Quarterly reports

OzFoodNet quarterly report, 1 October to 31 December 2011

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, occurring in Australia from 1 October to 31 December 2011.

Data were received from OzFoodNet epidemiologists in all Australian states and territories. The data in this report are provisional and subject to change.

During the 4th quarter of 2011, OzFoodNet sites reported 322 outbreaks and clusters of enteric illness, including those transmitted by 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 4,887 people, of whom 192 were hospitalised. There were 17 deaths reported during these outbreaks. The majority of outbreaks (70%, n=226) were due to person-to-person transmission (Table 1), with 57% (n=128) of these occurring in residential aged care facilities.

Foodborne/waterborne and suspected foodborne disease outbreaks

There were 36 outbreaks during this quarter where consumption of contaminated food or water was suspected or confirmed as the primary mode of transmission (Table 2). These outbreaks affected 453 people and resulted in 54 hospitalisations and 1 death. This compares with 34 outbreaks for the 3rd quarter of 2011[1] and a 5 year mean of 33 outbreaks for the 4th quarter between 2006 and 2010.

Salmonella enterica serotypes were identified as the aetiological agent for 9 outbreaks during this quarter (the majority were *S.* Typhimurium, refer to Table 2 for more detail). Of the remaining outbreaks, 5 (14%) were due to fish poisoning (2 ciguatera, 3 scombroid), 3 (8%) were due to *Clostridium perfingens*, and single outbreaks were due to *Bacillis cereus*, *Campylobacter*, and norovirus. In 16 outbreaks (33%), the aetiological agent remained unknown.

Fifteen outbreaks (42%) reported this quarter were associated with food prepared in restaurants. Further detail on food preparation settings associated with foodborne or suspected foodborne outbreaks is provided below in Table 3.

To investigate these outbreaks, sites conducted 9 cohort studies, 2 case control studies and collected descriptive case series data for 22 investigations. For 3 outbreaks no individual patient data were collected. The evidence used to implicate food vehicles included

Table 1. Outbreaks and clusters of gastrointestinal illness reported by OzFoodNet, 1 October to 31 December 2011, by mode of transmission

Transmission mode	Number of outbreaks and clusters	Per cent of total
Foodborne/waterborne and suspected foodborne	36	11
Person-to-person	226	70
Unknown (*Salmonella* cluster)	14	4
Unknown (Other pathogen cluster)	4	1
Unknown	42	13
Total	322	100*

* Percentages do not add up due to rounding.

Table 2. Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites,* 1 October to 31 December 2011 (n=36)

State or territory	Month	Setting prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
Multi-jurisdictional	December	Cruise/airline	*S.* Typhimurium PT 135a	16	3	A	Unknown
ACT	October	Commercial caterer	Unknown	9	0	D	Suspected mixed sandwiches
ACT	December	Restaurant	*S.* Typhimurium PT 170 MLVA profile 03-09-07-14-523	41	7	M	Chicken Caesar roll containing raw egg mayonnaise
NSW	October	Bakery	Unknown	3	0	D	Unknown
NSW	October	Camp	Unknown	8	4	D	Suspect cooked pasta
NSW	November	Commercial caterer	Unknown	16	0	A	Suspect lamb curry
NSW	November	Restaurant	*S.* Typhimurium PT 9	3	1	D	Unknown
NSW	November	Restaurant	Unknown	12	0	D	Unknown
NSW	November	Restaurant	Unknown	34	0	D	Unknown
NSW	November	Restaurant	Scombroid fish poisoning	4	4	D	Fresh tuna salad
NSW	December	Private residence	Unknown	9	0	D	Unknown
NT	October	Takeaway	Unknown	3	0	D	Unknown
Qld	October	Restaurant	Unknown	3	0	D	Unknown
Qld	October	Restaurant	Norovirus	6	0	D	Unknown
Qld	November	Fair/festival/mobile service	*S.* Birkenhead	37	9	D	Unknown
Qld	November	Primary produce	Ciguatera fish poisoning	6	0	D	Spanish mackerel
Qld	November	Restaurant	Unknown	19	0	D	Unknown
Qld	November	Restaurant	Scombroid fish poisoning	3	3	D	Yellow-tail kingfish
Qld	December	National franchised fast food	Unknown	4	0	D	Unknown
Qld	December	Primary produce	Ciguatera fish poisoning	2	0	D	Coral trout
Qld	December	Restaurant	*S.* Typhimurium PT 197	25	2	D	Unknown
SA	November	Commercial caterer	*S.* Typhimurium PT 9	27	7	D	Multiple foods
Vic	October	Hospital	*C. perfringens*	4	0	D	Unknown
Vic	October	Hospital	*C. perfringens*	8	0	D	Unknown
Vic	October	Restaurant	Scombroid fish poisoning	3	0	M	Tuna
Vic	November	Commercial caterer	*C. perfringens*	17	0	D	Suspected roast beef
Vic	December	Private residence	*Campylobacter jejuni*	22	1	A	Suspected private drinking water supply (untreated rainwater)
Vic	December	Private residence	*S.* subsp I ser 4,5,12:i:- PT 193	4	1	D	Homemade pork salami

