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Travellers' Diarrhoea

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Introduction

Travellers' diarrhoea (TD) is the most common syndrome affecting travellers. It is caused by one or more bacteria, viruses, and/or protozoa, most of which are endemic worldwide. The most common cause is enterotoxigenic *Escherichia coli* (ETEC) [1]. Bacteria such as *Campylobacter*, *Salmonella*, *Shigella*, other *E. coli*, viruses (including norovirus and rotavirus), and protozoa (e.g. *Giardia* and *Cryptosporidium* spp), also cause TD. [Cholera](#) is rarely seen in travellers.

Epidemiology

Global epidemiology

There are regional differences in the risk of traveller's diarrhoea [2]. Low risk areas include Western Europe, the United States, Canada, Australia, New Zealand, and Japan. Intermediate-risk areas include southern Europe, Israel, South Africa, and some of the Caribbean islands and the Pacific. High-risk areas include most of Asia, the Middle East, Africa, and Latin America [3-5].

It has been estimated that TD affects 20% to 60% of those who travel to higher risk destinations of the world [5]. A recently published study from the UK estimates that approximately 2% of the UK population acquire infectious intestinal disease after foreign travel, which equates to 1.2 million people [6].

Traveller's diarrhoea in travellers from England, Wales and Northern Ireland

Between 2004 and 2008, there were 24,332 cases of laboratory confirmed travel-associated gastrointestinal (GI) illness reported in England, Wales and Northern Ireland (EWNI) [2]. Fifty percent of cases were caused by *Salmonella* spp (non typhoid). Other organisms included *Campylobacter*, *Shigella*, *Giardia*, and *Cryptosporidium*. No surveillance data were available in EWNI for ETEC, as simple laboratory culture methods are not currently available in diagnostic laboratories to routinely identify this organism.

In 2008, travel to countries in North Africa, the Middle East, Asia, sub-Saharan Africa, South America and the Caribbean were associated with higher rates of TD. The highest risk destinations were identified as Egypt, India, Thailand, Pakistan and Morocco.

Risk for travellers

Travellers' diarrhoea is estimated to occur in 20%-60% of travellers [5]. There are several determinants of risk for acquiring TD, including diet, gender, age, host genetics, destination, season of travel and choice of eating establishment [7]. Of these, the destination country and choice of eating establishment are the most important determinants of risk [8]. The effects of diarrhoea are generally greater in the very young, the elderly, and those with special health needs.

Aetiology

TD is caused by a variety of organisms. Bacteria are responsible for most cases and include ETEC, *Salmonella* spp, *Shigella* spp, and *Campylobacter* spp. enterotoxigenic *Bacteroides fragilis* has recently been identified as a likely cause of TD [9]. Other organisms include viruses such as norovirus, and protozoa (e.g. *Cryptosporidium* spp, *Giardia lamblia*). Determining the aetiology can be difficult as many cases of TD are mild and self-limiting and the patient may not go to the doctor to report it. Also, if the patient does visit their doctor, a sample may not always be obtained for laboratory confirmation. Finally, if a sample is taken and analysed, it is not always possible to identify a causative organism. Screening for ETEC is not usually done and up to 50% of TD cases never have a causative pathogen identified [10].

Transmission

TD is acquired through the consumption of contaminated food or water. Although a change in bowel habit can be caused by the stress of travel, a change in diet, and increased alcohol consumption, most episodes of TD are related to infection.

Signs and symptoms

TD is defined as the passage of at least three loose to watery stools in a 24-hour period, with or without other symptoms such as abdominal cramps, nausea and low-grade fever [10]. Vomiting is uncommon, and dysentery (severe abdominal cramps with blood or mucous in the stool) is infrequent [7]. TD typically occurs during the first week of arrival and is often self-limiting, lasting three to four days. In approximately 2% of cases, symptoms persist for longer than a month [11]. An episode of TD, particularly one with severe symptoms, can lead to irritable bowel syndrome in a small number of travellers [12].

Treatment

The goals of treatment of TD are to avoid dehydration, reduce the severity and duration of symptoms and prevent interruption of planned activities [10].

