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Enhanced influenza surveillance: winter 2006/2007

Annually, the beginning of October marks the start of the enhanced surveillance for seasonal influenza and other respiratory viruses in the United Kingdom (UK). In previous years the peak of influenza activity has occurred between October and March in the UK and the impact of the disease on the population has been dependent on the strain of influenza circulating that year. All indices used to monitor influenza activity in the UK are currently well below base line levels.

The data collected by the enhanced influenza surveillance carried out by the Health Protection Agency (HPA) Centre for Infections is summarised in regular influenza reports

<http://www.hpa.org.uk/infections/topics_az/influenza/seasonal/default.htm>, which provide comprehensive information on the clinical and virological indicators of influenza activity throughout the influenza season, up to week 20 2007. Reports will initially be published fortnightly on a Wednesday.

Vaccine supply

The Department of Health has informed all GPs that while the requested amount of influenza vaccine will be produced this winter, it will be supplied between October and December as a result of initial delays in production [1]. 15 million doses will be available in the UK to cover vaccination of all people at high risk but some persons may not receive their vaccine until late in the year. As in previous years, the HPA will be monitoring the uptake of vaccine in England, on behalf of the Department of Health. Last winter over 75% of people aged 65 or more were vaccinated, the highest rate since monitoring was introduced in 2000. Further information can be obtained at <http://www.hpa.org.uk/infections/topics_az/influenza/seasonal/monitoring.htm>.

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Food-borne botulism associated with home prepared meat products from Poland

A case of food-borne botulism occurred in the Republic of Ireland in September 2006. Since the beginning of 2003, there have been a further four cases of food-borne botulism in the United Kingdom (UK) and the Republic of Ireland [1]. Three of these five incidents involved Polish nationals, and were associated with the consumption of home prepared meat products originating from Poland.

In 2003, a male Polish national living in England developed botulism and subsequently died, having eaten a home prepared meat product ('bigosh') brought from Poland. Botulinum neurotoxin serotype B [BoNTB] was detected in serum samples collected prior to death. The second incident occurred in a male Polish national living in England in 2005 who developed botulism within 24 hours of consuming home preserved pork originally prepared in Poland. *Clostridium botulinum* type B and BoNTB were recovered from the patient's faeces and from the jar of home preserved pork. The patient was treated with antitoxin and made a complete recovery. The preserved pork had been home slaughtered, bottled, stored at room temperature for several months in Poland prior to bringing to England for consumption. The most recent incident affected a Polish national living in the Republic of Ireland who developed symptoms of botulism after consuming home prepared pork which again originated in Poland. *C. botulinum* type A/B was isolated from the patient faeces and from a sample of home preserved pork. The patient received antitoxin and is making steady progress.

Of the remaining two cases of food-borne botulism reported in the UK, one was associated with UK commercially prepared hummus, and the final case with recent travel to Georgia. Readers should be aware of the increase in incidence of food botulism associated with the consumption of home prepared meat products from eastern European countries, which have much higher rates of food-borne botulism than either the UK or the Republic of Ireland [2,3]. The main vehicles for botulism transmission are meat dishes, and in particular home preserved pork in bottling jars. Clinicians should be aware of the possible increased risk of botulism among migrant workers from eastern Europe.

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Cryptosporidiosis in England and Wales

In the autumn of 2005 there was an increase in cases of human cryptosporidiosis together with two outbreaks putatively linked to public water supplies in South England and North Wales. These outbreaks led the Drinking Water Inspectorate (DWI) to instruct water companies to review their cryptosporidium risk assessments for surface water-derived treatment works by 30 April 2006. DWI also provided guidance on risk assessment criteria, monitoring and communications. DWI undertook to review the relevant regulations in light of any lessons learnt from companies' revised risk assessments and from the reports of the outbreak control teams. In the interim, the Health Protection Agency (HPA) was commissioned by DWI to produce a report updating knowledge on cryptosporidiosis (epidemiology and health surveillance data) since the publication of the Bouchier Report in 1998 [1]. The DWI has now published this report on the epidemiology of cryptosporidiosis produced by the Health Protection Agency, the National Public Health Service for Wales, and the University of East Anglia [2].

