Travellers' Diarrhoea

Introduction

Travellers' diarrhoea (TD) is a syndrome that commonly affects travellers caused by one of several different organisms, the most common being enterotoxigenic *Escherichia coli* (ETEC). Other agents such as *Campylobacter jejuni*, *Salmonella, Shigella,* other *E. coli*, viruses, e.g. Norovirus, and protozoa, e.g. *Cryptosporidium* spp and *Giardia* spp*,* may also cause disease.

Cholera is rare as a cause of diarrhoea in travellers.

Epidemiology

(Data from the Travel Health Surveillance Section of the Health Protection Agency Communicable Disease Surveillance Centre)

Global Epidemiology

Travellers' diarrhoea may be caused by many different bacteria, viruses, and parasites most of which are endemic worldwide. It is therefore not possible to give an accurate account of the global epidemiology of separate organisms.

Diarrhoea caused by organisms such as enteroviruses, enterotoxigenic *E. coli* (ETEC), non-typhoidal *Salmonella* spp, *Campylobacter* spp, *Giardia*, and *Cryptosporidium* are seen all over the world including resource-rich countries such as those in Europe and north America, Australia and New Zealand. Other organisms, such as ETEC, and those at the more severe end of the spectrum, such as *Entamoeba*, *Shigella*, *Salmonella* Typhi and Paratyphi, and *Vibrio cholerae*, tend to be more common in resource-poor countries of Africa, Asia and Latin America, where sanitation and food hygiene practices may be sub-standard.

It has been estimated that travellers' diarrhoea affects 20 to 50% of travellers from resource-rich to resource-poor countries. (1) Efforts to determine the aetiology of travellers' diarrhoea in returning travellers encounter several difficulties. Most cases of travellers' diarrhoea are relatively mild and self-limiting and the patient may not go to the doctor to report it. Second, if the patient is ill enough to go to a doctor, a sample may not be obtained for laboratory confirmation. Third, if a sample is taken and analysed, it may not be possible to identify a causative organism. In fact, it has been estimated that in the UK, only 1 in 136 cases of gastrointestinal infection is reported to routine surveillance systems (2).

Travellers' diarrhoea in travellers from England, Wales, and Northern Ireland

Figure 1 Laboratory reports of gastrointestinal illness reported as being associated with recent travel abroad by organism category, England, Wales, and Northern Ireland, 1990 – 2002
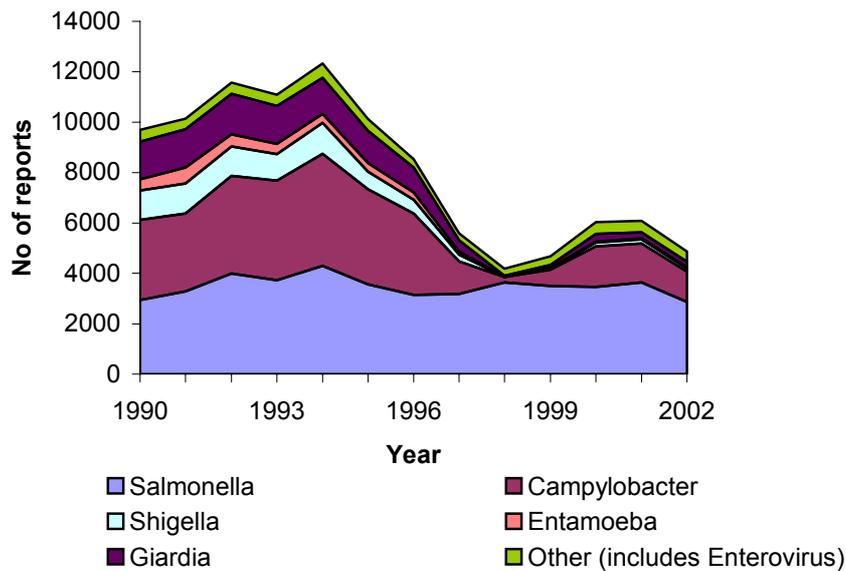
Figure 1 shows the laboratory reports to CDSC of organisms commonly causing gastrointestinal illness in England, Wales, and Northern Ireland from 1990 to 2002 where the 'recent travel abroad' field in LabBase[1] was specified as 'yes'. From 1990 to 1994, there was a general increase in laboratory reports of gastrointestinal illness associated with recent travel abroad. The number of reports of *Salmonella* and *Campylobacter* were similar and accounted for approximately two thirds of the total travel-related gastrointestinal disease reported. *Giardia* accounted for approximately 15% of all reports and *Shigella* for around 10% in the same period. Enteroviruses causing gastrointestinal illness associated with recent travel were not reported at all until 1999 and then only in very small numbers, therefore in figure 1 they have been classed as 'other'. After 1994, there was a noticeable decline in the number of gastrointestinal illness reports associated with recent travel abroad. This may partly reflect the decline in reporting of travel history, and it seems to be predominantly an effect of the very sharp decrease in reports of *Campylobacter*, the precise reasons for which are unknown. (Enhanced surveillance systems for *Campylobacter* have estimated that around 20% of the total reports for *Campylobacter* are probably associated with foreign travel, and that routine surveillance systems greatly under estimate this figure. (3)) *Giardia*, *Shigella* and *Entamoeba* reports however, also declined after 1994. The number of reports rose again after 1998 showing a peak in 2001. Since the late 1990s, *Salmonella* has been the predominant organism reported causing gastrointestinal illness associated with recent travel abroad.

