



**Food Safety
in pregnancy**



Te Pou Oranga Kai O Aotearoa



Auckland Regional Public Health Service
Rātonga Hauora ā Iwi o Tamaki Makaurau



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What is 'safe food'?

By 'safe food' we mean food that is free of pathogens (bacteria, viruses and parasites) that can cause illness in humans.

Why is safe food important in pregnancy?

Food that is safe to eat is important for pregnant women. While you are pregnant your levels of immunity are lower than usual, so you are at more risk of getting diseases carried by food. Your illness may also be worse than it would normally have been.

Rarely, certain pathogens – such as those described later in this booklet – can cause miscarriage, still or premature birth, and serious illness or even death to newborn babies. The good news is that following simple rules on food safety can help prevent most foodborne illness. Remember the 4Cs (clean, cook, cover, chill) and the 20+20 rule (20 seconds wash + 20 seconds dry = clean hands).

Food safety guidelines

Food often carries small numbers of germs. The food safety guidelines in this booklet are designed to reduce the risk of pathogens growing on food, or spreading from one type of food to another.

Buying safe food

- always check the 'use by' or 'best before' date – if it is past the date, don't buy it
- 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 cans



- 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, or infested with insects
- avoid chilled products that are not cold to the touch
- avoid frozen products that are not frozen solid
- avoid hot foods that are not steaming hot (eg, cooked chickens).

Taking food home

- at the supermarket, make sure raw meat and chicken is packed in a separate bag from other foods to stop raw meat juices from dripping onto other foods
- always take food straight home, especially chilled and frozen foods – never leave food in a hot car
- for chilled and frozen foods, if you have more than a 30 minute trip home or if the weather is hot, use 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 keep food fresh, and to slow any growth of pathogens, store it in the following ways:

In the pantry

- keep foods in airtight containers, or buy reusable bag clips (for closing packets)
- keep foods covered
- keep shelves clean – crumbs and spills attract pests.

In the fridge

- the temperature should be between 2°C and 4°C – check the temperature daily (you can buy a fridge thermometer from hardware stores)
- don't let meat and chicken juices drip onto other foods
- cover all cooked foods (eg, with plastic wrap)
- eggs should be stored in the fridge
- meats should be marinated in a covered container in the fridge, not on the bench
- leftover hot food should be put in 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
- leftovers must be reheated until steaming hot and must not be reheated more than once.

In the freezer

- only freeze fresh, good quality food – freezing will not kill pathogens in food
- only freeze small amounts of food at a time – otherwise the middle of the food might not get frozen quickly enough
- freezer temperature should be between -15°C and -18°C (you can buy a freezer thermometer from hardware stores)
- raw food should only be frozen once – leftovers can be frozen only one more time
- cooked food should only be frozen once.

Cooking

- make sure meat and chicken are completely thawed (defrosted) before you cook them
- never thaw frozen food on the bench – it can be thawed in the fridge overnight, or in the microwave (using the defrost or lowest power setting)
- when defrosting foods like mince and casserole in the microwave, break them up a few times during thawing, and then immediately cook or reheat them
- 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
- minced meat, meatloaf and sausages should be cooked right through, and pork and poultry juices should run clear - use a meat thermometer to check temperatures. Undercooked meat and chicken should not be eaten!
- eggs should be well cooked (firm yolk and white) – don't eat raw or undercooked eggs
- 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 hot and 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.



Hand hygiene

One of the most important things you can do to prevent illness from pathogens on food is to have clean hands! Drying is just as important as washing. Wash your hands thoroughly, using plenty of soap, for at least 20 seconds (sing two verses of Happy Birthday, while rubbing hands together vigorously), rinse them well, and then dry them completely for 20 seconds on a clean dry hand towel or two paper towels (sing another two verses). 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).


Wash and dry your hands:

- before and after preparing food
- after handling raw meat and chicken (before you handle any other foods, or before you touch your face, mouth or eyes)
- after going to the toilet, helping a child go to the toilet, or changing a baby's nappy
- after touching pets or farm animals
- after blowing or touching your nose, sneezing into your hand, or touching your hair or your mouth while preparing food
- after gardening
- after handling rubbish.




