Quarterly reports

OzFoodNet quarterly report, 1 October to 31 December 2014

The OzFoodNet Working Group

Introduction

The Australian Government Department of Health 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. In addition, 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 that commenced in Australia between 1 October and 31 December 2014.

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

Summary

During the 4th quarter of 2014 (1 October to 31 December), OzFoodNet sites reported 601 outbreaks of enteric illness, including those transmitted by contaminated food or water. Outbreaks of gastroenteritis are often not reported to health authorities, which results in current figures under-representing the true burden of enteric disease outbreaks within Australia. There were 10,072 people affected in these outbreaks with 310 hospitalisations and 35 deaths. This was similar to the number of people affected, hospitalised and who died compared with the 5-year average for the 4th quarter from 2009 to 2013 (9,665 affected; 267 hospitalised; 31 deaths). The majority of reported outbreaks of gastrointestinal illness in Australia are due to person-to-person transmission. In this quarter, 78% of outbreaks (n=469) were due to transmission via this route (Table 1). This was lower than the same quarter in 2013 (n=543) but slightly higher than the 5-year mean (4th quarter, 2009–2013) of 423 outbreaks due to person-to-person transmission. Of the reported person-to-person outbreaks this quarter, 53% (247 outbreaks) occurred in aged care facilities and 32% (150 outbreaks) occurred in child care facilities.

Foodborne and suspected foodborne disease outbreaks

There were 54 outbreaks during this quarter where consumption of contaminated food was suspected or confirmed as being the primary mode of transmission (Table 1, Appendix). There were 683 people affected by these outbreaks, with 59 hospitalisations and 1 death reported. This was the highest number of foodborne and suspected foodborne disease outbreaks ever reported for a quarter by OzFoodNet (2001–2014). The second highest number was the 1st quarter in 2012 (n=51). The second highest number for the 4th quarter

Table 1: Outbreaks and clusters of gastrointestinal illness and number ill reported by OzFoodNet, 1 October to 31 December 2014, by mode of transmission

Transmission mode	Number of outbreaks and clusters	Per cent of total outbreaks and clusters*	Number ill
Foodborne and suspected foodborne	54	9	683
Suspected waterborne	1	<1	6
Person-to-person	469	78	8,703
Unknown (*Salmonella* cluster)	9	1	82
Unknown (other or multiple pathogens) cluster	2	<1	31
Unknown	66	11	567
Total	601	100	10,072

* Percentages do not add to 100 due to rounding.

was in 2009 (n=49). These figures are more than double the number of foodborne outbreaks that were reported in the 3rd quarter of 2014 (n=25) and a 46% increase on the 5-year mean for the 4th quarter between 2009 and 2013 (n=37). Despite the increased total number of outbreaks, the total number of people affected (n=682) was only 65% of that for the same quarter in 2013 (n=1,044). 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. Hence, changes in the number of foodborne outbreaks should be interpreted with caution.

Salmonella Typhimurium was identified as or suspected to be the aetiological agent in 41% (22/54) of foodborne or suspected foodborne outbreaks during this quarter, a higher proportion than the number from the same quarter in 2013 (27%; 10/37). The aetiological agents for the remaining outbreaks during this quarter included: norovirus (8 outbreaks); ciguatoxin (6 outbreaks); *Salmonella* Chester (2 outbreaks); *Staphylococcus aureus* (2 outbreaks); and *Salmonella* Singapore, *Clostridium perfringens*, *C. bifermentans*, *Cryptosporidium* and *Campylobacter* (1 outbreak each). For 9 outbreaks, the aetiological agent was unknown.

Approximately 54% (29/54) of all the foodborne or suspected foodborne outbreaks reported in this quarter were associated with food prepared in restaurants (Table 2), which was higher than the average percentage of foodborne or suspected foodborne outbreaks associated with restaurants in the 4th quarter from 2009 to 2013 (39%).