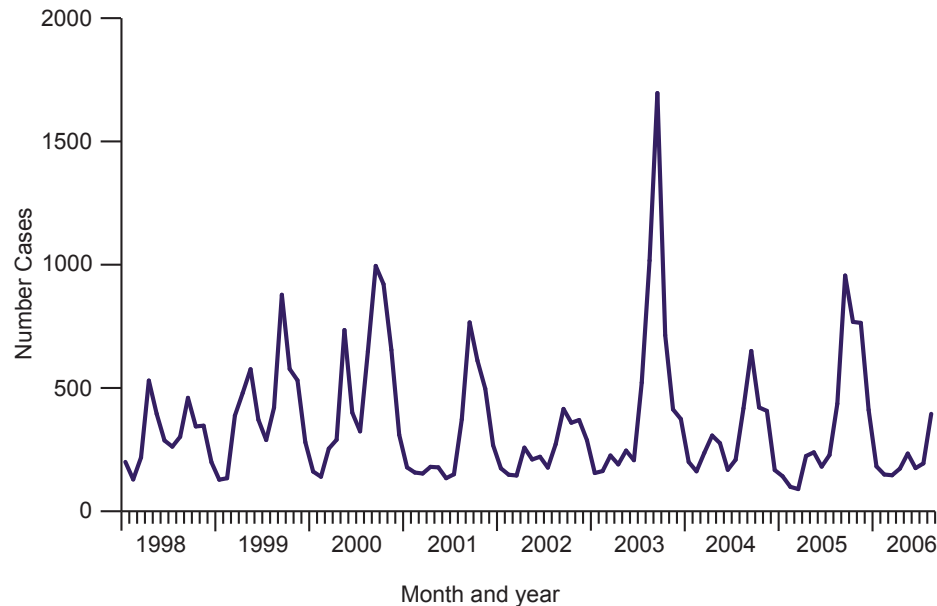
Cryptosporidium causes diarrhoea in people of all ages, but is most common in young children. Disease can be severe in people with an immune deficiency, particularly involving severe depletion of T-cell count and function [3]. Seasonal increases in the spring and autumn have been observed each year between 1989 to 2000, but since then, the spring peak of cases of cryptosporidiosis has declined, whereas no similar reduction has been observed in the autumn peak. Although the foot and mouth disease outbreak contributed to the decline in cases in the spring of 2001 [4,5] the reduction continues to be apparent. There is now good evidence to support the view that this is due to investment in new or improved water treatment, including first time filtration, particularly in the North West of England [6].

Regulatory monitoring data since 1999 have shown that water supplies may occasionally contain very low numbers of *Cryptosporidium* oocysts. The significance of these is unclear because the oocysts may be non-viable or may be of a species that are not very infectious for humans. It also remains possible, however, that low oocyst counts of highly infectious isolates represent a risk to public health. The routes by which people in the second half of the year become infected require further investigation, but swimming pools and foreign travel both appear to be important. The reference genotyping of isolates of *Cryptosporidium* to species level has proved important to understanding the

distribution of the two main species (*C. parvum* and *C. hominis*) within the human population and in identifying species-specific risk factors [7].

In 2006 Cryptosporidium cases have increased in August and September (Figure 1) and so far show similar numbers at this time of year to those in four out of five years between 2001 and 2005. As in previous years, this rise in cases is mainly caused by *C. hominis*.

Figure 1 Cases of cryptosporidiosis reported in England and Wales: 1998 to 2006



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Code of practice for the prevention and control of health care associated infection

The Department of Health in England has published the Code of practice for the prevention and control of healthcare associated infection as part of the implementation of The Health Act 2006 [1]. An earlier draft of the code was published in July, and the Code has subsequently been restructured and shortened.

The purpose of the Code is to help NHS bodies plan and implement how they can prevent and control healthcare associated infections (HCAI). It sets out criteria by which managers of NHS organisations and other health care providers should ensure that patients are cared for in a clean environment,

where the risk of HCAI is kept as low as possible. The Healthcare Commission will be using this code to assess NHS performance, and similar requirements will be introduced for the private and voluntary healthcare sector and care homes.

References

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Respiratory

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Respiratory Routine Data Reports

 Laboratory reports of respiratory infections made to the Health Protection Agency Centre for Infections from HPA and NHS laboratories in England and Wales: weeks 35-39/06

 Laboratory reports of respiratory infections made to the Health Protection Agency Centre for Infections from HPA and NHS laboratories in England and Wales: weeks 35-39/06

Table 1 Reports of influenza infection made to HPA Centre for Infections, by week of report: weeks 35-39/2006

Week	Week 35	Week 36	Week 37	Week 38	Week 39	Total
Week ending	03/09/06	10/09/06	17/09/06	24/09/06	01/10/06	
Influenza A	3	1	–	–	1	5
Isolation	–	–	–	–	–	–
DIF*	–	–	–	–	–	–
Four-fold rise in paired sera	–	–	–	–	–	–
PCR	–	–	–	–	–	–
Other†	3	1	–	–	1	5
Influenza B	1	–	–	–	–	1
Isolation	–	–	–	–	–	–
DIF*	–	–	–	–	–	–
Four-fold rise in paired sera	–	–	–	–	–	–
PCR	–	–	–	–	–	–
Other†	1	–	–	–	–	1
Influenza (untyped)	–	–	–	–	–	–
Isolation	–	–	–	–	–	–
DIF*	–	–	–	–	–	–
Four-fold rise in paired sera	–	–	–	–	–	–
PCR	–	–	–	–	–	–
Other†	–	–	–	–	–	–

*DIF = Direct Immunofluorescence.

