Quarterly reports

OzFoodNet quarterly report, 1 January to 31 March 2012

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. In each Australian state and territory, OzFoodNet epidemiologists investigate outbreaks of enteric infection. OzFoodNet conducts studies on the burden of illness and coordinates national investigations into outbreaks of foodborne disease. This quarterly report documents investigations of outbreaks of gastrointestinal illness and clusters of disease potentially related to food, which occurred in Australia between 1 January and 31 March 2012.

Data were received from OzFoodNet epidemiologists in all Australian states and territories. The data in this report are provisional and subject to change as the results of outbreak investigations can take months to finalise. Public Health laboratories across Australia have recently introduced standardised testing procedures and methods for coding and reporting of MLVA genotypes

During the 1st quarter of 2012, OzFoodNet sites reported 441 outbreaks of enteric illness, including those transmitted by contaminated food. Outbreaks of gastroenteritis are often not reported to health agencies or the reports may be delayed, meaning that these figures under-represent the true burden of enteric disease outbreaks. In total, these outbreaks affected 7,027 people, of whom 242 were hospitalised. There were 18 deaths reported during these outbreaks. The majority of outbreaks (72%, n=319) were due to person-to-person transmission (Foodborne and suspected foodborne disease outbreaks), with 48% (152/319) of these occurring in residential aged care facilities.

Foodborne and suspected foodborne disease outbreaks

There were 51 outbreaks during this quarter where consumption of contaminated food was suspected or confirmed as the primary mode of transmission (Appendix). These outbreaks affected 571 people, resulted in 44 hospitalisations and 2 deaths. This compares with 36 outbreaks in the 4th quarter of 2011[1] and a 5-year mean of 40 outbreaks for the 1st quarter between 2007 and 2011.

Salmonella enterica serotypes were identified as the aetiological agent in 28 outbreaks (55%) during this quarter (the majority of them due to *S.* Typhimurium, refer to the Appendix for more detail). Of the remaining outbreaks, 3 (6%) were due to norovirus, and 1 each due to *Campylobacter, Amanita phalloides* poisoning and a suspected viral agent. The aetiological agent remained unknown for 17 outbreaks (33%).

Twenty-three outbreaks (45% of foodborne or suspected foodborne outbreaks) reported in this quarter were associated with food prepared in restaurants. Other food preparation settings associated with foodborne or suspected foodborne outbreaks are listed in Table 2.

To investigate these outbreaks, sites conducted 11 cohort studies, 5 case control studies and col-

Table 1: Outbreaks and clusters of gastrointestinal illness reported by OzFoodNet, 1 January to 31 March 2012 by mode of transmission

Transmission mode	Number of outbreaks and clusters	Per cent of total
Foodborne and suspected foodborne	51	12%
Person-to-person	319	72%
Unknown (*Salmonella* cluster)	15	3%
Unknown (other pathogen cluster)	6	1%
Waterborne (recreational water)	1	<1%
Unknown	49	11%
Total	441	100%

lected descriptive case series data for 26 investigations, while for 9 outbreaks no individual patient data were collected. The evidence used to implicate food vehicles included analytical evidence in 4 outbreaks and microbiological evidence in 1 outbreak. Descriptive evidence alone was obtained in 46 outbreak investigations.

The following jurisdictional summaries describe key outbreaks and public health actions that occurred in this quarter.

Multi-jurisdictional

There was 1 reported multi-jurisdictional outbreak of suspected foodborne illness during the quarter, which was due to *S. enterica* serotype Typhimurium (or *S.* Typhimurium).

Investigators detected an outbreak of *S.* Typhimurium phage type (PT) 135 associated with a catered sporting event in South Australia, with cases from 2 jurisdictions (South Australia and Tasmania). A cohort study was conducted, and 36 of 41 players and associated staff were interviewed, with 18 meeting the case definition (diarrhoea and/or stool sample positive for *S.* Typhimurium PT 135). Eleven cases (2 hospitalised) had faecal samples positive for *S.* Typhimurium PT 135 or *S.* Typhimurium multi-locus variable number tandem repeat analysis (MLVA) profile 03-14-13-13-524. The illness was suspected to be associated with the consumption of food provided by a private caterer at the sporting venue; however, analytical evidence did not identify a single food item associated with illness. An environmental inspection was conducted where the food was prepared: however, no pathogens were detected from environmental swabs or food samples.