To investigate these outbreaks, OzFoodNet sites conducted 9 cohort studies, 3 case control studies and collected descriptive case series data for 36 investigations. No individual patient data were collected for 6 outbreaks. The evidence used to implicate food vehicles included the following: analytical evidence in 10 outbreaks; microbiological evidence in 14 outbreaks; descriptive evidence in 29 outbreaks; and both analytical and microbiological evidence in 1 outbreak. Of the 25 confirmed foodborne outbreaks for which an analytical and/or a microbiological link to a food vehicle was established, *S.* Typhimurium was the aetiological agent for 36% (9/25).

The following jurisdictional summaries describe key outbreaks and public health actions that occurred during the quarter.

Australian Capital Territory

During this quarter, the Australian Capital Territory reported 1 outbreak of foodborne or suspected foodborne illness. The aetiological agent identified was *S.* Typhimurium phage type (PT) 135, with multi-locus variable number tandem repeat analysis (MLVA) profile 03-17-09-11-523.

Description of key outbreak

Three people became ill after drinking eggnog made with raw egg at a Christmas luncheon in a private residence. Two of the 3 cases were con-

Table 2: Outbreaks of foodborne or suspected foodborne disease and number ill reported by OzFoodNet, 1 October to 31 December 2014, by food preparation setting

Food preparation setting	Outbreaks	Per cent of foodborne outbreaks*	Number ill
Restaurant	29	54	405
Primary produce	7	13	23
Private residence	5	9	33
Commercial caterer	4	7	105
Aged care	2	4	13
Camp	1	2	30
Takeaway	1	2	26
Other	1	2	16
Bakery	1	2	13
Community	1	2	5
Fair/festival/mobile service	1	2	4
Total	54	100	683

* Percentages may not add to 100 due to rounding.

firmed positive with *S.* Typhimurium PT 135, MLVA 03-17-09-11-523; both of whom presented to an emergency department, resulting in 1 hospital admission. The median incubation period was 19 hours. The eggs used in the drink were commercially produced free range eggs. Four leftover eggs from the implicated carton tested negative for *Salmonella*.

New South Wales

There were 11 outbreaks of foodborne or suspected foodborne illness reported in New South Wales during this quarter. *S.* Typhimurium was the aetiological agent identified for 9 outbreaks. *Sta. aureus* was the aetiological agent identified in 1 outbreak, and for 1 outbreak the aetiological agent was unknown.

Description of key outbreaks

In October 2014, an outbreak of acute gastrointestinal illness was investigated in 27 members of a tour group: 11 showed symptoms of diarrhoea and vomiting (all without fever); and 4 were hospitalised. The group had flown to New South Wales from the Gold Coast in Queensland that morning and had consumed restaurant-prepared sushi rolls prior to their departure. Onset of symptoms began 4 hours after consumption and all cases developed vomiting within 10 to 20 minutes of each other. All symptoms ceased within 8.5 hours. Three stool samples tested positive for *Sta. aureus* enterotoxin. Environmental health officers from Queensland conducted an inspection of the restaurant and detected hygiene deficits. Hand washing was only performed with hand sanitiser and not with soap and water. Surfaces and utensils also showed inadequate cleaning and sanitising. Swabs of kitchen surfaces were positive for *Sta. aureus* and *Bacillus cereus* but boiled rice tested negative for the pathogens. Contaminated sushi from the restaurant was the likely source of illness for this outbreak.

In November, 35 of 75 people developed gastroenteritis 24 hours after consuming a meal at a sports club. The food was prepared by a catering company. Ten stool samples were positive for *S.* Typhimurium MLVA 03-12-11-14-523. All cases reported consuming lamb ragout. Health authorities inspected the caterers and found that leftovers at the venue, a sample of cooked pork, and a floor swab of the cool room were all positive for *S.* Typhimurium MLVA 03-12-11-14-523. It remains unclear how the food became contaminated as the cooking step of the dishes served should have been sufficient to kill any *Salmonella* present at that stage. The contamination is suspected to be due to post cooking cross-contamination of the batch served to this sports club. The same product served to other groups did not cause any illness.

