

## Kitchen hygiene in the home

The kitchen is a communal area of the home which is in constant use throughout the day. In particular it is the area where food is prepared. This leaflet has been put together to provide background information on kitchen hygiene with particular reference to the home. This briefing material has been produced for healthcare professionals, the media and others who are looking for background understanding and/or are responsible for informing the public about infectious diseases in the home and their prevention through good hygiene practice.

The kitchen is a communal area of the home which is in constant use throughout the day, not only by all the family, but also by household pets. In particular it is the place where food is prepared. Good hygiene in the kitchen is important to ensure that the food we prepare is safe to eat. However, since the kitchen is an important social area where the family meet together, there is, as in other communal areas of the home, a risk of person-to-person spread of infection between family members or from household pets.

### How do pathogens get into the kitchen?

The major infection risk in the kitchen is food poisoning from **stomach bugs** such as ***Salmonella*, *Campylobacter*, norovirus, *Listeria*, *Escherichia coli* O157 and other pathogenic strains of *E. coli***. These microbes can get into the kitchen in a number of ways:

- Through **contaminated/infected food** purchased from retail premises. The most common sources are meat and poultry, raw eggs, unpasteurised milk, filter feeding shellfish (e.g. oysters, mussels and clams) which are harvested from sewage-contaminated waters, or vegetables grown or washed in polluted water.
- **Infected family members** can act as the primary source of infection in the home. Infected people may show no symptoms and may spread infection unknowingly. Stomach bugs from an infected person (or a carrier) are shed into the toilet via their faeces. Contamination can remain on the hands, if they are not washed after toilet visits. People can continue to harbour and shed stomach bugs in their faeces after symptoms have ceased.
- **Domestic animals** can carry some types of stomach bugs e.g. *Salmonella* and *Campylobacter*, and may shed them in their faeces.

Some facts and figures about stomach bugs in food:

- Studies confirm that *Salmonella* and *Campylobacter* are present in retail poultry in many/most countries across the world, although the rates of infection (the percentage of samples which are contaminated) varies significantly from one country to another.



- The 2012 European Community Summary Report on foodborne infections states that *Salmonella* is most commonly found in fresh poultry and pork meat, where, on average, 4.1% and 0.7% of samples were found to be positive (figures vary significantly from country to country with some countries showing much higher rates). *Campylobacter* were most commonly detected in fresh poultry meat where on average 23.6% samples were positive (again, rates varied from country to country, with much higher rates in some countries).
- A UK study showed that *Salmonella* and *Campylobacter* can sometimes be isolated from the exterior surface of retail poultry packaging.
- In the USA, more than half of raw chicken is estimated to be contaminated with *Campylobacter*.
- A survey of retail poultry in Bangkok and Nairobi revealed *Campylobacter* contamination rates of between 40 and 77%.
- The 2012 European Community Summary Report on foodborne infections states that overall 0.1% (range 0 – 0.5%) of samples of beef were positive for *E. coli* O157. A study showed that 0.4%-0.8% of raw meat products purchased from UK butchers were positive for *E. coli* O157.

Some facts and figures about stomach bugs and pets:

Domestic cats and dogs can carry stomach bugs such as *Salmonella* and *Campylobacter*, and also *Clostridium difficile*. Exotic pets such as reptiles can also be a source of infection e.g. *Salmonella*:

- In the USA up to 39% of dogs may carry *Campylobacter*, and 10–27% may carry *Salmonella*;
- A London study isolated 19 species of *Campylobacter* spp. from 100 specimens of faeces obtained from a cattery, including *C. upsaliensis* and *C. jejuni*
- A Canadian study showed that *C. difficile* was the most frequently isolated pathogen from dogs, *C. difficile* was isolated from 58 (58%) of 102 faecal specimens, of which 41 isolates were disease-causing strains.

These data are reviewed in more detail in a 2012 IFH report: The chain of infection transmission in the home and everyday life settings, and the role of hygiene in reducing the risk of infection.

<http://www.ifh-homehygiene.com/best-practice-review/chain-infection-transmission-home-and-everyday-life-settings-and-role-hygiene>

### How do stomach bugs spread in the kitchen and cause food poisoning?

**Contaminated food** can cause food poisoning:

- If **contaminated raw foods** such as poultry or shellfish bought from the supermarket are eaten raw or are not properly cooked.
- By **cross contamination**:
  - If contaminated raw foods come into contact with ready-to-eat foods (e.g. by inappropriate storage in the refrigerator) stomach bugs can be transferred to the ready-to-eat foods.
  - During handling and preparation of raw food such as poultry for cooking, microbes from the food are transferred to the hands and to any other surfaces (e.g. kitchen preparation surfaces and chopping boards) with which the food comes into contact. Some organisms e.g. *Salmonella* and *Campylobacter* survive for only short periods (1-4 hours) on these surfaces whilst others e.g. norovirus can survive for days or even weeks. These organisms can then be



spread to other ready-to-eat food which is handled with contaminated hands or placed on the contaminated surface.