Table 2 *continued*. Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites*, 1 October to 31 December 2011 (n=36)

State or territory	Month	Setting prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
Vic	December	Private residence	*S.* Typhimurium PT 9	4	0	D	Raw egg chocolate mousse
Vic	December	Restaurant	*B. cereus*	12	0	M	Multiple foods
Vic	December	Restaurant	Unknown	4	1	A	Moroccan chicken salad
Vic	December	Restaurant	Unknown	14	0	A	Suspect mango sticky rice
Vic	December	Takeaway	*S.* Typhimurium PT 170	37	11	M	Pizza containing egg and raw egg chocolate mousse
WA	November	Private residence	Unknown	17	0	D	Chicken biriyani
WA	December	Commercial caterer	Unknown	10	0	D	Unknown
WA	December	Restaurant	Unknown	7	0	D	Unknown
Totals				453	54		

* No foodborne or suspected foodborne outbreaks were reported by Tasmania.

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 of tandem repeat analysis.

PT Phage type.

analytical evidence in 5 outbreaks and microbiological evidence in 4 outbreaks. Descriptive evidence alone was obtained in 27 outbreak investigations.

Table 3. Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet, 1 October to 31 December 2011, by food preparation setting

Food preparation setting	Outbreaks
Restaurant	15
Private residence	5
Commercial caterer	5
Takeaway	2
Primary produce	2
Hospital	2
Fair/festival/mobile service	1
National franchised fast food	1
Bakery	1
Camp	1
Cruise/airline	1
Total	36

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 foodborne or suspected foodborne illness during the quarter.

A multi-jurisdictional outbreak investigation (MJOI 2011-004) was initiated following reports of gastroenteritis in passengers (from New South Wales, Victoria, South Australia and Western Australia) and crew aboard a West Australian-owned ship cruising Papua New Guinea (PNG). There were 3 confirmed *S.* Typhimurium Phage Type (PT) 135a cases (1 case each from South Australia, Victoria and Western Australia). Fourteen of 31 people (7 passengers and 7 crew) who returned questionnaires and an additional 2 cases who did not compete the questionnaire, reported illness. Two crew members and 1 passenger were hospitalised. There was no clear association between illness and eating a particular food item. The majority of food consumed on the ship was supplied from Australia, mostly from Queensland. All meat was from Western Australia. Some produce from PNG was used on board, including eggs, pineapple, watermelon, mangoes, paw paw, cucumber, pumpkin, coconut and avocado. A number of sauces (including mayonnaise, hollandaise, anglaise) and desserts (ice cream, tiramisu) contained raw eggs. An inspection of the vessel was conducted, but no samples were collected. The food vehicle was not identified.

Australian Capital Territory

There were 2 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which one was due to *S.* Typhimurium and no pathogen could be identified for the other.

Description of key outbreaks

An investigation identified 41 cases of gastroenteritis, including 23 laboratory confirmed cases of salmonellosis (7 hospitalisations) linked to a restaurant. Typing of human isolates detected *S.* Typhimurium PT 170 / multi-locus variable number of tandem repeats analysis (MLVA) profile 03-09-07-14-523. Cases all reported having eaten a chicken Caesar roll, which contained a raw egg mayonnaise from the restaurant. Mayonnaise sampled from the restaurant and on-farm sampling of a New South Wales egg producer supplying eggs to the bakery also tested positive for *S.* Typhimurium PT 170 with an identical MLVA profile 03-09-07-14-523.

New South Wales

There were 8 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which one was due to *S.* Typhimurium, one was due to scombroid fish poisoning and no pathogen could be identified for the remaining outbreaks.

