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THE SECRET TO SAFE EATING When food bites back
By Medical Writer Barry Hailstone

FOOD poisoning can be a devastating experience. A single incident can close a business, leave a company open to legal action or turn a family wedding into a life-threatening social disaster. Every day, humans are part of an unseen battle in the microworld of tiny organisms. Germs, parasites, bacteria, fungi, moulds, complex living proteins and simple, single-celled organisms flourish under suitable conditions and invade our bodies. Contaminated mettwurst and peanut butter in Australia, school lunches in Japan and meat in the United States have provided tragic evidence in the past two years of increasing human vulnerability. At the same time, there has been another worrying trend - anti-microbial drugs are becoming less effective against many micro-organisms and debate is raging about the best way to treat those infected.

The HUS (haemolytic uraemic syndrome) outbreak in Adelaide 18 months ago and Japan's food poisoning epidemic last month, which affected 8000 school children, have been traced to strains of *Escherichia coli* ~ an organism frequently linked to meat processing and processed salads.

Another strain of the same bacterium was found in hamburgers served at a fast-food chain in the US three years ago, causing a multi-State outbreak of haemorrhagic colitis (bloody diarrhoea) and serious kidney disease.

Reports of food poisoning in South Australia last year doubled with as many as 170,000 people possibly affected with illnesses which ranged from an "upset stomach" and diarrhoea to the need for urgent medical treatment and hospital admission.

The Health Commission's chief public health officer, Dr Kerry Kirke, says that for every notification of a food-borne illness there would be 10 to 100 times more cases which were not reported, as many people did not seek medical care.

An estimated 1.5 million food poisoning cases occur in Australia each year.

Food safety can be jeopardised at any stage in the food chain, from processing and manufacture, distribution and storage, to its ultimate handling by consumers.

It used to be thought that most cases of food-borne illness occurred at home because of poor hygiene and handling practices in the domestic kitchen.

However, latest research shows that at least 60 per cent of cases

result from meals prepared away from home. Bacteria are the main cause of food spoilage, though viruses, yeasts and moulds can play some part.

Micro-organisms are found almost everywhere in nature and thrive where food and water are present and the temperature is suitable. This is particularly the case in the nose, throat, skin, bowel and the lower urinary tracts of man and animals.

BACTERIA can form spores which resist damage by heat (as in cooking) and cold (freezing) and by chemicals such as disinfectants. A spore can survive in dust, vegetation or soil for weeks or months until it finds itself in an environment suitable for its growth. Not all bacteria are harmful and many are beneficial in food such as in cheese and yogurt.

VIRUSES are much smaller organisms than bacteria and can only grow in living tissue. The spread of virus-borne diseases is mainly by person-to-person or human blood contact.

YEASTS are found in the soil on plants. Many spoil food but only a few are disease producing.

MOULDS, unlike other micro-organisms, can be seen easily and are a familiar fluffy sight on jam and cheese. Many moulds are responsible for food spoilage but, like yeasts, only a very few cause disease in plants and human beings.

Under ideal conditions, food-spoiling bacteria can multiply by dividing into two every 20 minutes.

In this way, a single bacterium could increase to more than two million within seven hours, which is enough to cause a major dose of food poisoning.

BUGS

ESCHERICHIA COLI

Source: Normal inhabitant of the gut of warm-blooded animals. Most strains of E. coli are harmless but some can cause severe food-borne disease rapidly producing toxins which grow in acidic foods.

Infection: Usually undercooked groundmeat products or unpasteurised (raw) milk. Outbreaks implicated hamburgers, fresh-pressed apple cider, yoghurt, dried cured mettwurst and salad vegetables.

Symptoms: Watery diarrhoea that can turn bloody, stomach cramps. In a small proportion of victims, children and the elderly, infection can result in life-threatening HUS (haemolytic uraemic syndrome) and kidney failure.

CAMPYLOBACTER

Source: Improperly cooked meat, poultry, raw milk, household pets. Infection occurs when hands, objects or food become contaminated with faeces from infected people or animals and the bacteria are taken in by mouth.

