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# Campylobacter

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## Key facts

- **Campylobacter is 1 of 4 key global causes of diarrhoeal diseases. It is considered to be the most common bacterial cause of human gastroenteritis in the world.**
- **Campylobacter infections are generally mild, but can be fatal among very young children, elderly, and immunosuppressed individuals.**
- **Campylobacter species can be killed by heat and thoroughly cooking food.**
- **To prevent Campylobacter infections, make sure to follow basic food hygiene practices when preparing food.**

The burden of foodborne diseases, including Campylobacteriosis, is substantial: every year almost 1 in 10 people fall ill and 33 million of healthy life years are lost. Foodborne diseases can be severe, especially for young children. Diarrhoeal diseases are the most common illnesses resulting from unsafe food, with 550 million people falling ill yearly (including 220 million children under the age of 5 years). *Campylobacter* is 1 of the 4 key global causes of diarrhoeal diseases.

The high incidence of *Campylobacter* diarrhoea, as well as its duration and possible complications, makes it highly important from a socio-economic perspective. In developing countries, *Campylobacter* infections in children under the age of 2 years are especially frequent, sometimes resulting in death.

*Campylobacter* are mainly spiral-shaped, "S"-shaped, or curved, rod-shaped bacteria. Currently, there are 17 species and 6 subspecies assigned to the genus *Campylobacter*, of which the most frequently reported in human diseases are *C. jejuni* (subspecies *jejuni*) and

*C. coli*. Other species such as *C. lari* and *C. upsaliensis* have also been isolated from patients with diarrhoeal disease, but are reported less frequently.

## The disease

Campylobacteriosis is the disease caused by the infection with *Campylobacter*:

- **The onset of disease symptoms usually occurs 2 to 5 days after infection with the bacteria, but can range from 1 to 10 days.**
- **The most common clinical symptoms of *Campylobacter* infections include diarrhoea (frequently bloody), abdominal pain, fever, headache, nausea, and/or vomiting. The symptoms typically last 3 to 6 days.**
- **Death from campylobacteriosis is rare and is usually confined to very young children or elderly patients, or to those already suffering from another serious disease such as AIDS.**
- **Complications such as bacteraemia (presence of bacteria in the blood), hepatitis, pancreatitis (infections of liver and pancreas, respectively), and miscarriage have been reported with various degrees of frequency. Post-infection complications may include reactive arthritis (painful inflammation of the joints which can last for several months) and neurological disorders such as Guillain-Barré syndrome, a polio-like form of paralysis that can result in respiratory and severe neurological dysfunction in a small number of cases.**

## Sources and transmission

*Campylobacter* species are widely distributed in most warm-blooded animals. They are prevalent in food animals such as poultry, cattle, pigs, sheep and ostriches; and in pets, including cats and dogs. The bacteria have also been found in shellfish.

The main route of transmission is generally believed to be foodborne, via undercooked meat and meat products, as well as raw or contaminated milk. Contaminated water or ice is also a source of infection. A proportion of cases occur following contact with contaminated water during recreational activities.

Campylobacteriosis is a zoonosis, a disease transmitted to humans from animals or animal products. Most often, carcasses or meat are contaminated by *Campylobacter* from faeces during slaughtering. In animals, *Campylobacter* seldom causes disease.

The relative contribution of each of the above sources to the overall burden of disease is unclear but consumption of undercooked contaminated poultry is believed to be a major contributor. Since common-source outbreaks account for a rather small proportion of cases, the vast majority of reports refer to sporadic cases, with no easily discernible pattern.

Estimating the importance of all known sources is therefore extremely difficult. In addition, the wide occurrence of *Campylobacter* also hinders the development of control strategies throughout the food chain. However, in countries where specific strategies have been put in place to reduce the prevalence of *Campylobacter* in live poultry, a similar reduction in human cases is observed.

## Treatment

Treatment is not generally required, except electrolyte replacement and rehydration. Antimicrobial treatment is recommended in invasive cases (when bacteria invade the intestinal mucosa cells and damage the tissues) or to eliminate the carrier state (the condition of people who harbour *Campylobacter* in their bodies and keep shedding the bacteria while remaining asymptomatic).

