



CDR WEEKLY

the Communicable Disease Report Weekly

Current Issue: Volume 16 Number 23 **Published on:** 8 June 2006

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News

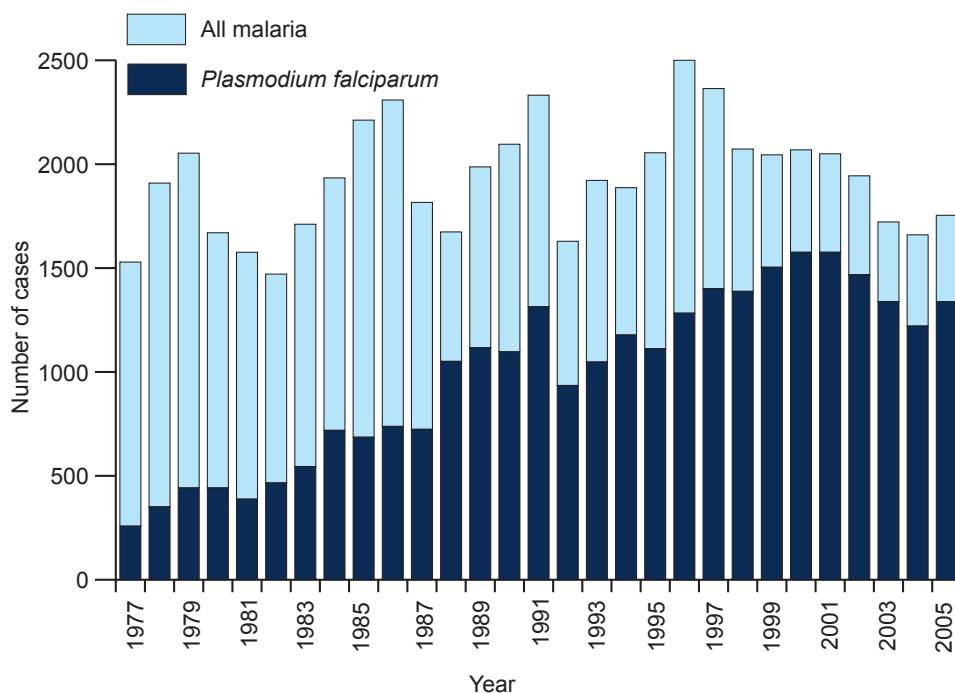
Last updated: 8 June 2006 **Volume 16, No.23** **Next update:** 15 June 2006

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▾ Malaria imported into the United Kingdom in 2005: implications for those advising travellers

This article presents the data on malaria imported into the United Kingdom (UK) in 2005, based on figures reported to the Health Protection Agency (HPA) Malaria Reference Laboratory. Details on methods of data collection for malaria have been published previously (1).

Figure 1 Cases of malaria in the United Kingdom: 2005



There were 1754 cases of malaria reported in 2005, 94 more cases than reported in 2004 (It is possible that a few cases have still to be reported.) (Figure 1). Over 70% of malaria cases are caused by the potentially fatal *Plasmodium falciparum*, and the steady increase in the proportion of falciparum malaria has been sustained. Over twice as many cases of falciparum malaria, in absolute numbers, are now seen in the UK compared to 20 years ago. The breakdown of malaria cases reported by region of travel and parasite species is shown in table 1.

Table 1 Cases of malaria by species of parasite and primary region of travel, United Kingdom : 2005

Geographic Area	Species of malaria									Total
	P.f	P.v	P.m	P.o	Pf+Pv	Pf+Pm	Pf+Po	Po+Pv	P.unsp	
North Africa	–	–	–	–	–	–	–	–	–	–
Central Africa	35	–	2	12	–	1	1	–	–	51
East Africa	126	11	4	12	–	–	1	–	–	154
Southern Africa	46	1	–	2	–	–	–	–	–	49
West Africa	781	2	10	57	–	1	3	–	–	854
Africa - unspec.	26	–	–	3	–	–	–	–	1	30
Middle East	2	–	–	–	–	–	–	–	–	2
Asia	15	162	–	–	–	–	–	–	–	177
Asia -unspecified	–	–	–	–	–	–	–	–	–	–
Far East/S.E.Asia	2	1	–	–	1	–	–	–	–	4
Far East - unspec.	–	1	–	–	–	–	–	–	–	1
Central/S.America	1	17	2	1	–	–	–	–	–	21
Oceania	1	10	–	–	–	–	–	–	–	11
Not given	303	53	11	29	–	1	–	1	2	400
Total	1338	258	29	116	1	3	5	1	3	1754

Pf – *Plasmodium falciparum*, Pv – *P. vivax*, Pm – *P. malariae*, Po – *P. ovale*, and P unsp- species not known.

