OzFoodNet: enhancing foodborne disease surveillance across Australia: quarterly report, January to March 2004

The OzFoodNet Working Group

Introduction

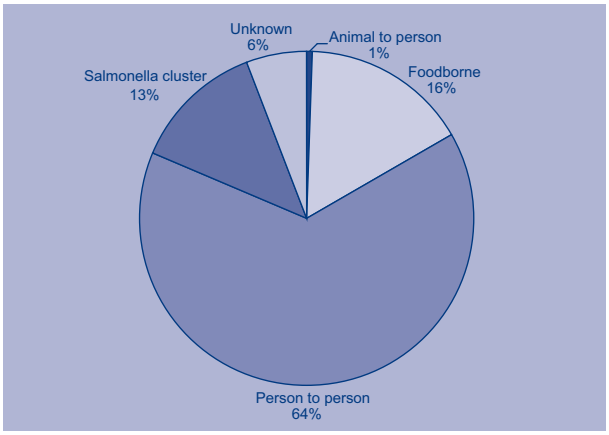
The Australian Government Department of Health and Ageing established the OzFoodNet network in 2000 to collaborate nationally to investigate foodborne disease. OzFoodNet conducts studies on the burden of illness and coordinates national investigations into outbreaks of foodborne disease. This quarterly report documents investigations of gastroenteritis outbreaks and clusters of disease potentially related to food occurring around Australia. The first quarter of the year is the peak season for many foodborne infections, such as *Salmonella* and *Campylobacter*. For information on sporadic cases of foodborne illness, see Communicable Disease Surveillance, Highlights for 1st quarter 2004 in this issue.

This report summarises the occurrence of foodborne disease outbreaks and cluster investigations between January and March 2004. Data were reported from all Australian State and Territory jurisdictions and a sentinel site in the Hunter 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.

Foodborne disease outbreaks

During the first quarter of 2004, OzFoodNet sites reported 152 outbreaks of gastrointestinal infections (Figure 1). Seventy-one per cent (107) of these outbreaks were spread from person-to-person or were of unknown transmission affecting 2,629 people, hospitalising 61 and causing six fatalities. The majority of these outbreaks occurred in aged care facilities (57%), hospitals (12%) and child-care centres (9%). Recent reports from the United Kingdom have reported the emergence of a new norovirus strain since 2001 that may have increased virulence.[1] In recent years, there has also been a marked increase in the use of molecular diagnosis of these infections leading to increased recognition of this massive problem for healthcare agencies and the community. Outbreaks of gastroenteritis not transmitted by food are often not reported to health agencies or the reports are delayed, meaning that these figures significantly under-represent the true burden of these infections.

Figure 1. Mode of transmission for gastrointestinal outbreaks reported by OzFoodNet sites, January to March 2004



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

Twenty-four outbreaks were due to foodborne transmission compared to 27 in the fourth quarter of 2003 (Table). The outbreaks affected 280 people and 23 people were hospitalised. There were no fatalities in these outbreaks. Eleven outbreaks were due to *Salmonella* infection, three outbreaks of norovirus infection, three outbreaks of ciguatera poisoning and one outbreak of *Bacillus cereus* poisoning. The remaining six outbreaks were of unknown aetiology, affecting a total of 67 people. Nine of the outbreaks occurred in association with meals at restaurants and four in association with meals prepared by commercial caterers. Ten outbreaks occurred in January, eight in February and six occurred in March 2004.

OzFoodNet sites conducted four retrospective cohort studies and two case control studies to investigate these foodborne outbreaks. Fifty-eight per cent of outbreak investigations relied on descriptive epidemiology alone. One outbreak investigation obtained both epidemiological evidence of an association with a food vehicle and microbiological evidence of the agent in the food. In three outbreaks, investigators obtained analytical epidemiological evidence only, and in a further three microbiological evidence only, was found.

Table. Outbreaks of foodborne disease, January to March 2004 by OzFoodNet sites*

State	Month	Setting category	Agent responsible	Number exposed	Number affected	Evidence	Responsible vehicles
NSW	January	Restaurant	*S.* Typhimurium 170	Unknown	2	D	Suspected tartare sauce, fish and chips
	January	Institution	*S.* Typhimurium 135	Unknown	6	D	Suspected chicken or eggs
	January	Hospital	Unknown	6	5	D	Beef curry
	February	Caterer	Unknown	72	20	A	Mushroom soup
	February	Community	*S.* Typhimurium 9	Unknown	4	D	Duck eggs
	February	Caterer	*S.* unknown	14	12	N	BBQ chicken and rice
	February	Restaurant	Unknown	Unknown	7	D	Fried rice
NT	January	Restaurant	*S.* Typhimurium 108	Unknown	9	D	Unknown
Qld	January	Restaurant	Norovirus	Unknown	4	D	Frozen oysters
	January	Home	Ciguatoxin	2	2	D	Golden spotted trevally
	January	Community	*S.* Typhimurium 44	Unknown	12	D	Sushi
	February	Restaurant	Ciguatoxin	Unknown	4	D	Coral trout
	February	National take-away	*B. cereus*	Unknown	6	M	Potato and gravy
	March	Caterer	Norovirus	Unknown	8	D	Unknown
	March	Restaurant	Unknown	6	5	D	Sandwiches
	March	Home	Ciguatoxin	Unknown	2	D	Fish species unknown
	March	Restaurant	*S.* Zanzibar Var 15+	Unknown	5	D	Unknown
SA	March	Community	*S.* Typhimurium 108	Unknown	13	AM	Cream cakes
	January	Community	*S.* Saint Paul	Unknown	4	A	Eggs
Vic	January	Restaurant	*S.* Typhimurium 9	Unknown	90	M	Pizza and pasta
	February	Hospital	Unknown	Unknown	14	D	Unknown
	March	Restaurant	Unknown	Unknown	16	A	Suspect spaghetti bolognaise
	February	Community	*S.* Typhimurium 126	Unknown	11	D	Suspected eggs
WA	January	Caterer	Norovirus	37	19	M	Prawns and cold meats