Northern Territory

There were 4 outbreaks of suspected foodborne illness reported in the Northern Territory during this quarter. No aetiological agent was identified for any of these outbreaks.

Queensland

There were 15 outbreaks of foodborne or suspected foodborne illness reported in Queensland during this quarter. The aetiological agents identified were: ciguatoxin (6 outbreaks); *S.* Typhimurium (4 outbreaks); *S.* Chester (2 outbreaks); and *C. bifermentans* and *Sta aureus* (1 outbreak each). The remaining outbreak had an unknown aetiology.

Description of key outbreaks

Three separate outbreaks of *S.* Typhimurium PT U307 MLVA 03-12-11-12-524 were reported in December 2014 affecting at least 28 people (23 laboratory-confirmed). All 3 outbreaks occurred in restaurant settings (Brisbane and the Gold Coast). Traceback investigations identified that eggs supplied to the restaurants were obtained from the same egg producer. Following an investigation of the implicated egg farm, the same *Salmonella* strain (MLVA 03-12-11-12-524) found in the cases, was also identified in samples of used chicken feed and drag swabs. This strain was also detected in the implicated eggs sampled from a retail store. A voluntary trade level recall was subsequently undertaken by the egg producer.

Two outbreaks of *S.* Chester were investigated during the quarter that affected at least 9 people. In both outbreaks, the cases were from an African community and the consumption of lamb offal was reported. The first outbreak involved 3 cases who developed illness following a church function. One case was hospitalised as a result of their infection. The suspect meal was a stew made from lamb intestine, tripe, kidney and liver that was shared among attendees. In the 2nd outbreak, 6 cases (4 laboratory-confirmed) reportedly consumed a lamb intestine dish that had been prepared at a private residence for a function. Three cases were hospitalised. Poor food handling and temperature abuse were suspected to have contributed to both outbreaks. Following these outbreaks, health authorities contacted community leaders to provide food safety advice to the African community. OzFoodNet has only previously investigated 2 other *S.* Chester outbreaks, 1 in 2009 associated

with fresh chillies used to make chilli sauce, and no food vehicle was determined for the other outbreak in 2004.

South Australia

There were 7 outbreaks of foodborne or suspected foodborne illness reported in South Australia during this quarter. The aetiological agents identified were *S.* Typhimurium in 5 outbreaks and *Campylobacter* in 1 outbreak. The remaining outbreak had an unknown aetiology.

Description of key outbreaks

Four *Salmonella* outbreaks were linked to restaurants in Adelaide affecting a total of 36 people in October and December 2014. In 1 café outbreak reported in December, 11 cases were positive for *S.* Typhimurium PT 9 MLVA 03-14-06-12-550, including 4 hospitalisations. Environmental investigations of the food premises identified a number of food handling and preparation practices that could have contributed to the outbreak. A raw egg aioli made at the café tested positive for the same *Salmonella* strain identified in the cases. The investigation also reported that the egg brand used in this café was the same as that found in another café with a concurrent outbreak under investigation. In this outbreak, 7 cases of *S.* Typhimurium PT 9 MLVA 03-15-06-12-550 were identified in individuals who had eaten at the second café over a 4-day period. No common food item was consumed by all cases at the café. The MLVA profile of cases from both outbreaks was closely related with only one repeat difference at the third locus. Food samples taken from the second café were negative for *Salmonella*. An inspection at the egg processing plant demonstrated appropriate food safety practices. Advice was provided to the staff and owner of the second café on the production, storage and handling of raw egg products.