Eleven deaths in 2005 from malaria have been reported. Of these, ten were from falciparum malaria, and one was reported as being from vivax malaria. Vivax malaria deaths are relatively rare, and are often associated with co-morbidity. Of the travellers with falciparum malaria who died, nine had been in Africa and one in south Asia. Two deaths were in children, both of whom were visiting friends and relatives. There is a small variation in the number of deaths from malaria in the UK every year, but the number for 2005 is similar to the annual average since 2000.

Six hundred and ninety-three of the 884 patients (78%) with malaria where the history of prophylaxis was obtained had not taken prophylaxis, and a high proportion of the remainder took prophylaxis not recommended for their travel destination by the HPA Advisory Committee on Malaria Prevention in UK Travellers (ACMP). This high proportion is similar to recent years. It is clear that some groups are at particular risk of acquiring malaria and are not being reached by health messages about the importance of antimalarial prophylaxis. The burden of falciparum malaria falls heavily on those of African and south Asian ethnicity. Of those who had malaria diagnosed in the UK, where ethnicity was known, 120 were reported as white British, compared with 1101 who were reported as African or of African descent, and 209 reported as south Asian or of south Asian decent.

Among those who were travellers from the UK (rather than normally resident in an endemic area) where reason for travel is known, 567/734 (77%) were visiting friends and relatives (table 2). The ratio of malaria in UK residents visiting friends and relatives compared with malaria cases acquired in holiday travellers is 6.8:1. As with all routinely collected data, exact figures should be treated with caution. It seems likely that those travelling to visit friends and relatives are either not seeking or able to access medical advice on malaria prevention before they travel, or they are not being given good advice, or are not adhering to it as they do not perceive the risk to be as great to them as to the holidaying public; probably all these contribute. Targeting these groups, and their healthcare providers, should be considered a priority for health promotion and education.

Table 2 Cases of malaria by stated reason for travel, UK: 2005

Population group	<i>P. falciparum</i>	<i>P. vivax</i>	Other	Total
New entrant	55	27	18	100
Visiting family in country of origin	482	58	27	567
UK citizen living abroad	15	2	2	19
Civilian sea/air crew	1	–	–	1
British armed services	8	2	5	15
Business/professional travel	46	4	6	56
Foreign student studying in UK	16	11	5	32
Holiday travel	59	19	5	83
Foreign visitor ill while in UK	66	22	6	94
Children visiting parents living abroad	2	–	–	2
Not stated	588	113	84	785

P – *Plasmodium*

A failure to take prophylaxis is associated with the majority of cases of malaria in UK residents travelling to malarial areas. There is evidence that those of African or Asian ethnicity going to visit friends and relatives are at increased risk, and those providing advice should pay particular attention to these travellers.

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Associated links

HPA Advisory Committee on Malaria Prevention in UK Travellers (ACMP) .
http://www.hpa.org.uk/infections/topics_az/malaria/ACMP.htm

An outbreak of *Salmonella* Enteritidis PT4 in a boarding school in south east England

A large outbreak of infection with *Salmonella* Enteritidis PT4 has been reported at a boarding school in south east England. The epidemic curve is consistent with a point source exposure putatively on 11 May with some secondary spread. Since 12 May there have been 141 cases of a diarrhoeal illness of which 41 have been confirmed cases of *Salmonella* Enteritidis. The first cases were reported from 12 May, 8:00 am onwards. Seventy-six per cent of cases have been in boarders. The second peak on the 22 May is probably an artefact resulting from active case detection. There have been no further confirmed cases reported since 22 May. Investigations including an analytical study are ongoing to identify the source(s).

