Quarterly reports

OzFoodNet quarterly report, 1 January to 31 March 2007

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 investigation of outbreaks of gastrointestinal illness and clusters of disease potentially related to food occurring in Australia from 1 January to 31 March 2007.

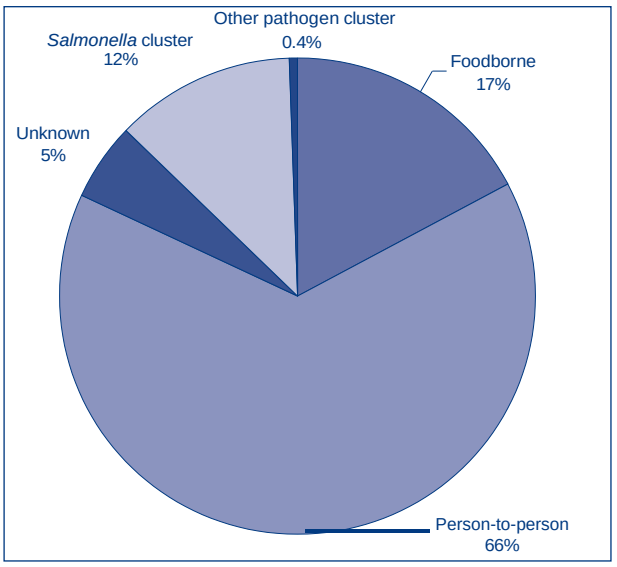
Data were received from OzFoodNet representatives in all Australian states and territories and a sentinel site in the Hunter/New England region of New South Wales. The data in this report are provisional and subject to change as the results of outbreak investigations can take months to finalise.

During the first quarter of 2007, OzFoodNet sites reported 234 outbreaks of enteric illness, including those transmitted by contaminated food. In total, these outbreaks affected 4,522 people, of which 239 were hospitalised and 6 died. The majority (65%, n=152) of outbreaks resulted from infections suspected to be spread by person-to-person transmission (Figure 1). Thirty-seven per cent (86/234) of outbreaks occurred in aged care facilities, 14% in child care centres and 12% (27/234) in hospitals. Norovirus was identified as a cause of illness in 36 outbreaks in aged care facilities. Outbreaks of gastroenteritis 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.

Foodborne disease outbreaks

There were 40 outbreaks during the first quarter of 2007 where consumption of contaminated food was suspected or confirmed as the primary mode of transmission (Table). These outbreaks affected 861 people and resulted in 138 people being admitted to hospital. There were no deaths. This compares with 36 outbreaks in the first quarter of 2006 and 26 outbreaks in the fourth quarter of 2006.

Figure 1. Mode of transmission for outbreaks of gastrointestinal illness reported by OzFoodNet sites, 1 January to 31 March 2007



Salmonella was responsible for 18 outbreaks during the quarter, with *Salmonella* Typhimurium (16 outbreaks) being the most common serotype. *S.* Typhimurium 197 was responsible for 5 outbreaks; *S.* Typhimurium 44 four outbreaks; *S.* Typhimurium 9 three outbreaks; and *S.* Typhimurium 12, *S.* Typhimurium 135a, *S.* Typhimurium U302, *S.* Typhimurium U307 were each responsible for a single outbreak. Of these *S.* Typhimurium outbreaks, 12 were either confirmed or suspected to be associated with eating eggs or dishes containing eggs. The other *Salmonella* serotypes causing outbreaks during the quarter were *S.* Mbandaka and *S.* Saintpaul. There were 8 toxin-related outbreaks during the quarter including histamine poisoning (4 outbreaks), ciguatera fish poisoning (2 outbreaks), *Bacillus cereus* intoxication (1 outbreak) and *Clostridium perfringens* intoxication (1 outbreak). Norovirus was responsible for a single outbreak of foodborne disease. The remaining 13 outbreaks were caused by unknown aetiological agents.