- A UK study showed that, during the preparation of a meal in a domestic kitchen using a *Salmonella* or *Campylobacter*-contaminated chicken, almost 1 in 5 (17%) of hands and hand and food contact surfaces become contaminated with the *Salmonella* or *Campylobacter*.

Contamination of food can occur from an **infected family member** who handles or prepares ready-to-eat foods such as sandwiches, salads etc. for other family members with contaminated hands.

**Infected domestic animals** can cause infection:

- By hand to food transfer. This can occur if hands are not washed after handling the animal.
- Domestic animals can transfer pathogens (e.g. via their paws) to environmental surfaces. Ready-to-eat foods can become contaminated if placed e.g. on a kitchen surface that a cat has walked across.

### Is gastroenteritis always caused by eating contaminated food?

When we suffer a bout of gastroenteritis, we tend to assume that it is due to something we've eaten. Stomach bugs enter the body to infect the gastrointestinal tract via the mouth. They can get into our mouths not only on food but also by contaminated hands (fingers) touching the mouth. The data increasingly suggest that a significant proportion of gastroenteritis infections are caused by person-to-person transfer via hands and surfaces, or via the air (spread of norovirus infection can occur by inhalation of infected particles when an infected person vomits). Infection can also arise from direct or indirect contact with infected animals.

Infection can be spread from an **infected family member** to an unaffected family member in a number of ways:

- If their hands become contaminated and they either handle and prepare ready-to-eat foods or touch hand contact surfaces which are then touched by an unaffected family member.

Infection can be spread from an **infected domestic animal** to a family member in a number of ways:

- By handling the infected animal or touching a kitchen surface which has been contaminated by contact with an infected animal.

Although the main risk in the kitchen is from stomach bugs, the kitchen environment also offers opportunities for spread of other pathogens e.g. **respiratory viruses**, such as **cold and flu viruses**, are shed in large numbers in nasal and other secretions produced by coughing, sneezing and nose blowing by an infected person. The kitchen area provides an ideal environment for spread of respiratory viruses via hands and hand contact surfaces. Family members can become infected if they rub their eyes or nose with contaminated hands.



## How to prevent food poisoning in the home

The four key principles of food hygiene are: keep clean - prevent cross contamination, separate raw and cooked foods, cook foods thoroughly and store foods correctly:

### Keep clean – prevent cross contamination

Good food hygiene means preventing cross contamination. This means stopping germs from spreading from people, pets, pets and contaminated food or water, into food which is being prepared for eating:

- Preventing cross contamination means making cooking utensils, hands, hand and food contact surfaces, and cleaning cloths and sponges hygienically clean at the times that matter – before and after use.
- Wash hands after handling foods which may be contaminated and disinfect using an alcohol handrub or sanitiser.
- Hygienically clean all food contact surfaces, utensils and cloths after handling and preparation of raw foods, using a disinfectant cleaner\*\*. Hygienically clean all contact surfaces, utensils and cloths before handling and/or preparing ready to eat foods.
- Cloths and sponges become contaminated when they are used to wipe up spills from food, and bacteria can multiply with time once present on damp cloths and sponges. Afterwards the cloths and sponges serve as a vector for further spread of pathogens to the hands of the user, to the surfaces wiped and then to many articles throughout the kitchen.

### Separate raw and cooked foods

- Food poisoning organisms can move from contaminated foods to other foods by direct contact. Ensure that raw foods are kept separate from cooked foods

### Cook food thoroughly

- Good food hygiene means cooking food thoroughly to kill pathogenic organisms. Food can be made safe by heating to a particular temperature for a sufficient amount of time.

### Store food properly

- Foods must be stored at the right temperature, e.g. hot foods kept hot, chilled foods kept cold. Store food in a refrigerator or freezer.
- Neither freezing nor refrigeration will inactivate bacteria, which means that on bringing these foods back to room temperature they may become heavily contaminated again if left at warm temperatures.

Also:

- Wash any foods, such as fruit and vegetables to be eaten raw, thoroughly under clean running water. Freezing prevents bacteria from growing and refrigeration will delay it.



The “WHO 5 keys to food hygiene“ ([www.who.int/foodsafety/publications/consumer/manual\\_keys.pdf](http://www.who.int/foodsafety/publications/consumer/manual_keys.pdf)) which gives guidance on food hygiene in developing countries includes a fifth principle:

- **Use safe water and raw materials**

### General hygiene in the kitchen

Since the risk of introducing all types of pathogenic microbes (respiratory and skin pathogens as well as gut pathogens) into the kitchen is constant and may not be recognised until an outbreak of infection occurs within the family, this means that good day-to-day hygiene in the kitchen as a whole makes sense.

The biggest infection transfer risk in the kitchen comes from the hands and from surfaces, which are constantly touched by family members, such as taps, cupboard and door handles, the waste bin lid etc. It also comes from cloths and other cleaning utensils which can spread bacteria and viruses from one surface to another and to hands.

