

## Are Hot Chicken Rolls Safe to Eat?

Hot chicken rolls are traditionally made from either the previous day's leftover chicken or commercially-prepared, cooked diced chicken. Two previous surveys of commercially-prepared, cooked diced chicken identified that between 10–13% of products contained *Listeria monocytogenes*, a food poisoning bacteria that can cause miscarriage in pregnant women. (See Bacteria Fact File.)

Hot chicken rolls are of concern as the chicken undergoes intensive handling, i.e. cooking, stripping it from the carcass, cutting and slicing, packaging, transporting, storing, preparing the chicken roll, heating and serving. At any stage of this process, chicken rolls may become contaminated by food poisoning bacteria. If the products are not held at safe temperatures, the bacteria will be able to grow to numbers that could cause food poisoning.



What hidden extras are in hot chicken rolls?

### What was found?

This survey of 218 hot chicken rolls found that while most products were safe to eat, 15 (7%) contained food poisoning bacteria and nearly half were stored at unsafe temperatures.

*Listeria monocytogenes* was found in 13 (6%) samples. *Listeria* is killed by heat, so the presence of *Listeria* suggests that either the products were not cooked properly or they had been contaminated after cooking. If products are heated thoroughly, this organism should not be present. A non-disease-causing type of *Listeria* called *Listeria innocua* was found in 14 samples. (Bacteria Fact File.)

Preparation method	Samples	<i>Listeria monocytogenes</i>	<i>Listeria innocua</i>	Salmonella	Campylobacter
Fridge/Microwave	106	1	5	1	1
Freezer/Microwave	18	0	0	0	0
Fresh/Microwave	71	9	7	0	0
Other methods	23	3	2	0	0
<b>TOTAL</b>	<b>218</b>	<b>13</b>	<b>14</b>	<b>1</b>	<b>1</b>

TABLE 1: Comparison of preparation method and number of samples containing bacteria. *Listeria monocytogenes* was most frequently isolated from freshly-made chicken rolls that were microwaved.

Salmonella was found in one sample. It proved to be *Salmonella paratyphi B* – the potential cause of a serious illness called paratyphoid fever. The most likely source of the salmonella would be contamination from a human carrier. However, a thorough investigation by the local government Environmental Health Officer (EHO) failed to identify an infected food handler.

Campylobacter was found in one sample.

### How were chicken rolls prepared?

Nearly half of the chicken rolls sampled had been stored in the refrigerator and then heated using a microwave oven. Of these, one contained *Listeria monocytogenes*, five contained *Listeria innocua*, one contained Salmonella and one contained Campylobacter.

These products may not have been thoroughly heated in the microwave oven. It is essential to turn food while it is being microwaved to ensure that there are no cold spots in the food. Short cuts should not be taken with recommended cooking times and settings. Table 1 compares the storage and heating conditions with the number of samples that contained bacteria.

Freshly made samples most frequently contained *Listeria monocytogenes*. It is not known if these products were made from chicken which had been left out at room temperature or whether they had been contaminated by frequent handling.

### Turn the heat up on chicken rolls?

The temperatures were measured for 155 (80%) of the 218 samples. Seventy (45%) were stored in the 'temperature danger zone' between 5°C and 60°C.

The WA Health (Food Hygiene) Regulations 1993 require potentially hazardous foods to be stored either below 5°C or above 60°C at all times. Potentially hazardous foods are capable of supporting the rapid growth of micro-organisms and include meats, fish, poultry, gravies, cheeses, milk, egg products, etc.

Many premises do not have thermometers to monitor temperatures and proprietors only become aware of substandard temperatures during an inspection by an EHO.

### What can be done?

Manufacturers, proprietors, food handlers and EHOs can all help to improve the quality of hot chicken rolls.

- Manufacturers and proprietors of food premises can make themselves aware of their responsibilities under the WA Health (Food Hygiene) Regulations 1993. They can also purchase thermometers to monitor and record temperatures regularly. By recording temperatures, proprietors can find out how efficiently equipment is working and, where necessary, adjust temperatures to ensure the food is not at risk.
- Proprietors and food handlers can work with their local government EHOs to promote better food handling, for example, by supporting the implementation of appropriate food handler training, e.g. FoodSafe, and quality assurance systems that utilise 'Hazard Analysis Critical Control Point' (HACCP) techniques.
- Manufacturers of cooked diced chicken should be encouraged to include regular microbiological testing for *Listeria monocytogenes* as part of their quality assurance program.
- Environmental Health Officers can include temperature monitoring as part of routine premises inspection, and they can audit temperature records to ensure foods are stored at the correct temperature.
- In addition, EHOs and proprietors should monitor storage conditions, cleaning and sanitising programs and general food handling activities. They should encourage food handlers to use the correct hand-washing technique.

## Bacteria Fact File

### LISTERIA

Listeria infection is a rare condition caused by eating food contaminated with *Listeria monocytogenes*. Those most at risk are the immuno-compromised (e.g. people on radiation therapy, chemotherapy, kidney dialysis, etc.) and pregnant women. Pregnant women are a high-risk group because Listeria infection can be transmitted to the foetus and may cause miscarriage, stillbirth, premature birth or a very ill newborn baby. The symptoms of Listeria infection resemble 'flu.

Unlike other food poisoning bacteria, Listeria can multiply in the refrigerator. High-risk foods for Listeria infection include pre-prepared cooked diced chicken, pate, smallgoods (ham, polony, etc.), soft cheeses and pre-prepared salads. Listeria infection can be prevented by avoiding high-risk foods and by eating freshly prepared and freshly cooked foods. For more information see the Health Department of WA's *Listeria Infection and Pregnancy* leaflet.