Outbreaks of foodborne disease reported by OzFoodNet sites,* January to March 2007

State	Month of outbreak	Setting prepared	Infection	Number affected	Evidence	Responsible vehicles
NSW	January	Takeaway	Unknown	4	D	Suspected fried chicken
		Institution – other	Unknown	6	D	Unknown
		Restaurant	Unknown	9	D	Chicken stirfry or beef massaman
		National franchised fast food restaurant	Unknown	3	D	Unknown
	February	Restaurant	Unknown	4	D	Seafood platter
		Commercial manufactured food	Unknown	6	D	Berri blackcurrant play water
		Restaurant	Unknown	5	D	Unknown
		Restaurant	Histamine poisoning	2	D	Tuna steaks
		Grocery store/ delicatessen	Histamine poisoning	3	D	Tuna kebab steaks
		Takeaway	*Clostridium perfringens*	6	D	Hommus on a kebab
		Commercial caterer	*Bacillus cereus*	32	AM	Boiled gefilte fish (fish balls)
	March	Takeaway	*Salmonella* Typhimurium U302	34	D	Kebabs and crepes
		Takeaway	*Salmonella* Typhimurium 9	294	M	Vietnamese pork and chicken rolls
		Restaurant	*Salmonella* Typhimurium 12	7	D	Suspected marinated chicken dish, noodle dish, fried rice
Qld	January	Community	*Salmonella* Typhimurium 197	21	D	Suspected eggs
		Restaurant	*Salmonella* Typhimurium 197	3	D	Suspected eggs
	February	Private residence	Histamine poisoning	2	D	Tuna
		Primary produce	Ciguatoxin	2	D	Mackerel
		Camp	*Salmonella* Saintpaul	24	M	Bore water
		Restaurant	*Salmonella* Typhimurium 197	12	D	Suspected eggs
		Restaurant	*Salmonella* Typhimurium 197	6	D	Suspected eggs
		Restaurant	*Salmonella* Typhimurium 197	2	D	Suspected eggs
	March	Primary produce	Ciguatoxin	6	D	Mackerel
		Institution – other	Norovirus	45	A	Ham, salad, bread
SA	March	Restaurant	*Salmonella* Typhimurium 9	46	A	Multiple food items
Tas	January	Primary produce	Unknown	19	D	Suspected oysters
	March	Bakery	*Salmonella* Typhimurium 135a	20	D	Suspected eggs

Outbreaks of foodborne disease reported by OzFoodNet sites,* January to March 2007, continued

State	Month of outbreak	Setting prepared	Infection	Number affected	Evidence	Responsible vehicles
Vic	January	Private residence	*Salmonella* Typhimurium 44	4	M	Milkshake includes raw egg
		Restaurant	*Salmonella* Typhimurium 44	15	D	Caesar salad dressing includes raw egg
		Private residence	*Salmonella* Typhimurium 44	11	A	Trifle – includes raw egg
		Private residence	*Salmonella* Typhimurium 44	10	A	Tiramisu – includes raw egg
		Restaurant	Unknown	4	D	Unknown
		Takeaway	Unknown	17	A	Suspected meat curry
	March	Camp	Unknown	19	D	Suspected water
		Commercial caterer	Unknown	37	A	Suspected passionfruit coulis
		Restaurant	Unknown	10	A	Suspected feta cheese
		Camp	*Salmonella* Typhimurium 9	30	AM	Water
		Restaurant	Histamine poisoning	2	D	Tuna
WA	February	Restaurant	*Salmonella* Mbandaka	4	D	Unknown
	March	Restaurant	*Salmonella* Typhimurium U307	75	A	Caesar salad

* No foodborne outbreaks were reported in the Northern Territory or Tasmania 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.

Sixteen outbreaks reported in the quarter were associated with food prepared by restaurants, 5 from takeaway outlets, 4 in private residences, 3 from contaminated primary produce, 3 at camps, 2 by commercial caterers, and 2 associated with institutions. There were single outbreaks associated with food prepared by a bakery, a commercially manufactured food, community, a national franchised fast food restaurant and a grocery store.

To investigate these outbreaks OzFoodNet sites conducted 10 cohort studies, 3 case control studies, and collected descriptive data on 27 outbreaks. Investigators obtained analytical epidemiological evidence in 8 outbreaks, microbiological and analytical epidemiological evidence in 3 outbreaks and microbiological evidence alone in 3 outbreaks. For the remaining 26 outbreaks, investigators obtained descriptive epidemiological evidence implicating a food vehicle or suggesting foodborne transmission.

