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EFSA-ECDC annual report on animal infections transmissible to humans in Europe

The European Food Safety Authority (EFSA) and the European Centre for Disease Prevention and Control (ECDC) have published their annual joint Community report on infectious diseases transmissible from animals to humans (zoonotic diseases) which affect over 350,000 people in the European Union (EU) every year. The report is prepared using data gathered from both organisations from EU Member States and four other European countries. The report shows that while the number of salmonella infections in humans is still falling, infections from listeria are increasing. Campylobacter infections still top the list of reported human zoonotic diseases.

The number of cases of salmonellosis fell for a third successive year, although it remained second in the list of human zoonotic diseases across the EU with 160,649 people infected in 2006 (35 cases per 100,000) compared to 173,879 confirmed cases in 2005 (38 people per 100,000). An average 5.6% of all raw broiler meat samples were reported to be infected with *Salmonella* in the European Union and in some instances the levels of salmonella positive samples were as high as 67.6%.

The number of human listeriosis cases was up by 8.6% in the EU from 1,427 cases in 2005 to 1,583 in 2006, with the number of cases per 100,000 having increased by 59% over the last five years. Although relatively rare, listeriosis is more serious than many other foodborne infections, particularly among vulnerable groups such as the elderly: 56% of listeria infections occurred in individuals over 65 years of age. Ready-to-eat foodstuffs, such as cheeses and fishery and meat products, tended to be at the origin of most human infections.

Over 175,000 people in the EU suffered from campylobacter infections in 2006. Forty-six cases in every 100,000 people were reported in 2006, falling from 52 cases per 100,000 in 2005 (195,426 confirmed human cases in 2005). Campylobacter infections generally cause an inflammatory and sometimes bloody diarrhea with cramps, fever and pain. The most common foodborne route of infection is through poultry meat. An average 35% of all raw broiler meat samples in the EU tested positive for *Campylobacter* spp with positive samples being reported in levels up to 66.3% in some instances. In human campylobacter cases, high levels of resistance to ciprofloxacin was reported in 2006 (up to 45%), thereby causing severe problems in treating these infections. Ciprofloxacin is the drug most commonly used in severe campylobacter infections in humans that require antibiotic therapy. This resistance is also common in campylobacter from poultry meat and live poultry, pigs and cattle.

The report also provides data on other important zoonotic diseases such as *Escherichia coli* (verocytotoxin and Shiga toxin producing *E. coli*), *Mycobacterium bovis*, *Brucella*, *Yersinia*, *Trichinella*, *Echinococcus*, and *Toxoplasma*.

The summary report, full report and annexes are available on EFSA's website at http://www.efsa.europa.eu/EFSA/efsa_locale-1178620753812_1178671312912.htm

Further information

EFSA-ECDC annual report on animal infections transmissible to humans: Salmonella infections in humans in the EU down, Lis teria infections up Campylobacter still most frequently reported animal infection transmissible to humans. Press release. EFSA/ECDC 19 December 2007. Available at
<http://www.efsa.europa.eu/EFSA/News_PR/pr_zoonoses_efsa-ecdc1_en.pdf>.

Training fellowships for intervention epidemiology in Europe

The European Centre for Disease Prevention and Control (ECDC) is recruiting for the 14th cohort of fellows in the European Programme for Intervention Epidemiology Training (EPIET), which will start in September 2008. The aim of EPIET is to enable fellows to assume service responsibilities in communicable disease epidemiology. The in-service training focuses on outbreak investigations, disease surveillance, applied research and communications with decision-makers, the media, the public and the scientific community. Fellows will attend a three-week intensive introductory course and then be located in a host institute in one of the participating training sites, based in European Union Member States and Norway .

Detailed information about EPIET can be obtained from <http://www.epiet.org> . The vacancy notice for application can be found at <http://ecdc.europa.eu/Recruitment.html>

Respiratory

Laboratory reports of respiratory infections made to Cfl from HPA and NHS laboratories in England and Wales: weeks 49-52/2007

Data are recorded by week of report, but include only specimens taken in the last eight weeks (i.e. recent specimens)