An outbreak of campylobacteriosis was investigated after 3 children who ate at a hotel on the same evening developed gastroenteritis. A case control study was conducted by contacting individuals on the booking list from the hotel. Twenty-two people reported having diarrhoea after the event and 5 tested positive for *Campylobacter*. A multivariate analysis indicated consumption of freshly cooked prawns was significantly associated with diarrhoeal illness (adjusted odds ratio (aOR) 8.5, 95% confidence interval (CI) 2.6–27.9, $P < 0.005$). An additional case of campylobacteriosis was reported from an individual who ate at the hotel the following night. An environmental inspection was conducted and no issues were identified at the premises. A trace-back indicated that the batch of prawns used at the hotel was distributed to other food businesses, but there were no reports of cases associated with any other premises. No sporadic cases of campylobacteriosis interviewed concurrently with the outbreak reported consuming prawns.

Tasmania

One outbreak of suspected foodborne illness was reported in Tasmania during this quarter. Norovirus was identified as the aetiological agent.

Description of key outbreak

An outbreak was investigated in November following reports of illnesses among a group of interstate visitors. Nine cases of gastroenteritis were identified among the 18 persons who could be contacted. Six people could not be contacted. The majority of the cases were female (78%) with a median age of 73 years. Diarrhoea and vomiting were experienced by 89% of the cases. Other symptoms reported included: lethargy (85%); fever (75%); nausea (63%); abdominal pain (57%); and headaches (33%). Onsets occurred between 8 and 10 November 2014. The median duration of illness was 36 hours. Three specimens were collected, with 2 being positive for norovirus. Four cases were admitted to hospital. A cohort study was conducted as part of the investigation. Fruit salad eaten at a dinner held on 7 November was the only statistically significant food item in the analysis (risk ratio (RR) 3.3, CI 1.2–9.5, $P < 0.005$). However, 3 cases did not report eating this food item. This finding appeared unlikely to explain all illnesses, and may have been a chance finding among many exposures in a relatively small cohort. No other exposure had a statistically significant positive association with illness. Inconspicuous environmental contamination at one or more sites to which the group was exposed early in the tour remains a possible source of the outbreak. The environmental investigation identified that the rain water supply at the business where guests stayed for the majority of their tour was insufficiently managed and operating in contravention of the Private Water Supply provisions of the *Public Health Act* 1997. Immediate guidance was provided to the business on how to manage and treat the tank water supply to ensure potability. This matter was managed separately to the outbreak investigation by the local council environmental health officer. The result of the epidemiological study showed no association between the consumption of this water and the development of illness. No definitive source of illness was identified for the outbreak.

Victoria

There were 11 outbreaks of foodborne or suspected foodborne illness reported in Victoria during this

quarter. The aetiological agents were identified as: norovirus (5 outbreaks); *S.* Typhimurium (2 outbreaks); and *S.* Singapore, *C. perfringens*, and *Cryptosporidium* (1 outbreak each). The aetiology for the remaining outbreak was unknown.

Description of key outbreaks

Two cases of haemolytic uraemic syndrome (HUS) were reported by 2 metropolitan hospitals on the same day in late October. The cases were both young children who lived in neighbouring suburbs. Investigation of both cases revealed that they had consumed the same brand of 'bath milk', which is unpasteurised cow's milk, not intended for human consumption. A 3rd case of HUS, notified earlier in the year had also reported consuming the same brand of unpasteurised milk. One of the HUS cases was also confirmed with cryptosporidiosis, so an investigation of recently notified cases of cryptosporidiosis living in the same geographical location as the HUS cases commenced. Twelve cases of cryptosporidiosis were identified for follow up and 11 were interviewed. Two of these cases reported consuming the same brand of unpasteurised milk as the HUS cases in their incubation period. Onset dates for these 2 cases of cryptosporidiosis and the 2 recent HUS cases were within 10 days of each other. This outbreak investigation led to the introduction of tighter controls around the sale of unpasteurised milk sold for cosmetic purposes in Victoria, as detailed in the comments section below.

