

Food Safety

*When you have
low immunity*

recent illness

cancer

organ transplant

HIV/Aids

young baby

sick child

pregnant

low stomach acidity

frail elderly

chronic illness

NEW ZEALAND

nz *fsa*
FOOD SAFETY
AUTHORITY

Contents

What makes you more vulnerable?	1
How do I know if I am vulnerable?	1
What is safe food?	2
Some of the things that can make you vulnerable	3
What should I do if I have symptoms of foodborne illness?	4
Some pathogens that can contaminate food	5
Choosing safer foods	6
Dairy products	6
Vegetables, salads and fruits	8
Breads and cereals	9
Drinks	9
Meat, poultry, seafood and eggs	10
Miscellaneous	11
Buying safer food	12
Taking food home	12
Storing food	13
Hand hygiene	14
Thawing and cooking food	15
Reheating and microwaving	16
Food safety in the kitchen	16
Restaurants and takeaways	18
Non-commercial wild foods, recreational catch, collect-your-own and farmkill	19
Water	20
Overseas travel and food safety	21
Other common risks for vulnerable people	21
More information about pathogens that cause foodborne illnesses	22-24

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This booklet contains **food safety information** for vulnerable people (those with low immunity)

Everyone at some point in their lives is at a higher risk than normal from foodborne illness. There is no such thing as 100 per cent safe food but this booklet provides information on:

- identifying 'high risk' foods to avoid and selecting 'safer foods'
- food safety guidance to help prevent growth of, or contamination with, pathogens (bacteria, viruses and parasites that cause illness) when storing and preparing food.

What makes you **more vulnerable?**

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

How do I know if **I am vulnerable?**

A number of conditions, surgical or medical treatments or extremes of age, along with illness, may reduce your immunity or make infections more serious. Details are on page 3. Appropriate advice on what is safe for you may depend on what has caused your low immunity. Your doctor or dietician may want to make some changes to the advice in this booklet to suit the state of your immunity or your individual circumstances.

In pregnancy, infections can be more serious for the mother and can affect the unborn child. Newborn babies take time to build immunity.

NZFSA 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 NZFSA on 0800 NZFSA1 (0800 693 721).

What is **safe food**?

No food is 100 per cent safe at all times for all people, but the risks can be managed. This booklet tells you how and advises on the foods that have the most risk.

There are some simple rules about food safety that can help prevent most foodborne illness:

4 simple rules to
keep your food safe

CLEAN
COOK
COVER
CHILL



Some of the things that can make you vulnerable

Illness	
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 you have more advanced disease 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 (particularly less than 0.5×10^9 cells/L), can result in a higher risk of infection. Neutropenia may occur with radiation therapy or chemotherapy
Surgical or medical treatments	
Transplant procedures	Especially if the transplant (kidney, liver, heart, lung, bone marrow) was recent or you are taking antirejection drugs such as tacrolimus or cyclosporin
Immunosuppressive 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 defence by killing many pathogens – when acid is absent or reduced, pathogens may grow and cause an infection) or are regularly taking antacids
Extremes of age along with illness; Pregnancy	
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 other serious illnesses
Pregnancy	Also see the advice in NZFSA's Food Safety in Pregnancy booklet

Remember: ask your doctor whether you have low immunity

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 food that is contaminated by pathogens (and often it 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 or dysentery
- fever or chills
- headache
- muscle or joint aches
- allergic reactions



Some pathogens that can contaminate food

- *Bacillus cereus*
- *Clostridium*
- *E. coli*
- *Giardia*
- *Listeria*
- Rotavirus
- *Staphylococcus aureus*
- *Campylobacter*
- *Cryptosporidium*
- *Enterobacter sakazakii*
- Hepatitis A
- Norovirus
- *Salmonella*
- *Toxoplasma*

See pages 22–24 for more information about these and other pathogens



Choosing **safer foods**

Food is generally safe but often carries small numbers of pathogens and therefore it can be affected by poor handling. There is no way to make your food totally risk-free. However, some foods are higher risk than others and should be avoided while your immunity is low. This section will help you choose food that presents a lower risk of foodborne infection. It offers guidelines on the major food groups, including drinks.

