

Food poisoning

“Food poisoning” generally refers to acute gastroenteritis caused by ingestion of food contaminated by pathogenic bacteria and/or their toxins, or by certain viruses.

Food contaminated with pathogens often shows no organoleptic signs of deterioration. *Bacillus cereus* can cause two distinct syndromes: diarrhoeal form and vomiting form. Foods implicated are meat and vegetable dishes stored without refrigeration and cooked, reheated foods.

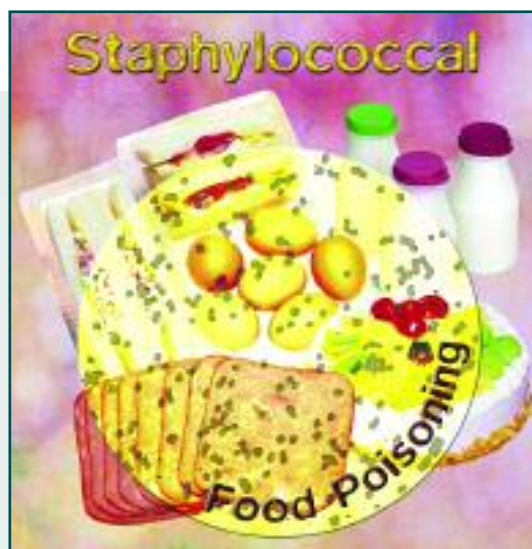
Campylobacter food poisoning is caused mainly by **strains** of *C. jejuni*. Sources of infection include undercooked meat, unpasteurized milk and water contaminated with animal faeces; the pathogen can survive refrigeration and freezing, but is killed by moderate heating. Infection may also derive from domestic animals.

The commonest cause of clostridial food poisoning is *Clostridium perfringens* type A. Food (especially meat and poultry) may be contaminated with *C. perfringens* spores present in dust, human or animal faeces, etc. The spores may survive cooking and, if the food is allowed to cool slowly or is stored without refrigeration, may germinate and grow rapidly.

Clostridium botulinum causes botulism, the deadliest kind of food poisoning. The greatest danger of botulism is in underprocessed home-canned foods. The toxin of *C. botulinum* attacks the nervous system progressively causing double vision, impaired speech, muscle paralysis and difficulty in breathing.

Certain strains of *Escherichia coli* can cause gastroenteritis following ingestion of raw or improperly cooked foods or water contaminated by animals or human carriers.

Salmonella **serotypes** responsible for food poisoning derive primarily from animals. Infection commonly occurs by consumption of contaminated foods of animal origin: undercooked meat and poultry, eggs, meat products, raw milk, etc.; foods may also be



contaminated during preparation. *Salmonellae* can survive deep freezing but are killed by adequate cooking.

Transmission of *Shigella* occurs via the faecal-oral route or via food or water contaminated with the faeces of dysentery patients or carriers. Staphylococcal food poisoning usually follows ingestion of food containing “enterotoxin” formed by strains of *Staphylococcus aureus*. Foods commonly implicated include cooked foods eaten cold and prepared foods such as sandwiches, **custards** etc.

Gastroenteritis due to *Vibrio parahaemolyticus* is associated with the consumption of raw or inadequately cooked seafoods. Most **outbreaks** occur during warm months.

Rotaviruses are the commonest cause of viral gastroenteritis in infants. Infection occurs by ingestion of faecally contaminated food or water. *Yersinia enterocolitica* has been associated with gastroenteritis – mainly in children. Transmission is probably via the faecal-oral route from animals or man.

Various other bacteria have been recorded as occasional causes of food poisoning – e.g. species of *Aeromonas*, *Citrobacter*, *Enterobacter*, *Klebsiella*, *Proteus*, *Pseudomonas* and *Streptococcus*.

P. Singleton, D. Sainsbury: *Dictionary of Microbiology and Molecular Biology*, WILEY

GLOSSARY

custard: mixture of milk, sugar and eggs.

outbreak: epidemic.

serotype: group of intimately related microorganisms.

strain: type.