Several studies indicate that the most common organism causing travellers' diarrhoea worldwide is ETEC; this has not been demonstrated by the data presented here. However, it is difficult to attribute travellers' diarrhoea to ETEC, as this bacterium is part of the normal bowel flora. Furthermore, ETEC tends to cause less severe disease (in healthy adults) and therefore most cases are probably not laboratory confirmed.

---

[1] LabBase is the national database at CDSC, which collates all laboratory reports from Co-Surv modules in laboratories in England, Wales, and Northern Ireland.

Figure 2 Laboratory reports of organisms that commonly gastrointestinal illness by region of acquisition, England, Wales, and Northern Ireland, 2002 (n=4865)
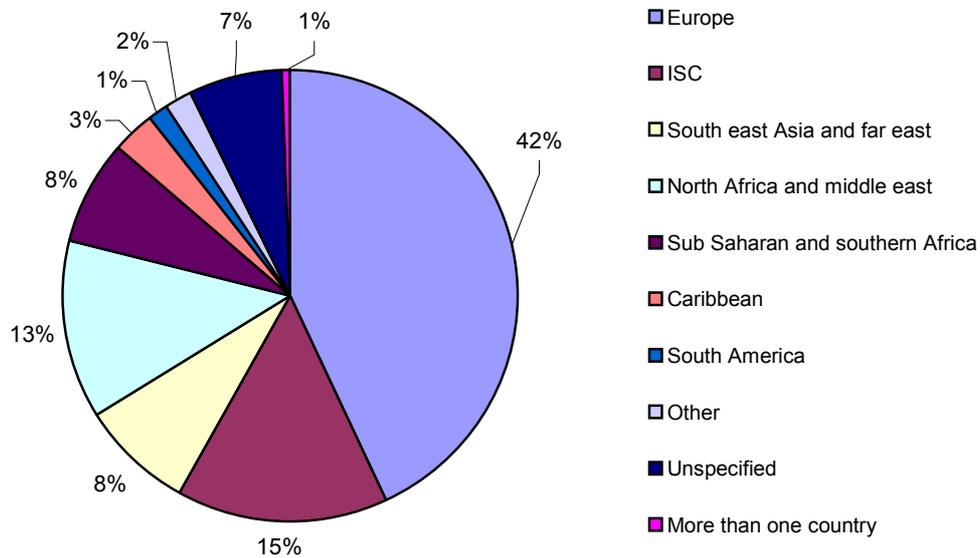

Figure 2 shows the laboratory reports of gastrointestinal illness in 2002 that specified recent travel abroad by region of the world in which they were acquired. The main region of the world where travellers from England, Wales, and Northern Ireland acquired gastrointestinal illness was Europe (42%); Spain (including the Balearic Islands) was the most reported country in this region. This probably reflects the travel patterns of UK travellers since the majority them go to Europe, particularly to Spain. Most *Salmonella* infections reported in travellers were also associated with travel to Europe (48%), while *Shigella* infections (figure 3) were more often associated with north Africa and the Middle East (33%), and the Indian sub-continent (30%).

