New Zealand Food Safety

Haumaru Kai Aotearoa

Food safety when you have **low immunity**

Ministry for Primary Industries
Manatū Ahu Matua

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What is low immunity?

Your immune system fights harmful pathogens. Having low immunity means your immune system is weaker than usual. This means you are at higher risk of getting infections – including those transmitted by food – and your illness may be more serious.

At some point in their lives, everyone is at a higher risk than normal from foodborne illness. A number of health conditions, surgical or medical treatments, and age may reduce your immunity or make infections more serious. In pregnancy, common infections can cause more serious illness for the mother and can affect the unborn child. Newborn babies take time to build immunity.

Appropriate advice on what is safe for you may depend on what has caused your low immunity. Your doctor or dietician may make some changes to the advice in this booklet to suit your individual circumstances.

There is no such thing as 100 percent safe food, but this booklet provides information for those with low immunity about:

- identifying high risk foods to avoid;
- selecting safer foods;
- food safety rules for common foodborne illnesses;
- what to do when storing and preparing food.

New Zealand Food Safety has a free booklet available with special advice about food safety in pregnancy. Ask your doctor, midwife or local Public Health Unit for a copy, or call 0800 00 83 33

What causes low immunity?

Some conditions that can result in low immunity are listed below. If you are unsure about your immunity or have concerns, talk to your doctor or other health professional, or call healthline on 0800 611 116.

Illness	Cause of low immunity
Cancer	If you have advanced cancer or are taking chemotherapy drugs or having radiotherapy
HIV/Aids	HIV/AIDS directly affects the immune system's cells; if your disease is more advanced you are at higher risk of infection
Inflammatory bowel disease	If you have ulcerative colitis or Crohn's disease and especially if you are taking higher doses of drugs such as steroids (cortisone, prednisone) or immune suppressants such as salazopyrine
Neutropenia (low white blood cell count)	A low blood neutrophil cell count can result in a higher risk of infection. Neutropenia may occur with radiation therapy or chemotherapy
Surgical or medical treatments	**Cause of low immunity**
Transplant procedures	If the transplant (kidney, liver, heart, lung, bone marrow) was recent or you are taking anti-rejection drugs such as tacrolimus or cyclosporine
Immuno-suppressive drugs	Prednisone and azathioprine are used for medical conditions, including arthritis and autoimmune disease. Ask your doctor whether you are on this type of drug and if the dose is enough to leave you prone to foodborne illness
Low stomach acidity	If you have had a stomach operation that has reduced the amount of acid your stomach produces or if you are on medication for gastric reflux (stomach acid provides a defense by killing many pathogens – when acid is absent or reduced, pathogens may grow and cause an infection) or are regularly taking antacids
Age and pregnancy	**Cause of low immunity**
Elderly	If you are an older person and also have ongoing (chronic) illnesses, you may have low immunity
Premature babies and sick children	Especially babies who are very premature and children who have serious illnesses
Pregnancy	Illness caused by some infections can be more serious for the mother and her unborn child. See the advice in New Zealand Food Safety's ***Food safety in pregnancy*** booklet

Choosing safer foods

Food is generally safe but occasionally may carry some amount of harmful substances which may affect food safety if food is poorly handled. Some foods are higher risk than others and should be avoided while your immunity is low. This section helps explain some of the risks associated with certain foods and how to minimise them.

Dairy products (milk, cheese, yoghurt, ice cream) are important sources of protein and calcium and you are encouraged to eat them. These foods may be especially easy to eat if you are suffering from the side effects of treatment (such as mouth pain and nausea).

Most dairy products in New Zealand (both locally produced and imported) are pasteurised. This process kills pathogens in the raw product. After opening these products, contamination by pathogens can occur and eating the product may lead to illness. *Listeria* is bacteria that can grow on food in the fridge to numbers which can cause an infection.

To reduce your risk of infection:

- store dairy products in a clean fridge with a temperature between 2°C and 4°C;
- keep dairy products well covered to prevent contamination;
- buy dairy products in small quantities so pathogens don't have time to grow before you use them all;
- choose single serve containers of dairy products if available (such as individual pots, tubs or slices) of yoghurt, cheese and ice cream;
- do not drink raw (unpasteurised) milk and eat raw milk products.

Raw eggs should not be eaten by those with low immunity.

Raw meat is a primary source of pathogens, and can cross-contaminate kitchen surfaces, hands and ready-to-eat foods. Undercooked chicken and hamburgers are the highest risk products.

