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


Salmonella Typhimurium U290 outbreak linked to a bakery

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This report summarises the investigation of the first documented outbreak of Salmonella Typhimurium Phage type U290 exhibiting tetracycline resistance.

Typhimurium is the most commonly isolated Salmonella serovar in Australia and is responsible for the majority of identified outbreaks of bacterial gastroenteritis.1,2 S. Typhimurium U290 has been recognised as a distinct phage type in Australia since October 2000, and re-examination of phage reaction records for unclassifiable isolates by the University of Melbourne’s Microbiological Diagnostic Unit (MDU) suggests that the first case occurred in New South Wales in October 1999.

Since then and until this outbreak, only 96 human isolates and 14 non-human isolates (from broiler chickens, chicken litter, pet dogs and horses)1,3 had been notified to the National Enteric Pathogen Surveillance Scheme (NEPSS).

On 31 May 2002, the Communicable Disease Section of the Department of Human Services (DHS) Victoria identified a cluster of five salmonellosis cases in an area of Northern Victoria (Area A).

An outbreak investigation team was formed under the auspices of OzFoodNet and DHS to determine the source and prevent further infection.

Other state and territory health authorities were notified of the cluster via the OzFoodNet network and asked to report recent cases of this phage type in their jurisdictions.

The initial case definition was ‘any laboratory confirmed S. Typhimurium U290 infection notified after 30 May 2002’. Cases were interviewed, focusing on food and environmental exposures in the fortnight preceding onset. Active case finding was initiated by alerting general practice clinics in Area A, and requesting the collection of faecal samples from suspected cases.

Upon identifying a suspected common time and place of exposure, we undertook a case control study, refining the case definition to ‘any person with laboratory identified S. Typhimurium U290 infection, onset of illness from 30 April 2002 onward, and residing in or having visited Area A’. Controls within Area A were selected by progressive digit dial, excluding those under five years of age, or who had pre-existing illness. Cases and controls were interviewed regarding foods eaten from vendors in Area A on the weekend prior to onset of illness.