Food and water hygiene

Advice on avoiding food and water-borne diseases

Key messages

- **Contaminated food and water can transmit a number of different infectious diseases such as cholera, hepatitis A, travellers' diarrhoea and typhoid. Travellers' diarrhoea is particularly common in those visiting low-income countries.**
- **It can be difficult to avoid contaminated food and water, but travellers can try and reduce their risk by following the steps below.**
- **A factsheet on travellers' diarrhoea is available. This includes information on how to manage symptoms and when to get medical help.**
- **Certain travellers need to take particular care as they are at increased risk of complications. This includes older people, those with a weak immune system, young children and those taking medication to reduce stomach acid.**
- **Occasionally travellers experience illness from ingesting toxins from fish and other seafood.**

Overview

Contaminated food and water can transmit a number of different infectious diseases, the risk is higher in low-income regions [1]. There is a wide range of infectious diseases that are transmitted by contaminated food and water. Many are caused by pathogens (bacteria, viruses or parasites) transmitted via the faecal-oral route (consumption of food and drinks contaminated with faeces).

Swallowing or inhaling contaminated water in inadequately treated swimming pools, hot tubs and spas can also transmit pathogens that can cause diarrhoea, vomiting, or infection of the ears, eyes, skin, or the respiratory system [2].

Vaccinations can prevent only a small number of these diseases (such as cholera, hepatitis A, polio and typhoid). Although contaminated food and water is difficult to avoid in areas with poor

sanitation, it is sensible for travellers to try and reduce their risk by following the information below.

Poisoning from ingesting marine toxins can occur worldwide. In the tropics, certain fish are more likely to be contaminated as they concentrate toxins produced by algae or bacteria. Depending on the toxin ingested, affected individuals may have allergic type symptoms or neurological, gastrointestinal and/or cardiovascular symptoms; some of these can result in long-term illness or death.

Risk for travellers

Standards of hygiene have improved in some areas with increasing economies and in improved tourism infrastructure [1]. The incidence rates of travellers' diarrhoea (TD) and other diseases transmitted by contaminated food and water have reduced as a result [1, 3]. However, TD remains a common illness affecting 20-60 percent of travellers from high-income countries, visiting low-income areas of the world [4, 5]. In recent years, an increase in cases of a parasite called cyclospora has been reported in UK travellers coinciding with the summer holiday period [6].

There are several risk factors for TD including: diet, gender, age, host, genetics, destination, season of travel and choice of eating place [4, 7]. Destination and choice of eating establishment are the most important determinants of risk [4].

The effects of diseases transmitted by contaminated food and water, such as TD, may be greater in the very young, the elderly and the frail. Vulnerable travellers, such as pregnant women and those with immune suppression, inflammatory bowel disorders, chronic kidney or heart disease should also take particular care to avoid contaminated food and water, and be prepared to manage TD symptoms. Conditions that reduce stomach acidity increase risk of contracting infections with acid-sensitive organisms such as Salmonella and Campylobacter [8-9].

There are no data on the number of UK travellers affected by marine toxins abroad.

Before travel

Travellers should seek information on the risks of contaminated food and water at their destination in advance of travel. The Country Information pages on our website show details of the vaccine preventable risks where relevant. Ideally, travellers should see their healthcare provider at least 4-6 weeks before travel for advice on vaccinations (if appropriate) and food and water precautions. However, even if travelling at short notice, pre-travel advice is still important and worthwhile. Travellers should consider taking a diarrhoea treatment pack, further details can be found in our travellers' diarrhoea factsheet.

Pregnant women, those with very young infants and travellers with pre-existing medical conditions such as significant bowel disease or immune suppression should discuss the suitability of travel with their specialist or GP practice before booking.

Travellers should consider obtaining other items to help reduce their risk from contaminated food and water. Alcohol gel can be helpful for hand hygiene where hand washing facilities are not available. Those who may not have access to safe water at their destination should consider taking appropriate equipment such a water filter or chemical treatments (see details in the ‘during travel’ section).

During travel

Travellers should wash their hands after visiting the toilet, changing nappies and before preparing or eating food. Alcohol gel is helpful when hand washing facilities are not available.

It is difficult to eliminate the risk from contaminated food [1] but it is sensible for travellers to try and avoid higher risk food and drinks where possible.