Processed meats should be okay if fresh, in its original, sealed, manufacturer's packaging and bought in small quantities that are eaten within a few days of opening.

Fish and shellfish should not be eaten raw.

Fruits and some vegetables are often eaten raw. To avoid pathogens that may be on them it is very important to:

- avoid foods that are difficult to wash thoroughly, e.g. raspberries;
- wash all fruits and vegetables thoroughly and prepare salads just before eating;
- dry fruit and vegetables with a clean paper towel;
- do not buy or eat damaged fruit or vegetables.

Note: Depending on the state of your immunity and the stage of your treatment, your doctor or dietician may advise you to peel or cook some fruits before eating them. You may need to avoid eating some raw fruits and vegetables for a while.

Buying safer food

- Always check the “best before” and “use by” dates – if it is past the use by date, don’t buy it.
- Remember, once the packet is opened the date no longer applies – Opened food should be stored in the fridge and sealed to prevent cross-contamination.
- Check for damaged packaging – don’t buy heavily dented or pierced tins, leaking cartons or bottles (e.g. milk), ripped boxes or packets, broken or pierced seals (e.g. yoghurt).
- Avoid swollen chilled food packages and swollen tins.
- Avoid products in loose vacuum packs (e.g. bacon – the packaging should be tight around the food, with no air).
- Avoid products that are mouldy, strangely coloured, have an unpleasant odour or are infested with insects.
- Avoid chilled products that are not cold to the touch.
- Avoid frozen products that are not frozen solid.

Taking food home

- At the supermarket, make sure raw meat and poultry is packed in a separate supermarket bag away from other foods – this stops blood from dripping on to other foods.
- Always take food straight home after purchase, especially chilled and frozen foods – don’t leave food in a hot car or car boot.
- For chilled and frozen foods, if you have more than a 30-minute trip home or if the weather is hot, pack them in a chilly bag or bin with an ice pack.
- When you get home, immediately transfer chilled and frozen foods into the fridge or freezer.

Storing food

To slow any growth of pathogens and keep food fresh, store food in the following ways:

In a **clean fridge:**

- The fridge temperature should be between 2°C and 4°C.
- Cover and store raw meat, poultry and fish separately. Store on the bottom shelf of the fridge to avoid meat and chicken juices dripping on to other foods.
- Cover all prepared or cooked foods (e.g. with plastic wrap or resuable containers with lid).
- Meats should be marinated in a covered container in the fridge, not on the bench.
- Leftover hot food should be put in the top of the fridge as soon as it has stopped steaming. Hot food will cool more quickly if put into a shallow dish.
- Only store leftovers or cooked food in the fridge for two days – if it is not used by then, throw it out.
- Separate and cover pet food.

In a **clean freezer:**

- The freezer temperature should be –18°C or colder. Ice cream will be hard at –18°C. If it is soft, your freezer temperature is too warm.
- Freeze only fresh, good quality food – freezing does not kill most of the pathogens in food.
- Freeze only small amounts of food at a time – otherwise the middle of the food might not freeze quickly enough to stop pathogen growth.
- Thawed food should not be refrozen.
- Cooked food and leftovers should only be frozen once.

In a **clean pantry:**

- Do not store chilled or frozen foods in the pantry.
- Keep foods in airtight containers, or buy reusable bag clips (for closing packets).
- Cover all foods.
- If in doubt, throw it out!

Chill

- Ensure your fridge is between 2°C and 4°C.
- Keep all perishable foods in the fridge until you are ready to use them.
- When picnicking or carrying food, keep it cool in a chilly bin with frozen drink bottles or chilly pads.
- Marinate food in the fridge, not on the bench.

Hand hygiene

A simple and very important thing you can do to help prevent foodborne illness is to have clean hands!

How to wash and dry your hands:

- Wash your hands thoroughly, using plenty of soap. At least 20 seconds is recommended.
- Use a nail brush to remove dirt from under your nails and cuticles.
- Rinse your hands well, and dry them completely (for at least 20 seconds) with a clean dry hand towel or with paper towels.
- Drying is just as important as washing.
- Keep hand towels only for hands or use paper towels – don't use the tea towel that is used to dry dishes.
- Use a fresh hand towel daily or change it more often if it is wet or dirty.

Wash and dry your hands:

- before and after preparing food;
- after handling raw meat and poultry;
- after blowing or touching your nose, sneezing into your hand, or touching your hair or your mouth while preparing food;
- after going to the toilet, helping a child go to the toilet, or changing a baby's nappy;
- after touching pets, farm animals, pet food and pet litter;
- after gardening;
- after handling rubbish.