Australian Capital Territory

There were 7 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which four were due to *S.* Typhimurium, and one each due to *Amanita phalloides* poisoning, a suspected viral cause and an unknown pathogen.

Description of key outbreaks

Routine interviewing of *Salmonella* cases identified an outbreak of 10 cases (1 hospitalised) of *S.* Typhimurium PT 170 infection (MLVA profile 03-10-07-12-523) that had eaten a variety of foods at the same café. An inspection of the café identified numerous food safety breaches, resulting in a prohibition order being served. Four cases had eaten a toasted chicken sandwich that contained a raw egg mayonnaise. Traceback of eggs identified that they had been produced at a New South Wales farm, with the New South Wales Food Authority (NSWFA) subsequently undertaking an inspection and testing of the implicated farm. Whilst the outbreak strain was not detected on the farm, a number of other *Salmonella* serotypes (including *S.* Singapore) were recovered from the environment, on equipment and in feed.

Routine interviewing of *Salmonella* cases also identified an outbreak of 7 cases (3 hospitalised) of *S.* Typhimurium PT 135a infection at café (a different café to that involved above). Five of the 7 cases reported eating eggs as part of breakfast or brunch meals. An inspection of the café identified numerous food safety breaches and a prohibition order was served.

Investigators identified an outbreak of 22 cases (7 confirmed) of *S.* Typhimurium PT 170 infection (MLVA profile 03-09-08-13-524) when a number of general practitioners from the same practice became unwell after a dinner meeting at a function

Table 2: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet, 1 January to 31 March 2012, by food preparation setting

Food preparation setting	Outbreaks
Restaurant	23
Commercial caterer	6
Takeaway venues	6
Aged care	4
Private residence	4
Unknown	3
Other	3
National franchised fast food	1
Fair, festival, other temporary/mobile service	1
Total	51

centre. The outbreak cases were linked to 5 separate functions, which included several interstate and international visitors. Analysis of a retrospective cohort study conducted with two separate cohorts identified an association between illness and the consumption of a fish dish (RR 7, 95% CI 0.9–51.1, $P = 0.04$) for cohort 1 and a lamb dish (RR 3.9, 95% CI 1–14.5, $P = 0.02$) for cohort 2. Interviews with the chef revealed that a raw egg emulsion was used to garnish both the lamb and the fish dish. This cold egg emulsion was prepared by mixing egg whites, oil and flavouring (specific to the dish) and 4–5 drops of this emulsion was added as a garnish to the dishes prior to being served. It was also found that after a batch of eggs were separated, that they were refrigerated for up to a week and batches of these were used to prepare the garnishes. An inspection of the premises did not identify any food safety breaches.

An outbreak of *Amanita phalloides* (death cap mushroom) poisoning was identified after 3 of 4 restaurant workers became ill after sharing a post-service staff meal. This meal contained mushrooms that had been recently picked in the Australian Capital Territory by one of the cases. All cases were hospitalised and two died. An inspection of the premises was undertaken and a large volume of fresh produce was destroyed (no mushrooms were found); any risk to the dining public was considered to be minimal. Additional public health actions taken included an urgent media alert, and targeted communication aimed at members of the Chinese community, overseas-born students and tourists. A further hospitalised case (unrelated to the previous cluster) was identified in a New South Wales resident who had picked mushrooms whilst visiting the Australian Capital Territory.

New South Wales

There were 20 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which 11 were due to *S.* Typhimurium; one each due to *S.* Give, *S.* Muenchen and *S.* Wangata. No pathogen could be identified for the remaining outbreaks.