Dairy products

Type of food		
Cheese	Hard yellow cheese (eg, cheddar, parmesan)	Buy in small quantities
	Cottage cheese, cream cheese etc	Buy in sealed packs; eat cold or cooked within two days of opening pack
	Soft pasteurised cheese (eg, brie, camembert, blue, feta, ricotta, etc)	Don't eat unless heated until steaming hot
Cream	Fresh, un-whipped or whipped, sour cream etc	Buy in sealed packs; eat within two days of opening pack
Custard	Ready-made chilled (packaged)	Don't eat unless heated until steaming hot
	Home-made	Eat within two days of making
Ice cream and dairy desserts		Choose single serve pots, tubs or slices
Milk	Pasteurised	Ideally drink or use within two days of opening
	Unpasteurised (raw)	Don't drink or use
Yoghurt	All types	Ideally eat within two days of opening pack



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 a painful mouth and nausea).

Virtually all **commercially available 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 may occur and may lead to illness. ***Listeria* can grow on food in the fridge** to numbers that 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, dairy food and ice cream.

Do not eat:

- **raw milk and raw milk products** (such as unpasteurised milk and home-made cheeses made from unpasteurised milk)
- **soft cheeses** (including brie, camembert, blue, ricotta and feta), unless they are cooked until steaming hot (for example, as part of a cooked dish)
- **soft-serve ice cream.**

Vegetables, salads and fruits

Type of food		
Fruit	All fresh fruits	Wash and dry well just before eating
Vegetables	All fresh vegetables	Wash and dry well just before eating raw, or wash before cooking
	Frozen vegetables	Cook; don't eat uncooked frozen vegetables
Salads	Ready-made salads and coleslaws from delis, salad bars etc	Don't eat
	Home-made	Wash and dry salad ingredients well just before making and eating salads
Parsley and other herbs with hard-to-clean leaves, and dried herbs and spices	Home-grown and store-bought	Don't eat raw; can use in cooked dishes

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 eg, raspberries
- **wash** all fruits and vegetables thoroughly and prepare salads just before eating
- **dry** fruit and vegetables with a clean paper towel
- 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.



Bread and cereals

Type of food		
Breads	All types	Okay to eat
Cakes, slices, muffins etc	Plain	Okay to eat
	With cream or custard	Only eat if home-made and fresh (cream newly opened, custard home-made and less than two days old)
Cereals	Breakfast cereals, rice, pasta etc	Okay to eat – refer to dairy products section for milk information
Sandwiches	Ready-made	Don't eat unless refrigerated or you know they are freshly prepared. Check the use by date if they are in special 'modified atmosphere' packaging. When selecting fillings consider and treat accordingly whether they are higher risk foods included in other tables in this booklet

Drinks

Type of drink		
Water	From a treated town supply, boiled or commercially bottled	Okay to drink
	Untreated	Don't drink
Coffee, tea, chocolate drinks etc	Made with boiling water, served hot	Okay to drink
Pasteurised fruit juice	From a sealed pack, bottle or tin	Okay to drink
Soft drinks, cordials		Okay to drink
Pasteurised milk	From a sealed pack or bottle	Okay to drink
Flavoured pasteurised milk	From a sealed pack or bottle	Okay to drink
Home-made milk shakes	Made from safe ingredients	Okay to drink
Ready-made milk shakes		Don't drink
Hot soup	Home-made or in packets or tins	Okay to drink