* No foodborne outbreaks were reported from the Australian Capital Territory, Tasmania or the Hunter sites.

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.

During the quarter, Queensland reported a small outbreak of norovirus associated with imported oysters from Japan. This followed similar outbreak investigations in Western Australia and the Northern Territory in November 2003.[1] The brand of oyster was different in each of the three outbreaks. Norovirus was not isolated from the oysters, but traceback investigations found that all implicated products were harvested from the same oyster system in Japan. This 'outbreak of outbreaks' was investigated by several Australian health departments, the National Centre for Epidemiology and Population Health, public health laboratories, Food Standards Australia New Zealand, and the Australian Quarantine and Inspection Service. OzFoodNet coordinated the investigation, which relied on good cooperation with Japanese authorities.

There were nine outbreaks of foodborne illness in Queensland. Three outbreaks were due to ciguatera following consumption of golden spotted trevally, coral trout and an unknown species of fish. Two of these outbreaks occurred at home, while one occurred at a restaurant. Queensland reported a small outbreak of *S.* Zanzibar 15+var affecting five people of Pacific Island origin. Common food outlets were investigated, but no food vehicle or source was identified. In an outbreak of *S.* Typhimurium 44 four of six cases interviewed had eaten sushi in the 48 hours prior to onset of their illness. Three cases had purchased their sushi from the same premises. There was one small outbreak of *Bacillus cereus* associated with potato and gravy from a take-away food premises. One outbreak of unknown aetiology occurred following a meal of sandwiches. There were two outbreaks of norovirus; one of which was associated with the frozen oyster meat mentioned previously, and one where the food vehicle was not identified.

The Victorian Department of Human Services reported two outbreaks of *Salmonella* infection and two of unknown aetiology. One outbreak of *Salmonella* Typhimurium 9 occurred at a pizza restaurant and affected 90 people. Multiple foods were positive for *S.* Typhimurium 9, including leftover cooked chicken, ham, salami and marinara mix. Pizza is a food commonly reported to be associated with foodborne outbreaks as short cooking times may not kill microorganisms.[3] An outbreak of *S.* Typhimurium 126 was a community-wide outbreak affecting 11 people. There were nine cases in an initial cluster. Six out of nine cases ate the same brand of organic eggs. One case had leftover uncooked vegetable patties bound with raw egg, which were positive for *S*. Typhimurium 126. The particular brand of eggs were sampled but no salmonellae were isolated. The Department of Agriculture collected drag swabs from the farm and sampled eggs, all of which were negative. Two further cases were investigated: both cases shared a smoothie containing raw eggs. The brand of eggs was not the same as that identified in the earlier cases. The two outbreaks of unknown aetiology were consistent with *Clostridium perfringens.* Spaghetti bolognese was the food vehicle in one of these outbreaks, while the other was unknown.

New South Wales reported seven outbreaks during the quarter, four of which were due to *Salmonella.* Three of these outbreaks were due to *S.* Typhimurium. One outbreak of *S.* Typhimurium 135 in a correctional facility was suspected to be caused by chicken or eggs, while another outbreak of *S.* Typhimurium 9 was attributed to duck eggs. The food vehicles in the remaining outbreaks included beef curry, seafood, mushroom soup, barbecue chicken and rice, and fried rice. Three outbreaks were of unknown aetiology.

The Northern Territory reported a single outbreak of *S.* Typhimurium 108 associated with a café. No food vehicle was identified despite sampling mayonnaise, chicken loaf and tartare sauce. *S.* Typhimurium 108 has an identical phage type pattern to *S.* Typhimurium 170, which is currently one of Australia's most common phage types of *S.* Typhimurium. During the quarter there were three foodborne outbreaks due to phage types 108 or 170.