Description of key outbreaks

A public health unit was notified of the hospitalisation of four school children who had attended a 3 day camp. Eight of 111 students developed symptoms of vomiting and abdominal pain 4 hours (median) after consuming a meal of spaghetti bolognaise. The symptom profile for the cases was consistent with a foodborne illness caused by a pre-formed toxin. Other children, both from the same school and other schools who ate the meal, did not report symptoms. The environmental health investigation identified a number of breaches of the food safety regulations including the improper cooling of high risk foods, specifically a large container of spaghetti was reported to be at 22 degrees 3 hours after cooking. A warning letter was issued by the local council.

Northern Territory

There was 1 outbreak of foodborne or suspected foodborne illness reported during the quarter.

Following a birthday party held at a private residence, 3 of 12 attendees experienced mild gastroenteritis.

Food was purchased from commercial premises and a supermarket. A cohort study was attempted but did not identify a food vehicle. A viral agent or toxin was thought to be responsible for disease, but no clinical or food specimens were obtained.

Queensland

There were 9 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which two were due to Ciguatera fish poisoning, and one each due to scombroid fish poisoning, norovirus, *S*. Birkenhead, and *S*. Typhimurium. For the remaining outbreaks, no pathogen could be identified.

Description of key outbreaks

Investigators were notified of an outbreak of gastrointestinal illness among a group of 9 people who had consumed a meal at a restaurant. Six of the 9 people developed symptoms of gastrointestinal illness, with anecdotal evidence suggesting that other patrons also experienced symptoms. No restaurant staff members reported any recent illness. Two faecal specimens collected during the investigation tested positive for norovirus. Salads were suspected as a possible food vehicle as all cases had consumed salad with their respective meals and environmental investigations revealed considerable use of bare hands whilst preparing and serving salads.

Authorities investigated an outbreak of salmonellosis among attendees (150–200) of a community event. A cohort investigation was conducted involving 48 attendees of whom 37 reported symptoms of gastrointestinal illness, with 9 hospitalised. *S.* Birkenhead was identified in 11 of these cases. Persons who had consumed a potato and pumpkin curry were at higher risk of illness, odds ratio (OR) 8.0 (95% CI: 1.4–47.2). One environmental sample tested positive for *S.* Birkenhead from the food processor used for preparing home-made lemonade. No food or environmental source of infection was identified during the investigation.

A large outbreak of *S.* Typhimurium PT 197 (MLVA profile 04-15-09-09-490) was identified among a group of 62 patrons (no staff reported illness) who had attended a dinner function at a community club. A cohort investigation identified that 25 of 55 persons experienced symptoms of gastrointestinal illness. Six cases were laboratory confirmed with *S.* Typhimurium PT 197 and 2 cases were hospitalised. Extensive environmental investigations of the kitchen area identified a number of deficiencies in food storage, food safety knowledge, and cleanliness. Environmental swabs and samples collected during this investigation were negative for bacterial pathogens. No food vehicle or source of infection could be identified from this investigation.

South Australia

There was 1 outbreak of foodborne or suspected foodborne illness investigated during the quarter.

Twenty-seven cases (74% female) of *S.* Typhimurium PT 9 were identified after an outbreak at a community event associated with food consumed from a temporary food stall. Foods consumed by cases included a variety of salads and vegetarian patties, although no common food item was identified. No pathogens were detected in 48 samples from an environmental inspection of the premises where the food was prepared. The company that produced the food also catered for other events and ran a retail outlet; 1 additional case who ate food from the retail outlet was identified.

Tasmania

There were no reported outbreaks of foodborne or suspected foodborne illness during the quarter.

Victoria

There were 10 reported outbreaks of foodborne or suspected foodborne illness of which three were due to *C. perfringens*, two were due to *S.* Typhimurium, and one each due to *Salmonella* sub-species I, *Campylobacter, B. cereus*, and scombroid fish poisoning. There was also 1 suspected waterborne outbreak during the quarter. For the remaining outbreaks no pathogen could be identified.

Description of key outbreaks

An outbreak of gastroenteritis occurred among attendees of a family reunion, where approximately 130 meals were supplied by a commercial caterer. Seventeen of 20 people interviewed reported illness, with 5 faecal specimens testing positive for *C. perfringens* enterotoxin. All of the interviewed cases reported eating the meat dishes, with 2 people specifically reporting only eating beef and those not ill either ate no meat at all or no beef specifically. Investigation of the caterer revealed that they were operating a business that was not registered under the *Food Act 1984* with the local council, and food preparation procedures were inappropriate.