Symptoms: Diarrhoea, fever and stomach cramps.

Prevention: Food hygiene, cooking.

SALMONELLA

Source: Meat and poultry, egg products, custards, shellfish, soups, gravies and "warmed-over" foods. Infection by faecal contamination (by food handlers).

Symptoms: Nausea, stomach cramps, diarrhoea and headache with illness persisting three to 21 days.

Prevention: Sufficient cooking, refrigeration, good personal habits and elimination of rodents and flies.

CLOSTRIDIUM PERFRINGENS

Source: Organism is a natural contaminant of meat from bowels and intestines of animals.

Infection: Meat which has been boiled, steamed, brazed or partially roasted and allowed to cool several hours and served either cooled or reheated.

Symptoms: Stomach pains, diarrhoea and sometimes nausea and vomiting. A "24 hour illness".

Prevention: Refrigerate between cooking and use of food. Cooking thoroughly.

STAPHYLOCOCCUS AUREUS

Source: Cooked ham or other chopped meat, mince, pastries or dairy products, meat salads and warmed-over foods.

Infection: Usually by food handlers through nasal discharges or skin infections.

Symptoms: Diarrhoea, vomiting.

Prevention: Refrigerate most foods during storage, minimise use of hands in preparation and exclude unhealthy food handlers or those having obvious infections.

LISTERIA MONOCYTOGENES

Source: Coleslaw, soft cheeses, milk, uncooked foods, pate.

Infection: Widespread in the environment in soil, sewage and animal (including man) intestines.

Symptoms: Flu-like illness with fever, headaches, pains. May cause miscarriages and stillbirths in pregnant women who should take extra care (does not cause nausea, vomiting or diarrhoea).

Prevention: Normal hygiene and adequate refrigeration. Because **listeria** grows at low temperatures, it is recommended that pregnant women should not eat prepared salads stored for more than 24 hours under domestic refrigeration or soft cheeses.

CLEANING

Wash hands with soap and running water before handling any food, especially after using the toilet, eating or drinking, smoking, handling raw food, touching hair, body or face, blowing your nose, coughing or sneezing into your hand, handling garbage or touching pets.

Maintain good personal habits in the kitchen, not preparing food while ill.

Wash cutting boards, utensils and benches when switching between preparing raw and cooked food. Wash all uncooked foods before

preparation for cooking.

Clean work areas with very hot water.

If you do become ill and symptoms persist for more than 24 hours see your doctor and also contact the environmental health officer at your local council. Contact a doctor sooner for babies, young children or the elderly.

STORAGE

Keep food COLD below 4C or HOT above 63C at all times. Do not keep/store food at room temperature before and after preparation.

Store food in sealed containers.

Hot food to be stored should be cooled quickly in the refrigerator. Use small shallow containers to allow for faster cooling. When reheating raise the temperature to above 63C as quickly as possible.

Always store cooked foods above uncooked foods in the refrigerator and keep uncooked meats separate from other foods.

Do not store food at floor level. Always keep it at least 500mm above the ground.

Use the refrigerator or the microwave to defrost frozen food and allow plenty of time. Do not thaw food at room temperature. If necessary use running cold water or place food in a plastic bag and immerse in cold

water.

COOKING

Cook foods thoroughly and quickly at hot temperature.

Remember, bacteria multiply rapidly in or on food when there is warmth, moisture and nutrients. The high-risk foods are those which have high protein and high moisture content. Meats, shellfish, fish, stews, soups, gravies, cakes with fresh cream. Generally these foods require refrigeration to extend their keeping qualities.

Some products must be cooked through to be safe. These include rolled roasts, mince patties, processed meats and chicken. Steaks, chops and whole roasts can be cooked to preference provided they are seared. Mince products must be cooked to an internal temperature of 71C in order to kill dangerous organisms.

Never eat food that is from a can which is leaking or bulging. It may contain the deadly botulism toxin.

Illus: 2 photos (color): glasses of wine; simon wilkinson; 5 artworks (color): food poisoning - cleaning; storage; cooking; bugs; contaminated food

IllusBy: Grice, Steve

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