

Quarterly report

OzFoodNet QUARTERLY REPORT, 1 JANUARY TO 31 MARCH 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. 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 commenced in Australia between 1 January and 31 March 2014.

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 1st quarter of 2014, OzFoodNet sites reported 465 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 7,233 people, of whom 299 were hospitalised. There were 20 deaths reported during these outbreaks. The majority of outbreaks (n=335) were due to person-to-person transmission

(Table 1), with 46% (155/335) of these occurring in child care facilities or schools and 42% (142/335) occurring in aged care facilities.

Foodborne and suspected foodborne disease outbreaks

There were 49 outbreaks during this quarter where consumption of contaminated food was suspected or confirmed as being the primary mode of transmission (Appendix). These outbreaks affected 721 people and resulted in 125 hospitalisations. Two deaths were reported during these outbreaks. This was an increase on the number of outbreaks that were reported in the 1st quarter of 2013 (n=34) and an increase on the 5-year mean for the 1st quarter between 2009 and 2013 (n=44). 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.

Salmonella Typhimurium was identified as, or suspected to be, the aetiological agent in 67% (33/49) of foodborne or suspected foodborne outbreaks during this quarter, a higher proportion than the number from the same quarter in 2013 (50%, 17/34). The aetiological agents for the remaining outbreaks included: ciguatoxin in 5 outbreaks; *Campylobacter* species and suspected bacterial enterotoxins in 2 outbreaks each; and *Salmonella*

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

Transmission mode	Number of outbreaks and clusters	Per cent of total*	Number ill
Foodborne and suspected foodborne	49	11	721
Suspected waterborne	1	<1	16
Person-to-person	335	72	5,514
Unknown (<i>Salmonella</i> cluster)	13	3	301
Unknown (Other pathogen cluster)	2	<1	17
Unknown	65	14	664
Total	465	100	7,233

* Percentages do not add to 100 due to rounding.

sub species 1, *S. Singapore*, Shiga-toxin producing *Escherichia coli* (STEC), *Shigella sonnei*, histamine and *Escherichia coli* for 1 outbreak each. For 1 outbreak the aetiological agent was unknown. The 6 outbreaks associated with fish toxins affected 45 people, with 4 occurring in Queensland and the remaining two occurring in New South Wales. In comparison, there was only 1 fish toxin outbreak (ciguatoxin) recorded in the 1st quarter of 2013, which affected 4 people.

Nineteen outbreaks (39% of all the foodborne or suspected foodborne outbreaks) reported in this quarter were associated with food prepared in restaurants (Table 2), which was the same as the average number associated with foodborne or suspected foodborne outbreaks in the 1st quarter from 2009 to 2013 (39%, 85/218).

To investigate these outbreaks, sites conducted 9 cohort studies, 1 case control study and collected descriptive case series data for 34 investigations, while for 5 outbreaks no individual patient data were collected. The evidence used to implicate food vehicles included analytical evidence in 1 outbreak, microbiological evidence in 8 outbreaks, and descriptive evidence in 40 outbreak investigations.

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

Australian Capital Territory

There were 3 outbreaks of foodborne or suspected foodborne illness reported in the Australian Capital Territory during this quarter. The aetiological agents identified were *E. coli*, *Campylobacter jejuni* and suspected bacterial enterotoxin.

Description of key outbreaks

An outbreak was investigated in January following a complaint to public health authorities of gastroenteritis among 3 diners who had eaten from the same takeaway kebab store. Symptoms included diarrhoea, vomiting and abdominal pain, with onsets occurring 12 to 30 hours after consuming kebabs. Elevated levels of *E. coli* were found in multiple samples of tabouli obtained during 3 separate inspections of the premises, resulting in a prohibition order being issued. It is suspected that foods eaten by cases had been either cross contaminated or contained pathogenic *E. coli*, with parsley used in the tabouli being a likely source.

An outbreak was investigated in February following reports of gastroenteritis among diners at a restaurant. There were 2 laboratory-confirmed cases of *C. jejuni* infection and 1 clinical case, with one of the confirmed cases being hospitalised. All cases had consumed the liver parfait. An inspection of the premises found that the liver parfait served on the day the cases reported their exposure had been prepared using chicken livers due to the unavailability of duck livers.

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

Food preparation setting	Outbreaks	Per cent of total	Number ill
Restaurant	19	39	475
Private residence	11	22	55
Takeaway	4	8	17
Bakery	3	6	60
Commercial caterer	2	4	29
Aged care facility	1	2	14
Private residence/restaurant	1	2	2
Camp	1	2	4
Cruise/airline	1	2	3
Institution	1	2	10
Community	1	2	12
Fair/festival	1	2	8
Other*	1	2	8
Unknown	2	4	24
Total	49	100	721

* Other - food prepared in a cooking class.

Food samples, including duck liver parfait, were taken for analysis, with the duck parfait sample found to be positive for *S. Typhimurium* phage type (PT) 9. *Campylobacter* spp. was not detected. No further campylobacteriosis cases or salmonellosis cases with links to the restaurant were identified. Undercooked chicken liver used in the parfait is the suspected cause of the campylobacteriosis cases.