## Prevention methods

There are a number of strategies that can be used to prevent disease from *Campylobacter*:

- **Prevention is based on control measures at all stages of the food chain, from agricultural production on a farm, to processing, manufacturing and preparation of foods both commercially and domestically.**
- **In countries without adequate sewage disposal systems, faeces and articles soiled with faeces may need to be disinfected before disposal.**
- **Measures to reduce the prevalence of *Campylobacter* in poultry include enhanced biosecurity to avoid transmission of *Campylobacter* from the environment to the flock of birds on the farm. This control option is feasible only where birds are kept in closed housing conditions.**
- **Good hygienic slaughtering practices reduce the contamination of carcasses by faeces, but will not guarantee the absence of *Campylobacter* from meat and meat products. Training in hygienic food handling for abattoir workers and raw meat producers is essential to keep contamination to a minimum.**
- **Prevention methods against infection in domestic kitchens are similar to those used against other foodborne bacterial diseases.**
- **Bactericidal treatment, such as heating (for example, cooking or pasteurization) or irradiation, is the only effective method of eliminating *Campylobacter* from contaminated foods.**

## WHO response

In partnership with other stakeholders, WHO is strongly advocating the importance of food safety as an essential element in ensuring access to safe and nutritious diets. WHO is providing policies and recommendations that cover the entire food chain from production to consumption, making use of different types of expertise across different sectors.

WHO is working towards the strengthening of food safety systems in an increasingly globalized world. Setting international food safety standards, enhancing disease surveillance, educating consumers and training food handlers in safe food handling are amongst the most critical interventions in the prevention of foodborne illnesses.

In collaboration with the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (OIE) and the WHO Collaborating Centre at the University of Utrecht, WHO published the report *The global view of campylobacteriosis in 2012*.

- **The global view of campylobacteriosis**

WHO is strengthening the capacities of national and regional laboratories in the surveillance of foodborne pathogens, such as *Campylobacter* and *Salmonella*.

WHO is also promoting the integrated surveillance of antimicrobial resistance of pathogens in the food chain, collecting samples from humans, food and animals and analysing data across the sectors.

WHO, jointly with FAO, is assisting Member States by coordinating international efforts for early detection and response to foodborne disease outbreaks through the network of national authorities in Member States.

- **International Network of Food Safety Authorities (INFOSAN)**

WHO also provides scientific assessments as basis for international food standards, guidelines and recommendations developed by the FAO/WHO Codex Alimentarius Commission to prevent foodborne diseases.

- **Codex Alimentarius Commission**

## Recommendations for the public and travellers

The following guidance will help people to stay safe while travelling:

- **Ensure food is properly cooked and still hot when served.**
- **Avoid raw milk and products made from raw milk. Drink only pasteurized or boiled milk.**
- **Avoid ice unless it is made from safe water.**
- **When the safety of drinking water is questionable, boil it, or if this is not possible, disinfect it with a reliable, slow-release disinfectant agent (usually available at pharmacies).**
- **Wash hands thoroughly and frequently using soap, in particular after contact with pets or farm animals, or after having been to the toilet.**
- **Wash fruits and vegetables carefully, particularly if they are eaten raw. If possible, vegetables and fruits should be peeled.**

- [A guide on safe food for travellers](#)

## Recommendations for food handlers

WHO provides the following guidance for people handling food:

- **Both professional and domestic food handlers should be vigilant while preparing food and should observe hygienic rules of food preparation.**
- **Professional food handlers who suffer from fever, diarrhoea, vomiting, or visible infected skin lesions should report to their employer immediately.**
- **The WHO *Five keys to safer food* serve as the basis for educational programmes to train food handlers and educate consumers. They are especially important in preventing food poisoning. The Five keys are:**
  - **keep clean**
  - **separate raw and cooked**
  - **cook thoroughly**
  - **keep food at safe temperatures**
  - **use safe water and raw materials.**
- [Five keys to safer food](#)