Figure 1 Cases of diarrhoeal illness by date of onset of symptoms

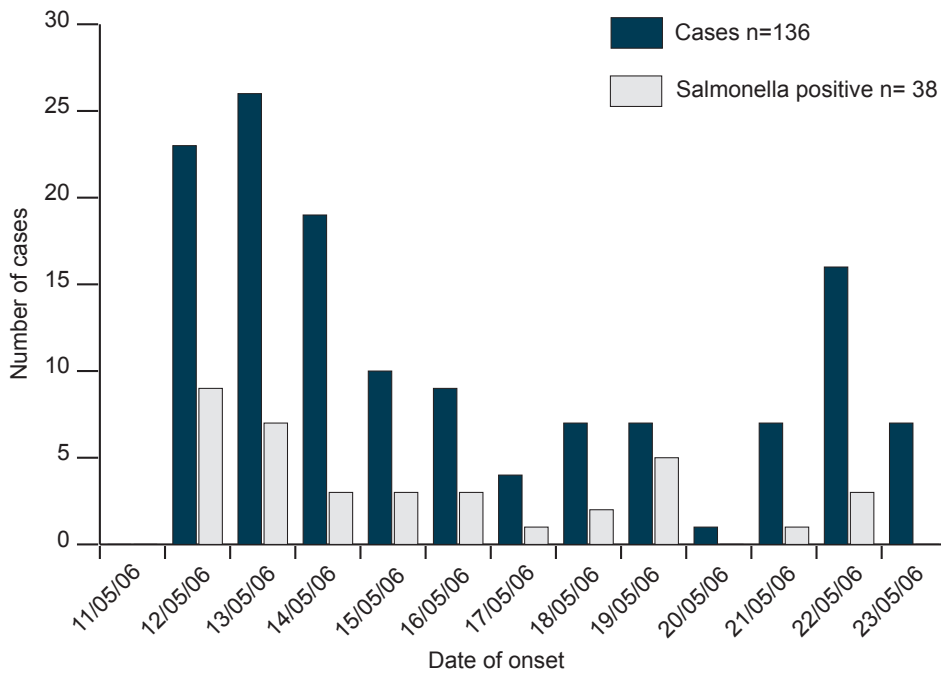
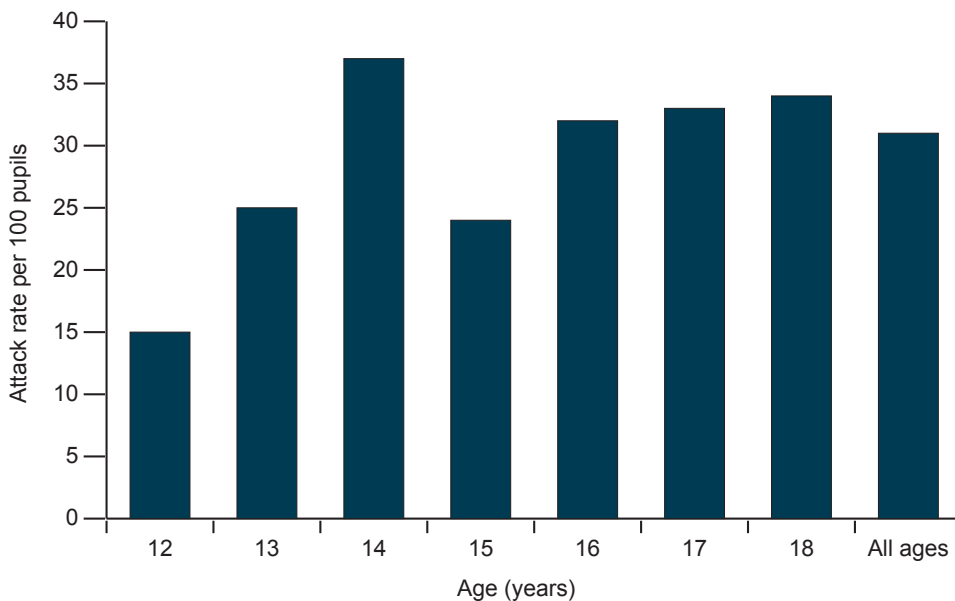