Table 1 Reports of influenza infection made to Cfl, by week of report: weeks 49-52/2007

| Week | Week 49 | Week 50 | Week 51 | Week 52 | Total |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|--------------|
| Week ending | 09/12/07 | 16/12/07 | 23/12/07 | 30/12/07 | |
| Influenza A | 6 | 17 | 11 | 3 | 37 |
| Isolation | 2 | 1 | 3 | 2 | 8 |
| *DIF | – | – | – | – | – |
| Four-fold rise in paired sera | – | – | – | – | – |
| PCR | 1 | 8 | 4 | 1 | 14 |
| †Other | – | 3 | 2 | – | 5 |
| Influenza B | 2 | 2 | – | – | 4 |
| Isolation | – | – | – | – | – |
| *DIF | 2 | – | – | – | 2 |
| Four-fold rise in paired sera | – | – | – | – | – |
| PCR | – | 2 | – | – | 2 |
| †Other | – | – | – | – | – |
| 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), by week of report: weeks 49-52/2007

| Week | Week 49 | Week 50 | Week 51 | Week 52 | Total |
|-----------------------------------|----------|----------|----------|----------|-------|
| Week ending | 09/12/07 | 16/12/07 | 23/12/07 | 30/12/07 | |
| Adenovirus [*] | 18 | 25 | 14 | 17 | 74 |
| Coronavirus | – | – | 1 | 2 | 3 |
| Parainfluenza [†] | 25 | 12 | 13 | 21 | 71 |
| Rhinovirus | 40 | 31 | 26 | 35 | 132 |
| Respiratory Syncytial Virus (RSV) | 629 | 585 | 450 | 310 | 1974 |

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

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

Table 3 Respiratory viral detections by age group: weeks 49-52/2007

| Age group (years) | <1 year | 1-4 years | 5-14 years | 15-44 years | 45-64 years | ≥65 years | Unknown | Total |
|-----------------------------------|---------|-----------|------------|-------------|-------------|-----------|---------|-------|
| Adenovirus [*] | 23 | 13 | 7 | 25 | 3 | 3 | – | 74 |
| Coronavirus | – | 2 | – | 1 | – | – | – | 3 |
| Influenza A | 7 | 7 | 3 | 9 | 6 | 5 | – | 37 |
| Influenza B | 1 | – | – | 3 | – | – | – | 4 |
| Parainfluenza [†] | 31 | 15 | 5 | 10 | 8 | 1 | 1 | 71 |
| Rhinovirus | 67 | 27 | 9 | 14 | 11 | 4 | – | 132 |
| Respiratory syncytial virus (RSV) | 1675 | 221 | 22 | 21 | 18 | 9 | 8 | 1974 |

*Respiratory samples only.

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

Table 4 Laboratory reports of infections associated with atypical pneumonia, by week of report: weeks 49-52/2007

| Week | Week 49 | Week 50 | Week 51 | Week 52 | Total |
|----------------------------------|----------|----------|----------|----------|-------|
| Week ending | 09/12/07 | 16/12/07 | 23/12/07 | 30/12/07 | |
| <i>Coxiella burnetii</i> | – | 1 | – | – | 1 |
| Respiratory <i>Chlamydia</i> sp. | 2 | 1 | – | – | 3 |
| <i>Mycoplasma pneumoniae</i> | 31 | 15 | 13 | 2 | 61 |
| Legionella sp. | 5 | 6 | 4 | – | 15 |

*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 49-52/2007

| Week | Week 49 | Week 50 | Week 51 | Week 52 | Total |
|---------------|----------|----------|----------|----------|-----------|
| Week ending | 09/12/07 | 16/12/07 | 23/12/07 | 30/12/07 | |
| Nosocomial | – | – | – | – | – |
| Community | 4 | 3 | 2 | – | 9 |
| Travel Abroad | 1 | 1 | 1 | – | 3 |
| Travel UK | – | 2 | 1 | – | 3 |
| Total | 5 | 6 | 4 | – | 15 |
| Male | 3 | 3 | 3 | – | 9 |
| Female | 2 | 3 | 1 | – | 6 |

Fifteen cases of legionnaires' disease with pneumonia were reported; nine males aged from 49 to 64 years and six females aged from 45 to 78 years. Nine cases had community acquired infection. One death was reported in a 59 year old male.

Six cases were travel associated: United Kingdom (3), France (1), Italy (1), Turkey (1).