†'Other' = 'Antibody detection – Single high titre' or 'method not specified'.

Table 2 Respiratory viral detections by any method (culture, direct immunofluorescence, PCR, four-fold rise in paired sera, single high serology titre, genomic, electron microscopy, other method, other method unknown), by week of report: weeks 35-39/2006

Week	Week 35	Week 36	Week 37	Week 38	Week 39	Total
Week ending	03/09/06	10/09/06	17/09/06	24/09/06	01/10/06	
Adenovirus*	17	24	10	33	14	98
Coronavirus	–	–	–	–	–	–
Parainfluenza†	2	7	1	–	1	11
Rhinovirus	–	1	5	–	1	7
Respiratory syncytial virus (RSV)‡	2	4	3	2	3	14

*Respiratory samples only. Excludes diagnoses made by electron microscopy (EM).

†Includes parainfluenza types 1, 2, 3, 4, and untyped.

‡ Excludes diagnosis made by electron microscopy (EM).

Table 3 Respiratory viral detections by age group: weeks 35-39/2006

Age group (years)	<1 year	1-4 years	5-14 years	15-44 years	45-64 years	≥65 years	Unknown	Total
Adenovirus*	1	7	6	56	20	6	2	98
Coronavirus	–	–	–	–	–	–	–	–
Influenza A	–	–	–	4	–	2	–	6
Influenza B	–	–	1	–	–	–	–	1
Parainfluenza†	3	4	1	2	1	–	–	11
Rhinovirus	5	–	–	2	–	–	–	7
Respiratory syncytial virus (RSV)‡	11	2	–	–	–	1	–	14

*Respiratory samples only.

†includes parainfluenza types 1, 2, 3, 4, and untyped.

‡ Excludes diagnoses made by electron microscopy (EM).

Table 4 Laboratory reports of infections associated with atypical pneumonia, by week of report: weeks 35-39/2006

Week	Week 35	Week 36	Week 37	Week 38	Week 39	Total
Week ending	03/09/06	10/09/06	17/09/06	24/09/06	01/10/06	
<i>Coxiella burnettii</i>	1	1	1	–	–	3
Respiratory <i>Chlamydia</i> sp*	–	1	2	2	1	6
<i>Mycoplasma pneumoniae</i>	8	9	13	6	7	43
<i>Legionella</i> sp	10	41	45	21	29	146

*Includes *Chlamydia psittaci*, *Chlamydia pneumoniae*, and *Chlamydia* sp detected from blood, serum, and respiratory specimens.

Table 5a Reports of legionnaires' disease cases in England and Wales, by week of report: weeks 35-39/2006

Week	Week 35	Week 36	Week 37	Week 38	Week 39	Total
Week ending	03/09/06	10/09/06	17/09/06	24/09/06	01/10/06	
Nosocomial	–	–	–	–	–	–
Community	5	29	39 (3*)	13	20(2)†	106
Travel abroad	4	7	5	3	7(1)†	26
Travel UK	1	5	1	5	2	14
Total	10	41	45	21	29	146
Male	9	35	38	18	18	118
Female	1	6	7	3	11	28

*Cases of Pontiac fever (included in totals). † Non-pneumonic case (included in totals).

One hundred and forty cases were reported with pneumonia with an additional six non-pneumonic cases; 118 males aged between 37 and 91 years and 28 females aged between 46 and 86 years. One hundred and six cases had community-acquired infection. Nine deaths were reported (in six males aged between 40 and 80 years and three females aged between 67 and 80).

Forty cases were travel associated: United Kingdom (14), Spain (7), France (4), Italy (3), Malta (2), and one each of: Austria/France, Cruise – Europe, Czech Republic/Germany/Hungary, France/Spain, Germany, Greece, India, Netherlands, Portugal, and Turkey.