Meat, poultry, seafood and eggs

Type of food		
Cooked meats	Beef, pork, chicken, mince, sausages, hamburgers etc	Cook thoroughly until steaming hot throughout, and until juices run clear, eat while hot, never eat rare or undercooked meats; reheat leftovers thoroughly
Processed meats	Ham, salami, luncheon, pâté, pastrami, biltong, jerky (dried meat) etc	Don't eat unless heated until steaming hot. Packaged processed meats should be okay if fresh and in small quantities
Cold cooked poultry	Any cold pre-cooked poultry (eg, chicken, turkey etc)	Don't eat unless heated until steaming hot
Raw meat	Any raw meat, raw chicken or other poultry, beef, pork etc	Don't eat, taste, or touch face, mouth or eyes while preparing; wash and dry hands well after touching raw meats
Raw fish	Any raw fish	Should be okay if fresh and hygienically prepared
Raw shellfish	Any raw shellfish	Don't eat
Smoked fish and seafood	Chilled pre-cooked fish, oysters, mussels, salmon etc	Don't eat unless heated until steaming hot
Cooked fish and seafood	Freshly cooked fish, mussels, oysters, scallops etc	Cook thoroughly until steaming hot throughout; eat while hot
Raw eggs	In egg flips, eggnog, smoothies, home made mayonnaise etc	Don't eat
Cooked eggs	Fried, scrambled, baked or poached	Cook well (firm yolks, firm scrambled eggs)

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. Processed meats should be okay if fresh, packaged and bought in small quantities that are eaten within a few days of opening. Raw fish should be okay if fresh and hygienically prepared. Shellfish should not be eaten raw.

Miscellaneous

Type of food		
Leftovers	Cooked foods	Store uneaten leftovers covered in fridge; eat within two days; never eat cold leftovers – always reheat until steaming hot
Tinned foods	Tinned fruit, vegetables, fish, seafood, meat, sauces etc	Eat hot or cold immediately after opening tin; store uneaten leftovers covered in fridge and eat hot (never cold) within two days
Sauces and dressings	Salad dressings (oil and vinegar), bought mayonnaise, tomato sauce etc	Store in fridge once opened; check maximum storage time
Sushi	Store-bought (all types, even without raw seafood)	Don't eat
	Home-made	Use freshly cooked rice, and don't use raw meat or shellfish; eat immediately; don't eat leftovers
Stuffing	Stuffing from chicken or turkey	Don't eat unless stuffing is cooked separately (in a dish); eat hot, store uneaten leftovers in fridge and eat hot within two days
Hummus	Store-bought or home-made	Don't eat



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** – most food opened and stored in the fridge should be eaten within two days
- **check for damaged packaging** – don't buy dented tins, leaking cartons or bottles (eg, milk), ripped boxes or packets, broken or pierced seals (eg, yoghurt)
- **avoid swollen chilled food packages** and swollen tins
- **avoid products in loose vacuum packs** (eg, 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 juices 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 it in the following ways:

In the 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 (eg, with plastic wrap)
- **store eggs** in the fridge not in the pantry
- 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 the 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 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 the clean pantry:

- keep foods in airtight containers, or buy re-usable bag clips (for closing packets)
- **cover** all foods.

Clean your fridge, freezer and pantry regularly



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).

When to wash and dry your hands:

- **before** and **after** preparing food
- after **handling** raw meat and poultry (before you handle any other foods, or before you touch your face, mouth or eyes)
- 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**.

Thawing and cooking food

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

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**, and then immediately cook or reheat it.

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
- 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.

Food safety in the kitchen

To avoid contaminating food with pathogens:

- always use **clean utensils** (eg, 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 (eg, salad)
- if you have just one chopping board and one knife, make sure they are **scrubbed clean** in hot soapy water and well dried 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** (eg, when barbecuing)
- use **different utensils** for 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 (eg, 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).

Campylobacter



Salmonella



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.

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.

soft cheeses (unless cooked)



unwashed vegetables
pre-prepared salads



undercooked



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

Foods obtained via non-commercial 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.

unwashed fruits



pre-prepared cold foods such as salads, sandwiches



cold meats, pâté or cold, smoked fish



raw or undercooked meat



foods containing raw eggs, undercooked seafood



undercooked poultry



Water

Pathogens frequently associated with food can also be found in non-food sources. Untreated water may be contaminated with such pathogens, as well as *Cryptosporidium* and *Giardia*. If you have low immunity you can get very sick from drinking untreated water. Water swallowed while swimming can also make you sick.