1 Complete the table with the missing data.

FOOD POISONING BACTERIUM	SOURCES OF INFECTION	PREVENTION/DESTRUCTION
Bacillus cereus	meat and vegetable dishes stored without refrigeration, cooked, reheated foods	Keep cooked foods refrigerated
C. perfringens		
Clostridium botulinum		
Escherichia coli		
Salmonella		
Shigella		
Staphylococcus aureus		
V. parahaemolyticus		

2 In groups, discuss episodes of food poisoning you may have suffered, heard or read about in the papers.

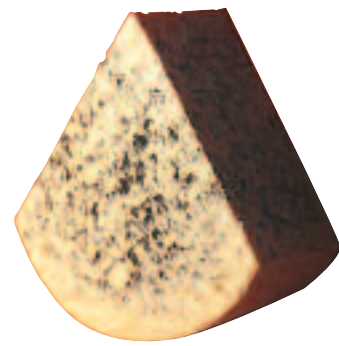
3 Match these expressions from the reading passage with the definitions below.

- deep freezing • domestic animals • home-canned foods
- impaired speech • organoleptic signs • seafoods • syndrome
- upper respiratory tract infection • via the faecal-oral route

- a. Signs like flavour, odour, appearance, involving the sense organs.
- b. Set of medical symptoms.
- c. Animals like cats and dogs kept in a house or farm.
- d. Foods treated at home with heat or acid and put in jars to preserve them.
- e. Difficulty in speaking.
- f. Preservation at very low temperatures, usually about -18°C
- g. Through direct contact between faeces and mouth.
- h. Fish and shellfish.
- i. Infection of the larynx and trachea.

4 Rewrite the passage below using the words in the box instead of those underlined.

although • any • are to • avoid • aware • both
• danger • either • harm • medication • on • once
• piping • raw • recently • storing • such as
• thoroughly • well-known



Salmonella is a renowned cause of food poisoning. But only lately have we all become conscious of the potential risk from *Listeria* in chilled foods and soft cheeses. Even if nearly everyone can eat a small quantity of *Salmonella* or *Listeria* without coming to any damage, large numbers of one or the other of the two can be dangerous. If an unspecified type of *Listeria* or *Salmonella* is present, preserving food at 5°C or colder at all times helps to keep numbers low. Cooking all food until it is very hot all the way through will kill the two types of bacteria. When they are dead, *Listeria* and *Salmonella* cannot be a danger to health. The chief medical officer recommends: pregnant women and those regularly taking certain types of medicines should not eat soft cheese like Brie and Camembert, or blue-vein cheeses. Everyone should keep away from eating uncooked eggs and uncooked foods made from them. Poultry and meat products should be cooked completely and fruits and vegetables that will be eaten raw should be washed.

5 And now let's have some fun and sing!

WE ARE THE MICROBES (Carl Winter's song taken from Queen's *We are the champions*)
We're always the targets / We evoke lots of fear / Bombarded with chlorine, pH, gamma rays
/ To make us disappear
But we're naturally occurring / Nature pulls our reins / And when there's trouble / We mutate
into really virulent strains
We are the microbes, my friend / And we'll keep dividing / Till the end
We are the microbes / We are the microbes / No time for chlorine / Cause we are the
microbes / In your food
We'll mess up your kidneys / GI damage we'll do / We go by clostridium, E. coli, salmonella
/ Just to mention a few
We like sprouts and lettuce / Salami and stew / You'll find us on chicken, soft cheeses, fruit
juices / and hamburgers too
We are the microbes, my friend / And we'll keep dividing / Till the end
We are the microbes / We are the microbes / No time for chlorine / Cause we are the
microbes / We are the microbes, my friend / And we'll keep dividing / Till the end
We are the microbes / We are the microbes / No time for chlorine / Cause we are the
microbes / In your food