Table 5b Reports of legionnaires' disease cases by region of report in England and Wales: weeks 49-52/2007

| Region/Country | Nosocomial | Community | Travel Abroad | Travel UK | Total |
|--------------------|------------|-----------|---------------|-----------|-----------|
| North East | – | – | – | – | – |
| Yorkshire & Humber | – | 1 | – | 1 | 2 |
| East Midlands | – | – | – | 1 | 1 |
| East of England | – | – | – | – | – |
| London | – | 4 | – | 1 | 5 |
| South East | – | 1 | – | – | 1 |
| South West | – | – | – | – | – |
| West Midlands | – | – | – | – | – |
| North West | – | 3 | 2 | – | 5 |
| Wales | – | – | 1 | – | 1 |
| Unknown | – | – | – | – | – |
| Total | – | 9 | 3 | 3 | 15 |

Travel Health

Imported infections, England and Wales: July to September 2007

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. All data presented in table 1 are for laboratory reports with specimen dates within the third quarter unless specified otherwise.

Table 1. Imported infections, England and Wales: July to September 2007

| Organism | Total reports for Q3 (Jul - Sep) | | | | Cumulative totals for Jan to Sep | | | |
|-------------------------------------|----------------------------------|-------------|----------------|-------------|----------------------------------|-------------|----------------|-------------|
| | 2007* | | 2006 | | 2007* | | 2006 | |
| | Travel-related | All reports | Travel-related | All reports | Travel-related | All reports | Travel-related | All reports |
| Gastrointestinal Infections | | | | | | | | |
| Bacterial | | | | | | | | |
| <i>Salmonella</i> spp | 819 | 4088 | 892 | 4591 | 1796 | 8805 | 1840 | 8518 |
| <i>Campylobacter</i> spp | 424 | 16568 | 340 | 14957 | 981 | 38453 | 768 | 35770 |
| <i>Shigella flexneri</i> | 7 | 83 | 2 | 55 | 17 | 240 | 31 | 251 |
| <i>Shigella dysenteriae</i> † | 7 | 11 | 10 | 10 | 20 | 34 | 25 | 35 |
| <i>Shigella sonnei</i> | 35 | 305 | 38 | 194 | 102 | 789 | 74 | 479 |
| <i>Shigella boydii</i> † | 11 | 20 | 11 | 19 | 52 | 93 | 44 | 84 |
| Other (species unknown) | 2 | 47 | 3 | 32 | 3 | 98 | 7 | 94 |
| <i>Salmonella</i> Typhi | 46 | 81 | 43 | 78 | 107 | 209 | 93 | 185 |
| <i>Salmonella</i> Paratyphi (A,B,C) | 38 | 64 | 41 | 75 | 99 | 173 | 128 | 224 |
| <i>Vibrio cholerae</i> O1† | 5 | 5 | 4 | 4 | 19 | 20 | 9 | 9 |
| <i>Vibrio parahaemolyticus</i> | – | 22 | – | 1 | 3 | 29 | 5 | 11 |
| Protozoal | | | | | | | | |
| <i>Entamoeba histolytica</i> | – | 17 | – | 22 | 1 | 49 | 4 | 72 |
| <i>Giardia lamblia</i> | 75 | 874 | 78 | 909 | 198 | 2127 | 215 | 2148 |
| <i>Cryptosporidium</i> | 68 | 1102 | 65 | 1388 | 89 | 2150 | 84 | 2483 |
| <i>Cyclospora</i> spp | 3 | 17 | 1 | 8 | 9 | 33 | 2 | 17 |
| Intestinal helminths | | | | | | | | |
| <i>Strongyloides stercoralis</i> | 1 | 3 | 3 | 8 | 1 | 10 | 7 | 20 |