Five people from 2 separate groups who had eaten food from the same café in October were reported to be ill. The groups had eaten 1 day apart and both groups reported consumption of fried chicken and beef wraps. An investigation commenced in conjunction with the local government health department. The initial cases were subsequently confirmed with *S.* Singapore. No booking list was kept at the café so case finding was limited to self-reported illness to the council or the department and detection of cases of *S.* Singapore in the notifiable diseases surveillance system. A total of 15 cases of illness were identified in people who consumed food from the café on 1 of 5 consecutive days in October. Eight of the 15 cases were confirmed with *S.* Singapore. Fourteen cases consumed a beef wrap and for 3 of the cases, it was the only food item consumed from the café during the outbreak period. Despite a thorough investigation of the preparation method and source of ingredients for the beef wraps, it was not possible to identify the exact means by which they became contaminated. However, the council identified several cleanliness issues during their investigation and a possible explanation was that a raw ingredient used in the wraps, such as a fresh herb, was cross contaminated during preparation.

Western Australia

There were 4 outbreaks of foodborne or suspected foodborne illness reported in Western Australia during this quarter. The aetiological agents were identified as norovirus in 2 outbreaks and *Salmonella* Typhimurium in 1 outbreak. The aetiology for the remaining outbreak was unknown.

Description of key outbreaks

In December 2014, gastroenteritis was reported among attendees of a graduation dinner at a restaurant. Interviews were conducted with 40 of 48 attendees and 21/40 reported diarrhoea and/or vomiting after the event. The median incubation period was 36 hours (range 12 to 53 hours) and the median duration of illness was 2 days (range 1 to 5 days). One faecal specimen was positive for norovirus. Food was served as a buffet, which included hot pasta dishes, salads, roast potatoes and roast beef, and several desserts. Consumption of salads was statistically associated with illness (odds ratio (OR) 7.35, CI 1.3–42.4, $P=0.03$). There were no reports of staff illness prior to the meal. The evidence suggests the outbreak was due to salad(s) contaminated with norovirus, but the source of the norovirus was unknown.

Cases of gastroenteritis were reported following a function at a bowling club in December 2014. Nineteen of the 60 attendees were interviewed, with 13 reporting illness. Symptoms reported included diarrhoea (100%), abdominal pain (92%) and vomiting (8%) with a median incubation period of 12 hours and median duration of diarrhoea of 11 hours. No faecal specimens were tested, but the characteristics were suggestive of *C. perfringens* food poisoning. Food had been prepared by a caterer and included roast meats salads and several desserts. The result of the analytical study found a statistical association between eating roast meats and becoming ill (OR not defined, CI 1.65–not defined, $P = 0.015$. The OR and upper CI were undefined because all the cases ate the roast meats. The local government conducted the environmental health investigation of the food business and at the time of the investigation, the food business could not provide evidence of safe food handling, processing and hygiene.

Comments

Whilst the sale of unpasteurised (raw) cow's milk for human consumption is illegal in all states and territories of Australia, a niche market existed in 2014 selling raw milk for cosmetic use, often labelled as 'bath milk'. Raw milk can contain a number of disease-causing pathogens, including *Campylobacter* and *Salmonella* species, *Listeria monocytogenes,* Shiga toxin-producing *Escherichia*

coli, *Cryptosporidium*, and *Sta. aureus*.[1] Following the outbreak reported above, in February 2015, Dairy Food Safety Victoria (DFSV) introduced a new licence condition for the Victorian dairy industry, stating that 'any licence holders who intend to sell, deliver or supply milk or milk products not intended for human consumption must advise DFSV and obtain approval of the proposed treatment of these products to ensure they are clearly differentiated from dairy food.[2]

Cluster investigations

OzFoodNet sites conducted investigations into 11 clusters of infection during this quarter. No common food vehicle or source of infection could be identified. Aetiological agents identified during the investigations were: *S.* Typhimurium (7 clusters); *S.* Bovismorbificans, *S.* Saintpaul, *Clostridium perfringens* (1 cluster each); and a cluster with multiple aetiological agents detected (norovirus, astrovirus, sapovirus, and *Campylobacter*).