New South Wales

There were 10 outbreaks of foodborne or suspected foodborne illness reported in New South Wales during this quarter. The aetiological agents were identified as *S. Typhimurium* for 6 outbreaks, ciguatoxin for 2 outbreaks and *Shigella sonnei* and STEC for 1 outbreak each.

Description of key outbreaks

An outbreak was investigated in January after 2 cases of gastroenteritis reported eating Vietnamese rolls from the same café. Active case finding via emergency department notifications and salmonellosis notifications identified a total of 24 people who all ate at the same café; 16 cases of *S. Typhimurium* multiple-locus variable number tandem repeat analysis (MLVA) profile 03-17-10-11-523 infection and another 8 clinical cases. An inspection of the premises identified that sanitiser was not in use for utensils and equipment. A sample of pâté taken at the time of the inspection was positive for *S. Typhimurium* MLVA profile 03-17-10-11-523. The pâté was made on site and it is possible the chicken liver was not cooked to a temperature necessary to kill any *Salmonella* present, so may have been the source of the outbreak.

An outbreak was investigated in February after half (8/16) of a group who ate food prepared during a cooking class developed gastroenteritis. Five of the 8 cases were positive for *S. Typhimurium* (4 MLVA profile 03-10-07-12-523 and 1 MLVA profile 03-11-07-12-523). All cases consumed various fish dishes with a raw egg mayonnaise. The food authority traced the eggs back to a producer and inspected the egg farm. *Salmonella* was detected on environmental swabs at the egg farm, including 1 boot swab of the egg laying shed positive for *S. Typhimurium* with the same MLVA profile as the cases. The farm was found to be in very good running order and no further improvements were suggested.

An outbreak was investigated in March after 10 cases of *S. Typhimurium* MLVA 03-09-07-12-523 infection clustered in time and location were identified, with 7 cases reporting to have eaten

food from the same bakery. A range of foods were consumed including sandwiches with sliced deli meat, bread, sweets and hot foods. A food safety investigation identified a number of food handling issues including temperature abuse, cross contamination and inadequate equipment sanitisation. Two open food samples (sliced silverside and sliced roast beef) were positive for *S. Typhimurium* with a MLVA profile identical to the confirmed cases. It appears that cross contamination and poor temperature control likely resulted in a number of foods being contaminated. It is uncertain how the pathogen was initially introduced into the bakery.

Northern Territory

There were 2 outbreaks of suspected foodborne illness reported in the Northern Territory during this quarter. The aetiological agents were identified as *S. Typhimurium* for 1 outbreak and unknown for the other.

Queensland

There were 8 outbreaks of foodborne or suspected foodborne illness reported in Queensland during this quarter. The aetiological agents were identified as *S. Typhimurium* for 4 outbreaks, ciguatoxin for 3 outbreaks and histamine for 1 outbreak.

Description of key outbreak

A suspected foodborne outbreak was investigated in January after reports of gastrointestinal illness among 7 guests and 3 food handlers at a resort restaurant. Six cases were confirmed with *S. Typhimurium* PT 135a, MLVA profile 03-12-12-09-524 infection. Cases reported consumption of chicken (either chicken focaccia sandwiches and/or roasted chicken breast) at the resort restaurant and both meals were served with a raw egg-based sauce. The investigation identified that multiple sauces had been left out of temperature control for extended time periods as well as being used over consecutive days prior to this outbreak occurring. Several food samples including aioli, tartare sauce, ham, chicken, eggs and passionfruit cream were collected for microbiological testing. *S. Typhimurium* MLVA profile 03-12-12-09-524 was isolated from the sample of passionfruit cream; however, no cases had reported the consumption of this food item. This finding was considered an indicator of poor food handling practices that had occurred within the kitchen environment and was a contributing factor for this outbreak.

South Australia

There were 5 outbreaks of foodborne or suspected foodborne illness reported in South Australia during this quarter. The aetiological agents were identified as *S. Typhimurium* for 4 outbreaks and *Salmonella* sub species I for the other.

Description of key outbreaks

An outbreak was investigated in February following a notification of *S. Typhimurium* PT 135 infection reported in a food handler at a café and reports of another ill co-worker. A total of 4 confirmed cases of *S. Typhimurium* MLVA profile 03-12-09-11-523 infection reported consuming baguettes from this café. This included the 2 food handlers, who had multiple exposures within their incubation period. All baguettes made at the café contained a raw egg aioli. Samples of the eggs used to make aioli were taken and *S. Typhimurium* with an MLVA profile identical to the confirmed cases was found on the inside and outside of the egg.