| | | | | | | | | |
|---|-----|-----|-----|-----|------|------|------|------|
| <i>Strongyloides</i> spp | – | 2 | – | 1 | 1 | 7 | – | 3 |
| <i>Ancylostoma duodenale</i> | – | – | – | – | – | – | – | 1 |
| <i>Necator americanus</i> | – | – | – | – | – | – | – | – |
| Hookworm unspec | 1 | 7 | 3 | 8 | 3 | 15 | 4 | 17 |
| <i>Ascaris lumbricoides</i> (round worm) | 2 | 22 | 3 | 13 | 7 | 44 | 8 | 42 |
| <i>Trichuris trichiura</i> (whip worm) | 1 | 6 | 2 | 9 | 2 | 13 | 6 | 25 |
| <i>Hymenolepis diminuta</i> | – | – | – | – | – | – | – | – |
| <i>Hymenolepis nana</i> | – | – | – | 6 | 1 | 3 | – | 10 |
| <i>Hymenolepis</i> spp | – | – | – | – | – | – | – | – |
| <i>Taenia saginata</i> | 1 | 10 | 2 | 20 | 7 | 37 | 7 | 46 |
| <i>Taenia</i> spp | 3 | 8 | 4 | 12 | 4 | 29 | 5 | 31 |
| <i>Gnathostoma</i> spp | – | – | – | 1 | – | – | – | 1 |
| <i>Diphyllobothrium latum</i> (fish tape worm) | 1 | 1 | – | 3 | 1 | 1 | – | 5 |
| Arthropod borne infections | | | | | | | | |
| Malaria - total ‡ | 499 | 499 | 599 | 599 | 1123 | 1123 | 1356 | 1356 |
| <i>Plasmodium falciparum</i> | 367 | 367 | 459 | 459 | 809 | 809 | 1068 | 1068 |
| <i>Pl. vivax</i> | 93 | 93 | 95 | 95 | 201 | 201 | 185 | 185 |
| <i>Pl. malariae</i> | 9 | 9 | 9 | 9 | 22 | 22 | 17 | 17 |
| <i>Pl. ovale</i> | 27 | 27 | 28 | 28 | 80 | 80 | 73 | 73 |
| Pl. unspecified | – | – | – | – | – | – | 1 | 1 |
| Mixed | 3 | 3 | 8 | 8 | 11 | 11 | 10 | 10 |
| Other (<i>P. knowlesi</i>) | – | – | – | – | – | – | 1 | 1 |
| Arboviruses | | | | | | | | |
| Dengue virus †† | 51 | 61 | NA | NA | 65 | 78 | NA | NA |
| Chikungunya virus †† | 10 | 13 | NA | NA | 12 | 15 | NA | NA |
| Ross river virus †† | – | – | NA | NA | – | – | NA | NA |
| Sandfly fever virus †† | – | – | NA | NA | – | – | NA | NA |
| Eastern Equine Encephalitis †† | 1 | 1 | NA | NA | 1 | 1 | NA | NA |
| West Nile virus †† | – | – | NA | NA | – | – | NA | NA |
| Unspecified †† | 27 | 31 | NA | NA | 37 | 41 | NA | NA |
| Leishmaniases | | | | | | | | |
| Cutaneous | 3 | 5 | 6 | 16 | 8 | 11 | 20 | 34 |
| Visceral | 3 | 3 | 1 | 2 | 8 | 9 | 4 | 7 |
| Unspecified | 1 | 7 | 2 | 5 | 2 | 15 | 2 | 7 |
| Filariases | | | | | | | | |

| | | | | | | | | |
|------------------------------------|----|-----|----|-----|----|-----|-----|-----|
| <i>Loa loa</i> | – | 1 | 1 | 2 | – | 1 | 1 | 3 |
| <i>Wuchereria bancrofti</i> | – | – | – | – | – | – | 1 | 1 |
| <i>Mansonella perstans</i> | 1 | 1 | – | – | 1 | 1 | – | – |
| <i>Onchocerca volvulus</i> | – | – | – | – | – | – | – | – |
| Unspecified | – | – | – | – | – | – | – | – |
| Lyme borreliosis § | | | | | | | | |
| Lyme borreliosis § | NA | NA | NA | NA | NA | NA | NA | NA |
| Trypanosomiasis | 1 | 2 | – | – | 1 | 2 | – | – |
| Miscellaneous | | | | | | | | |
| Schistosome infections | | | | | | | | |
| <i>Schistosoma mansoni</i> | – | 11 | – | 3 | 1 | 13 | – | 8 |
| <i>Schistosoma haematobium</i> | – | 9 | 3 | 7 | 4 | 26 | 5 | 23 |
| <i>Schistosoma intercalatum</i> | – | – | – | – | – | – | – | – |
| <i>Schistosoma</i> spp | 1 | 3 | 1 | 7 | 5 | 19 | 2 | 13 |
| Other infections | | | | | | | | |
| Leptospirosis § | NA | NA | NA | NA | NA | NA | NA | NA |
| Legionnaires' disease** | 69 | 178 | 73 | 269 | 79 | 231 | 128 | 381 |
| <i>Coxiella burnetii</i> (Q fever) | – | 24 | – | 10 | 2 | 43 | – | 18 |
| <i>Rickettsia</i> spp †† | 20 | 39 | NA | NA | 32 | 66 | NA | NA |

All data extracted from Labbase 12 December 2007 unless otherwise specified.