Food safety in the kitchen

To avoid contaminating food with pathogens:

- always use clean utensils (eg, knives, spoons) when preparing foods; use hot soapy water or a dishwasher to wash dishes; let dishes air dry rather than drying with a tea towel. If you have to use a tea towel make sure it is changed at least daily
 - use separate chopping boards and utensils when preparing raw foods which require cooking (especially meat and chicken), and cooked or ready-to-eat foods (eg, salad)
 - if you have only one chopping board and one knife, scrub them clean in hot soapy water and dry thoroughly between using them for raw and for cooked/ready-to-eat foods
 - never put cooked food back onto the same plate that contained the raw food – always use a clean plate (eg, when barbecuing meat, chicken or fish)
 - use separate sponges or cloths for the dishes, the bench and the floor (tip: use different colours, so you know which one is for which task)
- 
- use paper towels (instead of a cloth or sponge) and disinfectant (eg, bleach solution) to wipe up messy spills like raw meat or chicken juices from the bench or floor
 - clean dish cloths or sponges (especially after use on the floor) by washing them in hot water (60°C), or soaking in bleach solution for at least 1 hour, or microwaving the damp dish cloth for 1 minute on high, or putting them through a cycle in the dishwasher
 - avoid coughing or sneezing over food
 - don't allow pets near food or on bench tops
 - cover food to protect it from 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 the food).

Foods that are eaten raw

Fruits and some vegetables are often eaten raw. To get rid of pathogens, such as *Listeria* or *Toxoplasma* that may be on them, it is very important to thoroughly wash them and dry with a clean paper towel. Do this just before eating them. Salads should also be prepared just before eating.





Guide to Food Safety in pregnancy pullout

Keep as a handy reference on the fridge, when shopping or dining out to ensure you have a safe and happy pregnancy.



Te Pou Oranga Kai O Aotearoa

Safer eating in pregnancy

Food type	
Breads and cereals	
Breads	all types
Cakes, slices, muffins etc	plain
	with cream or custard
Cereals	breakfast cereals, rice, pasta etc
Dairy products	
Cheese	hard yellow cheese (eg, cheddar, parmesan etc)
	cottage cheese, cream cheese etc
	feta cheese
	soft pasteurised cheese (eg, brie, camembert, blue, ricotta, mozzarella etc)
Butter	all types
Cream	fresh, unwhipped or whipped, sour cream etc
Custard	ready-made chilled (packaged)
	home-made
Milk	pasteurised
	unpasteurised (raw)
Yoghurt	all types
Eggs	
Raw eggs	in egg flips, egnog, smoothies, home-made mayonnaise etc
Cooked eggs	well cooked (fried, scrambled, baked, poached, etc)
Meat and poultry	
Cooked meats	beef, pork, chicken, mince, sausages etc
Processed meats	ham, salami, luncheon, pâté, pastrami, biltong, or jerky (dried meat) etc
Cold cooked poultry	any cold pre-cooked poultry (eg, chicken, turkey etc.)
Raw meat	any raw meat, raw chicken or other poultry, beef, pork etc
Seafood	
Raw fish and seafood	any raw fish or seafood
Smoked fish and seafood	chilled, pre-cooked fish, mussels, oysters, salmon etc
Cooked fish and seafood	freshly cooked fish, mussels, oysters, crayfish, scallops etc
Vegetables, salads and fruits	
Fruit	all fresh fruits
Vegetables	all fresh vegetables
	frozen vegetables
Salads	ready-made salads and coleslaws from delis, salad bars etc
	home-made
Parsley	home-grown and store bought
Miscellaneous	
Leftovers	cooked foods
Tinned foods	tinned fruit, vegetables, fish, seafood, meat, sauces etc
Sauces and dressings	salad dressings (oil and vinegar), bought mayonnaise, tomato sauce etc
Sushi	store bought (all types - even without raw seafood)
	home-made
Stuffing	stuffing from chicken or turkey
Hummus	store-bought or home-made