Table 5b Reports of legionnaires' disease cases by region of report in England and Wales: weeks 35-39/2006

Region	Nosocomial	Community	Travel (Abroad)	Travel (UK)	Total
North East	–	7 (3*)	2	–	9
Yorkshire & the Humber	–	6	4 (1†)	1	11
East Midlands	–	28	1	–	29
East of England	–	10	3	4	17
London	–	13(2†)	2	–	15
South East	–	13	3	1	17
South West	–	5	4	2	11
West Midlands	–	13	6	5	24
North West	–	8	1	–	9
Wales	–	3	–	1	4
Total	–	106	26	14	146

*Cases of Pontiac fever (included in totals). † Non-pneumonic case (included in totals).

Travel Health

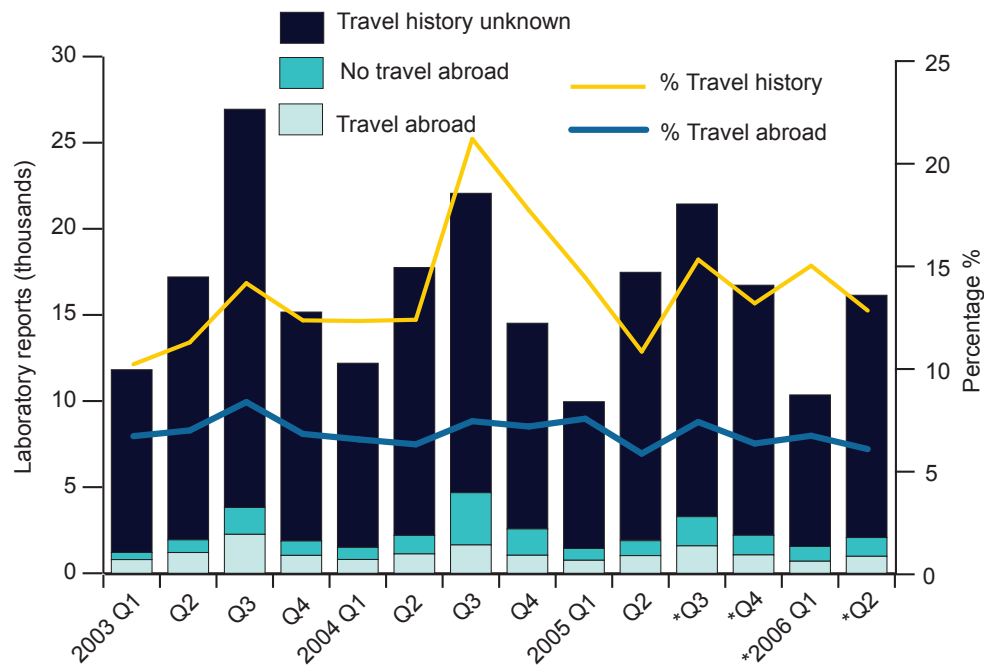
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Imported infections, England and Wales: April to June 2006

The data presented in this report should be interpreted in conjunction with the report Illness in England, Wales, and Northern Ireland associated with foreign travel – a baseline report to 2002 [1], especially the content under the section ‘Sources of data on travel-associated illness and their limitations for analysis’. Please note that all data presented are provisional and subject to change; the confirmed final data will be presented on a biennial basis.

Of the infections in table 1 that were reported via Co-Surv*, there was a decrease in the second quarter of 2006 of 7.5% (16,103†) compared to the same period in 2005 (17,400). (There may be late reports in 2006 that have yet to be loaded into Labbase2‡ that may account for this.) Travel history reporting has increased from 10.9% in the second quarter of 2005 to 12.9% in the same period in 2006. The actual number of reports associated with recent travel abroad has remained more or less the same (5.9% in 2005 and 6.1% in 2006). Since the quarterly reports began (January 2003), on average, 13.68% of laboratory reports had any travel history recorded, of which 51% stated recent travel (6.8% of the total), with no discernible trend over time (figure 1). Travel history reporting peaks in the summer months coinciding with the time when most United Kingdom (UK) residents travel abroad [2]. The proportion of reports with travel history information remains low, and limits the interpretation of the following data.

