

An outbreak of *Salmonella* Typhimurium phage type 4 linked to cold set cheesecake

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On 3 September 2003 the Australian Salmonella Reference Centre in Adelaide notified the Communicable Disease Control Branch, Department of Human Services, South Australia, of four cases of *Salmonella* Typhimurium phage type 4 infection. A fifth case was notified on 24 August and all cases had dates of onset between 16 and 19 August 2003.

Hypothesis generating interviews identified consumption of cheesecake in four of the five cases. Cheesecakes were consumed in three different commercial food outlets in metropolitan Adelaide. A trace back investigation revealed that they were supplied by a common bakery. Two different flavoured cheesecakes were consumed. All were prepared by the cold set method in which commercially supplied cream cheese, sugar, cream, milk and gelatine were mixed and poured into a hand-moulded biscuit crumb and butter base. No cooking was involved in any stages of preparation of the cheesecakes. Cream via piping bags and toppings were applied after the cakes had set. Cold set cheesecakes were distributed to 15 other outlets and sold between 12 and 18 August 2003.

A case control study commenced on 8 September 2003. A case was defined as a person with microbiologically confirmed *Salmonella* Typhimurium phage type 4 infection with date of onset of gastrointestinal symptoms between 11 and 31 August. Each case was matched to three controls by age, sex and postcode. One additional case was notified on 10 September bringing the total number of cases to 6 (2 male, 4 female). Cases were aged between 3 and 82 years (median 22 years) and distributed throughout metropolitan Adelaide. The most common symptom reported was abdominal pain (6, 100%), diarrhoea, nausea and vomiting (5, 83%). Bloody diarrhoea was reported by 3 (50%) cases and one case was hospitalised. The median incubation period where known (3 cases), was one day (range 1 to 2 days) and the median

duration of illness was 13 days (range 7 to 17 days) with one case still ill after 58 days. Analysis showed an association between consumption of cheesecake and illness. Of the six cases, 4 (67%) reported consumption of cheesecake.

An environmental inspection of the bakery was conducted on 6 September. The inspection identified potential sources of *Salmonella* including several cracked and faecally contaminated eggs amongst the egg supply, frequent bare hand contact with the cold set cheesecake in its manufacture, staff unable to demonstrate how to prepare sanitiser at correct concentration and long standing food residues adhered to mixing equipment. There were no reports of gastrointestinal illness in bakery staff. Ten environmental samples were taken from piping bags, mixing equipment, wash basin tap handles, cracked and faecally contaminated eggs, cold set cheesecake and cream. The bakery discarded all cold set cheesecakes and suspended production of the product pending microbiological results. All samples were negative for *Salmonella* sp.

In Australia, food businesses must comply with the requirements of the Food Safety Standards. The requirements address broad issues which apply to all food businesses such as storage, temperature control, hygiene of food handlers and cleaning and sanitising of equipment, amongst many others. This is the third outbreak of *Salmonella* Typhimurium infection in South Australia since 2001 that has been linked to consumption of sweet bakery products.^{1,2} A specific source was identified as piping bags in one outbreak but was unknown in this and a second outbreak. These outbreaks raise concerns about food-handling practices in bakeries. Bakery-specific food safety guidelines should be developed that address issues including cleanliness of the egg supply, storage, preparation and handling of dairy-based products and fillings (in particular the use of piping bags) and the potential for cross-

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contamination between products. These can be used as a supplement to the Food Safety Standards to prevent future outbreaks.

References

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