New South Wales reported 14 outbreaks of foodborne illness during the quarter. The aetiological agent was not identified in 7 of the outbreaks. In March, an outbreak of *S.* Typhimurium 9 due to contaminated Vietnamese style pork and chicken rolls affected 294 people and resulted in more than 100 people being hospitalised. Multiple food samples from the bakery were positive for *S.* Typhimurium 9. The response to this outbreak included a NSW Health media release alerting the public to the source of the outbreak and advice on what to do if you were ill. The NSW Food Authority restricted the bakery's production and sale of the implicated foods.

During March, 34 people were infected with *S.* Typhimurium U302 after eating kebabs and crepes prepared by a takeaway outlet. *S.* Typhimurium 12 was confirmed in 1 person from a group of 7 people ill following a meal of chicken and fried rice at a restaurant on Chinese New Years Eve.

There were 4 toxin-related outbreaks in New South Wales, including 2 outbreaks of histamine poisoning after meals of tuna; *Bacillus cereus* intoxication following consumption of boiled gefilte fish (fish balls); and *Clostridium perfringens* intoxication from kebab meals containing hommus.

Victoria reported 11 outbreaks of foodborne illness during the quarter. The aetiological agent was not identified in 5 of the outbreaks. Victoria experienced a state-wide increase in *S.* Typhimurium 44 infections during the quarter. There were 4 point source outbreaks associated with this community-

wide outbreak. The first was a group of 4 people who shared a raw-egg milkshake where the blender tested positive for *S*. Typhimurium 44. The second outbreak involved 15 cases who had eaten at the same restaurant and it was confirmed that the common food vehicle contained a dressing made with raw eggs. Eleven cases occurred in the third outbreak where the suspected source was a home-prepared trifle containing raw eggs and 10 people were ill after attending a function in a private residence where a home-prepared tiramisu made with raw eggs was served for dessert.

In Victoria, an outbreak of *S*. Typhimurium 9 affecting 30 children out of 55 adults and children who attended a school camp, was associated with drinking water. Water samples were positive for *S*. Typhimurium 9 and the camp was closed until drinking water met the standards specified in the Australian Drinking Water Quality Guidelines. Water was also suspected to have caused illness among 3 separate groups staying at another camp during late March. The untreated drinking water was being sourced from a nearby creek. Water samples at the camp were contaminated with *E. coli* and *Salmonella* (serotype pending). The camp was closed until a water treatment system was installed to meet the standards specified in the Australian Drinking Water Quality Guidelines.

One outbreak of histamine poisoning affected 2 people after a meal of tuna steaks. During the quarter, Victoria reported a single case of adult botulism. The same toxin that caused illness in the case was detected in the discarded remains of a ready-to-eat nachos meal consumed by the case during the incubation period. The case was severely ill requiring extensive hospital treatment including a long stay in Intensive Care Therapy. The manufacturer of the ready-to-eat nachos meal conducted a voluntary recall of the product as a precautionary health measure.

Queensland reported 10 outbreaks of foodborne disease for the quarter, 4 of which included restaurants and were part of a larger multi-state outbreak of *S*. Typhimurium 197 that began in November 2006. Queensland initiated a case control study to investigate the cause of illness. These outbreaks were all suspected to be associated with foods containing raw or undercooked eggs, or foods cross-contaminated by eggs from a farm where a specific *S*. Typhimurium 197 and its associated multiple-locus variable-number tandem-repeats analysis (MLVA) type was isolated. People infected with the matching outbreak MLVA strain were significantly more likely to have eaten a meal outside of the home in the 5 days before onset compared to other notified *Salmonella* cases chosen as controls (OR 11.2, 95%CI, 1.3–100). Cases with the outbreak strain were significantly more likely than controls to have attended a restaurant (OR 8.1, 95%CI, 1.8–35) and have eaten at a restaurant that was supplied eggs from the implicated farm (OR undefined). Environmental and other food samples from 3 of the 4 restaurants were all negative for *Salmonella*. However, samples taken from handwash basin, chopping board, preparation bench, food display unit lid and a tea towel in one restaurant were positive for the outbreak strain of *S*. Typhimurium 197.