Description of key outbreaks

Investigators were notified of an outbreak of *S.* Typhimurium MLVA profile 03-09-07-12-523 infection (historically associated with PT 170) involving 14 cases from 6 separate groups who had eaten at the same restaurant. All cases had consumed deep fried ice cream, but an investigation by the NSWFA did not identify any positive food samples. The restaurant was issued a warning letter advising of the risks involved in serving raw egg-based menu items and minimally cooked egg-based foods; deep fried ice cream has since been removed from the menu.

New South Wales Health investigated 9 cases of *S.* Typhimurium MLVA profile 03-09-08-13-523 infection (previously associated with PT 170) after receiving complaints via the NSWFA from 2 separate groups that ate deep fried ice cream at the same restaurant. The restaurant was issued a warning letter advising of the risks involved in serving raw and minimally cooked egg-based foods. Deep fried ice cream has since been removed from the menu. Samples taken of ice cream balls and component ingredients taken at the time were negative for pathogens. An egg-rinse was found to be positive for *S.* Bareilly.

Investigators were notified of 4 cases of *S.* Typhimurium MLVA profile 03-09-07-13-523 (previously associated with PT 170) who had eaten at the same café. Illness was associated with eating scrambled eggs, omelettes and a tortilla dish made from potato and egg. The chef advised that scrambled eggs and omelettes were lightly cooked, and that eggs were pooled and stored on the bench. A number of food safety breaches were identified during the investigations and an Improvement Notice was issued. The café no longer pools eggs; eggs are now kept under refrigeration and used only when an order is placed.

A public health unit investigated 11 cases of *S.* Typhimurium MLVA profile 03-10-08-09-523 infection (previously associated with PT 44) associated with Vietnamese rolls purchased from a bakery. A NSWFA inspection identified the use of raw egg butter in the rolls, but all samples taken during the inspection were negative. The bakery was advised of the dangers of using raw egg butter and recommended to use a commercial mayonnaise product.

Investigators were notified of 18 cases of gastrointestinal illness among a group that had eaten at a restaurant. Three of 4 stool samples were positive for *S.* Typhimurium MLVA profile 03-09-09-12-523. High risk foods eaten by the group were a Bombe Alaska dessert (coated in raw egg meringue) and raw vegetable ingredients in the Peking duck pancakes. The restaurant was issued with a warning letter advising of the risk involved in serving raw egg-based menu items and minimally cooked egg-based foods; they agreed to stop serving Bombe Alaska. A sample of egg rinse taken during an inspection was positive for *S.* Chester. Traceback to the supplying egg farm identified multiple *Salmonella* serotypes in the environment and the egg grading area, with the outbreak strain detected in faeces from a laying shed.

Investigation of a cluster of 34 *S.* Typhimurium MLVA profile 03-10-07-15-523 cases identified 15 that were linked to a takeaway shop. The NSWFA inspected the premises and collected numerous food and environmental samples, with a sample of hummus (made

with the same stick blender as the raw egg crepe batter) positive for the outbreak strain. The traceback to the supplying egg farm found *S.* Singapore on boot swabs from the egg grading area.

Investigations into an increase in *Salmonella* cases identified an outbreak linked to 2 cafés situated along a freeway. Twenty cases of *S.* Typhimurium MLVA profile 03-09-07-13-523 infection reported eating a variety of foods from both cafés. All foods consumed contained raw egg mayonnaise/dressing. Samples of aioli and mayonnaise collected during a NSWFA inspection of the manufacturing premises that supplied the cafés were positive for the same MLVA profile as the outbreak cases; the eggs used were supplied by a farm in Queensland. A prohibition order was issued to the manufacturing premises to cease the use of raw eggs in the preparation of foods that are not further cooked.

Northern Territory

There were 4 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which two were due to norovirus. No pathogen could be identified for the remaining outbreaks.

Description of key outbreaks

Investigators identified an outbreak of norovirus among 22 diners who all ate items from high tea platters served on one particular day at the same restaurant. A cohort study was conducted and high risk items were egg sandwiches, chicken sandwiches and cocktails. An environmental health inspection did not identify any food safety issues. Nevertheless, the restaurant was required to implement a food safety plan as part of their registration as a food business. Contamination via a food or beverage handler was suspected to have occurred, but no staff reported illness at the time.