Diet and Fluid The most important management goal in all cases of diarrhoea is to maintain adequate hydration. In mild illness oral hydration is often all that is necessary. Oral rehydration powders can be diluted into clean drinking water to remedy electrolyte imbalances and hydrate the traveller. Adults without underlying medical problems can usually hydrate with available fluids or a salt and sugar solution of six level teaspoons of sugar and one level teaspoon of salt to a litre of 'safe' water [13]. Dehydration in adults is unusual, but is the greatest risk for young children with diarrhoea [13]. The elderly,

pregnant women and those with pre-existing illness and impaired immune systems are also more susceptible to complications. Breastfeeding should be continued for infants. As symptoms improve, bland foods, for example bread, cereals, potatoes, soup, rice, bananas, and chicken should be introduced as tolerated. Milk-containing products should be avoided for several days after recovery.

Symptomatic treatment The most common symptomatic treatments for TD are antimotility agents (i.e. loperamide), and bismuth subsalicylate. Loperamide can be considered for travellers in whom frequent diarrhoea is inconvenient, e.g. those travelling on long bus journeys, or for business meetings. However, it should not be used if the traveller has active inflammatory bowel disease (e.g. ulcerative colitis), a fever or bloody diarrhoea [10]. Loperamide should be used with caution and is not recommended for young children. Loperamide preparations are available over the counter for use in adults and children over 12 years of age.

Bismuth subsalicylate can be recommended for mild diarrhoea and is helpful in reducing nausea. However, loperamide has been shown to be more effective in controlling diarrhoea and cramping and has a more rapid onset of action [14]. Bismuth subsalicylate preparations are available over the counter for use in adults and children over 16 years of age.

Antibiotics Antibiotic treatment can be considered for treatment of moderate to severe travellers' diarrhoea. A Cochrane Review examined studies of the use of antibiotics for acute diarrhoea in travellers and determined that there were significant benefits from taking antibiotics [15]. Those who took antibiotics had a shorter duration of diarrhoea, decreased severity of illness, and were more frequently cured by 72 hours. Although there were more adverse effects in those being treated compared with those taking placebo, these were mostly minor or resolved once the antibiotic had been discontinued.

Fluoroquinolones are typically the drugs of choice [7]. Ciprofloxacin is prescribed most commonly for travellers to Latin America and sub-Saharan Africa; 750mg as a single dose or 500mg twice daily for three days.

Campylobacter is frequently resistant to fluoroquinolones and is a higher risk for travellers to South and Southeast Asia. In these cases azithromycin is an appropriate choice: 1,000mg single dose or 500mg once daily for three days [16].

The combination of loperamide with an antibiotic in moderate travellers' diarrhoea may lead to more rapid clinical improvement compared with either agent alone [17].

Medical care Travellers should seek medical care if symptoms do not improve within a day or two, or they are passing blood and/or mucous. Medical care should be sought earlier for the elderly, and immediately for children whose diarrhoea is accompanied by dehydration, vomiting, fever or blood.

An algorithm for the investigation and management of diarrhoeal illness in returned travellers can be found in [Health Information for Overseas Travel](#) [18].

Prevention

Following common sense guidelines on [food and water hygiene](#) [19] can help reduce the risk of TD.

The highest risk foods are those that have not been thoroughly cooked or that have been left out at room temperature. It is recommended that food is completely cooked and served piping hot, as most enteropathogens are inactivated at temperatures above 60°C. Precautions also need to be taken with drinking water by drinking only sealed bottled water, or water that has been purified by boiling or filtration combined with halogenation [20].

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 contribute to diarrhoea.

Travellers should also practice good swimming pool hygiene by not swimming if they have TD, ensuring babies and infants are wearing suitable swimwear, and avoiding ingesting any pool water [2].

There is no vaccine available for the syndrome of travellers' diarrhoea. There are vaccines available for some faecal-orally transmitted organisms such as [Salmonella Typhi](#), [poliomyelitis](#), [hepatitis A](#), and [Vibrio cholerae](#).

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