



This Food Science Fact Sheet is one of a series compiled by Institute of Food Science and Technology, providing clear, concise and scientifically reliable information on key food science topics for consumers.

Safe Handling of Meat and Seafood

What is safe handling of meat and seafood?

When handling raw meat and proteins (including poultry and fish), it is important for consumers to take steps to ensure safe selection, handling, storage, preparation and cooking. Adopting good practices, at home can protect from foodborne illnesses caused by organisms such as Salmonella, Escherichia coli (e.g. E. coli O157), Campylobacter, Listeria and Norovirus. If meat is kept clean there will be little or no contamination whether biological, physical or chemical. Safe meat handling practices are necessary because, even though cooking may destroy bacteria, this is not the case for toxins if they have been formed.

What are the key steps to follow?

Clean - wash your hands and working surfaces often to remove bacteria, especially after handling raw meat. Hands should be washed for at least 20 seconds with soap and warm water. Also wash your utensils, cutting boards and countertops with hot, soapy water after preparing each food item. It is not advisable to wash raw meat and protein because of the risk of splashing bacteria, in water droplets, that may spread food poisoning organisms onto surfaces.





Separate - when shopping, keep raw meat and their juices away from other foods. Raw meat can spread germs to kitchen surfaces or ready-to-eat food unless kept apart. Always use a different chopping board and knife for raw meat.

Chill - after meat is purchased, it should be chilled





promptly (within 2 hours) since bacteria can multiply rapidly at room temperature, or in the 'danger zone' between 8 and 60°C. Raw, unpackaged meat (from butchers) can generally be stored safely for up to 3 days in the refrigerator. If needed for longer (several months), wrap properly or place in a sealed container and store in the freezer before the 'use by' date. Keep refrigerators and freezers at, or below, 5 and -18°C respectively. Food poisoning bacteria can grow in cooked meat that is left to cool slowly. If it is not to be served immediately, it should be cooled quickly (in around 2 hours) and then put in a fridge or freezer.

Cook - if available, follow the cooking instructions on the packaging. Meat must be cooked to the correct temperature - high enough to kill bacteria and viruses that cause food poisoning. This can be measured with the use of a food thermometer, placed in the thickest part and away from the bone, to achieve the temperatures shown below.



Meat type	Min. temp	Notes
Joints (beef, veal and lamb) 	65°C	Allow to rest for about 5 minutes before carving or eating
Steaks (beef and lamb) 	60°C	Rare (pink) 52°C, medium 60°C and well-done 75-80°C

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Mince (beef and pork; sausages and burgers) 	75°C	Never serve rare or undercooked, since bacteria may be spread throughout
Poultry 	75°C	Juices should run clear when the thickest part (leg) is pierced. Any stuffing should reach desired temperature
Fish 	65°C	Cook until opaque and separates easily with a fork
Seafood 	65°C	Cook until a change in colour (to pink for shrimps or prawns), and texture

What is cross-contamination?

This is the unintentional transfer of germs from one surface to another, most commonly between raw meat and ready-to-eat food. It is believed to be the most common cause of foodborne diseases so should be avoided by proper cleaning, separation and storage practices.



Where can cross contamination occur?

It can happen anywhere from point of purchase to food preparation. For example, bacteria can spread from raw meat to your chopping board, knife and hands and subsequently ready-to-eat foods. It can also occur through less obvious ways such as dish cloths, leakages in reusable shopping bags, shopping baskets and trollies, or splashes if meat is washed.

What other considerations are there?

Select - buy from a reputable source and note the use-by date. Also, purchase meat and protein last during shopping trips, to reduce the time they are out of refrigeration (chilled chain). Alternatively, an insulated bag will help to maintain the chilled temperature. Generally, avoid meat or poultry which are discoloured, have a strong odour, feel tough or slimy, or fish that is squishy and smells like ammonia. Regarding packaging, avoid that which is damaged, leaking or torn, as the contents will have been exposed to the atmosphere and potentially to harmful bacteria.



Store - follow instructions on the packaging label, such as 'use-by' date or 'keep refrigerated'. Store raw meat in clean sealed containers on the bottom shelf of the fridge, so the meat cannot touch or drip onto other food.

Defrost - putting food in the fridge (or in cold water) keeps it at a safe temperature while it is defrosting. A fast way to thaw meat is in the microwave on the 'defrost' setting. Never thaw meat on the counter because bacteria multiply quickly in the parts that reach room temperature.



References

CDC advice [Four Steps to Food Safety: Clean, Separate, Cook, Chill - CDC](#)

Overview [Meat Safety: Storing and Handling Meat, Poultry, and Fish - Healthline](#)

NHS advice [Preparing and cooking food safely - NHS inform](#)

FSS advice [Food Safety - Food Standards Scotland](#)

Roasting guide [Roast timer - BBC Good Food](#)