An outbreak of *Campylobacter* occurred at a youth training camp involving 24 attendees and a host family of three. The accommodation was on a rural property and the main source of drinking water was a rainwater tank. Twenty-two of 26 people interviewed reported illness. A heavy rainfall event occurred over the weekend of the camp and this may have washed a large amount of debris into the rainwater tank resulting in contamination with *Campylobacter*, commonly found in bird faeces.

Statistical analysis of food and water exposures of camp attendees identified consumption of rainwater at Saturday breakfast, risk ratio (RR) 1.6 (95% CI 1.01–2.46), and Sunday breakfast, RR 1.6 (95% CI 1.01–2.46) as risk factors, supporting this hypothesis. Two rainwater tank samples, collected 10 and 18 days after the last day of the camp, and 3 food samples (frozen leftover food) were all negative for *Campylobacter*.

Routine follow-up of a single *Salmonella* case identified an outbreak among a group of family and friends who had attended a common dinner party. All 4 attendees consumed raw egg chocolate mousse at the dinner and all reported illness. Two cases were confirmed with *S.* Typhimurium PT 9 and traceback of the eggs was initiated.

An outbreak of salmonellosis was detected after 4 of 6 family members became ill after eating a home prepared meal together. Homemade pork salami was suspected as the source (eaten only by ill cases) with the index case reporting that salami consumed during the meal had been processed differently to normal practices. Three of 4 cases and a sample of leftover salami were positive for *S.* subsp I ser 4,5,12:i:- PT 193.

An outbreak investigation commenced after routine surveillance detected a cluster of *Salmonella* cases residing in the same geographical area. The majority of cases reported eating from the same pizza and pasta takeaway food premises during their incubation period. Of 37 cases who had eaten at these premises, 36 reported eating either an 'Aussie' pizza or a pizza 'with the lot' (both contained egg). The remaining case reported eating a raw egg chocolate mousse from the venue. Several cases reported that the pizzas were 'soggy' and it is suspected that the pizzas, and specifically the egg on these pizzas, were not cooked thoroughly. The premises were closed on the day that the outbreak was linked to it. From over 80 different food and environmental samples, 5 were positive for *S.* Typhimurium PT 170, including 2 samples of egg pulp and a sample of raw egg chocolate mousse. Two other positive foods (grated cheese and tomato puree for pizzas) were likely to have been cross contaminated from the egg pulp during food preparation. One case had frozen leftover 'Aussie' pizza, which was sent for analysis and also found to be positive for *S.* Typhimurium PT 170. An investigation was conducted at the farm that supplied eggs to the food premises and all samples (eggs and environmental samples) were negative for *Salmonella*.

Western Australia

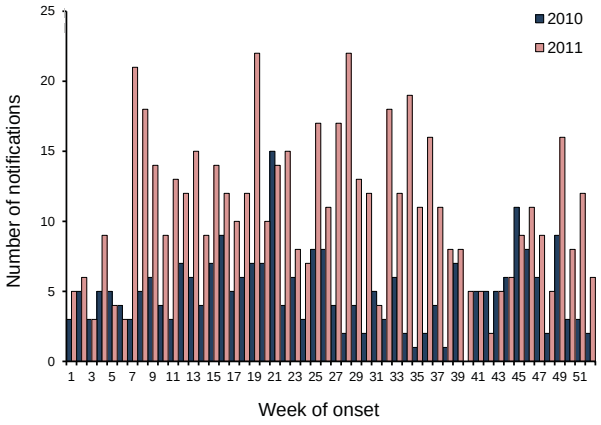
There were 3 reported outbreaks of foodborne or suspected foodborne illness during the quarter, for all of which no pathogen could be identified.

Investigations of note

An increase in notified cases of *Campylobacter* infection was identified in Queensland, in the Cairns (Figure 1) and Townsville (Figure 2) health service districts in the 2nd quarter 2011. The elevated numbers continued throughout the 3rd quarter and into the 4th quarter, though there was a downward trend in the last quarter. By contrast, the number of notified cases of *Campylobacter* in other jurisdictions of Queensland were not above expected levels based on historical data.