Clean under each fingernail using warm running water, soap and a nail brush.

Wash hands with warm running water and soap, rubbing vigorously (front, back and between fingers).

Dry hands thoroughly (front, back and between fingers).

Food safety in the kitchen

To avoid contaminating food with pathogens:

- Always use clean utensils (e.g. knives, spoons) and chopping boards when preparing foods.
- Use separate chopping boards and utensils when preparing raw foods (especially meat and poultry) and cooked or ready-to-eat foods (e.g. salad).
- If you have just one chopping board and one knife, make sure they are scrubbed clean in hot soapy water and dried well between preparing raw and cooked or ready-to-eat foods.
- Never put cooked food back on to the same plate that contained the raw food – always use a clean plate (e.g. when barbecuing).
- Use different utensils for human food and pet food.

Doing the dishes and cleaning up:

- Use hot soapy water or a dishwasher to wash dishes. Let dishes air dry rather than drying with a tea towel. If you do use a tea towel, change to a clean tea towel at least once daily.
- Use separate sponges or cloths for the dishes, the bench and the floor (use different colours, so you know which one is for which surface) and keep them separate.
- Use paper towels (instead of a cloth or sponge) and disinfectant (e.g. bleach solution) to wipe up messy spills, such as raw meat or poultry juices, on the bench or floor.
- Always use clean dish cloths. You can clean dish cloths or sponges by washing them in hot water (60°C), or soaking in bleach solution for at least an hour, or putting them through a hot cycle in the dishwasher (60°C).

Remember:

- avoid coughing or sneezing over food;
- don't allow pets near food or on bench tops;
- cover food to protect it from pets, flies and other insects;
- don't prepare food for other people if you have an illness with diarrhoea or vomiting, which could be passed on through contaminating food.

Thawing and cooking food

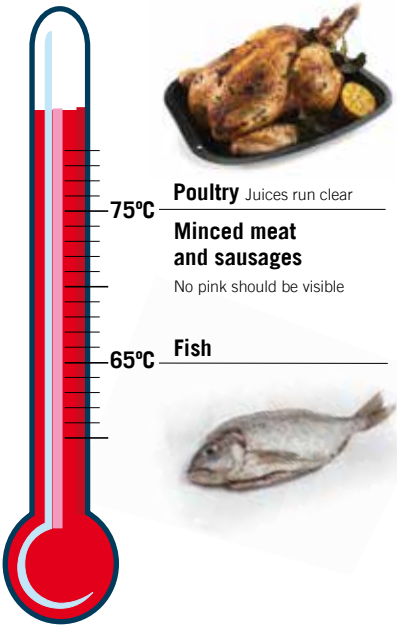
Thawing

- Make sure meat and poultry are completely thawed (defrosted) before you cook them.
- Never thaw frozen food on the bench – thaw it in the fridge overnight, or in the microwave (using the defrost or lowest power setting).
- When thawing foods such as mince and casserole in the microwave, break the food up a few times while thawing, then immediately cook or reheat it.

Always make sure food is cooked (steaming hot) right through to the middle before eating.

Cooking

- Preheat the oven so that food cooks as quickly as possible.
- Make sure that food is thoroughly cooked and steaming hot right through to the middle.
- Make sure that meats are cooked until the juices run clear. This is particularly important for chicken and other poultry and minced meats (mince, sausages, meatloaf). Don't eat rare or undercooked meat or poultry.
- All types of shellfish should be well cooked until the shell opens and the flesh is fully cooked.
- Eggs should be well cooked (firm yolk and white) – don't eat raw eggs, or cooked eggs with a soft yolk.
- Vegetables should be washed before cooking.
- Eat cooked food immediately while it is still hot – don't leave it to stand at room temperature.



Reheating and microwaving

Microwaves are quick and easy to use, but they don't always cook or reheat food evenly, and may leave cold spots in the food:

- When cooking in the microwave, stir food frequently to avoid uneven cooking.
- Cover food with a suitable lid or microwave-safe plastic wrap (but don't let the wrap touch the food) – covered food cooks or thaws more evenly.
- Always leave food for the recommended standing time after cooking or reheating in the microwave – this is necessary for the food to finish cooking and to even out hot spots.
- Make sure that reheated and cooked food is steaming hot right through to the middle.
- Leftovers must be reheated until steaming hot and must not be reheated more than once.