Figure 1 Travel history reporting for laboratory reports by quarter, England and Wales: 2003 to June 2006



*provisional data

Table Imported infections in England and Wales: April to June 2006

	Total reports for Apr - Jun				Cumulative totals			
	2006*		2005		2006*		2005	
Organism	Travel-related	All reports	Travel-related	All reports	Travel-related	All reports	Travel-related	All reports
Gastrointestinal Infections								
Bacterial								
<i>Salmonella</i> spp	578	2327	511	2039	912	3809	851	3710
<i>Campylobacter</i> spp	221	12046	288	13365	407	19432	508	20197
<i>Shigella flexneri</i>	11	111	16	96	25	183	21	165
<i>Shigella dysenteriae</i>	9	14	14	20	15	25	19	28
<i>Shigella sonnei</i>	22	168	36	275	32	276	66	448
<i>Shigella boydii</i>	24	45	17	30	33	65	34	54
Other (species unknown)	3	43	1	32	5	64	2	59
<i>Salmonella</i> Typhi	26	55	35	64	51	106	64	104
<i>Salmonella</i> Paratyphi (A,B,C)	54	85	33	68	87	151	50	97
<i>Vibrio cholerae</i> O1	5	5	6	6	5	5	6	6
<i>Vibrio parahaemolyticus</i>	2	6	–	6	2	6	2	12
Protozoal								
<i>Entamoeba histolytica</i>	6	37	11	61	13	72	24	129
<i>Giardia lamblia</i>	42	550	55	634	106	1141	113	1224
<i>Cryptosporidium</i>	6	576	11	636	19	1032	31	962
<i>Cyclospora</i> spp	1	6	4	27	1	7	7	34
Helminths								
<i>Strongyloides stercoralis</i>	1	6	–	2	2	9	–	7
<i>Strongyloides</i> spp	–	1	–	2	–	1	–	3
<i>Ancylostoma duodenale</i>	–	1	–	–	–	1	–	–
<i>Necator americanus</i>	–	–	–	–	–	–	–	–
Hookworm unspec	–	7	–	4	1	8	1	5
<i>Ascaris lumbricoides</i> (round worm)	2	13	–	18	3	22	2	33
<i>Trichuris trichiura</i> (whip worm)	–	5	3	10	1	8	4	20
<i>Hymenolepis diminuta</i>	–	–	–	–	–	–	–	–
<i>Hymenolepis nana</i>	–	2	–	1	–	4	–	3
<i>Hymenolepis</i> spp	–	–	–	–	–	–	–	–
<i>Taenia saginata</i>	–	5	1	7	–	9	4	19
<i>Taenia</i> spp	1	9	1	9	1	9	1	18
<i>Gnathostoma</i> spp	–	–	–	–	–	–	–	1
<i>Diphyllobothrium latum</i> (fish tape)	–	2	–	–	–	2	1	1

worm)									
Arthropod borne infections									
Malaria – total †	415	415	411	411	757	757	750	750	
<i>Plasmodium falciparum</i>	335	335	307	307	609	609	576	576	
<i>Pl. vivax</i>	54	54	68	68	90	90	101	101	
<i>Pl. malariae</i>	2	2	2	2	8	8	9	9	
<i>Pl. ovale</i>	20	20	30	30	45	45	58	58	
<i>Pl.unspecified</i>	1	1	2	2	1	1	3	3	
Mixed	2	2	2	2	3	3	3	3	
<i>Pl.knowles‡</i>	1	1	–	–	1	1	–	–	
Arboviruses									
Dengue virus	1	10	–	3	2	15	–	4	
Chikungunya virus	–	10	–	–	1	11	–	–	
Ross river virus	–	–	–	–	1	1	–	–	
Sandfly fever virus	–	–	–	–	–	–	–	–	
Unspecified	–	1	–	–	–	4	–	–	
Leishmaniases									
Cutaneous	1	1	5	6	1	1	9	13	
Visceral	–	–	2	2	–	–	3	3	
Unspecified	–	1	1	4	–	2	1	12	
Filariases									
<i>Loa loa</i>	–	1	–	2	–	1	–	2	
<i>Wucheria bancrofti</i>	–	–	–	–	–	–	–	–	
<i>Mansonella perstans</i>	–	–	–	–	–	–	–	1	
<i>Onchocerca volvulus</i>	–	–	–	–	–	–	–	–	
Unspecified	–	–	–	–	–	–	–	1	
Lyme borreliosis§	NA	NA	6	65	NA	NA	18	117	
Miscellaneous									
Schistosome infections									
<i>Schistosoma mansoni</i>	–	3	1	1	–	3	1	3	
<i>Schistosoma haematobium</i>	1	10	6	13	2	13	9	22	
<i>Schistosoma intercalatum</i>	–	–	–	–	–	–	–	–	
<i>Schistosoma spp</i>	1	3	1	2	1	5	2	5	
Other infections									

Leptospirosis§	NA	NA	2	5	NA	NA	5	12
Legionnaires' disease**	34	63	27	58	53	105	46	105
<i>Coxiella burnetii</i> (Q fever)	3	–	–	5	3	3	–	8
<i>Rickettsia</i> spp	2	2	1	5	2	6	1	9

All data extracted from LabBase2 15 September 2006 unless otherwise specified.

