in Accident and Emergency (43% and 37% respectively), and around 20% in intensive care and in operating theatres (22% and 20% respectively), occurred after the procedure had taken place. Many of these incidents could have been prevented with proper adherence to the safe handling and disposal of sharps and clinical waste. There is guidance in place that details the recommended procedures for the prevention of exposure to bloodborne viruses in the healthcare setting [4] and Trusts should ensure that healthcare workers are aware and adequately trained on the implementation in these precautions in order to protect themselves from exposures. Employers should also have adequate systems for reporting and management of occupational exposures in operation 24 hours a day, seven days a week, and should ensure that all staff members know how to report such incidents, in line with current guidance [3, 5].

Centres participating in the surveillance scheme were audited in 2007 to examine the provision of occupational health services to community-based healthcare workers. Initial analyses indicate that, where information was given, the majority of participating centres do provide services to community-based healthcare workers, although there were problems with the reporting of exposures by staff, due to lack of knowledge of protocols and logistics. Primary Care Trusts working with local Health Protection Units should ensure that arrangements are in place for managing occupational exposures to healthcare workers occurring outside the hospital environment.

To report incidents of healthcare workers occupationally exposed to bloodborne viruses in England, Wales and Northern Ireland, please contact Sarah Tomkins /Dr Susan Cliffe at the Centre for Infections (tel: 020 8327 7095/7152).

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NHSBT/HPA Infection Surveillance Programme annual report, 2007

The fourth annual report from NHS Blood and Transplant (NHSBT)/Health Protection Agency (HPA) Centre for Infections Surveillance Programme is now available at: http://www.hpa.org.uk/infections/topics_az/BIBD/publications.htm.

The programme is comprised of a series of national schemes, which provide epidemiological information about bloodborne infections in blood, tissue and cell donors in the UK and the associated risk of transmission via transfusion or transplantation, in order to inform donor practices and public health. In addition, information about antenatal samples tested by the NHSBT is presented. This report includes national data from all the schemes within the NHSBT/HPA programme, and aims further to describe the methods used and the information collected; describing any trends observed and detailing some of the applications of the data including the estimated risks of the current donation testing strategies not identifying an infectious donation.

Key information in the report includes:

- A continuing increase was seen in the frequency of HIV among male repeat blood donors; the frequency of HIV in repeat donors was low, but by 2007 it was higher than hepatitis B or C viruses.
- Hepatitis C was the only infection where the frequency continued to decline in both new and repeat blood donors.
- Rubella susceptibility increased by 0.5% in 2007 to 2.5% of samples from antenatal women.
- During 2007, 5/545 deceased donors were confirmed positive (4 syphilis and 1 HCV), the highest number of infections detected in this donor group since surveillance began in 2001.
- In 2007, there were no confirmed transmissions of viruses via transfusion of blood components but two confirmed bacterial transmissions from red cells units; the first time transmission from red cells have been reported since the SHOT report year 2001/2002.
- Data on residual risk estimates for the English surgical bone donor population was included for the first time using recently published methods [1].
- In addition to this annual report, some of these data are routinely published on the HPA website [2] and in the Health Protection Report, and data from the transfusion transmitted infection surveillance scheme form a part of SHOT (Serious Hazards of Transfusion) website <http://www.shotuk.org>.

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Infection reports

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Bacteraemia

- ▶ Invasive meningococcal infections, England and Wales: laboratory reports, weeks 27-39/08
- ▶ Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme during April to June 2008
- ▶ Laboratory confirmed cases of measles, mumps and rubella, England and Wales: July to September 2008

Invasive meningococcal infections, England and Wales: laboratory reports, weeks 27-39/08

	Method of diagnosis						Cumulative* totals to week to week	
	CSF and blood Culture		Non-culture		Other sites		39/2008	39/2007
	2008	2007	2008	2007	2008	2007		
Group A	–	–	–	–	–	–	1	1
B	76	98	84	93	4	4	723	836
C	2	2	–	5	1	–	15	31
W135	–	5	1	2	–	–	10	24
X	–	–	–	–	–	–	–	1
Y	7	5	2	2	–	–	26	31
Z/29E	–	1	–	–	–	–	2	1
Ungroupable	–	–	–	–	–	–	1	2
Ungrouped	–	–	3	13	–	–	35	51
Total	85	111	90	115	5	4	813	978

Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme during April to June 2008

There were 244 laboratory confirmed cases of pertussis (culture, PCR, serology) reported to the pertussis enhanced surveillance programme in the second quarter of 2008 (table 1). This is an increase on the number of cases reported in the previous two quarters (177 in both October to December 2007 [1] and January to March 2008 [2]), consistent with seasonal increases usually observed in this quarter.