Restaurants and takeaways

When you eat out or buy takeaways, you should avoid the same high-risk foods you would avoid at home. Steaming hot food is your best choice. However, you have little control over the way food is prepared in restaurants and takeaways.

When eating in a restaurant or eating takeaway food:

- Your food should be well cooked and prepared just before it is served to you.
- Eat food that is steaming hot.
- Avoid eating from buffets, smorgasbords, salad bars or from street vendors, as the risks are harder to manage.
- If in doubt, avoid!

Do not eat:

- raw eggs or foods containing raw eggs (such as mayonnaise, hollandaise sauce, Caesar dressing, some desserts);
- unwashed fruits and vegetables, raw sprouts, raw herbs;
- pre-prepared cold foods such as salads, unrefrigerated sandwiches or sushi;
- undercooked or raw meat, poultry or seafood;
- cold meats, pâté or cold, smoked fish;
- soft cheeses (unless cooked);
- soft-serve ice cream.

Non-commercial wild foods, recreational catch, collect-your-own and farmkill

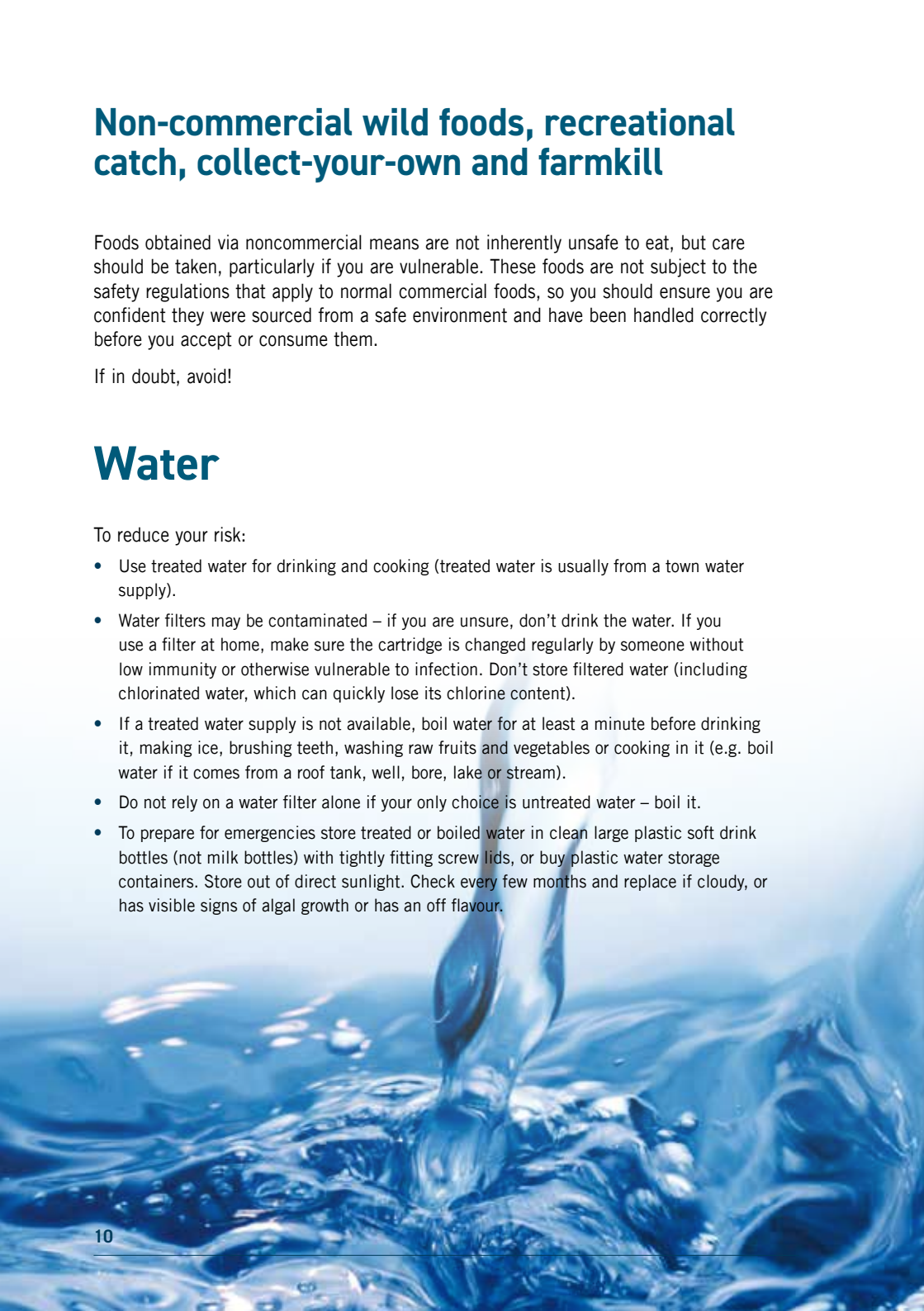
Foods obtained via noncommercial means are not inherently unsafe to eat, but care should be taken, particularly if you are vulnerable. These foods are not subject to the safety regulations that apply to normal commercial foods, so you should ensure you are confident they were sourced from a safe environment and have been handled correctly before you accept or consume them.

