

A cluster of *Salmonella* Typhimurium phage type U307 associated with a restaurant

Helen E Quinn,¹ Russell J Stafford,² Robert J Bell,² Greg Blumke,³ Margaret Young⁴

On 8 May 2003 the Queensland OzFoodNet epidemiologist was notified of a cluster of six cases of *Salmonella* Typhimurium phage type U307. A further nine cases were identified the following day. *S.* Typhimurium phage type U307 is rare in Australia. Only 133 isolations from human sources have occurred since 1996 (National Enteric Pathogens Surveillance Scheme data) and there has only been one recorded outbreak in Australia.¹ Hypothesis generating interviews were conducted, with three cases identified as having eaten roast pork at a particular Sunshine Coast restaurant 1-2 days prior to onset of illness, as a common exposure.

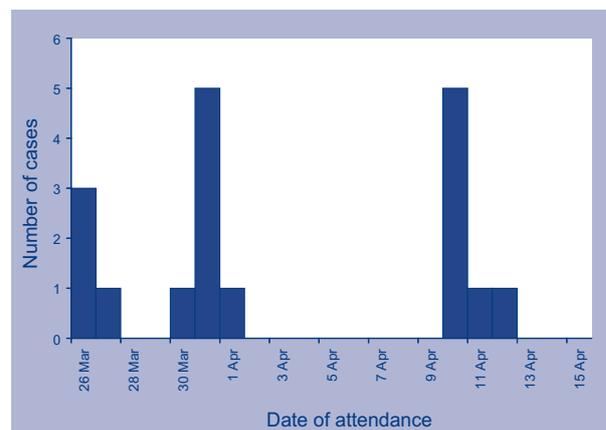
A case control study was conducted. A probable case was defined as a person who attended the Sunshine Coast restaurant between 26 March and 30 April 2003 and suffered a gastrointestinal illness within 5 days of eating at the restaurant. A gastrointestinal illness was defined as three or more loose bowel motions within a 24 hour period, with or without vomiting. A confirmed case was a probable case with a laboratory confirmed diagnosis of *S.* Typhimurium phage type U307 infection. Persons who attended the restaurant with a confirmed case were also sought for interviewing. Those who had not developed a gastrointestinal illness were recruited as controls.

The investigation identified 13 laboratory confirmed and six probable cases. These persons had dined at the restaurant between 26 March and 12 April 2003. The date of onset of symptoms in cases occurred over a 20 day period and followed three time-clusters of restaurant visits over a 16 day period (Figure). Sixteen cases were female (84%) and the median age was 45 years (range 2-75 years). Common symptoms included diarrhoea (100%), abdominal cramps (83%), fever (75%), fatigue (76%) and nausea (76%).

A total of 12 cases (8 confirmed and 4 probable) and 10 controls were recruited for the study. Both roast pork (OR=12.0, 95% CI=1.6-91.1, P=0.03) and apple sauce (OR=18.0, 95% CI=1.7-196.3, P=0.01) were significantly associated with illness. Consumption of these items was reported by 75 per cent (roast pork) and 67 per cent (apple sauce) of cases. No diners consumed apple sauce without roast pork. Cases who consumed roast pork all dined at the restaurant between 26 March and 10 April. In comparison, cases who consumed meals other than roast pork and apple sauce all dined at the restaurant between 10 and 12 April 2003.

Seven environmental swabs and 20 food samples were collected on 12 May 2003. These were all negative for *Salmonella* sp. Ninety-two per cent of staff submitted stool specimens for testing and these were also all negative for *Salmonella* sp.

Figure. Cases of gastrointestinal illness associated with dining at the restaurant, between 26 March and 15 April 2003, by date of attendance



1. Epidemiology Registrar, Communicable Diseases Unit, Queensland Health, Brisbane, Queensland
2. OzFoodNet, Communicable Diseases Unit, Queensland Health, Brisbane, Queensland
3. Environmental Health Officer, Central Public Health Unit Network, Sunshine Coast, Queensland
4. A/Manager, Communicable Diseases Unit, Queensland Health, Brisbane, Queensland

Corresponding author: Dr. Helen E Quinn, Epidemiology Registrar, Communicable Diseases Unit, Queensland Health, PO Box 48, Brisbane, QLD 4001. Telephone: +61 7 3234 1326. Facsimile: +61 7 3234 0057. Email: helen_quinn@health.qld.gov.au

An additional inspection of the restaurant was conducted on 21 May 2003. Problems documented by the Environmental Health Officer included lack of temperature monitoring facilities in place for food during receipt, storage and processing and the absence of a food safety plan.

This study has identified a significant association between illness and the consumption of roast pork or apple sauce. This was unable to be supported by microbiological evidence; however, roast pork has been implicated as the vehicle for infection in a number of *S. Typhimurium* outbreaks.^{2,3,4}

No food handling problems during processing were observed during the environmental inspection of the implicated premises; however, evidence from the outbreak suggests that cross contamination during food preparation also contributed to the outbreak. This is supported by the following findings:

- The restaurant reported a high turnover of both pork and apple sauce, and repeated contamination of these products at the supplier level seems unlikely.
- Those cases that did not report consumption of either roast pork or apple sauce, attended the restaurant towards the end of the outbreak.
- The head chef and several other food handling staff failed a food handling course several months after the outbreak.

This investigation highlights the challenge faced by Environmental Health Officers to systematically scrutinize food handling practices as part of the investigation of a potential foodborne outbreak. Identification of problems during food processing is more likely to occur during observation of staff at peak times, despite the inconvenience for investigators and the premises. Compliance with the recently developed national Food Safety Standard of Practice⁵ will assist investigators to undertake inspections in a rigorous and systematic manner.

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References

1. Department of Human Services Victoria. Surveillance of notifiable infectious diseases in Victoria 1996: Public Health Division, Department of Human Services Victoria; 1998.
2. Delpech V, McAnulty J, Morgan K. A salmonellosis outbreak linked to internally contaminated pork meat. *Aust N Z J Public Health* 1998;22:243-246.
3. Murase T, Yamada M, Muto T, Matsushima A, Yamai S. Fecal excretion of *Salmonella* enterica serovar Typhimurium following a food-borne outbreak. *J Clin Microbiol* 2000;38:3495-3497.
4. Tribe IG, Walker J. An outbreak of *Salmonella* Typhimurium phage type 44 linked to a restaurant in South Australia. *Commun Dis Intell* 2000;24:347.
5. Australian Institute of Environmental Health. Food Safety Standard of Practice: Australian Institute of Environmental Health; 2003.