The number of cases reported this quarter represents an 83% increase on the number of cases reported during April to June in 2007 (133 cases) [1], which in turn was an increase in the number of cases in this quarter in 2006 (54 cases) [3] and 2005 (78 cases) [4]. However, culture-confirmed cases in children under one year of age have followed expected epidemiological cycles to date. The increases in laboratory confirmed cases are largely in the older age groups and subsequent to the introduction of new laboratory methods. More detailed explanations are provided in previous *HPR* articles [1].

Table 1. Age distribution and method of laboratory confirmation of pertussis cases in England and Wales, April to June 2008

Age group	Culture	PCR only	Serology only	Total
<3 months	35	15	–	50
3-5 months	7	3	–	10
6-11 months	2	–	–	2
1-4 years	2	1	2	5
5-9 years	–	–	7	7
10-14 years	–	–	38	38
≥15 years	4	–	128	132
Total	50	19	175	244

Note: Nine of the <3 month-old and one of the 3-5 month culture-confirmed cases were previously confirmed by PCR but are listed in the “culture” column only. PCR provides a rapid diagnosis but the submission of all putative *B. pertussis* isolates is encouraged for confirmation of identity and to allow further characterisation for epidemiological purposes.

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>.

References

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Laboratory confirmed cases of measles, mumps and rubella, England and Wales: July to September 2008

Data presented here is for the third quarter of 2008 (ie July to September 2008). Cases include those confirmed by oral fluid IgM antibody tests, PCR, and 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 27-39/2008

	Cases			Oral fluid IgM antibody results		Results		
	Notified	Tested	%	Total Positive	Recently vaccinated	Oral fluid IgM confirmed	Other lab confirmed	Total Confirmed cases
Measles	1347	1069	79%	241	13	228	61	289
Mumps	1688	1160	69%	301	7	294	53	347
Rubella	266	189	71	4	1	3	4	7

Measles

Two hundred and eighty-nine cases of confirmed measles with onset dates in the third quarter of 2008 were reported, compared to 427 cases in the previous quarter [1]. The overall proportion of confirmed measles amongst oral fluid samples tested is above 22.5%, a small decrease compared to the last quarter where around 25% of samples tested were confirmed.

In this quarter the number and proportion of confirmed infections in London (128; 43%) decreased in comparison to previous quarter (294; 69%). The outbreak in Blackpool mentioned in the previous quarter's report spread from school aged children and the general population to the travelling community in the area. Similar traveller outbreaks in the East Midlands, Cheshire and Merseyside Wales, and East of England were also reported [2].

Most of the cases reported this quarter (67%) were in children aged less than 15 years (28 less than one year; 67 aged 1 to 4 years; 57 aged 5 to 9 years; and 43 aged 10 to 14 years); the remaining 94 cases were aged between 15 and 53 years. Nine cases reported receiving measles-containing vaccines: three received single measles vaccine, five received one MMR vaccine, and one reported receiving two doses of MMR.

Cases were investigated from all regions except North East (London 128, North West 43, South East 37, East of England 21, West Midlands 21, Wales 20, East Midlands 12, Yorkshire and the Humber 4 and South West 3). Although the predominant measles genotype continues to be the endemic D4 strain (MVs/Enfield.GBR/14.07), circulating in the UK since March 2007

a second D4 strain (MVs/Chester.GBR/38.08) has began to circulate. The source for this new strain has so far not been identified.

Seven cases identified recent travel as a possible risk for infection; one had been in Turkey and the other was an overseas student from Gibraltar studying in England . In addition, a family of five who returned recently from holiday in France were also diagnosed with measles.

Mumps

Three hundred and forty-seven cases of mumps with onset dates in the third quarter of 2008 were confirmed compared to 755 in the April to June quarter (1) and 422 in January to March 2008 (3). Cases continue to be confirmed predominantly in those aged between 17 and 28 years (63%), 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 27-39/2008

Region	Age Group								Total
	<1	1-4	5-9	10-14	15-19	20-24	≥25	NK	
North East	–	1	1	1	–	2	4	–	9
North West	–	–	6	8	4	11	14	–	43
Yorkshire & Humber	–	–	–	1	23	12	9	1	46
East Midlands	–	–	–	1	–	1	5	1	8
West Midlands	–	2	–	2	2	5	11	1	23
East of England	–	1	–	1	6	10	6	–	24
London	–	1	2	4	11	38	27	2	85
South East	–	–	1	4	21	31	22	1	80
South West	1	1	–	1	2	4	9	–	18
Wales	–	–	–	1	3	4	2	–	10
Not known	–	–	–	–	–	–	–	1	1
Total	1	6	10	24	72	118	109	7	347

Rubella

Seven cases of rubella were confirmed in the second quarter of 2008 compared to four in the last quarter (1). Five of the seven cases were from an outbreak in children who attended an English language summer school in East Sussex; four children were from Kazakhstan and one was from Poland . Two different strains of the rubella virus were identified, neither of which is currently circulating in UK .

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