South Australia reported an outbreak of *S.* Typhimurium 108 associated with cream cakes from a single bakery. Thirteen of 22 people interviewed were affected and five people were hospitalised. A case control study demonstrated an association between illness and consumption of cream cake, continental cake, sponge cake and cream Black Forest cake. No source of *Salmonella* was identified within the bakery. There is an urgent need for food safety agencies to determine the exact critical control points in bakeries, as these foods are consistently identified as the cause of *Salmonella* outbreaks.[3,4] South Australia also reported a small outbreak of four cases of *S.* Saintpaul where a cohort study identified an association with consumption of boiled eggs at a workplace function.

Western Australia reported an outbreak where 19 of 37 people on a cruise became ill with norovirus infection. Illness was associated with consumption of prawns and cold meats. The caterer for the cruise was unregistered.

There were no outbreaks of foodborne illness reported from the Australian Capital Territory, Tasmania or the Hunter OzFoodNet sites during the quarter.

Cluster investigations

During the third quarter of 2003, Australian states and territories conducted 18 investigations into clusters of various *Salmonella* serovar infections, including *S.* Typhimurium 126 in Western Australia; *S.* Typhimurium 9, *S.* Typhimurium 6 var 1, *S.* Typhimurium 141, *S.* Typhimurium 12, and *S.* Enteritidis 26 in Queensland; *S.* Typhimurium 197, *S.* Typhimurium 12, *S.* Typhimurium 9, *S.* Typhimurium 170, *S.* Virchow 8, *S.* Anatum, *S.* subsp I 16 :1,v:–, *S.* Cerro, *S.* Infantis and *S.* Oranienberg in Victoria; *S.* Zanzibar in South Australia; and *S.* Typhimurium 4 and *S.* Typhimurium 12 in New South Wales.

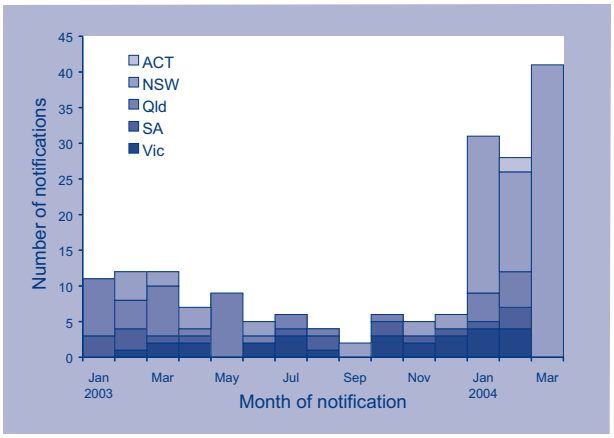
Queensland reported that seven of 19 cases of *S.* Typhimurium 9 interviewed had consumed kebabs from take-away shops in the 48 hours prior to their illness. Five of these cases purchased chicken kebabs in Brisbane from several locations, while two other cases purchased kebabs from a shop in northern New South Wales. Food samples including chicken meat, beef, lamb, sauces and salad ingredients collected from five shops in Brisbane and the Gold Coast were negative for all pathogens tested. Queensland also reported a cluster of four locally-acquired cases of *S.* Enteritidis 26 in a northern Queensland town. Interviews of three cases did not identify any common exposures. One patient owned egg-laying hens. Egg and environmental samples taken from the chicken coop were negative for *Salmonella*.

Queensland also reported a small cluster investigation into two cases of *S.* Paratyphi biovar Java 3b var 10, who had purchased aquarium fish from a common pet shop. These cases were included in the national case series investigation into these infections. In 2003, there were 72 cases of *S.* Paratyphi biovar Java notified to the National Enteric Pathogen Surveillance Scheme (NEPSS) and phage type 3b var 10 accounted for 21 cases (personal communication, J Powling, NEPSS, May 2004).

The Australian Capital Territory reported an investigation into two cases of locally-acquired *S.* Typhimurium 104L. The two cases were a 51-year-old female and a 1-year-old male who lived in the same suburb. Case households shopped at the same supermarkets, but no common foods were identified. Investigations into this cluster are continuing.

Multiple jurisdictions reported increases in *Salmonella* Typhimurium 12 during the quarter (Figure 2). Links could not be identified between cases. Since the majority of these *S.* Typhimurium 12 cases occurred in New South Wales, the Hunter OzFoodNet site coordinated the multi-state investigation into this increase in *S.* Typhimurium 12 and initiated a case control study of *S.* Typhimurium 12 in New South Wales to explore hypotheses for the increase, which included consumption of salad vegetables and fruit. The results from this study are not yet available.

Figure 2. Notifications of *Salmonella* Typhimurium 12, January 2003 to 23 March 2004, by jurisdiction and date of notification



Summary

Salmonella incidence increased during the quarter and was responsible for 46 per cent of foodborne outbreaks. Large numbers of norovirus outbreaks continued to be reported in aged care facilities and hospitals. Several outbreaks were related to eggs, although traceback efforts were unsuccessful. A third outbreak of norovirus implicating a different brand of oysters imported from Japan was significant, resulting in action to remove the oysters from the marketplace. These outbreaks have resulted in reconsideration of the safety of oysters harvested from contaminated waters in other countries.

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References

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