* All data for 2006 is provisional and may be subjected to change

†Data on cholera, *S.boydii* and *S.dysenteriae* were supplied by the Cfl Laboratory of Enteric Pathogens.

‡Data for malaria were supplied by the HPA Malaria Reference Laboratory and are provisional. Trends are best interpreted on an annual basis.

§Data for Lyme borreliosis and leptospirosis were supplied by the Zoonoses Surveillance Reference Unit, CDSC Wales on behalf of the Leptospira Reference Unit, Hereford and the Lyme Disease Reference Unit, Southampton.

**Data on legionnaires' disease were supplied by the Legionella Section of the Respiratory Diseases Department of Cfl.

Gastrointestinal infections

Bacterial infections

In the second quarter of 2006, *Salmonella* spp (non-typhoidal) were the most frequently reported infections associated with recent travel abroad (578 (24.8%) travel associated cases among 2327 total cases). Of 12,046 reports of *Campylobacter* spp, 221 (1.8%) were associated with recent travel abroad; the proportions of travel associated reports are consistent with previous quarters. Travel history reporting is usually more complete for *Salmonella* spp than for *Campylobacter* spp, with 59.4% of *Salmonella* spp reports having any information about travel history compared with only 3.7% for *Campylobacter* spp.

Of the salmonella reports that stated recent travel abroad, *Salmonella Enteritidis* was the most frequently reported (235 reports), particularly phage type (PT)4 (63 reports) PT1 (56 reports), PT21 (24 reports), and PT14B (21 reports). *S. Enteritidis* PT1 was most frequently associated with travel to Spain (16 of 56 reports) and PT 4 was most associated with travel to Tunisia and Egypt (14 and 11 of 63 reports respectively). Of all the salmonella reports, 115 reports were associated with travel to north Africa and the middle east (Egypt 40, Tunisia 32, Morocco 16, Turkey 14, and the remainder to nine other countries); 104 reports were associated with travel to Europe (Spain 67, Greece 11, with the remainder to 12 other countries); 102 reports were associated with travel to the Indian sub-continent (India 69, Pakistan 24, and the remainder to three other countries). Other countries of significance were Thailand (39 reports) and Kenya (37 reports); 60 reports had no country of travel stated, and the remainder of salmonella reports were associated with travel to 33 other countries throughout the world.

Of campylobacter reports that stated recent travel abroad, the most frequently reported country of travel was Spain (67/221), followed by India (17), Pakistan (14), Portugal and Turkey (11 each), and Tunisia (nine). Eleven reports had no country stated, and the remainder reported travel to 35 other countries.

In the second quarter of 2006, there were 381 reports of *Shigella* spp, the organisms that cause dysentery-like (bloody diarrhoea) illness, 168 were due to *S. sonnei*, 111 were due to *S. flexneri*, 45 were due to *S. boydii*, and 14 to *S. dysenteriae*. Eighteen per cent (69 reports) of all *Shigella* spp reported recent travel abroad. Nearly half (32/69) were associated with travel to the Indian sub-continent (22 to India, eight to Pakistan, and two to Nepal), 25 were associated with travel to north Africa and the middle east: 16 to Egypt (although one had also travelled to Australia, and another to Greece), four to Iraq, two to Morocco, and one each to Bahrain, Israel, and Tunisia); the remainder had travelled to seven other countries.

There were five reports of *Vibrio cholerae* O1 in the second quarter of 2006. All were *V.cholerae* biotype El Tor, of which three were serotype Ogawa (two of which stated travel to India, and one to Morocco), and two were serotype Inaba (both stated travel to India).

There were six reports of *Vibrio parahaemolyticus*, of which two stated travel to Kenya.

Intestinal protozoal infections

During the second quarter of 2006, there were 576 reports of *Cryptosporidium* (3.6% with travel history) in England and Wales, of which six (1%) reports stated recent travel abroad. Countries of travel reported via Co-Surv were India, Pakistan (two reports each), Spain, and Guyana (one report each). Sentinel surveillance submission forms to the UK *Cryptosporidium* Reference Unit (CRU) during the same time frame included 34 (12.1%) travel abroad-related cases. [Rachel Chalmers, Head

of UK Cryptosporidium Reference Unit, NPHS Wales, personal communication, 28 September 2006.] Countries of travel reported to CRU were India (five), Pakistan (five), Peru (two), Portugal (two), Egypt (two), and one report each from Australia, Bangladesh, Dominican Republic, Ecuador, Fiji, India and Thailand, Kenya, Nepal, Pakistan and Dubai, South Africa, Spain, Tenerife, and Tunisia; five reports had no country stated. Travel-related *Cryptosporidium* is under-estimated by routine surveillance.