Queensland

There were 7 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which four were due to *S.* Typhimurium and one due to *S.* Infantis. No pathogen could be identified for the remaining 2 outbreaks.

Description of key outbreaks

Investigators identified a restaurant-associated outbreak after 2 cases of *S.* Infantis infection were notified from the same hospital. A case series investigation identified that both cases had consumed prawn and pork rice paper rolls from the same restaurant on separate dates. *S.* Infantis was detected on kitchen towels, a cleaning cloth and raw chicken samples from the restaurant kitchen. This outbreak was likely to have been caused by cross contamination from staff handling raw chicken and subsequently preparing food that did not undergo a further cooking step.

Three cases of *S.* Typhimurium MLVA profile 03-13-10-10-524 infection and 1 epidemiologically linked case were identified as part of an outbreak associated with a church lunch. Food items served at the event were prepared by attendees. A case series investigation identified that all cases had consumed a chocolate cake with a raw egg meringue topping. Egg samples collected subsequent to the outbreak were negative for *Salmonella*.

A case series investigation of 5 geographically clustered cases of *S.* Typhimurium MLVA profile 03-09-07-13-524 infection (previously associated with PT 170) and 1 epidemiologically linked case found that all cases had attended the same café. Cases had consumed a variety of foods with salad being the common item. Food samples and environmental swabs taken at the café tested negative for *Salmonella*. An Environmental Health investigation of the café identified various hygiene issues. This Queensland cluster was investigated following the previously described New South Wales outbreak of the same strain of *S.* Typhimurium associated with food containing raw egg (supplied from Queensland), served at 2 cafés situated along a freeway.

Three cases of *S.* Typhimurium MLVA profile 03-12-13-09-524 infection (previously associated with PT 135a) and 2 epidemiologically linked cases were associated with an outbreak at a restaurant. A case series investigation identified that the only common food item consumed by all cases was deep fried ice cream. Egg samples and environmental swabs from the restaurant were all negative for *Salmonella*. A number of hygiene issues were identified at the restaurant and a compliance notice was issued by the local council. No confirmed source of infection was identified.

South Australia

There was 1 outbreak of suspected foodborne illness investigated during the quarter due to *S.* Typhimurium.

Investigators detected an outbreak of *S.* Typhimurium PT 9 infection that involved 80 people who had attended a private catered function at a restaurant. A cohort study was conducted with 25 of 73 respondents developing gastrointestinal illness, eight of whom were confirmed *S.* Typhimurium PT 9 cases. The study did not identify any significant associations between illness and any food item served at the function.

Tasmania

There was 1 reported outbreak of foodborne illness during the quarter, which was due to *S.* Typhimurium.

Investigators identified an outbreak of salmonellosis associated with a takeaway restaurant. There were 8 positive *Salmonella* cases (3 hospitalised), 6 *S.* Typhimurium PT 141, 1 *S.* subsp I ser 4,5,12:- :- (i.e. 'Typhimurium-like') PT 141 and 1 *S.* Mississippi. Five cases had eaten a chilli-coriander mayonnaise, with 2 of 3 remaining cases eating a tartare sauce; both sauces contained raw eggs. An inspection of the premises was conducted with samples of 4 egg-based sauces testing negative for *Salmonella*. A thorough cleaning of the restaurant was requested, and raw egg-based sauces were removed from the menu.

Victoria

There were 7 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which one was due to *S.* Typhimurium and one each due to *Campylobacter* and norovirus. No pathogen could be identified for the remaining outbreaks.

Description of key outbreaks

Investigators were notified of an outbreak of gastroenteritis affecting 2 separate groups who ate food (sandwiches, fruit platters, cakes) prepared by the same caterer. Illness was reported by 25 (and 1 secondary case) of 45 function attendees, with 3 faecal samples testing positive for norovirus. The chef had been ill with gastroenteritis 4 days prior to assisting with the preparation of the sandwiches.

Western Australia

There were 3 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which 1 was due to *S.* Anatum. No pathogen could be identified for the remaining outbreaks.