S. Saintpaul caused illness among at least 24 children from 3 different schools who had attended a camp in Queensland during mid-February. Bore water was the only source of drinking water on site and was pumped to a storage tank and manually chlorinated. *S*. Saintpaul was detected in 1 of 5 water samples. The water tank and lines were cleaned and a more robust system of chlorination instituted.

An outbreak of norovirus among 45 people attending a Queensland training facility was epidemiologically associated with salad, ham, and bread. Queensland also reported 3 toxin-related outbreaks from fish consumption, including histamine poisoning after a meal of tuna imported from Indonesia. Two outbreaks of ciguatera fish poisoning, affecting 2 and 6 people respectively, occurred after meals of mackerel.

Western Australia reported 2 outbreaks of foodborne illness during the quarter. In March, *S*. Typhimurium U307 infected as many as 75 people after eating Caesar salad at a resort, prepared using a raw egg mayonnaise. The resort used eggs originating from Western Australia and Queensland. A comparison of *S*. Typhimurium U307 isolated from Western Australian cases and contemporaneous Queensland cases showed that cases from both states and an isolate from raw egg pulp in Queensland had the same MLVA type.

Investigators were unable to identify a food vehicle associated with an outbreak of *S*. Mbandaka during February. Three cases reported eating at the same café but had eaten different foods. A fourth locally acquired case had not eaten at the café. Isolates from all 4 cases had indistinguishable pulsed-field gel electrophoresis patterns.

Tasmania reported 2 outbreaks of foodborne illness during the quarter, including an outbreak of unknown aetiology affecting 5 groups of people following consumption of oysters. Eighteen people tested positive for *S*. Typhimurium 135a following consumption of salad rolls from a bakery in Tasmania. A further 2 people from the same community tested positive for *S*. Typhimurium 135a following consumption of eggs purchased from retailers who were supplied eggs from the same supplier

as that which supplied the bakery. The response to this outbreak included a government media release to warn the public that a very limited number of small egg producers had supplied cracked and dirty eggs potentially contaminated by *Salmonella*.

South Australia reported a single outbreak of foodborne illness during the quarter where *S.* Typhimurium 9 infected 46 patrons of a restaurant. Investigators identified multiple food items associated with illness, including any entrée (RR 3.6, 95%CI, 1.3–10), chicken salad (RR 1.7, 95%CI, 1.0–3.0), BBQ chicken (RR 1.8, 95%CI, 1.2–2.7) and chicken soup (RR 2.4, 95%CI, 1.5–3.7).

Northern Territory and the Australian Capital Territory did not report any foodborne outbreaks during the first quarter of 2007.

Cluster investigations

State and territory health departments conducted a substantial number of investigations into various clusters of *Salmonella* and other pathogens during the quarter. Jurisdictions reported investigating 29 clusters of various serotypes of *Salmonella*, some of which were related to point source outbreaks. In January, South Australia investigated a cluster of cases of Shiga toxin producing *E. coli* infections, predominantly serotype O157. OzFoodNet held several multi-jurisdictional teleconferences to discuss these cluster investigations and try to determine a source of infection. A common food source could not be identified despite an extensive investigation of these cases.

Comments

Overall, Australia experienced a 14% increase in reported *Salmonella* infection for the first 3 months of 2007 (3,500 cases) compared to the same period in 2006 (3,067 cases). The number of egg-associated outbreaks was considerably higher than in previous years. In response to this, health departments, departments of agriculture and food safety regulators have met with egg industry representatives and companies to discuss food safety. The Implementation Sub-Committee of the Food Regulation Standing Committee agreed to host a national egg food safety summit to discuss outbreaks. In addition, Food Standards Australia New Zealand is currently preparing a primary production standard for the egg industry, although this will not be finalised for some time.