What to do	
	OK to eat
	OK to eat
	Don't eat (unless cream is newly opened and custard is home-made and fresh)
	OK to eat – refer to diary products below for milk information
	Buy in small quantities
	Buy in sealed packs; eat cold or cooked within two days of opening pack; don't eat leftovers
	Buy in sealed packs; eat cold or cooked within two days of opening pack; don't eat leftovers
	Buy in sealed packs; eat immediately after opening pack; don't eat leftovers
	Buy in small quantities; store in fridge; ideally eat within two days of opening
	Buy in sealed packs; eat within two days of opening pack; don't eat leftovers
	Don't eat unless heated until steaming hot
	Eat while hot immediately after cooking; don't eat cold leftovers
	Ideally drink or use within two days of opening
	Don't drink or use
	Check use-by date; ideally eat within two days of opening
	Don't eat
	Cook well (firm yolks, firm scrambled eggs)
	Cook thoroughly until steaming hot throughout, and until juices run clear; eat while hot; never eat rare or undercooked meats; don't eat cold leftovers
	Don't eat unless heated until steaming hot
	Don't eat unless heated until steaming hot
	Don't eat; don't taste, or touch face, mouth or eyes while preparing; wash and dry hands well after touching raw meats
	Don't eat
	Don't eat unless heated until steaming hot
	Cook thoroughly until steaming hot throughout; eat while hot
	Wash and dry well just before eating
	Wash and dry well just before eating raw, or wash before cooking
	Cook; don't eat uncooked frozen vegetables
	Don't eat
	Wash and dry salad ingredients well just before making and eating salads
	Don't eat raw; can use in cooked dishes
	Store uneaten leftovers covered in fridge; eat within two days; never eat cold leftovers - always reheat until steaming hot
	Eat immediately after opening tin (hot or cold); store uneaten leftovers covered in fridge and eat hot (never cold) within two days
	Store in fridge once opened
	Don't eat
	Use freshly cooked rice, and don't use raw meat or seafood; eat immediately; don't eat leftovers
	Don't eat unless stuffing is cooked separately (in a dish); eat hot; store uneaten leftovers in fridge and eat hot within two days
	Buy in sealed containers; store in fridge; eat within two days of opening or making



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Dairy products

Dairy products (milk, cheese, butter, yoghurt) are important sources of protein and calcium in pregnancy and their consumption is encouraged. Commercially produced New Zealand and imported dairy products are pasteurised and this kills any pathogens in the raw product. However, after opening these products there is potential for contamination by pathogens that may lead to illness. *Listeria* can grow at refrigeration temperature to numbers that can result in an infection. For this reason, dairy products should be kept well covered to prevent contamination. They should ideally be consumed within two days of opening, or used in cooked foods after that two-day period. All soft cheeses (including brie, camembert, blue, ricotta, mozzarella) should be purchased in small quantities and eaten immediately after opening the sealed pack. Pregnant women should not eat leftover soft cheeses.

Raw milk and raw milk products (such as unpasteurised milk drunk on the farm and home-made cheeses made from unpasteurised farm milk) should be avoided.



Restaurants and takeaways

The principles of food safety are the same for takeaway foods as they are for foods prepared at home, and steaming hot food is likely to be safe. The main difference is that pregnant women have little control over the way in which the food is prepared. Consumption of high-risk restaurant or takeaway foods should be avoided.

High-risk foods include pre-prepared foods such as sushi, salads and sandwiches. Foods that have been well cooked immediately before consumption can be considered safe eg, deep fried and baked foods, hot pizza.



Gardening and food safety

Toxoplasma cysts may be present in garden soil. Even if you don't own a cat, other people's pets may use your garden. Pregnant women may be at risk of infection from gardening, either from handling soil or from breathing in dust from soil. If you choose to garden while pregnant, to reduce the risk you should:

- always wear gloves while gardening
- avoid touching your face, mouth or eyes while gardening
- avoid stirring up or breathing in dust from the soil
- wash your hands well after gardening (even if you have worn gloves).

Pets, farm animals and food safety

You can catch several illnesses from pets and farm animals, by handling or playing with them and not washing your hands afterwards. Pets and farm animals can carry many food pathogens (this is not a complete list):

- cats: *Toxoplasma*, *Campylobacter*, *Salmonella*
- dogs: *Campylobacter*, *Salmonella*
- birds: *Campylobacter*, *Salmonella*
- farm animals: *Listeria*, *Campylobacter*, *Salmonella*, *Cryptosporidium*.

To reduce the risk of getting illnesses from pets or farm animals while you are pregnant you should:

- wash and dry your hands well after handling pets or farm animals
- avoid cleaning up cat faeces or cat litter – get someone else to do it; if you must do it, wear gloves, wash your hands afterwards, and avoid breathing in dust from the cat litter
- be careful if you live or work on a farm: wear gloves if you feed out silage (*Listeria* grows in it) and wash your hands afterwards; avoid handling stillborn animals; buy pasteurised milk to drink (pregnant women should never drink unpasteurised milk or eat products made from it, such as yoghurt or cheese); don't drink untreated water (boil it if it comes from a roof tank, well, bore, lake or stream).