Figure 2 Attack rates by age of pupils (per 100 pupils)



The Leatherhead Office of the Surrey and Sussex Health Protection Unit (HPU) was initially notified of two cases of salmonella in pupils from a local boarding school. Enquiries revealed that a large number of pupils had been ill during the previous week with a diarrhoeal illness and that cases were still occurring. HPU staff together with colleagues from the local Environmental Health Department (EHD) visited the school. Arrangements were made with the local HPA laboratory to process a large number of stool specimens collected from individuals who were symptomatic and the HPA Laboratory for Enteric Pathogens (LEP) was informed about the outbreak. The EHD began an investigation to identify the source(s) of the outbreak and the HPU advised the school about infection control procedures to limit secondary spread. The situation was complicated because many of the older pupils were about to begin examinations and may have been concealing their illness. An outbreak control team was formed and a decision made that an analytical study was needed to help identify all the potential cases and assist in identifying the source. A questionnaire was designed with the full co-operation of the school it was distributed to all pupils and staff (table). *Salmonella* Enteritidis was subsequently cultured from stools collected from 41 cases and LEP confirmed that all isolates were phage type (PT) 4. No pathogens, including salmonella, have been isolated from any of the food, water, or environmental samples collected at the school.

Table Reported symptoms: confirmed cases of salmonella with completed questionnaire (N=31)

Symptom	Number
diarrhoea	30
abdominal cramps	29
headache	22
general aches and pains	16
nausea	12
fever	12
chills	11
vomiting	5
blood in stools	4
sore throat	4
constipation	3

Control measures put in place included a strict 48 hour exclusion policy for cases, cohorting of affected pupils, increased cleaning of toilet areas, encouraging frequent hand washing including the provision of alcohol gel hand rub dispensers at the entrance to the refectory. Self-service was temporarily discontinued in the refectory and the serving of uncooked items such as peeled fruits and salads supervised. Spot inspections of the dormitories and kitchenette areas revealed a bewildering collection of foodstuffs that had been hoarded by the pupils. Enhanced surveillance for diarrhoeal diseases will be in force at the school until the end of term and plans are in preparation to hold sessions for the pupils in basic food hygiene.

📌 Large outbreak of gastroenteritis following a wedding

On 22 May the Health Protection Agency was informed that about 100 guests out of 350 guests at a wedding held in the East Midlands had become ill after the wedding celebrations with symptoms of food poisoning. There were three events to celebrate the wedding: the first was held on 19 May, the second together with the ceremony was held at lunchtime on 20 May, and the final celebration in the evening on 20 May. The wedding was held in a community centre where there was no means of keeping food warm once it had been delivered. An outside caterer provided food for all three events. The family prepared a meat curry for the Saturday evening event, and friends of the family served the food. Further supplies of rice were delivered during the evening. It was also reported that the rice was 'cold' when delivered.

People who had attended the wedding were questioned to determine if they became ill and if so when. They were also asked which foods they had consumed and which of the wedding celebrations they attended. Samples were obtained from a number of ill people to attempt to culture the organism that caused the outbreak. Symptoms included diarrhoea, vomiting, abdominal pain, and nausea. Average onset time of illness was early morning on 21 May.

The catering premises were visited. The only common food consumed by those who were ill was rice that was served on Saturday evening. Inspection of the kitchens where the preparation took place revealed poor practice, with mouse droppings, no blast chiller and bags of flour split and open. The owner of the premises was interviewed under caution on 31 May.

All specimens tested were negative for viruses. No food poisoning bacteria have been cultured. Results of environmental samples taken from the caterer are not yet available.

This outbreak is most likely to be due to *Bacillus cereus*, probably from the rice. Although no organism has been isolated, the time interval from exposure to the development of symptoms and the symptoms themselves supports this hypothesis. There is evidence from the questionnaires that everyone who developed symptoms consumed rice on the evening of 20 May. Those who consumed rice at other times were not ill. The rice brought in as an extra order on the evening of 20 May might have been stored at room temperature after cooking - the kitchen where the food was prepared did not have a blast chiller and, therefore, it would have been difficult to cool the rice down after cooking.