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OzFoodNet contributors to this report include (*in alphabetical order*): Barry Combs (WA), Anthony Draper (NT), Marion Easton (Vic.), Jess Encena (Vic.), James Flint (HNE), Laura Ford (ACT), Neil Franklin (NSW), Catriona Furlong (NSW), Michelle Green (Tas.), Joy Gregory (Vic.), Jodie Halliday (SA), Kirsty Hope (NSW), Karin Lalor (Vic.), Robyn Leader (Central), Megge Miller (SA), Cameron Moffatt (ACT), Nevada Pingault (WA), Ben Polkinghorne (Central), Russell Stafford (Qld), and Kate Ward (NSW).

Author details

Dr Rizalyn Albarracin, Office of Health Protection, Australian Government Department of Health, Canberra Australian Capital Territory

Correspondence: Dr Ben Polkinghorne, Office of Health Protection, Australian Government Department of Health, GPO Box 9848, MDP 14, CANBERRA ACT 2601. Telephone: +61 2 6289 1831. Email: ozfoodnet@health.gov.au

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Appendix: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites, 1 October to 31 December 2014 (n=54)

State or territory	Month*	Setting prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
ACT	Dec	Private residence	*Salmonella* Typhimurium PT 135, MLVA 03-17-09-11-523	3	1	D	Eggnog
NSW	Oct	Restaurant	*S.* Typhimurium MLVA 03-12-12-09-523	13	0	D	Unknown
NSW	Oct	Restaurant	*Staphylococcus aureus*	11	4	M	Sushi
NSW	Oct	Fair/festival/mobile service	*S.* Typhimurium MLVA 03-12-12-09-523	4	1	D	Unknown
NSW	Oct	Restaurant	*S.* Typhimurium MLVA 03-09-07-12-523	4	0	D	Burger
NSW	Oct	Takeaway	*S.* Typhimurium MLVA 03-10-07-11-523	26	0	D	Chocolate mousse cake made with lightly cooked eggs
NSW	Oct	Aged care facility	Unknown	8	0	D	Unknown
NSW	Oct	Restaurant	*S.* Typhimurium MLVA 03-12-11-14/15-523	38	6	AM	Unknown
NSW	Nov	Restaurant	*S.* Typhimurium MLVA 03-12-11-14-523	35	0	M	Pre-prepared meals
NSW	Nov	Other	*S.* Typhimurium MLVA 03-09/10-08-12-523	16	4	M	Unknown
NSW	Dec	Restaurant	*S.* Typhimurium MLVA 03-17-09-11-523	19	4	M	Unknown
NSW	Dec	Restaurant	*S.* Typhimurium MLVA 03-09-08-11-523	4	1	D	Unknown
NT	Oct	Primary produce	Suspected bacterial toxin	2	0	D	Unknown
NT	Nov	Restaurant	Unknown	4	0	D	Unknown
NT	Nov	Restaurant	Suspected viral gastroenteritis	3	0	D	Unknown
NT	Dec	Restaurant	Suspected bacterial toxin	2	0	D	Unknown
Qld	Oct	Primary produce	Ciguatoxin	3	0	M	Coronation trout
Qld	Oct	Primary produce	Ciguatoxin	3	0	M	Coral trout
Qld	Oct	Primary produce	Ciguatoxin	4	0	M	Coral trout
Qld	Oct	Primary produce	Ciguatoxin	4	0	D	Coral trout
Qld	Oct	Private residence	*S.* Chester	3	1	D	Offal (lamb intestine)
Qld	Oct	Restaurant	*S.* Typhimurium MLVA 03-12-12-09-524	11	2	D	Unknown
Qld	Oct	Bakery	Unknown	13	0	D	Birthday cake
Qld	Nov	Private residence	*Staphylococcus aureus*	7	0	M	Taro cake
Qld	Nov	Primary produce	Ciguatoxin	2	0	M	Coral trout
Qld	Nov	Restaurant	*Clostridium bifermentans*	28	0	M	Butter chicken
Qld	Nov	Private residence	*S.* Chester	6	3	D	Offal (lamb intestine)
Qld	Nov	Restaurant	*S.* Typhimurium PT U307, MLVA 03-12-11-12-524	12	Unknown	D	Chocolate mousse
Qld	Dec	Restaurant	*S.* Typhimurium PT U307, MLVA 03-12-11-12-524	10	Unknown	M	Deep fried ice cream
Qld	Dec	Primary produce	Ciguatoxin	5	0	D	Coral trout
Qld	Dec	Restaurant	*S.* Typhimurium PT U307, MLVA 03-12-11-12-524	6	0	D	Chocolate mousse
SA	Oct	Restaurant	*Campylobacter*	22	2	A	Prawns
SA	Oct	Restaurant	Unknown	25	0	D	Unknown
SA	Oct	Restaurant	*S.* Typhimurium PT 9	10	2	D	Unknown
SA	Dec	Restaurant	*S.* Typhimurium PT 9, MLVA 03-14-06-12-550	11	4	M	Raw egg aioli
SA	Dec	Private residence	*S.* Typhimurium PT 9, MLVA 03-24-13-10-523	14	3	A	Raw egg tiramisu
SA	Dec	Restaurant	*S.* Typhimurium PT 9, MLVA 03-15-06-12-550	7	0	D	Unknown
SA	Dec	Restaurant	*S.* Typhimurium PT 9, MLVA 03-24-13-10-523	8	1	D	Unknown