Figure 3 Laboratory reports of *Shigella* spp by region of acquisition, England Wales, and Northern Ireland, 2002 (n=205)
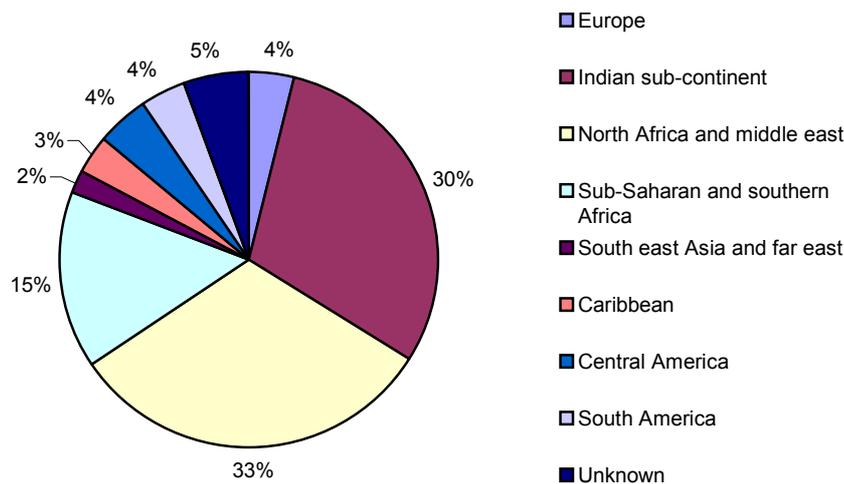
Further information is available from the HPA/NaTHNaC report '*Illness in England, Wales, and Northern Ireland associated with foreign travel – a baseline report to 2002*' available online at www.hpa.org.uk/infections/topics_az/travel/publications.htm. (4)

Risk for Travellers

Travellers' diarrhoea is the most common illness in those travelling from resource rich to resource poor countries and occurs in 20-50% of travellers. (2)
Those who travel rough and are adventurous in their eating habits may be at higher risk. The effects of diarrhoea are generally greater in the very young, the elderly and those with special needs.

Transmission

Eating contaminated food and to a lesser degree drinking contaminated liquids are the predominant way of acquiring travellers' diarrhoea. The highest risk foods are those that have not been thoroughly heated or that have been left out at room temperature. It is recommended that food is thoroughly cooked and served piping hot, as most diarrhoea causing enteropathogens are inactivated at temperatures above 60°C.

Although a change in bowel habit can be caused by stress, a change in diet, increased alcohol consumption and hot weather, most episodes of diarrhoea are related to infection.

Signs and Symptoms

Travellers' diarrhoea is usually defined as the passage of 3 or more unformed stools in a 24-hour period, or any number of loose stools if accompanied by abdominal pain, fever, nausea or vomiting. (2) Travellers' diarrhoea typically occurs during the first week of arrival and is often self-limiting, lasting three to four days. Approximately 3% of travellers' diarrhoea persists for longer than a month.

Treatment

Generally, travellers' diarrhoea is a self-limiting illness lasting between one and several days. The majority of travellers will recover with symptomatic treatment only.