*All data for 2007 is provisional and may be subject to change.

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

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

§Data for Lyme borreliosis and leptospirosis 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 from the Special Pathogens Reference Unit, Centre for Emergency Preparedness and response

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

NA – Not available

Gastrointestinal infections

Salmonella spp (non-typhoidal)

There were 4,088 laboratory reports of *Salmonella* spp, of which 819 (20%) were associated with recent travel abroad. *Salmonella* Enteritidis was the most common serotype associated with travel abroad (434/819, 53%), followed by *S. Typhimurium* (95/819, 12%) and *S. Virchow* (31/819, 4%). The most commonly reported countries of travel for salmonella infections are listed in tables 2 and 3.

Table 2. Laboratory reports of *Salmonella* Enteritidis associated with foreign travel, England and Wales: third quarter 2007

| Country of travel | <i>Salmonella</i> Enteritidis phage types (PT) | | | | | | | | Total |
|------------------------|--|-----------|-----------|-----------|-----------|-----------|-----------|---------------|------------|
| | PT 1 | PT 21 | PT 4 | PT 14B | PT 8 | PT 6 | Other | PT not stated | |
| Turkey | 1 | 27 | 11 | 4 | 1 | 18 | 7 | 5 | 74 |
| Spain | 18 | 2 | 3 | 11 | 9 | 1 | 9 | 2 | 55 |
| Greece | 10 | 12 | 2 | 11 | – | – | 6 | 2 | 43 |
| Portugal | 8 | 3 | 7 | 4 | 1 | 1 | 8 | – | 32 |
| Cyprus | 2 | 3 | 2 | 2 | 5 | 2 | 2 | – | 18 |
| Morocco | 13 | – | – | 4 | – | – | – | 1 | 18 |
| Tunisia | 3 | – | 1 | 1 | 6 | 3 | – | 1 | 15 |
| Egypt | – | – | 6 | 1 | 1 | – | 4 | 1 | 13 |
| France | 1 | – | 5 | – | 1 | – | 1 | – | 8 |
| Kenya | 5 | 1 | 1 | – | 1 | – | – | – | 8 |
| Other countries (N=44) | 12 | 11 | 14 | 5 | 12 | 11 | 24 | 9 | 98 |
| Country not stated | 9 | 7 | 9 | 6 | 5 | 4 | 9 | 3 | 52 |
| Total | 82 | 66 | 61 | 49 | 42 | 40 | 70 | 24 | 434 |

Table 3. Laboratory reports of other *Salmonella* spp associated with foreign travel, England and Wales: third quarter 2007

| Country of travel | <i>S. Typhimurium</i> | <i>S. Virchow</i> | Other serogroups (N=82) | Total |
|------------------------|-----------------------|-------------------|-------------------------|------------|
| Pakistan | 9 | 1 | 27 | 37 |
| Egypt | 4 | 9 | 23 | 36 |
| India | 5 | 4 | 19 | 28 |
| Turkey | 8 | 2 | 15 | 25 |
| Spain | 12 | – | 9 | 21 |
| Thailand | 7 | 2 | 11 | 20 |
| Tunisia | 2 | – | 12 | 14 |
| Cyprus | 2 | 1 | 10 | 13 |
| Greece | 4 | 1 | 8 | 13 |
| Morocco | 5 | 1 | 5 | 11 |
| Other countries (N=42) | 18 | 8 | 101 | 127 |
| Country not stated | 19 | 2 | 19 | 40 |
| Total | 95 | 31 | 259 | 385 |

***Campylobacter* spp**

There were 16,568 laboratory reports of *Campylobacter* spp, of which 424 (3%) were associated with recent travel abroad. *Campylobacter* infections are mostly associated with travel to Spain in the summer months. The ten most frequently reported countries of travel for *Campylobacter* infections are listed in table 4.