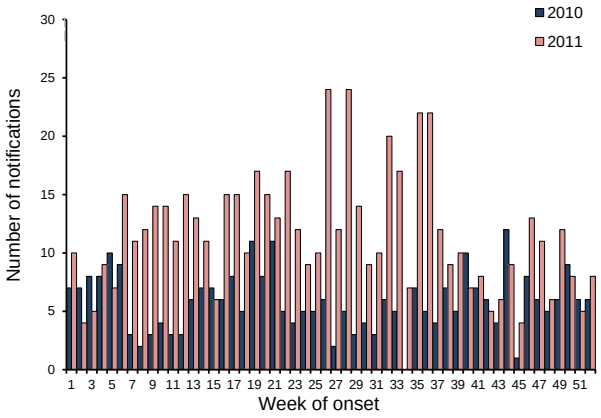
Safe Food Production Queensland and Queensland Health were involved in an extensive follow-up of the chicken meat industry and continue to work closely with a north Queensland abattoir and secondary processors in the supply chain. The implementation

Figure 1: Cairns and Hinterland health service districts *Campylobacter* counts, 2010 and 2011, by week*



* 4th Quarter 2011 runs from weeks 40 to 52

Figure 2: Townsville health service district *Campylobacter* counts, 2010 and 2011, by week*



* 4th quarter 2011 runs from weeks 40 to 52.

of several interventions at the abattoir in September 2011 including disposing of any viscerally contaminated chicken product detected after processing, the requirement to maintain tighter process and product controls, attention to maintenance of plant equipment and training of staff, contributed significantly to the decline in the number of notified cases of *Campylobacter* infection in north Queensland during the 4th quarter.

Comments

The majority of reported outbreaks of gastrointestinal illness in Australia are due to person-to-person transmission, and in this quarter, 70% of outbreaks (n = 226) were transmitted via this route. The number of foodborne and suspected foodborne outbreaks this quarter (n=36) remained consistent with the same quarter of 2010. *S.* Typhimurium continues to be a leading cause of foodborne outbreaks in Australia, with 70% (7/10) of *Salmonella* being due to this serotype.

Foodborne disease outbreak investigations this quarter highlighted a range of high risk practices, many occurring in food service settings. Fourteen foodborne disease outbreaks this quarter were associated with foods prepared in a restaurant, while a further five 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 under-cooked egg products continued to be reported this quarter (n = 3). OzFoodNet continues to report on foodborne or suspected foodborne outbreaks associated with the consumption of dishes containing raw or under-cooked eggs, such as raw egg mayonnaise, chocolate mousse, tiramisu and dressings containing raw egg.[2]

A limitation of the outbreak data provided by OzFoodNet sites for this report was the potential for variation in 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.

Acknowledgements

OzFoodNet thanks the investigators in the public health units and state and territory departments of health, as well as public health laboratories, local government environmental health officers and food safety agencies who provided data used in this report. We would particularly like to thank reference laboratories for conducting sub-typing of *Salmonella, Listeria monocytogenes* and other enteric pathogens and for their continuing work and advice during the quarter.

OzFoodNet contributors to this report include *(in alphabetical order)*: Robert Bell (Qld), Barry Combs (WA), Emily Fearnley (SA), Gerard Fitzsimmons (DoHA), Neil Franklin (NSW), Robyn Gibbs (WA), Joy Gregory (Vic), Michelle Harlock (NT), Robyn Leader (DoHA), Karin Lalor (Vic), Charlotte McKercher (Tas), Megge Miller (SA), Cameron Moffatt (ACT), Sally Munnoch (Hunter New England), Jennie Musto (NSW), Nevada Pingault (WA), April Roberts-Witteveen (Hunter New England), Timothy Sloan-Gardner (DoHA), Russell Stafford (Qld), Mark Veitch (Tas) and Kate Ward (NSW).

Correspondence

Mr Timothy Sloan-Gardner, OzFoodNet, Office of Health Protection, Australian Government Department of Health and Ageing, GPO Box 9848, MDP 14, Canberra, ACT 2601. Telephone: +61 2 6289 2777. Facsimile: +61 2 6289 2700. Email: ozfoodnet@health.gov.au

Reference

1. OzFoodNet Working Group. OzFoodNet quarterly report, 1 July to 30 September 2011. *Commun Dis Intell* 2012;36(1):188–195.
2. Moffatt CRM, Appuhamy R, Kaye A, Carswell A, Denehy D. An outbreak of *Salmonella* Typhimurium phage type 135a gastroenteritis linked to eggs served at an Australian Capital Territory café. *Commun Dis Intell* 2012;36(3):E281–E285.