OzFoodNet: quarterly report, 1 January to 31 March 2006

Introduction

The Australian Government of Health and Ageing established the OzFoodNet network in 2000 to collaborate nationally to investigate foodborne disease. OzFoodNet conducts studies on the burden of illness and coordinates national investigations into outbreaks of foodborne disease. This quarterly report documents investigation of outbreaks of gastrointestinal illness and clusters of disease potentially related to food occurring in Australia between 1 January and 31 March 2006.

Data were received from OzFoodNet representatives in all Australian states and territories and a sentinel site in the Hunter/New England region of New South Wales. The data in this report are provisional and subject to change as results of outbreak investigations can take months to finalise.

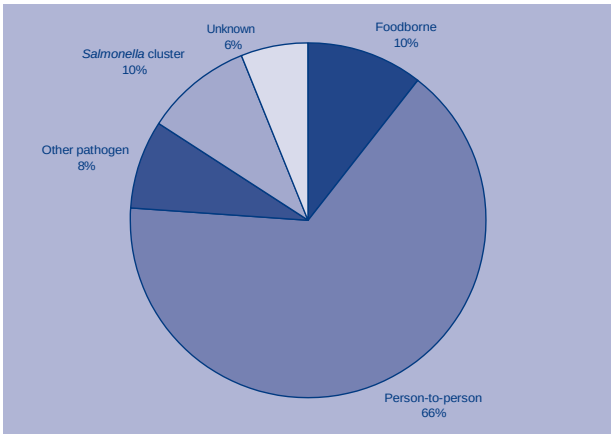
During the first quarter of 2006, OzFoodNet sites reported 248 outbreaks of enteric illness, including those transmitted by contaminated food. Outbreaks of gastroenteritis are often not reported to health agencies or reports are delayed, meaning that these figures significantly under-represent the true burden of these infections. In total, these outbreaks affected 5,092 people of which 72 people were hospitalised and three died. As has been the case in previous reports, the majority (66%, n=163) of outbreaks resulted from infections suspected to be spread from person-to-person (Figure). Fifty-one per cent of these person-to-person outbreaks occurred in aged care facilities, 15 per cent in hospitals and 13 per cent in child care centres.

Foodborne disease outbreaks

There were 26 outbreaks of illness where consumption of contaminated food was suspected or proven to be the primary mode of transmission. These outbreaks affected 263 people. This compares with 31 outbreaks for the first quarter of 2005 and 36 outbreaks in the fourth quarter of 2005.

Salmonella was responsible for nine outbreaks during the quarter, with *Salmonella* Typhimurium being the most common serotype. *S.* Typhimurium 170/108 was responsible for two outbreaks, *S.* Typhimurium 44, a mixed pathogen outbreak (*S.* Typhimurium 44/ *S.* Typhimurium U303), and *S.* Typhimurium 135 were each responsible for one outbreak. Other *Salmonella* serotypes causing single outbreaks were *S.* Anatum, *S.* London, *S.* Montevideo, and *S.* Saintpaul. Norovirus was responsible for five outbreaks, while scombroid poisoning and ciguatera fish poisoning were each associated with three outbreaks during the first quarter of 2006. No aetiological agent was identified for the remaining 6 (23%) outbreaks.

Figure. Mode of transmission for outbreaks of gastrointestinal illness reported by OzFoodNet sites, January to March 2006



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All data are reported using the date the report was received by the health agency.

Nine outbreaks reported in the quarter were associated with meals prepared by restaurants, six with meals prepared in private residences and four prepared by takeaway food premises. Single outbreaks were associated with food prepared in an aged care facility, bakery, camp setting, by a commercial caterer, and a national franchised fast food group. The setting where food was prepared was not identified or applicable to the remaining outbreaks. Eight of the outbreaks occurred in January, eleven in February and seven in March.

To investigate these 26 outbreaks, sites conducted six cohort studies. In 17 other outbreaks, only descriptive data were collected and individual patient data was not collected for another three outbreaks. Investigators obtained microbiological evidence linking a food to illness in seven outbreaks, and analytical epidemiological evidence in three outbreaks. For the remaining 16 outbreaks, investigators obtained descriptive epidemiological evidence implicating the food vehicle or suggesting foodborne transmission.