Table 4. Laboratory reports of *Campylobacter* spp associated with foreign travel, England and Wales: third quarter 2007

| Country of travel | <i>Campylobacter</i> spp |
|------------------------|--------------------------|
| Spain | 102 |
| Turkey | 38 |
| Morocco | 26 |
| Portugal | 25 |
| France | 23 |
| Greece | 20 |
| India | 20 |
| Pakistan | 10 |
| Cyprus | 9 |
| Thailand | 7 |
| Other countries (N=59) | 117 |
| Country not stated | 27 |
| Total | 424 |

***Shigella* spp**

There were 466 reports of shigella infection in the third quarter of 2007, of which 62 (1%) were associated with recent foreign travel. The majority of infections were due to *S. sonnei* (305/466, 65%), followed by *S. flexneri* (83/466, 18%), unspecified (47), *S. boydii* (20) and *S. dysenteriae* (11). Countries of travel for each species are listed in table 5.

Table 5. Laboratory reports of *Shigella* spp associated with foreign travel, England and Wales : third quarter 2007

| Country of travel | <i>Shigella</i> species | | | | | Total |
|------------------------|-------------------------|------------------|-----------------------|------------------|-----------------------------|-----------|
| | <i>S. flexneri</i> | <i>S. sonnei</i> | <i>S. dysenteriae</i> | <i>S. boydii</i> | <i>Shigella</i> unspecified | |
| Egypt | 4 | 7 | 3 | 4 | 2 | 20 |
| India | 2 | - | 2 | 5 | - | 9 |
| Morocco | - | 6 | - | - | - | 6 |
| Kenya | - | 2 | - | 1 | - | 3 |
| Dominican Republic | - | 3 | - | - | - | 3 |
| Pakistan | - | 2 | - | - | - | 2 |
| Africa unspecified | - | 2 | - | - | - | 2 |
| Syria | - | 2 | - | - | - | 2 |
| Dominica | - | 2 | - | - | - | 2 |
| Other countries (N=10) | 1 | 8 | 2 | 1 | - | 12 |
| Country not stated | - | 1 | - | - | - | 1 |
| Total | 7 | 35 | 7 | 11 | 2 | 62 |

Cholera

There were five reports of *Vibrio cholerae* serogroup O1; three were associated with travel to Pakistan, one to India, and one to Bangladesh.

Cryptosporidium

In total, 1102 cryptosporidium infections were reported, of which 68 (6%) were associated with recent foreign travel. Countries of travel are listed in table 6. Of note is that there were 14 reports of *Cryptosporidium* associated with travel to the Dominican Republic compared to only two during the same period in 2006. There was an outbreak reported in August that involved UK tourists at a hotel complex, which may have contributed to this increase [2].

Table 6. Laboratory reports of *Cryptosporidium* associated with foreign travel, England and Wales: third quarter 2007

| Country of travel | <i>Cryptosporidium</i> |
|--------------------------|-------------------------------|
| Spain | 15 |
| Dominican Republic | 14 |
| Turkey | 5 |
| India | 5 |
| Pakistan | 5 |
| Tunisia | 4 |
| France | 3 |
| Kenya | 2 |
| Bulgaria | 2 |
| USA | 2 |
| Other countries (N=8) | 8 |
| Country not stated | 3 |
| Total | 68 |

Giardia lamblia

There 874 giardia infections reported, of which 75 (9%) were associated with recent foreign travel. Countries of travel are listed in table 7.

Table 7. Laboratory reports of *Giardia lamblia* associated with foreign travel, England and Wales : third quarter 2007

| Country of travel | <i>Giardia lamblia</i> |
|--------------------------|-------------------------------|
| India | 20 |
| Spain | 6 |
| Turkey | 4 |
| Greece | 4 |
| Peru | 4 |
| Pakistan | 3 |
| Tunisia | 3 |
| Morocco | 2 |
| Bangladesh | 2 |
| Other countries (N=23) | 27 |
| Total | 75 |

Other intestinal protozoa reported were *Entamoeba histolytica* (17), of which none had any travel history stated, and *Cyclospora* spp (eight), of which three had recently travelled (Morocco, Thailand, and South America).

Enteric fever

During the third quarter of 2007, there were 81 reports of *S. Typhi* and 64 reports of *S. Paratyphi* (61 *S. Paratyphi A*, two *S. Paratyphi B*, and one *S. Paratyphi C*).

Fifty-seven per cent (46/81) of *S. Typhi* reports were associated with recent foreign travel; 59% (36/61) of *S. Paratyphi A* and both *S. Paratyphi B* reports were associated with recent foreign travel. Countries of travel are listed in table 8.

