

Key Words

Danger zone: the range of temperatures (5°C to 63°C) perfect for rapid multiplication.

Spore: a special protective coating that some types of bacteria grow if the conditions are not right for them to multiply.

Germinate: when the conditions become right, the protective spore breaks open and the bacteria becomes active again.

Cross contamination: how bacteria are spread from one source (place) onto some food

Food Spoilage—Making food unfit and unsafe to eat

Contaminate—making a food unsafe to eat by allowing it to come into contact with micro-organisms that will grow and multiply.

Pathogenic—capable of causing illness

High-risk food—foods containing a lot of moisture and nutrients (especially protein) e.g. meat + fish) that easily support the growth of pathogenic micro-organisms, particularly bacteria. Also called **perishable foods**

Shelf life: how long it will last before it becomes unsafe or unpalatable (unpleasant) to eat

Use-by date: applies to high-risk foods, and is the date by which the food should be eaten.

The best-before/best-before-end (of month or year) date: applies to low-risk and non perishable foods e.g. canned foods, biscuits, breakfast cereals, bottled foods, dried pasta and rice. The date means that, although the food will still be safe to eat after this date, the quality may have changed, for example, it may have begun to go stale and changed in texture and flavour.

Ambient: room temperature 19°C to 21°C

Tainted: when a food picks up the smell or flavour of another food nearby which spoils its palatability

Core temperature: Internal temperature food must be heated to ensure it is cooked

Bacterial contamination. 3.1.4

Food poisoning is a common and unpleasant illness. Bacteria cause most cases of food poisoning. This is dangerous for **vulnerable groups** e.g. young children, pregnant women, elderly and people who are already ill or have weakened immune systems.

A person with food poisoning is not likely to have all these symptoms and different bacteria cause different symptoms. A person can start to feel unwell in a few hours to a few days after eating food contaminated with pathogenic bacteria. They may be ill for several days.

The symptoms of food poisoning can include:



Most bacteria cause it within the digestive system (stomach and intestines). Some bacteria get into the blood stream and go around the body causing damage to the liver and kidneys. Bacteria cannot be seen easily, smelt or tasted. They are found in many places. They are easily passed onto food from the hands and grow (multiply) rapidly in the right conditions (food + moisture + warmth + time + correct pH)

Food poisoning bacteria (these cause food poisoning by bacteria multiplying in or on food):

Salmonella—raw + undercooked poultry, eggs + meat, raw milk. 12—36 hours. Diarrhoea, abdominal pain, vomiting, fever

Staphylococcus aureus—people Hands, nose, mouth, throat, skin and cuts. 1—6 hours. Abdominal pain, vomiting, low body temperature

Clostridium perfringens—raw and cooked meat + meat products. 8—22 hours. Nausea; diarrhoea; abdominal pain

Clostridium Botulinum—incorrectly canned meat, fish or veg. 12—48 hours. Paralysis; difficulty breathing; double vision; nausea; vomiting.

Bacillus cereus—cooked rice, pasta and cereal foods. 1—6 hours. Nausea; diarrhoea; abdominal pain

Food-borne disease (caused by pathogenic microbes (bacteria + viruses) carried on food. They do not multiply in food but in the human body:

Escherichia-Coli (E.coli)—beef (minced), raw milk, dirty water. 12—24 hours. Diarrhoea, abdominal pain, vomit, fever + kidney damage

Listeria—soft cheese + made from unpasteurised milk; salad veg., pates. 1—70 days. Flu-like symptoms + septicaemia. Causes miscarriage and premature labour + birth

Campylobacter Found in dirty water, raw poultry + meat. Milk. Incubation 48—60 hours. Diarrhoea, abdominal pain, nausea, fever
salads and pates.

Norovirus— shellfish, raw veg. salads. 1—2 days. Nausea; projectile vomiting; diarrhoea; abdominal pain; fever.

In the right conditions, bacteria multiply every 20 minutes and many million are produced in a few hours. As they produce, waste products and poisons (toxins) are made which make people ill. Large numbers of bacteria also irritate the stomach. If conditions are not right, bacteria form spores where they remain inside until the conditions are right for them to reproduce. If they germinate, they produce very strong toxins (poisons) which cause serious illness or death.



Reset the food probe to zero.

Clean with antibacterial wipe.

Insert the probe into the centre/core of the food.

Leave in place until the probe temperature stabilises

Leave until the temperature is 75°C or above for at least 2 minutes.

Clean with antibacterial wipe.

How to use a heat probe

-18°C to -24°C Freezer.
Bacteria dormant (alive but inactive)

Chilled food 0°C to 5°C.
Bacteria multiply slowly

5°C to 63°C **Danger zone.** Bacteria multiply rapidly = ideal conditions for growth

Key temperatures

100°C. water boils.
Bacteria cells are dead.
But bacteria spores can survive

75°C. Cooked from raw food
Reheat cooked food once

63+°C keep cooked food hot



Bacterial contamination. 3.1.4 Buying & Storing Food 3.2.1

Steps to prevent food poisoning when buying, storing and cooking food:

Buying foods: •Food should be bought from a reputable supplier and the shop should be clean.