Victoria

In Victoria there were eight outbreaks of foodborne illness reported during the quarter. The aetiological agent was identified in seven of these outbreaks. *S.* Typhimurium 44 affected four people, all of whom were hospitalised. All cases had shared a milkshake containing raw egg and *Salmonella* was later isolated from the blender used to make the milkshake. *S*. Saintpaul affected 11 patrons of a sushi restaurant. Bean shoots from an open container in the restaurant were positive for *S*. Saintpaul, but subsequent testing of bean shoots from a sealed package were negative for *Salmonella.* Five people infected with *S*. London had eaten home-prepared salami which was positive for *S.* London.

Norovirus affected 41 people from four separate groups that had eaten food prepared by a commercial caterer. No specific food was identified as causing the illness. A food handler reported being ill prior to the event and worked while the were ill. In another outbreak, illness due to norovirus was reported in 6 of 19 groups that had eaten at a restaurant. No specific food was identified as causing illness but there were anecdotal reports of a food handler and a waiter being ill just after the event. Norovirus was isolated and likely responsible for illness in nine people from two separate groups that had eaten at a restaurant. A food handler reported illness in the week prior to the event but did not work while ill.

Two cases of scombroid fish poisoning were reported after a meal of kingfish in a restaurant. A histamine level of 3,450 mg/kg was reported in a sample of the fish. An inspection identified inappropriate thawing and cold storage of fish at the restaurant.

Five residents of an aged care facility were ill with gastroenteritis that was consistent with *Clostridium perfringens* intoxication.

Queensland

Queensland reported eight outbreaks of foodborne illness during the quarter. Three outbreaks were caused by ciguatera fish poisoning: two cases consumed ‘cod’ fish steaks from a fish caught during a fishing trip east of Gladstone; trevally fish fillets purchased for preparation at home caused two cases of illness; and four cases of illness in two separate groups was caused by Spanish mackerel which had been served at a restaurant and prepared at home. Two cases of scombroid fish poisoning were reported after a meal of blue fin tuna steaks purchased for preparation at home. Norovirus was the cause of an outbreak of foodborne gastroenteritis among 45 guests who attended a birthday function at a restaurant. There were several foods independently associated with illness but the epidemiological associations were weak. A commercial caterer was suspected as the cause of an outbreak of norovirus gastroenteritis in 66 attendees at a school camp. Norovirus was detected in the stools of two food handlers who were ill with gastroenteritis. Norovirus was also detected in stools from six students.

Queensland also reported an outbreak of suspected foodborne gastroenteritis involving as many as 80 to 100 guests of a birthday function. The foods were poorly handled prior to consumption although a source of illness was not conclusively identified.

New South Wales

New South Wales reported five foodborne outbreaks for the quarter. A chicken schnitzel in gravy from a takeaway restaurant was suspected to have caused illness in three people. Two cases of scombroid fish poisoning were reported after a meal of tuna steaks in a restaurant. An inspection identified inadequate refrigeration and other fish storage problems at the restaurant. In another outbreak, four cases of *S.* Typhimurium 170/108 were reported over a short time period from a small township. Three of the cases had consumed hamburgers or chicken burgers from the same takeaway shop in the three days prior to illness onset. An environmental investigation did not identify any areas of non-compliance with the Food Safety Standards.

S. Montevideo affected three people that had eaten hamburgers from a New South Wales takeaway food shop. Food and environmental sampling identified *S*. Montevideo from hamburger, eggs, and a food scraper. It is thought that eggs introduced the pathogen into the premises, and then cross-contaminated the hamburger. An investigation of the egg farm identified that a new egg sorting machine may have spread contamination from egg-to-egg. Swabs taken from a wire brush machine on the farm were positive for *S.* Montevideo.

In another outbreak, two people were ill 1–2 hours after a restaurant meal, although no common food was identified.

South Australia

South Australia reported three outbreaks of foodborne illness during the quarter. *S*. Typhimurium 170/108 affected seven people after they had eaten a homemade chocolate ice-cream and topping containing raw egg. *S.* Typhimurium 170/108 was later isolated from the ice-cream and topping. In another outbreak, *S*. Typhimurium 135 affected four members of a family after a meal of silverside. *S.* Anatum affected five people after eating beef burger with bacon and egg prepared at a hotel restaurant.