Appendix *continued*: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites, 1 October to 31 December 2014 (n=54)

State or territory	Month*	Setting prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
Tas.	Nov	Restaurant	Norovirus	9	4	A	Suspected fruit salad
Vic.	Oct	Community	Cryptosporidium	5	3	M	Suspected unpasteurised milk
Vic.	Oct	Restaurant	*S.* Singapore	15	3	D	Beef wraps
Vic.	Oct	Restaurant	Suspected bacterial toxin	13	0	D	Suspected rice and/or beans
Vic.	Nov	Aged care	*Clostridium perfringens*	5	0	D	Unknown
Vic.	Nov	Restaurant	*S.* Typhimurium PT 170/108, MLVA 03-09-10-15-524/525	19	3	M	Mixed foods including rice paper rolls
Vic.	Nov	Commercial caterer	Norovirus	20	2	A	Brownies and /or fruit salad
Vic.	Nov	Commercial caterer	Norovirus	53	1	A	Thai beef salad
Vic.	Dec	School/private residence	*S.* Typhimurium PT 44, MLVA 03-10-09-09-524	10	0	A	Beef appetiser or frittata
Vic.	Dec	Commercial caterer	Norovirus	19	1	A	Lamb, lettuce and tomato
Vic.	Dec	Restaurant	Norovirus	14	0	A	Potato salad/food handler contamination
Vic.	Dec	Restaurant	Norovirus	26	0	D	Unknown
WA	Oct	Restaurant	*S.* Typhimurium PT 9, PFGE0001	4	1	D	Slow cooked pork hock
WA	Dec	Commercial caterer	Suspected bacterial toxin	13	0	A	Roast meats (turkey, pork, beef)
WA	Dec	Restaurant	Norovirus	21	0	A	Leafy salad (green salad or prawn salad)
WA	Dec	Camp	Norovirus	30	2	D	Unknown, possibly multiple foods
Total				682	59		

The number of people affected and hospitalised relate to the findings of the outbreak investigation at the time of writing and not necessarily in the month specified or in this quarter. The number of people affected does not necessarily equal the number of laboratory-confirmed cases.

* Month of outbreak is the month of onset of first case or month of notification or investigation of the outbreak.

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 aetiological agent in the suspected vehicle and cases.

PT Phage type

MLVA Multi-locus variable number tandem repeat analysis profile

PFGE Pulsed-field gel electrophoresis type