Water and other drinks

Drinks served in unopened, factory produced cans or bottles with intact seals such as carbonated drinks, commercially prepared fruit drinks, water and pasteurised drinks generally can be considered safe. Drinks made with boiled water and served steaming hot, such as tea and coffee are also usually safe.

In countries with poor sanitation, it is not advisable to drink tap water or use it to clean teeth, unless it has been treated. Ice should also be avoided. Water can be disinfected by bringing it to a rolling boil [10-11]. Although boiling is a reliable method of disinfection, it may not always be convenient.

Chemical treatments can be used to disinfect water. However, the effectiveness of these treatments can be reduced by low water temperatures and suspended matter in the water. Travellers should follow the instructions carefully to obtain the best results. Chlorine preparations are usually effective, but protozoan parasites such as *Cryptosporidium* and *Giardia* are not always inactivated by these agents [12]. Studies have shown chlorine dioxide to be more effective at inactivating parasites [13]. Following a European Union (EU) directive, iodine is no longer sold or supplied for use in disinfecting drinking water.

Using a water filter that has a filter size of ≤0.2 µm to 1.0 µm before using a chemical disinfectant is helpful as water filters can remove suspended matter and parasites if they work correctly [11].

Portable, battery-operated devices using UV light can be used to disinfect water. However, water must be free of particulate material before treating. This method may not be practical if large quantities of water need disinfecting.

Generally bottled water is not recommended to make up formula feeds for infants [14]. This is because it may contain too much salt, or sodium (also written as Na) sulphate (also written as SO or SO4), and is usually not sterile. When travelling, however, bottled water may be safer to drink than

tap water. If it is to be used, bottled water should contain:

- Less than 200 milligrams (mg) a litre of sodium.
- No more than 250mg a litre of sulphate.

Natural mineral water is usually not recommended for infant feeds because its contents often exceed the maximum recommended levels above [14].

In the UK there are regulations on the legal requirements for the production and labelling of natural mineral, spring and bottled water [15]. Similar requirements may not be in place in other countries. Parents should be aware of fake bottled water and ensure the seal has not been tampered with at the time of purchase.

As bottled water is usually not sterile, it should be boiled, like tap water, to at least 70°C [16] and allowed to cool before mixing with the formula in preparation for a feed.

Food

Recently prepared, thoroughly cooked food that is served piping hot, fruit that can be peeled by the traveller (such as bananas and oranges), and pasteurised dairy produce such as yoghurts, milk and cheese are good options for travellers.

Certain foods are prone to contamination and where possible should be avoided:

- Salads.
- Uncooked fruit and vegetables (unless washed and/or peeled by the traveller).
- Fresh or cooked food that has been left uncovered in warm environments, exposed to flies, such buffets.
- Unpasteurised dairy products, like milk, cheese, ice cream and yoghurt.
- Raw or undercooked meat, fish or shellfish, including oysters.
- Food from street traders unless thoroughly cooked in front of the traveller and served hot on clean crockery.

See our travellers' diarrhoea factsheet for details on the management of travellers' diarrhoea.

Reducing the risk of marine poisoning

Travellers should avoid eating pufferfish and other high risk fish such as barracuda, moray eel and other reef fish [17, 18].

Shellfish poisoning is more like during or shortly after algal blooms which may be referred to as 'red tides' or 'brown tides', travellers should take notice of any posted warnings on this. Ideally, those visiting developing countries should avoid eating all shellfish as they can also be contaminated with bacteria and viruses [17].

Unfortunately, marine toxins cannot be destroyed by cooking. Further information on risk areas and prevention of marine poisoning can be found on the US Centers for Disease Control website.

After travel

Travellers returning with diarrhoea should seek medical care if symptoms do not improve within three days. They should seek medical care immediately if they have a fever of 38°C or more, blood and/or mucous in the stool or other worrying symptoms such as altered mental status, severe abdominal pain, jaundice or rash.

Medical advice should be sought earlier for the elderly, children and other vulnerable travellers if they are not tolerating fluids or are showing signs of dehydration.

An algorithm for the investigation and management of diarrhoea is available from Public Health England in Managing suspected infectious diarrhoea [19].

Resources

- CDC: Keeping your hands clean on a cruise
- NHS: Food Poisoning
- NHS: Norovirus
- Public Health England: Cyclospora advice for travellers
- Travellers' diarrhoea
- World Health Organization: Food Safety Fact Sheet

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