Australian Capital Territory

The Australian Capital Territory reported an outbreak of gastroenteritis of unknown aetiology in members (10 cases) from different families who attended a family function. A birthday cake was the most likely food to cause illness. The bakery that supplied the cake was inspected and found to have poor hygiene standards. Samples of ingredients taken during inspection were negative for pathogens.

Tasmania

Tasmania reported an outbreak of both *S.* Typhimurium 44 and *S.* Typhimurium U303 that affected nine people following a family dinner. The cases had eaten multiple dishes prepared by different members of the family but the majority found it difficult to recall what foods they had eaten.

Northern Territory and Western Australia

West Australia and the Northern Territory did not report any foodborne outbreaks occurring in the first quarter of 2006.

Clusters and multi-state investigations

During the quarter, OzFoodNet and jurisdictions investigated many clusters of infection that were localised to single states or territories or spread over several jurisdictions. The major multi-jurisdictional investigations occurring during the quarter were for clusters of cases of listeriosis, and *S.* Bovismorbificans.

In February, Western Australia identified an increase in the number of cases of *Listeria.* Other jurisdictions also reported moderate increases and OzFoodNet held several teleconferences to discuss possible hypotheses. Laboratories in different jurisdictions sent recent *Listeria* isolates to PathWest where Pulsed Field Gel Electrophoresis (PFGE) testing was conducted with eight isolates from Western Australia, three from Victoria and one from South Australia being identified. A group of three Western Australian isolates had indistinguishable PFGE patterns (Cluster A). Another group of two Western Australian isolates had PFGE patterns indistinguishable from each other (Cluster B). Two of the Victorian isolates had PFGE patterns indistinguishable from the South Australian isolate (Cluster C). Cluster A had a PFGE pattern indistinguishable from an isolate from a salami product that was collected one week prior to the onset of the first of these three cases. Consumption of this salami was not mentioned by the cases in a review of their food history however their food recall was poor. The concentration of *Listeria* in this salami product was < 3/g and the company is reviewing their production processes. A common food source was not identified in Clusters B and C. This investigation again highlights the importance of incorporating information from DNA-based testing methods into surveillance and cluster investigations in Australia.

The outbreak of *S.* Bovismorbificans mainly affected Queensland, the Australian Capital Territory, New South Wales and Victoria. The main phage types that were responsible for the increase were phage types 24, 14 and 13. OzFoodNet sites conducted hypothesis-generating interviews of several cases but did not find a common food-vehicle or exposure associated with this multi-state increase in illness.

In February, the NSW Health Department was notified of two cases of hepatitis A in 12-year-old boys whose most likely exposure was a camp that they had attended in Fiji. The camp organisers were contacted and provided with a letter for distribution to camp attendees informing of their possible exposure to hepatitis A. Twelve children and four adults, from Queensland, New South Wales and New Zealand, attended the camp. New Zealand and Fiji health authorities were informed of the outbreak and our investigation. Subsequently, two further cases of hepatitis A were diagnosed in children in New South

Wales. All four children were infected with hepatitis A and were not immunised. Whilst hepatitis A is endemic in Fiji, the source of infection remains unclear.

During the quarter, states and territories reported large increases in sporadic and outbreak related cases of cryptosporidiosis (see *CDI* Highlights p. 251). There were six outbreaks of cryptosporidiosis in February and 15 in March. Seventeen of these outbreaks were related to swimming pool exposure, while the remaining outbreaks were of unknown or person-to-person transmission, including one outbreak in a prison.

Western Australia health authorities completed an investigation into a large outbreak of *Salmonella* Oranienburg that occurred from November 2005 to February 2006. In total 126 cases were reported as part of the outbreak, compared to an average of 6–12 notifications annually in Western Australia. Initial hypothesis generating questionnaires failed to identify a food vehicle, but the male to female ratio was 1:2. Western Australia conducted a case control study that identified alfalfa sprouts to be strongly associated with illness caused by *S.* Oranienburg. Brands of alfalfa purchased by the cases were traced back to a single sprout production facility. *S*. Oranienburg was isolated from alfalfa taken from the residence of cases and at the production facility. The PFGE pattern of isolates from alfalfa sprouts and clinical cases were identical. The company issued a recall of a range of sprout products during February 2006.