Overseas travel and food safety

Travel to overseas countries, particularly developing countries, carries a higher risk of foodborne illness for any traveller. Some countries have extremely high rates of illness carried by food, and water supplies may not be safe. Pregnant women should seek expert travel advice from a local public health office or travel health clinic before travelling overseas. While overseas, take special care that food and water (including ice) are safe to eat and drink.

Important causes of foodborne illness in pregnancy

Listeriosis

Listeria infection can occur at any time during pregnancy. *Listeria* infection generally results in mild flu-like symptoms including fever and muscle aches. In rare circumstances severe illness and premature labour may result, or the baby may be born with the infection and need treatment with antibiotics.

Listeria is a bacterium commonly found in the environment, including in animal faeces, on plants, in soil and in water. Consequently, *Listeria* can occur on raw food or re-contaminate prepared food. Unlike most bacteria, *Listeria* can grow on food in the fridge.

Listeria may contaminate a range of commonly consumed foods. By following the advice in this booklet you can reduce your risk of listeriosis.

Toxoplasmosis

Toxoplasma infection is uncommon in pregnancy as most people will be exposed to it early in life. For adults that do suffer an infection, symptoms include swollen glands, fever, nausea or headache. Infection during pregnancy can result in miscarriage or foetal death, or the baby may be born with brain and/or eye damage.

Toxoplasma is a parasite that is able to infect warm-blooded animals and birds, but cats are the only species that shed cysts in faeces.

Foodborne infection can occur through cross-contamination after gardening (where cats may have buried their faeces) or direct contact with cats. It can also come from eating undercooked meat (especially pig meat, but also sheep, deer, goat and chicken) or drinking raw or unpasteurised milk (particularly goat milk). Ready-to-eat cured meats such as salami and ham may also be a minor source of infection.

To reduce your risk, it is important to wash your hands after animal contact or gardening, avoid unpasteurised milk and unwashed raw vegetables from gardens of households with cats (or where neighbours have cats), and ensure meat (including salamis, hams and other cured meats) are thoroughly cooked.

Campylobacteriosis

Campylobacter infection is very common in New Zealand, and can occur at any time during pregnancy. The symptoms of *Campylobacter* infection are usually flu-like, followed by diarrhoea, abdominal pain, nausea, and vomiting. Miscarriage and premature labour can occur.

Campylobacter is a bacterium commonly found in animals and the environment. Therefore, foodborne infection can result from eating undercooked meats (undercooked poultry meat has caused outbreaks), raw milk, and drinking non-chlorinated water.

So, to reduce your risk, it is important to wash your hands after animal contact, avoid raw milk and untreated water, fully cook meats (especially on the BBQ), and to follow the food safety guidelines in this booklet.

Other illnesses carried by food

Salmonella infection occurs quite commonly in New Zealand with an estimated 75 cases in pregnant women annually. Infection with the *Salmonella* bacterium causes headache, abdominal pain, diarrhoea and vomiting. *Salmonella* infection during pregnancy can cause stillbirth.

Giardia is a parasite found all over New Zealand, and can be caught by drinking, swallowing or swimming in untreated water (from lakes, rivers, springs, wells, ponds). Food can be contaminated, especially raw food like fruit and vegetables. Wash raw foods well with safe water. It is very important to wash your hands properly after changing the nappies of young children who have *Giardia* infection.

Symptoms of *Giardia* infection are diarrhoea, abdominal cramps and nausea, and the illness can last 4-6 weeks (occasionally longer).

Cryptosporidium (Crypto for short) is a parasite similar to *Giardia*, and is also common in New Zealand. It can be caught in the same ways as *Giardia*. Crypto causes severe watery diarrhoea, and can be passed from an infected mother to her baby during the birth process.

Both *Giardia* and *Cryptosporidium* cause unpleasant illness, which may be severe.

To reduce your risk, drink and swim in safe water, wash your hands properly and follow the food safety guidelines.