If in doubt, avoid!

Water

To reduce your risk:

- Use treated water for drinking and cooking (treated water is usually from a town water supply).
- Water filters may be contaminated – if you are unsure, don't drink the water. If you use a filter at home, make sure the cartridge is changed regularly by someone without low immunity or otherwise vulnerable to infection. Don't store filtered water (including chlorinated water, which can quickly lose its chlorine content).
- If a treated water supply is not available, boil water for at least a minute before drinking it, making ice, brushing teeth, washing raw fruits and vegetables or cooking in it (e.g. boil water if it comes from a roof tank, well, bore, lake or stream).
- Do not rely on a water filter alone if your only choice is untreated water – boil it.
- To prepare for emergencies store treated or boiled water in clean large plastic soft drink bottles (not milk bottles) with tightly fitting screw lids, or buy plastic water storage containers. Store out of direct sunlight. Check every few months and replace if cloudy, or has visible signs of algal growth or has an off flavour.



Overseas travel and food safety

Travel to overseas countries, particularly developing countries, may carry a higher risk of foodborne illness for any traveller. Seek advice from your doctor, who may refer you to a travel health clinic.

Some countries have extremely high rates of illness carried by food and water supplies may not be safe.

While overseas, take special care that food and water (including ice) are safe to eat and drink, and heed the advice in this booklet.

Pathogens associated with food can also be found in non-food sources such as untreated water. If you have low immunity you can get very sick from drinking untreated water.

What should I do if I have symptoms of foodborne illness?

If you have low immunity and you think you have an illness caused by food, contact your doctor right away – don't wait until your next appointment.

It can take from as little as 20 minutes through to several weeks to become sick with foodborne illness after eating contaminated food. Often foodborne illness is not caused by the last food you ate. Foodborne illness can be mild but sometimes (especially if you have low immunity) it can be life-threatening or cause death.

Symptoms of foodborne illness may include:

- nausea or vomiting;
- stomach cramps or pains;
- diarrhoea;
- fever or chills;
- headache;
- muscle or joint aches;
- allergic reactions.

What causes foodborne illness?

NAME	POSSIBLE SYMPTOMS (FROM MOST TO LEAST COMMON)	FOODS AND CAUSES LINKED TO OUTBREAKS	HOW SOON IT TYPICALLY STRIKES
Bacillus cereus **(bacteria)**	Two different forms: **1.** Vomiting, nausea, occasional diarrhoea **2.** Diarrhoea, abdominal pain, occasional nausea	Rice, spices and foods containing starch-based products, e.g. gravies, casseroles and sauces.	1 to 6 hours (vomiting) 8 to 16 hours (diarrhoea)
Campylobacter **(bacteria)**	Muscle pain, headache, fever, followed by diarrhoea (can be bloody), abdominal pain, nausea	Undercooked chicken, unpasteurised milk, undercooked liver, untreated drinking water.	2 to 5 days but can range from 1 to 10 days
Ciguatera (toxin)	Nausea, vomiting, diarrhoea, muscle pain followed by neurological symptoms including headache, temperature reversal (hot things feel cold and cold things feel hot), dizziness, tingling, muscular weakness, irregular heartbeat	Ciguatera poisoning is generally associated with private imports of reef fish from the tropics. It is not known from New Zealand-caught fish.	Within 6 hours
Clostridium botulinum **(bacteria)**	Nausea and vomiting followed by neurological symptoms including weakness, dizziness, double vision, difficulty speaking, swallowing and breathing, abdominal distension	Canned or bottled foods, usually home prepared, that haven't received adequate heat treatment. Honey (infants only).	12 to 36 hours
Clostridium perfringens **(bacteria)**	Severe abdominal pain, watery diarrhoea, occasional vomiting and nausea	Meat dishes especially rolled roasts, stuffed meat, soups, stews, gravies, rice and pies that have been cooked inadequately and/or cooled too slowly.	10 to 12 hours, but can range from 6 to 24 hours
Cryptosporidium parvum **(parasite)**	Watery diarrhoea, vomiting, stomach cramps, weight loss	Untreated drinking water, recreational water contact and contaminated fresh produce, contact with sick animals and contact with sick people.	3 to 11 days
Shiga toxin-producing *E. coli* (STEC)	Severe abdominal pain, watery (then bloody) diarrhoea, occasional vomiting	Untreated drinking water,unpasteurised milk, contaminated fresh produce, undercooked ground raw meat, such as hamburger or sausage meat.	2 to 9 days
Giardia intestinalis **(parasite)**	Diarrhoea, flatulence, stomach cramps	Contaminated fresh produce, untreated drinking water.	1 to 3 weeks
Hepatitis A (virus)	Fever, malaise, nausea, vomiting, loss of appetite, abdominal pain, jaundice	Contact with infected people, shellfish, infected food handlers.	10 to 50 days
Listeria **(bacteria)**	**1. Non-invasive:** diarrhoea, fever, muscle pain, headache, occasional abdominal cramps and vomiting	Ready-to-eat products, such as deli meats and salads, cooked poultry products, smoked seafoods, soft cheeses and foods with a long refrigerated shelf life.	Non-invasive: 11 hours to 7 days