Description of key outbreaks

Investigators identified an outbreak of *S.* Anatum associated with a salad bar. Four cases with the same pulse-field gel electrophoresis type consumed a variety of foods from the salad bar. No major deficiencies in food safety practice were identified during the environmental inspection of the premises, although a sample of Caesar salad (without chicken) was positive for *S.* Anatum, closely related to outbreak strain.

Comments

The majority of reported outbreaks of gastrointestinal illness in Australia are due to person-to-person transmission, and in this quarter, 72% of outbreaks (n=319) were transmitted via this route. The number of foodborne outbreaks this quarter (n=51) had increased compared with the same quarter for 2011 and the 5-year mean (2007–2011). *S.* Typhimurium continues to be a leading cause of foodborne outbreaks in Australia, with 68% (23/34) of outbreaks during the quarter with a known *Salmonella* aetiology being due to this serotype.

Foodborne disease outbreak investigations this quarter have highlighted a range of high risk practices, many occurring in food service settings. Twenty-three foodborne or suspected foodborne disease outbreaks this quarter were associated with foods prepared in a restaurant, while a further 6 outbreaks were associated with foods prepared by caterers. Catering for large groups presents particular challenges in adequately controlling the temperature of stored foods and in preventing cross-contamination between raw and cooked foods. There may often be inadequate facilities for the safe storage and handling of large quantities of food at the location where it is to be served.

Outbreaks associated with raw or undercooked egg products (raw egg dressings, raw egg desserts, omelettes) continued to be reported this quarter (n=14). To address this continuing issue, OzFoodNet established an 'Egg Working Group' to describe the national epidemiology of egg-associated outbreaks. Jurisdictional food safety authorities are focussing on communication and education in relation to the use of raw egg products in commercial settings.

A limitation of the outbreak data provided by OzFoodNet sites for this report was the potential for variation in the categorisation of the features of outbreaks depending on circumstances and investigator interpretation. Changes in the number of foodborne outbreaks should be interpreted with caution due to the small number each quarter.

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Reference

1. The OzFoodNet Working Group. OzFoodNet quarterly report, 1 October to 31 December 2011. *Commun Dis Intell* 2012;36(3):E294–E300.

Appendix: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites, 1 January to 31 March 2012 (n=51)

State	Month	Setting Prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
MJOI	March	Commercial caterer	*S.* Typhimurium PT 135	18	2	D	Unknown
ACT	January	Restaurant	Amanita phalloides poisoning	3	3	D	Stir fry – mushrooms
ACT	February	Restaurant	*S.* Typhimurium PT 135a	7	3	D	Eggs
ACT	February	Restaurant	Unknown	5	0	D	Oysters
ACT	February	Restaurant	Suspected viral	25	0	D	Unknown
ACT	February	Restaurant	*S.* Typhimurium PT 170 / MLVA profile 03-10-07-12-523	10	1	D	Raw egg mayonnaise suspected
ACT	February	Fair, festival, other temporary/mobile service	*S.* Typhimurium PT 9 / MLVA profile 03-12-16-13-526	10	3	D	Chicken doner kebab
ACT	March	Restaurant	*S.* Typhimurium PT 170 / MLVA profile 03-09-08-13-524	22	0	A	Raw egg white emulsions
NSW	January	Private residence	*S.* Give	10	1	D	Cold pasta salad suspected
NSW	January	Restaurant	Unknown	12	0	D	Unknown
NSW	January	Restaurant	*S.* Typhimurium MLVA profile 03-09-07-12-523 (historically PT 170)	14	2	D	Deep fried ice cream
NSW	January	Restaurant	*S.* Typhimurium MLVA profile 03-09-07-13-523 (historically PT 170)	5	0	D	Eggs and omelettes
NSW	January	Restaurant	*S.* Typhimurium MLVA profile 03-09-09-12-523	10	3	D	Unknown
NSW	January	Unknown	Unknown	12	0	D	Unknown
NSW	January	Other	*S.* Muenchen	16	1	D	Leg of ham
NSW	January	Other	*S.* Wangata	3	0	D	Unknown
NSW	February	Restaurant	Unknown	3	0	D	Unknown
NSW	February	Restaurant	Unknown	4	1	D	Unknown
NSW	February	Restaurant	*S.* Typhimurium MLVA profile 03-09-07-13-523 (historically PT 170)	20	3	M	Raw egg mayonnaise
NSW	February	Restaurant	*S.* Typhimurium MLVA profile 03-09-09-12-523	9	0	D	Deep fried ice cream
NSW	February	Takeaway	*S.* Typhimurium MLVA profile 03-09-08-13-523 (historically PT 170)	3	0	D	Unknown
NSW	March	Commercial caterer	Unknown	16	1	D	Lamb salad
NSW	March	Commercial caterer	*S.* Typhimurium MLVA profile 03-15/16-11-10/11-523	8	0	D	Unknown
NSW	March	Restaurant	Unknown	10	0	D	Unknown
NSW	March	Restaurant	*S.* Typhimurium PT 170 MLVA profile 03-09-09-12-523	18	1	D	Raw egg products suspected
NSW	March	Restaurant	*S.* Typhimurium MLVA profile 03-13-09-11-550 (historically PT 135)	4	2	D	Burger with egg and bacon
NSW	March	Restaurant	*S.* Typhimurium PT 170 MLVA profile 03-10-07-15-523	15	Unknown	D	Unknown
NSW	March	Takeaway	*S.* Typhimurium PT 44 MLVA profile 03-10-08-09-523	11	0	D	Vietnamese rolls with raw egg butter

