

Clostridium perfringens

Food Act 2006

Clostridium perfringens (*C. perfringens*) is a type of bacteria that is widespread in the environment and frequently occurs in the gut of people and many domestic and wild animals. It has been known to cause serious wound infection, called 'gas gangrene', and is a common cause of foodborne illness.

C. perfringens are anaerobic bacteria (i.e. they can grow without oxygen) and can form spores, which are an inactive form of the bacterium. The spores have a coating that allows them to survive cooking temperatures and dehydration of food. The heat from cooking activates *C. perfringens* spores to transform into active bacteria once the cooked food cools.

C. perfringens can multiply rapidly at an optimum temperature between 43 to 47°C but can grow between 12°C and 50°C. Correct cooling and storage of cooked foods and rapid reheating of cooked foods can reduce the growth of *C. perfringens*.

How does *C. perfringens* cause foodborne illness?

Gastroenteritis (gastro) from *C. perfringens* is generally caused by toxins that are released following ingestion of food that is contaminated with high numbers of bacteria.

Spores of *C. perfringens* may be present in various animal or plant food products contaminated by soil or faeces. Because of its widespread distribution, all foods can be a potential source, however it is generally associated with foods of animal origin.

Foodborne illness from *C. perfringens* primarily occurs when food is kept in the temperature danger zone (between 5°C and 60°C) for too long - commonly, if cooling or reheating cooked food is not achieved rapidly. When large volumes of food are prepared and cooled too slowly, the large volume may contribute to anaerobic conditions and cause the internal temperature of the food to be in the danger zone for an extended period, providing ideal conditions for *C. perfringens* to multiply.

C. perfringens foodborne illness is almost always associated with cooked foods such as meats (mainly beef and poultry) and meat-containing products (e.g. gravies, stews, roast meats, pies and curries) being kept out of temperature control. It is less common in cured meats due to the combination of salts, nitrites and low water activity.

Who is at risk?

Anyone can be affected by *C. perfringens*, but certain people are at greater risk of severe illness, including:

- pregnant women
- young children (under 5 years)
- older adults (over 60 years)
- people with weakened immune systems.

What are the symptoms of *C. perfringens* foodborne illness?

Most infected people will experience the following symptoms within 6-24 hours after eating contaminated food:

- abdominal cramps
- diarrhoea.

Less common symptoms include:

- nausea
- vomiting
- fever.

Symptoms associated with *C. perfringens* foodborne illness typically subside within 24 hours.

Prevention

The most effective way of preventing *C. perfringens* foodborne illness is to prevent its growth in a food. This can be achieved by:

- cooking food thoroughly and serving it immediately or keeping it hot (60°C or hotter) until serving.
- when cooling cooked potentially hazardous food to be stored and used later, cool the food–
 - (a) within two hours - from 60°C to 21°C; and
 - (b) within a further four hours - from 21°C to 5°C.

Hint: divide large amounts of hot food into small shallow containers to allow it to cool faster.

- making sure your refrigerator is 5°C or colder.
- reheating cooked food quickly with a microwave or stovetop (to 60°C or above).
- storing raw meats below ready-to-eat foods in the refrigerator or cold room to prevent cross contamination.
- washing your hands with soap and drying them before preparing or eating food and between preparing raw and ready-to-eat foods.
- keeping your kitchen clean and ensuring all food contact surfaces are cleaned and sanitised before preparing food and between preparation of raw foods and ready-to-eat foods.

What to do if you suspect a case of foodborne illness

If you suspect you have foodborne illness, seek medical advice.

A stool sample may be required to confirm the presence of *C. perfringens* or the toxin it produces.

Diarrhoea can cause dehydration, so it is important to drink plenty of fluids.

If you have a concern about a food product or a food business, Queensland Health provides an online form to make a food complaint. This is available at <https://phconnect-foodcomplaints.health.qld.gov.au>

Further information

For health advice, please contact your doctor or nearest health facility, or call 13 HEALTH (13 43 25 84).

For food safety advice and further information relating to *C. perfringens* in food, contact your local Public Health Unit at www.health.qld.gov.au/system-governance/contact-us/contact/public-health-units. The Food Pantry has advice related to food safety for food businesses and consumers at www.qld.gov.au/foodpantry.