There were 550 reports of *Giardia lamblia* (8.2% with travel history), of which 42 had stated recent travel abroad. The most frequently reported region of travel was the ISC (21 reports: 11 to India, eight to Pakistan, and one each to Nepal and Bangladesh) followed by Egypt (four), Mexico (two), Spain (two); country was not stated for four reports and the remainder stated travel to nine other countries.

Other infections reported in this category included 37 reports of *Entamoeba histolytica*, of which eight stated recent travel abroad. Countries of travel included Kenya, Uganda, Malaysia, Thailand, United States, South Africa, Zambia, and Africa and South America (unspecified countries). Note that some reports had more than one country of travel stated.

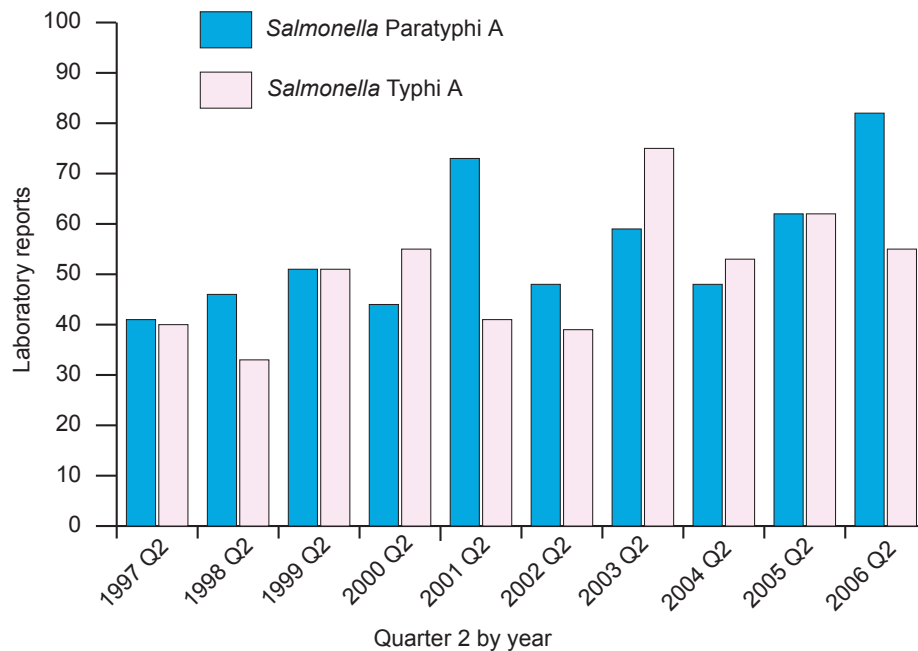
There were six reports of *Cyclospora* spp, of which one stated travel to Thailand; the remainder had no travel history.

Enteric fever

During the second quarter of 2006, there were 55 reports of *Salmonella* Typhi and 85 reports of *Salmonella* Paratyphi (82 were *S. Paratyphi* A of which 21 were PT 13, 14 were PT 1, and 13 were PT 1A; three were *S. Paratyphi* B). Reports of *S. Typhi* have decreased by 11.3% compared to the same period in 2005 (62 reports), while the number of *S. Paratyphi* A reports have increased by 32.3% compared to 2005 (62 reports); this is the second consecutive rise of similar magnitude in this quarter since 2004 (figure 2).

Seventy-seven per cent of all enteric fever reports in the second quarter in 2006 had some information about travel history compared to 71% in the same period in 2005. Of the 55 reports of *S. Typhi*, 26 (47%) stated recent travel abroad; all but one of these stated travel to the ISC (13 to India, five to Pakistan, three each to Nepal and Bangladesh, and one to Sri Lanka); one report had no country of travel stated. Seventy-nine per cent of *S. Paratyphi* A reports had travel history information and of those, 53 reports stated recent travel. Pakistan (25 reports) was the most frequently reported country of travel, followed by India (23), and Thailand (one); four reports had no country of travel stated. Of the reports of *S. Paratyphi* B, one stated travel to Peru and other two had no travel history. There were no reports of *S. Paratyphi* C during this quarter.

Figure 2 Laboratory reports of *Salmonella* Typhi and Paratyphi A in the second quarter of the year, England and Wales: 1997 to 2006



Data for 2006 are provisional.

Intestinal helminths

In the second quarter of 2006, there were 51 reports of intestinal helminth infection, of which only three stated recent travel abroad. Of the three, two were *Ascaris lumbricoides*, of which one stated travel to Cameroon and the other to France; the other report was of *Strongyloides stercoralis*, which stated travel to The Gambia. Travel history information for intestinal helminth infection is under-reported.