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 (for example, 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.

Other common risks for vulnerable people

Pets, farm animals, gardening

Pets and farm animals can carry many pathogens, including *Campylobacter*, *E. coli* (O157:H7), *Salmonella*, *Listeria*, *Cryptosporidium* and *Toxoplasma*.

Gardening can also increase the risk of infection, either from handling soil or from breathing in dust from soil or from potting mix, compost or fertiliser. *Toxoplasma* cysts may be present in garden soil.

To reduce the risk of getting ill:

- always **wash and dry your hands** after being in the garden, on the farm or handling pets
- where possible **wear gloves**, but always wear them while gardening, feeding out silage (*Listeria* grows in it), or if you cannot find anyone else to clean up cat faeces or cat litter (avoid breathing in dust from the cat litter). Wash and dry your hands afterwards
- **avoid touching** your face, mouth or eyes while gardening
- **avoid stirring** up or breathing in dust from the soil, potting mix, compost, or fertiliser
- be careful **if you live or work on a farm**: avoid handling stillborn animals; buy pasteurised milk to drink and pasteurised dairy products to eat; don't drink untreated water.



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 food that is contaminated by pathogens (and often it 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.

More information about pathogens that cause foodborne illnesses:

Name	Possible symptoms (from most to least common)	Foods and causes linked to outbreaks	How soon it typically strikes
<i>Bacillus cereus</i> (bacteria)	Two different forms of food poisoning: Vomiting, nausea, occasional diarrhoea. Diarrhoea, abdominal pain, occasional nausea	Rice, starchy foods such as potato and pasta, meat, casseroles, vegetable dishes, foods containing spices	1 to 6 hours (vomiting) 10 to 12 hours (diarrhoea)
<i>Campylobacter</i> (bacteria)	Muscle pain, headache, fever followed by diarrhoea (can be bloody), abdominal pain, nausea	Undercooked chicken, unpasteurised milk, chicken liver pâté, drinking water	2 to 5 days, range 1 to 10 days
<i>Clostridium perfringens</i> (bacteria)	Severe abdominal pain, watery diarrhoea, occasional vomiting and nausea	Meat dishes, especially rolled roasts, stuffed meat, soups, stews, gravies, pies	10 to 12 hours, range 6 to 24 hours
<i>Cryptosporidium parvum</i> (parasite)	Watery diarrhoea, vomiting, stomach cramps, weight loss	Drinking water, raw fruits and vegetables, apple juice, unpasteurised milk, salads	3 to 11 days
<i>Cyclospora</i> (parasite)	Watery diarrhoea, loss of appetite, weight loss, cramps, nausea, vomiting, muscle aches, low grade fever, extreme fatigue	Raspberries, lettuce, basil and pesto	1 week
<i>E.coli</i> (O157:H7) (bacteria)	Severe abdominal pain, watery (then bloody) diarrhoea, occasional vomiting	Undercooked minced meat, unpasteurised milk, lettuce, sprouts, unpasteurised fruit juices	1 to 8 days

More information about pathogens that cause foodborne illnesses:

Name	Possible symptoms (from most to least common)	Foods and causes linked to outbreaks	How soon it typically strikes
<i>E.coli</i> (STEC) (bacteria)	Range from mild diarrhoea through severe cramps to profuse diarrhoea containing a lot of blood	Undercooked minced meat, cooked meat, apples, radishes, unpasteurised juices and dairy products. Direct contact with animals and animal fertiliser. Contaminated water	1 to 2 days
<i>Enterobacter sakazakii</i> (bacteria)	May affect low birth weight, premature birth infants causing septicaemia, meningitis	In premature infants has been linked with consuming powdered infant formula	Not known
<i>Giardia intestinalis</i> (parasite)	Diarrhoea, flatulence, stomach cramps	Raw vegetables, drinking water, salads, fruit salad, sandwiches	1 to 3 weeks
Hepatitis A (virus)	Fever, malaise, nausea, vomiting, loss of appetite, abdominal pain, jaundice	Shellfish, salads, cold meats, sandwiches, fruits, vegetables, fruit juices, milk, milk products, infected food handlers	10 to 50 days
<i>Listeria</i> (bacteria)	Non-invasive: Diarrhoea, fever, muscle pain, headache, occasional abdominal cramps and vomiting Invasive: Fever, headache, diarrhoea, vomiting, septicaemia, encephalitis, meningitis, spontaneous abortion or stillbirth	Long shelf life products stored under refrigeration such as deli meat and poultry products, smoked seafoods, cheeses (particularly soft-ripened cheeses), pre-cooked sausage products. Also unpasteurised milk, corn salad, coleslaw	Non-invasive: 11 hours to 7 days Invasive: 1 day to 3 weeks
Norovirus	Nausea, vomiting, diarrhoea, abdominal pain, headache, low-grade fever	Shellfish, salads, sandwiches, cold meats, infected food handlers	24 hours, range 10 to 50 hours

More information about pathogens that cause foodborne illnesses:

Name	Possible symptoms (from most to least common)	Foods and causes linked to outbreaks	How soon it typically strikes
Rotavirus	Vomiting, watery diarrhoea, fever	Infection generally not recognised as foodborne but outbreaks associated with salad, cold foods, shepherd's pie and water have been reported overseas	2 days
<i>Salmonella</i> (bacteria)	Nausea, vomiting, abdominal cramps, diarrhoea, fever, headache	Raw meats, poultry, unpasteurised milk and dairy products, seafoods, fresh produce (including sprouts), foods handled by infected foodhandlers, eg, kebabs, sandwiches	6 hours to 2 days
<i>Staphylococcus aureus</i> (bacteria)	Nausea, vomiting, abdominal cramps, occasional diarrhoea	Ham, cooked meats, yoghurt, chicken salad, pasta dishes, bakery products (especially cream-filled), cheese	2 to 4 hours, range 30 minutes to 7 hours
<i>Toxoplasma</i> (parasite)	Most people are not aware that they are infected. Sometimes, flu-like symptoms such as swollen lymph glands or muscle aches and pains. Severe toxoplasmosis, resulting from an acute <i>Toxoplasma</i> infection or from a reactivated earlier infection, can cause damage to the brain, eyes, or other organs	Oral contact (direct or indirect) with faeces from a <i>Toxoplasma</i> -infected bird, reptile or animal – particularly cats. Contact with contaminated raw or partly cooked meat, especially pork, lamb or venison, or unwashed raw vegetables from the garden. Drinking water contaminated with <i>Toxoplasma</i>	10 to 23 days
<i>Vibrio parahaemolyticus</i> (bacteria)	Diarrhoea, abdominal pain, nausea, vomiting, headache, fever, chills	Raw oysters and clams, crabs, shrimp	4 hours to 4 days
<i>Yersinia enterocolitica</i> (bacteria)	Adults: abdominal pain, headache, fever, diarrhoea, nausea, vomiting Children: watery, mucoid diarrhoea	Pork and pork products, dairy products, fruit, vegetables, tofu	7 days, range 1 to 11 days

**20
SECOND
WASH**



WASH YOUR
HANDS FOR
20 SECONDS
WITH SOAP AND
HOT WATER

+

**20
SECOND
DRY**



DRY YOUR
HANDS FOR
20 SECONDS
WITH A CLEAN,
DRY TOWEL
OR PAPER
TOWEL

=

**CLEAN
HANDS**



REMEMBER THE
20+20 RULE
AND HELP KEEP
FOOD SAFE



recent illness

cancer

organ transplant

HIV/Aids

young baby

sick child

pregnant

low stomach acidity

frail elderly

chronic illness



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