Other Healthy Eating Tips

Pregnancy is a time that changes nutritional requirements to meet the needs of both mother and child. A full discussion on the nutritional needs of pregnant women is contained in the Ministry of Health's Eating for Healthy Pregnant Women (code 6002) and Your Pregnancy (code 1420) (www.health.govt.nz). Following are some of the key safety-related nutritional issues:

Folic Acid

Folic acid is a vitamin that is needed for the formation of blood cells and new tissue. During early pregnancy the need for folic acid is higher. Folic acid is important for reducing the risk of having a child with a birth defect. It is recommended that a 0.8 mg supplement of folic acid be taken for four weeks prior to conception and for the first three months of pregnancy. If folic acid has not been taken before pregnancy it is still worth starting to take the supplements as soon as pregnancy is known or expected. The 0.8 mg folic acid supplements are available from pharmacies.

Alcohol

There is no known safe level of alcohol consumption for pregnant women. Alcohol crosses the placenta so whatever a mother consumes, the foetus will also receive. Excessive alcohol consumption is associated with Foetal Alcohol Syndrome (FAS) where the infant may have varying effects including intellectual impairment. Even at lower levels of alcohol consumption, infants may show behavioural and learning difficulties which have been linked to alcohol consumption. It is therefore preferable not to drink alcohol during pregnancy or when contemplating pregnancy. If alcohol is consumed it should only be in small amounts.

Caffeine

Any drinks containing caffeine, including coffee, tea and colas, should be limited to three cups per day.

Mercury

Fish is a highly nutritious food, low in saturated fat and an excellent source of protein, essential omega-3 fatty acids, iodine and some vitamins. Omega-3 is important for the development of the central nervous system in babies, before and after they are born, and fish is a recommended food for all people.

There are, however, unresolved issues around levels of mercury in some fish and potential impacts on the growing foetus. Mercury occurs naturally in the environment and accumulates in the aquatic food chain as methyl-mercury. All fish contain some methyl-mercury. The good news is that the fish (and shellfish) we eat in New Zealand generally have very low mercury levels.

Fish types to be mindful of during pregnancy are some of the longer-lived and larger fish, including canned tuna, gemfish, orange roughy, ling, salmon, kahawai, hapuka, bluenose, skates, pale ghost shark, ghost shark, bass, groper, oreo, dory, red cod, ribaldo and rig. Consumption of these species should be limited to three to four servings (each of about 150 g) per week.

There are a very few species where it would be wise to eat no more than one serving every one or two weeks during pregnancy. These species include dogfish, school shark, swordfish, marlin, cardinal fish and fish (such as trout) caught in waters in geothermal regions. If you are already eating several portions of other species of fish each week you should not eat any of these high mercury species at all.

For other species commonly eaten in New Zealand (sardines, mackerel, tarakihi, blue cod, hoki, warehou and flat fish like flounder, as well as greenshell mussels and Pacific and dredge oysters) there is little concern over the amounts eaten. For a full list of fish species for which we have mercury data to date, and their recommended number of servings per week, please consult the NZFSA website.

Cadmium

It is recommended that, if you are pregnant, you limit your intake of oysters and queen scallops due to high cadmium concentrations.

General Advice

Pregnancy is not a time to focus on weight loss and diets of any type should not be considered unless on the advice and under supervision of a medical practitioner.

Disclaimer

Every effort has been made to ensure that information in this publication is accurate. NZFSA does not accept any responsibility or liability whatsoever for any error of fact, omission, interpretation or opinion that may be present, however it may have occurred.



Clean

- clean your hands by washing them with soap and drying with a clean towel
- always wash your hands before handling any food and after touching raw meat and poultry, going to the toilet, changing nappies, touching pets and gardening
- wash knives and other utensils and scrub chopping boards between preparing raw and cooked food
- keep your fridge clean.

Cook



- defrost frozen foods thoroughly before cooking
- minced meat and sausages should be cooked right through, and pork and poultry juices should run clear – use a meat thermometer to check temperatures
- pre-cook minced meat, sausages and poultry before barbecuing
- put leftovers in the fridge as soon as they're cool.



Keep food safe

- always cover stored food – even in the fridge or cupboard
- keep raw meat and poultry covered in the bottom of the fridge and away from ready-to-eat food, fruit and vegetables to avoid dripping juices
- when cooking outdoors, ensure that all food remains covered and cool until ready to cook or eat.
- ensure your fridge is between 2 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 a frozen drink bottle or chilly pad
- marinate food in the fridge, not on the bench.



Cover

Chill





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