Discussion

There was considerable activity during the first quarter of 2006, with overall notifications of *Salmonella* to the National Notifiable Diseases Surveillance System increased by 14 per cent when compared to the mean for the same time frame in the previous two years. There were several multi-jurisdictional investigations into *Salmonella* and *Listeria*, including the completion of the investigations into *Salmonella* Typhimurium 44 and 135 from the previous quarter.[1] The reasons for the generalised increase in salmonellosis were unknown, but some of the large ongoing salmonellosis outbreaks in eastern States and Western Australia would have contributed.

The outbreak of *Salmonella* Oranienburg in Western Australia resulted in a recall of alfalfa sprouts and is the largest reported outbreak of gastroenteritis associated with sprouts in Australia to date. Sprouts are a high risk food that have caused many outbreaks internationally.[2] The outbreak has identified a need to review the procedures associated with the growing, harvesting and production of sprouts in Australia. As a result of this outbreak, national food safety policy committees will consider ways to improve food safety for this industry sector.

Acknowledgements

We would like to thank the investigators in the public health units and state and territory departments of health, as well as public health laboratories and local government environmental health officers who provided data used in this report. We would also like to thank and acknowledge the work of all laboratories providing notifications of pathogens that can cause foodborne illness and in particular those laboratories that conduct serotyping and phage typing of *Salmonella*.

References

1. OzFoodNet Working Group. OzFoodNet: enhancing foodborne disease surveillance across Australia: quarterly report, 1 October to 31 December 2005. *Commun Dis Intell* 2006;30:148–153.

2. Taormina PJ, Beuchat LR, Slutsker L. Infections associated with eating seed sprouts: an international concern. *Emerg Infect Dis* 1999;5:626–634.

Table. Outbreaks of foodborne disease reported by OzFoodNet sites,* January to March 2006

State	Month of outbreak	Setting prepared	Infection/illness	Number affected	Evidence	Responsible vehicle
ACT	February	Bakery	Unknown	10	D	Birthday cake is most likely vehicle
NSW	January	Takeaway	*Salmonella* Typhimurium 170/108	3	D	Suspect chicken hamburger/ beef hamburger
	February	Takeaway	*Salmonella* Montevideo	3	M	Plain hamburger
		Takeaway	Unknown	3	D	Chicken schnitzel in gravy
		Restaurant	Scombroid	2	D	Tuna steaks
	March	Restaurant	Unknown	2	D	Sweet corn chicken soup or crumbed chicken
Qld	January	National franchised fast food	Unknown	24	A	Unknown
	February	Camp	Norovirus	66	D	Unknown
		Private residence	Scombroid	2	D	Blue fin tuna steaks
		Not applicable	Ciguatoxin	2	D	Cod
	March	Restaurant	Norovirus	15	A	Unknown
		Takeaway	Ciguatoxin	4	D	Spanish mackerel
		Restaurant	Unknown	8	A	Unknown
		Private residence	Ciguatoxin	2	D	Trevally fish
SA	January	Private residence	*Salmonella* Typhimurium 170/108	7	M	Home-made ice-cream topping containing raw egg
	February	Private residence	*Salmonella* Typhimurium 135	4	M	Silverside
		Restaurant	*Salmonella* Anatum	5	D	Beef burger with bacon and egg
Tas	January	Private residence	*Salmonella* Typhimurium 44 and U302	9	D	Unknown
Vic	January	Private residence	*Salmonella* Typhimurium 44	4	M	Milkshake containing raw egg
		Restaurant	Norovirus	15	D	Unknown
		Restaurant	Norovirus	9	D	Unknown
		Aged care facility	Unknown	5	D	Unknown
	February	Commercial caterer	Norovirus	41	D	Unknown
		Restaurant	Scombroid	2	M	Kingfish
	March	Restaurant	*Salmonella* Saintpaul	11	M	Suspected bean shoots
		Unknown	*Salmonella* London	5	M	Salami (non-commercial)

* No foodborne outbreaks were reported in West Australia or the Northern Territory during the quarter.

D Descriptive evidence implicating the suspected vehicle or suggesting foodborne transmission.

A Analytical epidemiological association between illness and one or more foods.

M Microbiological confirmation of agent in the suspect vehicle and cases.