> **Diet and Fluid.** The most important aspect of management in all cases of diarrhoea is to maintain adequate fluid replacement. Oral rehydration powders or tablets (e.g. Dioralyte® or Electolade®) can be diluted into plain safe drinking water to remedy electrolyte imbalances and hydrate the traveller. Otherwise healthy adults can rehydrate with available fluids or a salt and sugar solution of 8 level teaspoons of sugar and ½ teaspoon of salt to a litre of clean water. Fluids are all that is required for most cases of diarrhoea that are mild and self-limiting. Dehydration in adults is rare, but is the greatest risk for children with diarrhoea. (5) The elderly and those with pre existing illness are also more susceptible to complications. Breastfeeding should be continued for infants.
> As improvement occurs bland foods, for example bread, cereals, potatoes, soup, rice, bananas, chicken, should be introduced as tolerated. Milk containing products should be avoided for several days after recovery.

- **Loperamide.** Loperamide may be considered for those travellers in whom frequent diarrhoea is inconvenient, e.g. those travelling on long bus journeys, or for business meetings etc. However, it should not be used if the traveller has active ulcerative colitis, a fever or bloody diarrhoea. (6) Loperamide should be used with caution and only under specialist supervision in children under the age of 12 years.

- **Antibiotics.** Antibiotic treatment can be considered, especially for those travellers that have a serious underlying medical condition or whose travel plans would be severely disrupted by illness, e.g. business travellers and athletes. Ciprofloxacin, in the absence of contraindications, is generally the drug of choice. A single dose of 500mg has been shown to be effective in shortening the duration of diarrhoea.(7) Other agents that may be effective include azithromycin particularly in areas where there is *Campylobacter* spp resistance to quinolones.
The combination of loperamide with an antibiotic in moderate travellers' diarrhoea may lead to more rapid clinical improvement compared with either agent alone.

- **Medical Advice.** Travellers should seek medical care if symptoms do not improve within a few days, they are passing blood and/or mucous, or develop a fever. Medical care should be sought earlier for those at special risk including the elderly, and immediately for children whose diarrhoea is accompanied by dehydration, vomiting, fever or bloody diarrhoea.

Prevention

Following a few simple guidelines on food and water hygiene can reduce the risk of travellers' diarrhoea.

Antibiotic chemoprophylaxis is not recommended for most travellers. If a traveller is considering this the risks and benefits of such a course should be thoroughly discussed.

Travellers should avoid excess alcohol and sample unfamiliar foods in moderation, as both of these can also contribute to diarrhoea.

There is no vaccine available in the UK for travellers' diarrhoea. There are vaccines available for other faecal-oral transmitted organisms such as *Salmonella* Typhi and hepatitis A.

References

1. Wheeler JG, Sethi D, Cowden JM, Wall PG, Rodrigues LC, Tompkins DS et al. Study of infectious intestinal disease in England: rates in the community, presenting to general practice, and reported to national surveillance. *British Medical Journal* 1999; **318**: 1046-50

2. Ericsson CD, DuPont HL. Travelers' diarrhoea: approaches to prevention and treatment. Clinical Infectious Diseases 1993; **16**: 616-24

3. The *Campylobacter* Sentinel Surveillance Scheme Collaboration. Foreign and domestic travel and the risk of *Campylobacter* infection: results from a population-based sentinel surveillance scheme. *J Travel Med* 2003; **10**: 136-8.

4. Health Protection Agency. Illness in England, Wales and Northern Ireland associated with foreign travel- a baseline report to 2002. London: HPA, 2004.

5. CDC Food and water precautions and travelers' diarrhoea, in Travelers' Health. www.cdc.gov/travel/diarrhea.htm 2003-2004

6. Which? What to do about travellers' diarrhoea. *Drugs and Therapeutics Bulletin*. 2002;**5**:36-8

7. Salam I, Katelaris P, Leigh-Smith S, Farthing M. Randomised trial of single-dose Ciprofloxacin for travellers' diarrhoea. The Lancet. 1994;**344**:1537-39

Reading List

Ericsson C, DuPont H, Steffen R. Travelers' Diarrhea. 2003 BC Decker

Keystone JS, Kozarsky PE, Nothdurft HD, et al. Travel Medicine. London: Harcourt Publishers Ltd., 2003