*Listeria innocua* has not been associated with disease, but it indicates that conditions are right for the growth of *Listeria monocytogenes*. The presence of *Listeria innocua* suggests that the food handling and storage conditions are inadequate.

### CAMPYLOBACTER

Campylobacter gastroenteritis is a type of food poisoning caused by the bacteria *Campylobacter jejuni* and *Campylobacter coli*. Nearly half of all reported food poisonings in Australia are due to Campylobacter infection and the number of cases is on the increase. Approximately one-third of all cases are in young children aged four years or younger, but all age groups can be affected. Campylobacter can be found in, or on, raw meats and poultry, unpasteurised milk, untreated water, infected puppies and kittens.

Symptoms usually develop two to five days after eating contaminated food and include diarrhoea (which may contain mucus and blood), abdominal pain (similar to appendicitis), vomiting, fever and nausea. For more information see the Health Department of WA's *Campylobacter* leaflet.

### SALMONELLA

There are over 2000 different types of Salmonella, but most infections in WA are caused by *Salmonella typhimurium* and *Salmonella enteritidis*. Symptoms of Salmonella food poisoning develop up to 48 hours after eating infected food and include nausea, stomach cramps, diarrhoea, fever and headache. Some types of Salmonella can cause severe illness; e.g. typhoid is caused by *Salmonella typhi* and paratyphoid is caused by *Salmonella paratyphi*.

Salmonella is commonly found in raw meat and poultry. Infected people excrete Salmonella in their faeces, so after going to the toilet it is important that hands are washed thoroughly before handling food.

## What Can Possibly Go Wrong With a Hot Chicken Roll?

*Some* of the many steps to making a hot chicken roll are shown below with *some* of the things that can go wrong and how to prevent them. How lucky have you been so far?

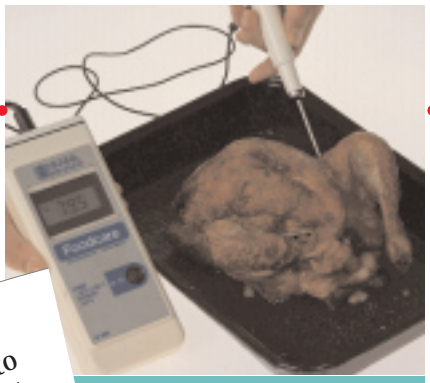
If food is not handled properly at *all* stages of preparation it could cause food poisoning. Find out how to look after your food – before you put your business and customers at risk.

### What Can Possibly Go Wrong With a Hot Chicken Roll?

**!** Frozen chickens delivered.

**X** Frozen chickens delivered defrosted. Bacteria on chicken multiply and produce toxins that are not destroyed by cooking.

**✓** Monitor and record delivery temperatures. Don't accept defrosted product.



**!** Raw chicken is cooked.

**X** Not cooked thoroughly – Salmonella, Campylobacter, Listeria, etc. survive.

**✓** Monitor and record cooking times and temperatures.



**Remember!**  
Wear a hat to keep hair out of the food.

**Make sure chicken is thoroughly cooked.**



**Use clean, sanitised utensils.**

**!** Chicken flesh diced.

**X** Cross-contaminated by dirty knife or chopping board previously used for raw meat or other food.

**✓** Clean and sanitise utensils and chopping boards before using for cooked chicken meat.



**!** Chicken flesh removed from carcass.

**X** Bacteria from food handlers' hands, gloves, hair, spit and clothing contaminate food.

**✓** Provide clean protective clothing and train staff in basic food hygiene techniques.



**Remember!**  
Detergents remove dirt, sanitisers kill bacteria. Both are needed for effective cleaning.

**!** Storage in refrigerator.

**X** Cross-contaminated by other products in coolroom, e.g. raw meat dripping onto cooked food puts salmonella, campylobacter and listeria onto chicken.

**✓** Keep food covered. Store cooked food above raw food.

**!** Chicken removed from refrigerator to construct chicken roll.

**X** Chicken left in 'temperature danger zone' (between 5°C and 60°C) so bacteria multiply.

**✓** Construct rolls in small batches, keeping meat in refrigerator for as long as possible.



**!** Chicken roll constructed.

**X** Contaminated by *Staphylococcus aureus* from food handler. Cross-contaminated by dirty knife, tongs, gloves, cutting boards.

**✓** Train staff in good food handling techniques, e.g. FoodSafe program.



**Has this chicken roll been handled with care?**

**!** Chicken roll heated.

**X** Bacteria multiply as temperature is not high enough to kill them.

**✓** Ensure product cooked and maintained above 60°C.



**!** Prepared chicken roll stored.

**X** Chicken roll left in 'temperature danger zone' so bacteria multiply.

**✓** Keep covered and store in refrigerator below 5°C, or in freezer.



## *Who was involved in this survey?*

Metropolitan local governments:

Armadale, Bayswater, Belmont, Canning, Claremont, Cockburn, East Fremantle, Fremantle, Gosnells, Kalamunda, Kwinana, Melville, Nedlands, Perth, Rockingham, South Perth, Stirling, Subiaco, Swan and Wanneroo.

Country local governments:

Albany (Shire), Ashburton, Augusta–Margaret River, Bunbury, Capel, Carnarvon, Gingin, Greenough, Harvey, Kalgoorlie–Boulder, Katanning, Mandurah, Manjimup, Moora, Murray, Ravensthorpe, Jerramungup, Roebourne, Serpentine–Jarrahdale, Wyndham–East Kimberley and Yilgarn.

PathCentre, Queen Elizabeth II Medical Centre, Nedlands.  
Food Safety, Health Department of Western Australia.

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