Appendix *continued*: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites, 1 January to 31 March 2012 (n=51)

State	Month	Setting Prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
NT	January	Private residence	Unknown	8	0	D	Unknown
NT	January	Private residence	Norovirus	6	0	D	Salad sandwiches suspected
NT	January	Restaurant	Norovirus	22	0	A	Chicken and/or egg sandwiches or cocktails
NT	March	Takeaway	Unknown	4	0	D	Unknown
Qld	January	Private residence	*S.* Typhimurium MLVA profile 03-13-10-10-524	4	0	D	Chocolate cake with raw egg meringue
Qld	January	Restaurant	*S.* Infantis	2	2	D	Prawn salad rolls
Qld	February	National franchised fast food	Unknown	4	0	D	Potato and gravy
Qld	February	Restaurant	*S.* Typhimurium MLVA profile 03-09-07-13-524	6	1	D	Unknown
Qld	February	Unknown	*S.* Typhimurium MLVA profile 03-14-09-13-524	30	Unknown	D	Unknown
Qld	March	Restaurant	*S.* Typhimurium MLVA profile 03-12-13-09-524	5	1	D	Deep fried ice cream suspected
Qld	March	Other	Unknown	35	0	D	Unknown
SA	February	Commercial caterer	*S.* Typhimurium PT 9	25	4	D	Unknown
Tas.	February	Takeaway	*S.* Typhimurium PT 141	8	3	D	Egg-based sauces (consumed with seafood)
Vic.	January	Takeaway	Unknown	9	1	D	Fish and chips
Vic.	January	Aged care	Unknown	8	0	D	Unknown
Vic.	January	Commercial caterer	Norovirus	27	0	D	Sandwiches suspected
Vic.	January	Aged care	Unknown	10	0	A	Vitamised food
Vic.	January	Aged care	Unknown	5	0	D	Unknown
Vic.	March	Restaurant	*S.* Typhimurium PT 170	13	3	D	Multiple foods
Vic.	March	Unknown	Campylobacter	3	2	D	Unknown
WA	February	Commercial caterer	Unknown	21	0	A	Grapes and caramel slice
WA	February	Takeaway	*S.* Anatum	4	0	D	Multiple salads
WA	March	Aged care	Unknown	9	0	D	Unknown

A Analytical epidemiological association between illness and 1 or more foods.
D Descriptive evidence implicating the suspected vehicle or suggesting foodborne transmission.
M Microbiological confirmation of agent in the suspected vehicle and cases.
MLVA Multi-locus variable number tandem repeat analysis.
PT Phage type.
MJOI Multijurisdictional outbreak investigation