An alternative hypothesis is that the outbreak was due to *Clostridium perfringens* toxin. This usually results from contamination of meat by faeces or sewage. There was poor hygiene at the catering premises. *Clostridium perfringens* poisoning is, however, unlikely as the usual vehicle for the toxin is meat, and questioning showed that not all those who were ill ate meat.

A viral cause is thought unlikely, as the time from exposure to symptoms developing is too short and viral particles were not isolated from any of the stool specimens.

Many weddings and other functions are catered for in this way. Food may often be left at room temperature and dishes often contain rice that may have been kept at room temperature for prolonged periods. It is important that sufficient volume of stool specimen is taken early in the investigation for both viral and bacterial analysis.

📌 Cephalosporin resistance: *E. coli* with CTX-M enzymes are now the major ESBL producers

A recent prospective HPA study examined the epidemiology and prevalence of cephalosporin resistance in Enterobacteriaceae species in London and South East regions [1]. The study found that the major mechanism of cephalosporin resistance in isolates, from both hospital and community settings, was the production of CTX-M type extended-spectrum beta-lactamases (ESBLs) and that the largest single group of isolates with this mechanism were *E. coli*, which is the most frequent pathogen among the Enterobacteriaceae, but is one not historically associated with multi-resistance. Other important cephalosporin-resistance mechanisms included production of non CTX-M ESBLs, and AmpC beta-lactamases.

Until 2003, most extended-spectrum beta-lactamase (ESBL)-positive bacteria referred to the HPA's Centre for Infections were *Klebsiella* spp, generally from specialist care units, with mutants of the long-known mutant TEM and SHV beta-lactamases. These mutants can attack cephalosporin antibiotics, which were designed to be stable to the classical penicillinase forms of TEM and SHV [2,3]. Otherwise, resistance to cephalosporin was largely seen in *Enterobacter* spp and *Citrobacter freundii*, where it was largely mediated via the hyperproduction of chromosomal 'AmpC' beta-lactamases [4]. The switch in enzyme types and major host are therefore dramatic and recent developments, as is the fact that around half the *E. coli* with these enzymes were from community patients.

CTX-M enzymes represent a distinct class of ESBLs [5]; they evolved by gene escape from *Kluyvera*, an obscure genus of little clinical concern. They were first recognised in the United Kingdom in 2000 but have now become the dominant family. This rise reflects a combination of plasmid and strain spread. CTX-M ESBLs likewise are becoming the dominant types in most of Europe and Asia, though not yet in North America.

Regardless of whether they had CTX-M enzymes or other types, most ESBL producers were multiresistant to quinolones, trimethoprim, tetracyclines, and most aminoglycosides. This association is well recognised and is because ESBLs are mostly encoded by multi-resistance plasmids. Fortunately, none of the isolates in this study was resistant to imipenem or meropenem, and very few were resistant to ertapenem. Although these carbapenems continue to be effective, the changing nature of resistance in *E. coli* (especially) will force more front-line use of these previously-reserved agents. Many of the *E. coli* isolates were also susceptible to nitrofurantoin, though this would only be useful in uncomplicated lower urinary infections.

Recent studies on infections with ESBL-producers outside of hospitals identify prior treatment with cephalosporins, quinolones, and penicillins as risk-factors, along with recent hospitalisation [6]. Inadequate initial antimicrobial therapy is strongly associated with multidrug-resistance and is an independent risk-factor for mortality in severe infections due to ESBL-producing *E. coli* and *Klebsiella* spp [7]. Outbreaks may occur within hospitals, with clonal spread of ESBL producing organisms, especially *Klebsiella* spp, among patients; some (but not all) of the *E. coli* with CTX-M enzymes belong to major, nationally-distributed clones, though their mode of spread remains elusive.

Microbiologists need to be aware that ESBLs are circulating in both the community and hospital environments, and they should test for them accordingly. The Agency's guidelines can be obtained from the website at <<http://www.hpa-standardmethods.org.uk/documents/qsop/pdf/qsop51.pdf>>.