- The foods should be stored correctly in the shop, e.g., perishable foods at the correct temperature in fridges or freezers
- The food should be in good condition, e.g. there should be no bruising on fruit or veg
- The foods should be within the use-by date for high-risk foods (such as chicken, dips, burgers and cream) and best-before date for ambient foods, such as breads. The packaging needs to be checked to ensure that it is intact and there is no contamination from rodents.

Storing food: •Follow the instructions on packaging.

- High-risk foods need to be stored in a fridge at a temperature to slow down the growth of micro-organisms. Frozen foods should be stored in a freezer so that micro-organisms are dormant.
- It is important to rotate the stock within a fridge and freezer so that foods are eaten within their use-by dates. This also helps to avoid throwing food away which is out of date.
- Raw meats stored on the bottom shelf of the fridge to avoid any drip from the raw meat touching the cooked foods and causing cross-contamination.
- All foods should be stored in the correct containers or sealed packages to avoid cross-contamination or damage to the food during storage.

Cooking food: The person cooking is following personal hygiene rules e.g. wearing a clean apron, cleaning hands before handling food, making sure long hair is tied back.

- The area where food is being prepared should also be clean e.g. wiping surfaces with antibacterial spray, ensuring all equipment is clean. Any frozen foods should be thoroughly defrosted before cooking to ensure that the centre of the food is cooked thoroughly.
- High-risk foods should be cooked to 75°C to ensure that harmful micro-organisms, such as Salmonella, are destroyed and to help prevent food poisoning. A food probe could be used to ensure that this temperature is reached in the centre of food e.g. chicken.



Points to look for when buying:

Fresh Fruit and vegetables

- A good, bright colour
- A firm, crisp texture (not wilted or soft)
- An unblemished smooth skin
- No mould growth
- Not too much soil on the skin of root vegetables
- No damage
- Stored so air can circulate freely
- Buy only when you can see the quality of the fresh produce
- Buy food in season.



Fresh meat

- Not too much fat
- A bright red or pink colour for beef, lamb or offal + creamy-white to pink clean flesh for poultry
- Moist flesh, but not wet, slimy or dried out
- A firm, springy texture with a fresh smell
- No risk of cross-contamination
- Stored at correct temp of less than 5°C
- Do not buy more than needed it deteriorates

Avoiding Cross contamination—Bacteria can spread. Occurs when juices from raw meats or germs from unclean objects touch cooked or ready-to-eat foods.

Supermarket, check food stored separately; keep apart in shopping trolley + bags. If using reusable bags, place raw foods in plastic bag to prevent juices leaking. Keep raw meat, poultry and seafood on the bottom shelf of fridge in a sealed container or bag to ensure juices don't drip and cause contamination. Keep eggs in the original carton and store on shelves of the refrigerator. Store reusable bags in a clean, dry place + and often with hot, soapy water. Avoid leaving reusable shopping bags in the boot of vehicle.

Preparing food: Wash hands thoroughly with warm, soapy water for 20 seconds before, during and after handling raw meats + foods or other high-risk foods. Wash plates between uses or use separate plates: for raw and another for cooked foods. Place washed produce into clean storage containers, not back into original ones. Never use the knife or preparation tool for raw meat, poultry or seafood to chop produce or ready-to-eat foods. Use one cutting board for meat, poultry and seafood, and a separate cutting board for produce and ready-to-eat foods. Use separate work surfaces for raw and cooked foods or be sure to wash the surfaces thoroughly between preparing raw and cooked food. Cover prepared food to protect it from pests + dust. Defrost frozen foods e.g. chicken thoroughly, in bottom of refrigerator on a tray to catch liquid that leaks.

Different-coloured chopping boards reduce the risk of cross-contamination between different foods • Red—raw meat and poultry. Yellow—cooked meat, poultry and fish. Blue—raw fish. • Brown—root vegetables. • Green - green vegetables, salads and fruit. • White— bakery and dairy foods

Points to look for when buying fresh fish:

- Bright red gills and firm flesh
- A fresh smell, no fishy smell
- Clear, shiny eyes that are not sunken
- Scales firmly attached, not loose and flaking off with moist (but not slimy) skin
- Bright, natural colouring
- White fish should be a pearly colour
- Shellfish should be intact; shells should not be broken

Personal hygiene rules when preparing, cooking and serving food.

•Food handlers are a common source of pathogenic bacteria.

- wear clean apron to protect food from contamination from bacteria on your clothing
- tie back or cover hair



- do not spit, sneeze or cough over or near food

Wash hands regularly using anti bacterial soap

- Before preparing food
- Between handling raw and high risk or ready to eat foods
- After going to the toilet
- After sneezing or coughing
- After changing a waterproof plaster
- After cleaning; handling food waste/rubbish + known allergens e.g. nuts.