The following hygiene measures are recommended to reduce the risk of infection transmission in the kitchen:

- Good handwashing practice is the single most important infection control measure. Hands should be thoroughly washed with soap and running water\* after toilet visits, after handling food, after caring for or playing with pets. In “high risk” situations where there is an outbreak of infection in the home, it is suggested that handwashing followed by use of an alcohol rub/sanitiser should be encouraged.
- Hygienically clean surfaces in the kitchen, with particular attention to hand and food contact surfaces. Use a disinfectant/cleaner which is effective against bacteria and viruses\*\*.
- Cleaning cloths can easily spread microbes around the kitchen. They should be hygienically cleaned after each use. This can be done in any of the following ways:
  - wash in a washing machine at 60°C (hot wash)
  - clean with detergent and warm water, rinse and then immerse in disinfectant solution which is effective against bacteria and viruses for at least 20 minutes, or as prescribed
  - clean with detergent and water then immerse in boiling water for 20 minutes. Alternatively use disposable cloths.
- Take care of pets in kitchen areas (see IFH information and hygiene advice sheet on care of pets). In particular:
  - keep pet food separate from human food.
  - always wash hands after touching animals or their food, toys, litter trays, etc., and especially before preparing food for human consumption.
  - ensure pet feeding areas are clean and animals have their own dishes and utensils. Dishes, utensils and tin openers used for pet food, should be cleaned and stored separately.
  - keep pets off kitchen surfaces or areas where food is prepared.
  - if there is a crawling baby in the kitchen as well as pets, it is advisable to clean the floor regularly using a disinfectant cleaner\*\*.
  - where floors or other surfaces become contaminated with faeces or vomit, they should be hygienically cleaned at once:



- remove as much as possible of the excreta, from the surface using paper or a disposable cloth, then
- apply disinfectant cleaner\*\* which is effective against bacteria and viruses to the surface using a fresh cloth or paper towel to remove residual dirt – then
- apply disinfectant cleaner\*\* to the surface a second time using a fresh cloth or paper towel to destroy any residual contamination
- disposable gloves should be worn if in contact with faeces, and hands should be washed after removing gloves.

#### **\*How to wash hands:**

Handwashing “technique” is very important. Rubbing with soap and water lifts the germs off the hands, but rinsing under running water is also vital, because it is this process which actually removes the germs from the hands. The accepted procedure for handwashing is:

- Ensure a supply of liquid soap, warm running water, clean hand towel/disposable paper towels and a foot-operated pedal bin.
- Always wash hands under warm running water.
- Apply soap.
- Rub hands together for 15–30 seconds, paying particular attention to fingertips, thumbs and between the fingers.
- Rinse well and dry thoroughly.

In situations where soap and running water is not available an alcohol- based hand rub or hand sanitiser should be used to achieve hand hygiene:

- Apply product to the palm of one hand.
- Rub hands together.
- Rub the product over all surfaces of hands and fingers until your hands are dry.

Note: the volume needed to reduce the number of germs on hands varies by product. In high risk situations where there is an outbreak in the home, handwashing followed use of an alcohol rub/sanitiser should be encouraged

One very simple thing which people can do which can significantly reduce the risk of disease is to avoid putting their fingers to their mouth.

#### **\*\*Disinfectants and disinfectant cleaners:**

Use a disinfectant or disinfectant/cleaner such as a bleach-based product, which is active against all types of organisms (bacteria and viruses). For more details on choosing the appropriate disinfectant, see the IFH information sheet “Cleaning and disinfection: Chemical Disinfectants Explained”. Consult the manufacturers’ instructions for information on the “spectrum of action”, and method of use (dilution, contact time etc). For bleach (hypochlorite) products, use a solution of bleach, diluted to 0.5% w/v or 5000ppm available chlorine. Household bleach (both thick and thin bleach) typically contains 4.5 to 5.0% w/v (45,000-50,000 ppm) available chlorine. Where “concentrated bleach” is recommended a solution containing not less than 4.5% w/v available chlorine should be used. Bleach/cleaner formulations (e.g. sprays) are formulated to be used “neat” (i.e. without dilution). It is always advisable however to check the label as concentrations and directions for use can vary from one formulation to another.



### Good Food hygiene practice in the home is described in more detail in:

- Home hygiene - prevention of infection at home: a training resource for carers and their trainers. (2003) International Scientific Forum on Home Hygiene. Available from: <http://www.ifh-homehygiene.com/best-practice-training/home-hygiene-%E2%80%93-prevention-infection-home-training-resource-carers-and-their>
- Home Hygiene in Developing Countries: Prevention of Infection in the Home and Peridomestic Setting. A training resource for teachers and community health professionals in developing countries. International Scientific Forum on Home Hygiene. Available from: [www.ifh-homehygiene.org/best-practice-training/home-hygiene-developing-countries-prevention-infection-home-and-peri-domestic](http://www.ifh-homehygiene.org/best-practice-training/home-hygiene-developing-countries-prevention-infection-home-and-peri-domestic). (Also available in Russian, Urdu and Bengali)

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