Using these guidelines, the recognition of ESBL-producers should be within the capacity of routine diagnostic laboratories. The HPA's Antibiotic Resistance Monitoring and Reference Laboratory (ARMRL) is, however, happy to help with any anomalous or unusual results and will continue to monitor the situation with further structured surveys. Further advice on reference testing of ESBL producers can be obtained from David Livermore or Neil Woodford: david.livermore@hpa.org.uk; neil.woodford@hpa.org.uk.

General practitioners (GPs) should be aware that ESBLs are circulating in the community and revise their treatment methods, especially for high risk patients. Although trimethoprim should generally remain the primary therapy for uncomplicated urinary tract infections (UTIs), GPs need to monitor treatment success in patients aged over 60 years (and especially those with a history of hospitalisation, time in nursing homes, and/or catheterisation).

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Enteric

Last updated: 11 May 2006, Volume 16, No. 23 Next update: 13 July 2006

Enteric Routine Data Reports

- ▾ General outbreaks of foodborne illness in humans, England and Wales: weeks 19-22/06
- ▾ Salmonella infections, (faecal specimens) England and Wales, reports to the HPA (salmonella data set): April 2006
- ▾ Common gastrointestinal infections, England and Wales, laboratory reports: weeks 19-22/06
- ▾ General outbreak of foodborne illness in humans, England and Wales quarterly report: October to December 2005
- ▾ Salmonella serotypes recorded in the HPA salmonella data set: January to March 2006

▾ General outbreaks of foodborne illness in humans, England and Wales: weeks 19-22/06

Preliminary information has been received about the following outbreaks.

Health Protection Unit	Organism	Location of food prepared or served	Month of outbreak	Number ill	Cases positive	Suspect vehicle	Evidence
Sussex	S. Enteritidis PT4	School	May	50	30	–	–
North West London	S. Enteritidis PT4	Restaurant	May	3	3	–	–

M (microbiological): identification of an organism of the same type from cases and in the suspect vehicle, or vehicle ingredient(s), or detection of toxin in faeces or food; D (descriptive): other evidence, usually descriptive, reported by local investigators as indicating the suspect vehicle or food; S (statistical): a significant statistical association between consumption of the suspect vehicle(s) and being a case.

▾ Salmonella infections (faecal specimens), England and Wales, reports to the HPA (salmonella data set): April 2006

Details of the 638 Salmonella infections recorded in April 2006 are given in the table below. In May 2006, 601 Salmonella infections were recorded and preliminary information was received on two outbreak(s) (see General outbreaks table above).

	April 2006
S. Enteritidis (PT4)	75
S. Enteritidis (other PTs)	203
S. Typhimurium	69
S. Virchow	22
Others (typed)	269
Total Salmonella (provisional data)*	638

*Figures quoted from the Health Protection Agency salmonella data set are for isolates confirmed and typed by Laboratory of Enteric Pathogens (LEP).

Common gastrointestinal infections, England and Wales, laboratory reports: weeks 19-22/06

Laboratory reports	Number of reports received				Total reports 19-22/06	Cumulative total to	
	19/06	20/06	21/06	22/06		22/06	22/05
<i>Campylobacter</i>	696	719	558	26	1999	11,863	14,701
<i>Escherichia coli</i> O157*	8	19	9	24	60	186	154
<i>Salmonella</i> †	218	144	103	111	576	2803	2979
<i>Shigella sonnei</i>	11	6	8	–	25	192	354
Rotavirus	188	144	86	13	431	11,112	12,004
Norovirus	51	28	22	2	103	2815	2167
Cryptosporidium	46	28	24	3	101	784	811
Giardia	41	33	28	4	106	874	1043

*Vero cytotoxin-producing isolates (data from Health Protection Agency's Laboratory of Enteric Pathogens (LEP).

† Data from Health Protection Agency's Laboratory of Enteric Pathogens.