NAME	POSSIBLE SYMPTOMS (FROM MOST TO LEAST COMMON)	FOODS AND CAUSES LINKED TO OUTBREAKS	HOW SOON IT TYPICALLY STRIKES
Listeria **(bacteria)**	**2. Invasive:** fever, headache, diarrhoea, vomiting, septicaemia, encephalitis, meningitis, spontaneous abortion or stillbirth	Once food is contaminated *Listeria* bacteria multiply quickly, even at the recommended refrigeration temperatures of 2–4°C.	Invasive: 1 day to 7 weeks
Norovirus (virus)	Nausea, vomiting, diarrhoea, abdominal pain, headache, low-grade fever	Shellfish, contaminated water, infected food handlers.	24 hours but can range from 10 to 50 hours
Salmonella **(bacteria)**	Nausea, vomiting, abdominal cramps, diarrhoea, fever, headache	Eggs, raw milk and meats, untreated water, infectious food handlers.	6 hours to 2 days
Scombrotoxin (toxin)	Tingling or burning sensation in the mouth, upper body rash, reduced blood pressure, headache, itching, nausea, vomiting, diarrhoea	Many generally darker-fleshed fish species can cause histamine poisoning if not kept chilled after capture. Species implicated in New Zealand outbreaks are kahawai, trevally and kingfish.	A few minutes to a few hours
Staphylococcus aureus **(bacteria)**	Nausea, vomiting, abdominal cramps, occasional diarrhoea	Poor hygiene management of ham, cooked meats, yoghurt, chicken salad, pasta dishes, bakery products (especially with cream), cheese.	2 to 4 hours but can range from 30 minutes to 7 hours
Toxic shellfish (toxin)	**1. Amnesic shellfish poisoning**: vomiting, nausea, diarrhoea, abdominal cramps; followed by neurological symptoms headache, dizziness, vision disturbances, loss of short-term memory **2. Diarrhetic shellfish poisoning**: vomiting, nausea, diarrhoea, abdominal cramps; **3. Neurotoxic shellfish poisoning**: difficulty in swallowing, double vision, unsteadiness and tremors, nausea, diarrhoea, vomiting, numbness, tingling of the mouth, lips and extremities 4.**Paralytic shellfish poisoning**: numbness and a tingling around the mouth, face, and extremities (hands and feet), difficulty swallowing or breathing, dizziness, headache, nausea, vomiting, diarrhoea, paralysis	Recreationally gathered shellfish	Within 24 hours and as rapid as 10 minutes – 3 hours for neurotoxic and paralytic poisoning
Vibrio parahaemolyticus and Vibrio vulnificus **(bacteria)**	Diarrhoea, abdominal pain, nausea, vomiting, headache, fever, chills	Recreationally gathered raw oysters and clams, crabs, shrimps.	4 hours to 4 days
Yersinia enterocolitica **(bacteria)**	**Adults:** abdominal pain, headache, fever, diarrhoea, nausea, vomiting Children: watery, mucoid diarrhoea	Pork and pork products, dairy products, fruit, vegetables.	7 days but can range from 1 to 11 days

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