Arthropod borne infections

Malaria

During the second quarter of 2006, there were 415 cases of malaria reported in the United Kingdom, 81% (335 cases) of which were caused by the parasite, *Plasmodium falciparum* (which causes the most serious, and potentially fatal, form of malaria) and 13% (54 cases) were caused by *P. vivax*. Fifty-six per cent of malaria cases caused by *P. falciparum* were reported to be acquired in west Africa, followed by east Africa (14%). Fifty-six per cent of *P. vivax* cases were reported to be acquired in Asia. Of all malaria cases reported, 21% (86/415) had no country of travel stated.

One particular report of interest during this quarter was of malaria caused by *Plasmodium knowlesi* in a traveller who had been to south east Asia. *P. knowlesi* is an extremely rare cause of malaria in humans; it is a primate malaria parasite whose hosts include crab-eating macaques, pig-tailed macaques, and leaf monkeys. It is transmitted by mosquitoes of the *Anopheles leucosphyrus* group. Natural infection in humans was first reported in 1965 in whom it resembles *P. malariae*. Occasional sporadic cases have occurred since then. So far, *P. knowlesi* has been found in humans in Malaysia, Malaysian Borneo, and Thailand [4].

Arboviruses

Ten cases of dengue fever were reported through the routine laboratory reporting system compared to only three in the same period in 2005; only one report stated recent travel (to Indonesia).

There were ten reports of chikungunya virus reported through the routine laboratory reporting system, all with no travel history stated. Routine reporting, however, underestimates the number of infections. Since the beginning of 2006, there have been 93 cases of chikungunya diagnosed by the HPA Special Pathogens Reference Unit as of the end of August [3], the majority of which were diagnosed during the first six months of the year. Most of these cases were associated with travel to the islands of the Indian Ocean (in particular, Mauritius).

Leishmaniasis

There were two reports of leishmaniasis in the second quarter; one of which was of the cutaneous type, with stated travel to Belize.

Other infections

Schistosomiasis

Sixteen cases of schistosomiasis were reported in the second quarter of 2006, ten *S. haematobium* of which one stated travel to Ghana, three *S. mansoni* all with no travel history, and three unspecified species of which one stated travel to Malawi.

Legionnaires' disease

There were 63 cases of legionnaires' disease reported in the United Kingdom (UK) with onset dates in the second quarter of 2006, of which 34 (including three deaths) were acquired abroad. This is a slight increase on the same period in 2005 (27/58 cases). Four of the travel-associated cases were involved in four separate outbreaks in Malta, India, Greece, and Spain.

Rickettsial infections

There were two reports of *Rickettsia* spp, one reported as Rickettsia spotted fever (but with no organism specified) with travel to Mozambique and South Africa, and the other was *Rickettsia conorii* (African tick typhus) with stated travel to South Africa.

Discussion

Travel history reporting is still disappointingly low, especially for some infections that do not occur in the UK but are prevalent in more tropical regions of the world, such as dengue fever, chikungunya fever, helminth infection, schistosomiasis, and leishmaniasis. Most of these infections are preventable by insect bite prevention measures or by other awareness and prevention methods. With increased travel by UK residents to more tropical regions of the world [1], it is important that information about the infections that travellers may acquire or be exposed to while abroad is collected so that appropriate pre-travel health advice can be developed for travellers themselves, as well developing appropriate information and advice that can be disseminated to health professionals who may see returning travellers (or new entrants to the UK) with unusual illness.

References

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4. Jongwutiwes S, Putaporntip C, Iwasaki T, Sata T, Kanbara H. Naturally acquired *Plasmodium knowlesi* malaria in human, Thailand. *Emerg Inf Dis* 2004; **10**(12): 2211-3. Available at <http://www.cdc.gov/ncidod/eid/vol10no12/04-0293.htm>.

Footnotes (body text)

* Co-Surv is the routine laboratory reporting system that collects laboratory reports of all microorganisms isolated at nearly 400 NHS and other laboratories throughout England and Wales. The database is managed and accessed at the Centre for Infections.

† Note that these figures refer to data extracted from Co-Surv only, and do not include cholera, *S. dysenteriae*, *S. boydii*, legionnaires' disease, malaria, Lyme borreliosis, or leptospirosis where data has been obtained from other sources.

‡ Labbase2 is the database that collects laboratory reports of all microorganisms isolated at nearly 400 NHS and other laboratories throughout England and Wales. The database is managed and accessed at the Centre for Infections.