General outbreak of foodborne illness in humans, England and Wales quarterly report: October to December 2005

Health Protection Unit	Organism	Location of food prepared or served	Number ill	Cases positive	Suspect vehicle	Evidence
Leeds	<i>Campylobacter</i>	Restaurant	8	2	–	–
Leeds	<i>Campylobacter</i>	Restaurant	11	5	–	–
Leeds	<i>Clostridium Perfringens</i>	Residential Institution	13	8	–	–
National	<i>Escherichia coli</i> O157	Community	77	77	Beef	S
Durham & Tees Valley	<i>Salmonella</i> Enteritidis PT4	Restaurant	6	6	–	–
Berkshire	S. Enteritidis PT4	School	27	27	Chocolate swiss roll	M
North East & Central London	S. Enteritidis PT5A	Restaurant	10	3	Mayonnaise, tiramisu, chocolate mousse	D
Kent	S. Typhimurim DT 104	Restaurant	65	13	Chicken dishes, Mussels in black bean sauce	D
Cheshire & Merseyside	Scombrototoxin	Retailer	2	–	Tuna baguette	M

*Vero cytotoxin-producing isolates (data from Health Protection Agency's Laboratory of Enteric Pathogens (LEP).

† Data from Health Protection Agency's Laboratory of Enteric Pathogens.

Salmonella serotypes recorded in the HPA salmonella data set: January to March 2006

More than ten reports of the following salmonella serotypes were received: January to March 2006

Serotype	No. of Reports	Serotype	No. of Reports	Serotype	No. of Reports
S. Agona	23	S. Infantis	30	S. Saint-Paul	16
S. Bareilly	15	S. Java	20	S. Stanley	40
S. Braenderup	14	S. Kentucky	18	S. Typhi	22
S. Corvallis	11	S. Mbandaka	11	S. Typhimurium	227
S. Enteritidis	545	S. Montevideo	17	S. Unnamed	65
S. Gold-Coast	18	S. Newport	29	S. Virchow	66
S. Hadar	22	S. Paratyphi A	25		

Between two and ten reports of each of the following serotypes were received: January to March 2006

Serotype	No. of Reports	Serotype	No. of Reports	Serotype	No. of Reports
S. Abony	4	S. Haifa	6	S. Nima	2
S. Adelaide	2	S. Hartford	2	S. Obogu	2
S. Agama	9	S. Havana	2	S. Ohio	4
S. Albany	3	S. Heidelberg	7	S. Oranienburg	8
S. Altona	2	S. Hull	2	S. Oslo	4
S. Anatum	8	S. Indiana	6	S. Panama	3
S. Arechavaleta	2	S. Jangwani	2	S. Pomona	2
S. Arizonae	3	S. Javiana	5	S. Poona	7
S. Blockley	8	S. Johannesburg	3	S. Reading	3
S. Bonn	2	S. Kedougou	2	S. Rissen	6
S. Bovis-Morbificans	6	S. Kiambu	3	S. Rubislaw	7
S. Brandenburg	7	S. Kottbus	8	S. San-Diego	4
S. Bredeney	5	S. Lanka	4	S. Schwarzengrund	7
S. Chester	2	S. Livingstone	5	S. Senftenberg	6
S. Cubana	3	S. Manhattan	2	S. Stanleyville	4
S. Derby	4	S. Minnesota	4	S. Tennessee	5
S. Dublin	2	S. Mississippi	8	S. Thompson	6
S. Durham	5	S. Muenchen	2	S. Uganda	2
S. Eastbourne	2	S. Muenster	5	S. Weltevreden	8
S. Emek	2	S. Nagoya	2		
S. Give	3	S. Newington	2		

One each of the following serotypes were received: January to March 2006

Serotype	Serotype	Serotype
S. Aberdeen	S. Gaminara	S. Marseille
S. Ajiobo	S. Ghana	S. Mbao
S. Arkansas	S. Grumpensis	S. Molade
S. Banana	S. Halle	S. New-Haw
S. Brisbane	S. Hofit	S. Nyborg
S. Caracas	S. Hvittingfoss	S. Pensacola
S. Cerro	S. Ibadan	S. Sangalkam
S. Cholerae-Suis	S. Idikan	S. Senegal
S. Colindale	S. Istanbul	S. Singapore
S. Doncaster	S. Jukestown	S. Tees
S. Duisburg	S. Kaneshie	S. Virginia
S. Durban	S. Kisangani	S. Vitkin
S. Eimsbuettel	S. Krefeld	S. Wangata
S. Essen	S. Kua	S. Wassenaar
S. Florida	S. Litchfield	S. Worthington
S. Galiema	S. London	S. Zanzibar