Table 8. Laboratory reports of enteric fever associated with foreign travel, England and Wales : third quarter 2007.

| Country of travel | Salmonella spp | | | Total |
|--------------------|----------------|-----------------|-----------------|-----------|
| | S . Typhi | S . Paratyphi A | S . Paratyphi B | |
| India | 11 | 18 | – | 29 |
| Pakistan | 13 | 6 | – | 19 |
| Bangladesh | 7 | 8 | – | 15 |
| Nigeria | 3 | – | – | 3 |
| Tanzania | 2 | – | – | 2 |
| Afghanistan | – | 1 | – | 1 |
| Africa | 1 | – | – | 1 |
| Ecuador | 1 | – | – | 1 |
| Indonesia | 1 | – | – | 1 |
| Nepal | 1 | – | – | 1 |
| Turkey | – | – | 1 | 1 |
| Country not stated | 6 | 3 | 1 | 10 |
| Total | 46 | 36 | 2 | 84 |

Intestinal helminths

In the third quarter of 2007 there were 59 reports of helminth infection, of which ten were associated with recent foreign travel. Four reports of infection with *Taenia* spp were associated with travel to Ethiopia, two reports of *Ascaris lumbricoides* were associated with travel to Madagascar and South America, one report of hookworm infection was associated with travel to Bangladesh, one report of infection with *Diphyllobothrium latum* was associated with travel to Uganda, one report of infection with *Strongyloides stercoralis* was associated with travel to Madagascar, and one report of *Trichiuris trichuria* was associated with travel to India. Helminth infections can persist in the body for months and it may not be possible to say for certain where these infections were acquired; they are probably associated with new entrants to the UK as well as short-term travellers.

Arthropod borne infections

Malaria

During the third quarter of 2007, there were 499 cases of malaria reported in the United Kingdom, 74% (367 cases) of which were caused by the parasite, *Plasmodium falciparum* and 19% (93 cases) were caused by *P. vivax*. Where country of travel was known (289), 90% of malaria cases caused by *P. falciparum* were reported to be acquired in west Africa, followed by east Africa (6%). Eighty-seven percent (56/67) of *P. vivax* cases, where country was known, were reported to be acquired in Asia.

Dengue

Sixty-one cases (includes 14 confirmed, 46 probable, and one possible) were reported by the

HPA Special Pathogens Reference Unit (SPRU) in the third quarter. Of those, 51 had information about foreign travel. The majority of cases had travelled to South East Asia (17) and the Indian Sub-continent (15). The countries of travel most commonly reported were Thailand, India, Viet Nam, Pakistan, and Cambodia. Other cases had travelled to countries in South and Central America and sub-Saharan Africa.

Chikungunya

Thirteen cases of chikungunya infection (ten confirmed, three suspected) were reported by the SPRU, of which ten had information about countries of travel. Nine cases reported travel to the Indian sub-continent (six India, three Sri Lanka) where there has been recent chikungunya activity, and one other case reported travel to the Seychelles.

Leishmaniasis

There were fifteen cases of leishmaniasis reported in the third quarter, five of which were presumed to be cutaneous leishmaniasis and three visceral leishmaniasis. Three of the cutaneous infections had information about recent foreign travel and were associated with travel to Afghanistan, Pakistan, and Belize. All the visceral infections were associated with travel to Afghanistan, Tunisia, and one had travelled to three countries: Peru, Argentina, and Spain.

Filariasis

There was one report of a case of infection with the filarial organism *Mansonella perstans*; this was associated with travel to Uganda.

Trypanosomiasis

There were two reports of trypanosomiasis, one of which was confirmed as *T. brucei* and was associated with travel to Zambia.

Eastern equine encephalitis

There was one case of Eastern equine encephalitis reported in the third quarter associated with travel to the United States.

Other infections

Schistosomiasis

Only one out of 22 reports of infection with *Schistosoma* spp. had any information about travel, and was associated with travel to East Africa.

Rickettsial infections

There were 39 cases of rickettsial infection reported by the SPRU in the third quarter. Countries of travel were available for 20 cases, of which six were associated with travel to sub-Saharan and southern Africa, five were associated with travel to European countries, and the remainder were associated with travel to ten other countries worldwide.

Legionnaires' disease

There were 178 cases of legionnaires' disease reported in the third quarter, of which 69 (39%) were associated with foreign travel. Seventeen of the travel-associated cases were involved in eight different outbreaks occurring in Italy, Bulgaria, Turkey, the United States, France, and one occurred on a Mediterranean cruise.

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