This is the second consecutive quarterly report in which eggs have been identified as the most frequent cause of foodborne disease outbreaks. Between January and March 2007, 67% (12/18) of *Salmonella* outbreaks were suspected to be associated with dishes containing raw or undercooked eggs. This represented 30% (12/40) of all foodborne disease outbreaks during the quarter. During the last quarter of 2006, all outbreaks of *S.* Typhimurium were associated with dishes containing raw or undercooked eggs.[1]

The Queensland outbreak investigation associated with eggs contaminated by *S.* Typhimurium 197 was first identified in the last quarter of 2006. This investigation demonstrates the usefulness of MLVA as it allowed the Queensland investigation team to link multiple outbreaks and to specifically pinpoint the source of eggs on a farm.[2] The outbreak investigation lead to a series of public health actions including a voluntary recall of eggs by the egg company, a Queensland Health media release warning the public about *Salmonella* infections and how to safely use and consume eggs. Following these interventions in March 2007, there have been no further cases of *S.* Typhimurium 197 in Queensland linked to this egg farm (Figure 2). This investigation highlights the role of eggs in causing *Salmonella* infections and how contaminated produce from a single farm can result in community-wide outbreaks of human illness.[3]

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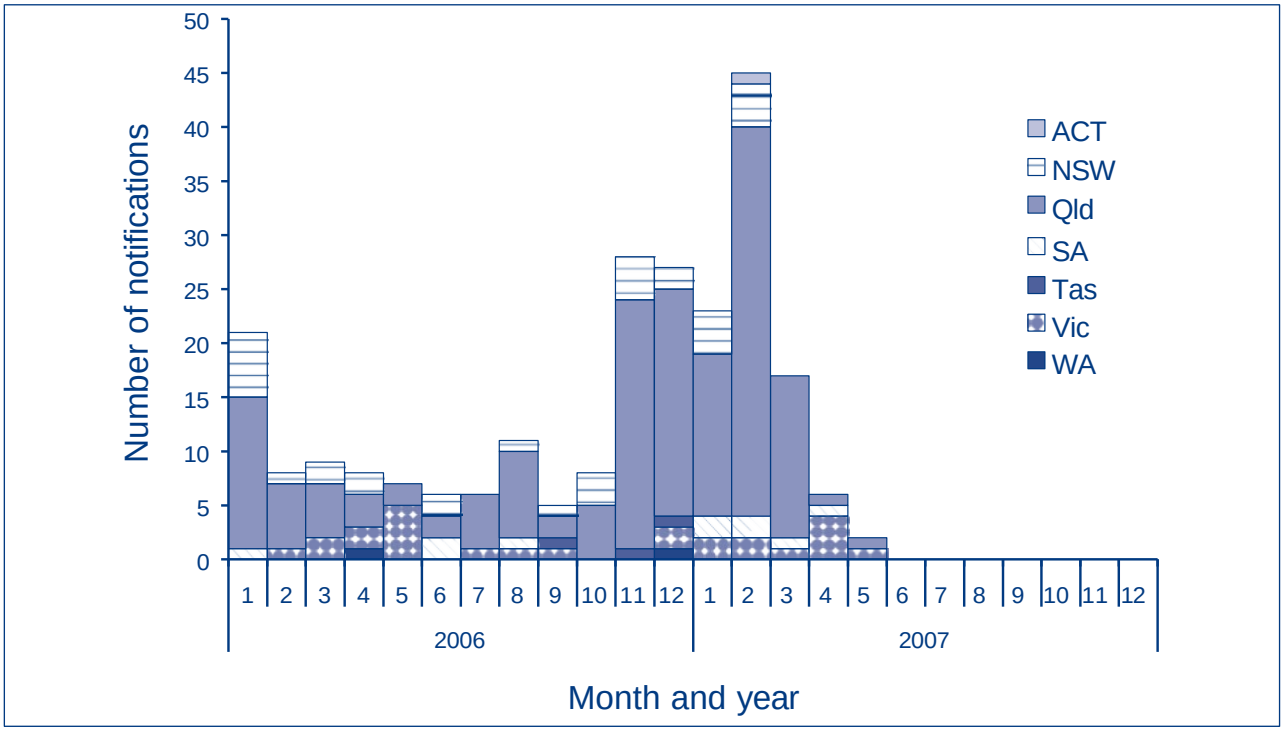
Figure 2. Salmonella Typhimurium 197 notifications reported to NNDSS, Australia, 2006–year to date, by month of diagnosis and state or territory



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