

An outbreak of *Salmonella* Typhimurium phage type 126 linked to a cake shop in South Australia

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On 7 March 2001, the Australian Salmonella Reference Centre in Adelaide notified the Communicable Disease Control Branch (CDCB), South Australian Department of Human Services, of 5 cases of infection with *Salmonella* Typhimurium phage type 126. *Salmonella* Typhimurium phage type 126 is an uncommon isolate in South Australia. Between 1993 and 2000 CDCB received only 27 notifications, an average of 3 cases per year.

Hypothesis generating interviews with the initial cases identified the consumption of cakes as a feature in common, in particular, the consumption of custard filled pastries. Cases reported consuming the custard filled pastries at commercially catered functions or purchasing them direct from a cake shop, cafes and delicatessens. A trace-back investigation from the point of purchase to the supplier identified a local Adelaide cake maker. This manufacturer distributes its products to 59 outlets in metropolitan Adelaide, and also supplies commercial caterers. The public is able to purchase direct from the cake maker.

On 14 March a further 5 cases were notified to CDCB. Of the 9 cases (one was excluded from the investigation because it was a secondary case), 6 were female and 3 were male. Ages ranged from 4 to 64 years (median age 32 years). The cases were distributed throughout metropolitan Adelaide. The predominant symptoms were diarrhoea (9 cases, 100%), abdominal pain (9 cases, 100%), headache (8 cases, 89%), fever (7 cases, 78%) and nausea (6 cases, 67%). The median incubation period where known, from consumption of items purchased from the cake shop to onset of symptoms, was 2 days (range 1 to 4 days) and the median duration of illness was 9 days (range 5 to 15 days). One case was hospitalised.

A case control study (9 cases and 27 controls matched by age, sex and postcode of residence) was conducted on

14 March 2001. A case was defined as a person who had an onset of illness between 19 February and 4 March and developed microbiologically confirmed *Salmonella* Typhimurium phage type 126 infection and was not a secondary case. Analysis demonstrated a statistically significant association between consumption of a pastry filled custard tart with strawberries and a jelly glaze, and illness (odds ratio 52.00, 95% confidence interval 3.57–1726.72). In total, 6 (67%) of the 9 cases reported the consumption of a pastry filled custard tart with strawberries and a jelly glaze.

An environmental investigation conducted on 14 March 2001 identified an inadequate level of premise maintenance and sanitation. A paintbrush used to apply the gel coating to the tarts was not cleaned after each day's production but left to sit in an aluminium saucepan until required. Similarly, unused custard from piping bags was returned to the initial custard container and retained for subsequent use. Commercially available ingredients were used in the production of the tarts, and raw eggs and milk were not used in making the custard. Employees had not experienced gastrointestinal illness in the month prior to the environmental investigation. Environmental and food samples were negative for *Salmonella* sp.

The original source of the outbreak remains unknown. An inadequate understanding of the risks associated with time temperature abuse of ready to eat products resulted in poor food handling practices. These practices had the potential to create a reservoir of contamination in the production process and for the cross contamination of subsequent batches. The owners of the cake shop took remedial action in collaboration with local government. One further case of *Salmonella* Typhimurium phage type 126 has been notified and reported the consumption of a sweet pastry linked to the cake shop.

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