An outbreak was investigated in March after authorities received complaints of gastroenteritis after people ate at a café. Active case finding identified 33 people who reported feeling unwell after eating at the café, with 19 confirmed as *S. Typhimurium* PT 9 (MLVA profile 03-26-15-09-523 and 03-26-11-09-523) infection. A case-control study was conducted with 1 meal (containing eggs, haloumi, pesto, avocado, rye bread, tomatoes and lime) significantly associated with illness, but the odds ratio (OR) was undefined as none of the well people ate the meal (95% confidence intervals [CI] 3.4 to undefined; P value=0.001). Consuming pesto in any meal was also significantly associated with illness with an undefined OR (95% CI 3.8 to undefined, P value=0.001). The environmental investigation found that the owners had recently changed and the new owners had limited knowledge of food safety. The stab mixer used to make the pesto was also used to regularly mix scrambled eggs, without being sanitised afterwards. A sample of the pesto was taken for testing and was positive for *S. Typhimurium* PT 9 MLVA profile 03-26-15-09-523.

Tasmania

There was 1 outbreak of suspected foodborne illness reported in Tasmania during this quarter. The aetiological agent was *S. Typhimurium*.

Victoria

There were 17 outbreaks of foodborne or suspected foodborne illness reported in Victoria during this quarter. The aetiological agents were

identified as *S. Typhimurium* for 15 outbreaks, and *Campylobacter* spp. and a suspected bacterial enterotoxin for 1 outbreak each.

Description of key outbreak

An investigation was initiated in February after authorities received numerous complaints of gastroenteritis after people had eaten at a gourmet hamburger restaurant. A total of 242 people reported illness, with 143 cases confirmed as *Salmonella* infection (142 confirmed as *S. Typhimurium* PT 9 infection). The investigation identified that up to 20 litres of raw egg mayonnaise had been prepared at the restaurant on the Friday evening and served throughout the weekend on most hamburgers and as a dipping sauce for chips. *S. Typhimurium* PT 9 was detected on a spoon used to serve the mayonnaise in the restaurant. Eggs used to make the mayonnaise were traced back to an egg farm that was implicated in 5 other outbreaks in 2004, 2005 and 2010, and all of these outbreaks were caused by *S. Typhimurium* PT 9. Authorities visited the implicated farm where *S. Typhimurium* PT 135 was detected in one of the initial drag swabs and *S. Typhimurium* PT 9 was found in a drag swab collected on a later date. The predominant MLVA profile for the *S. Typhimurium* PT 9 found in cases in this and the 2010 outbreak; on the mayonnaise serving spoon and in the drag swabs from the farm was 03-24-13-12-525. As a result of this outbreak investigation, complaints of gastroenteritis in the community and active surveillance for notified cases, a further 7 outbreaks involving at least 56 cases (51 of which were confirmed as *S. Typhimurium* PT 9 infection) were found to have been associated with food premises using eggs from the same egg supplier.

Western Australia

There were 3 outbreaks of foodborne or suspected foodborne illness reported in Western Australia during this quarter. The aetiological agents were identified as *S. Typhimurium* in 2 outbreaks and *S. Singapore* for the other.

Cluster investigations

During the quarter, OzFoodNet sites conducted investigations into 15 clusters of infection for which no common food vehicle or source of infection could be identified. Aetiological agents identified during the investigations included 8 *S. Typhimurium* clusters, and 1 cluster each of *S. Agona*, *S. Oslo*, *S. subspecies*, *S. Virchow*, *S. Wangata*, *Listeria monocytogenes* and suspected norovirus.

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=335) were transmitted via this route, which was slightly lower than the same quarter in 2013 (n=385) but higher than the 5-year mean (1st quarter 2009–2013) of 271 outbreaks.

S. Typhimurium was identified as the aetiological agent in 67% (33/49) of foodborne or suspected foodborne outbreaks during the quarter (Table 2). Of the 9 confirmed foodborne outbreaks for which an analytical and/or microbiological link to a food vehicle was established, seven were due to *S. Typhimurium* and five of these were associated with the consumption of raw or minimally cooked egg dishes.

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Appendix: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites, 1 January to 31 March 2014 (n=49)

State or territory	Month*	Setting prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
ACT	Jan	Takeaway	<i>Escherichia coli</i> (suspected)	3	0	D	Kebabs and tabouli (parsley)
ACT	Feb	Restaurant	<i>Campylobacter jejuni</i>	3	1	D	Liver parfait
ACT	Feb	Takeaway	Suspected foodborne enterotoxin (<i>Bacillus cereus</i>)	3	0	D	Fried rice
NSW	Jan	Bakery	<i>Salmonella</i> Typhimurium MLVA profile 03-17-10-11-523	24	9	M	Vietnamese rolls
NSW	Jan	Cruise/airline	<i>S. Typhimurium</i> MLVA profile 03-12-13-09-523	3	1	D	Unknown
NSW	Jan	Restaurant	<i>S. Typhimurium</i> MLVA profile 03-24-12-12-523	2	0	D	Raw egg Caesar salad dressing
NSW	Jan	Takeaway	Shiga toxin-producing <i>Escherichia coli</i>	6	5	D	Kebabs: multiple ingredients
NSW	Feb	Bakery	<i>S. Typhimurium</i> MLVA profile 03-16-09-12-523	26	3	M	Vietnamese rolls with raw egg butter
NSW	Feb	Commercial caterer	<i>Shigella sonnei</i> biotype f	7	1	D	Unknown
NSW	Feb	Other	<i>S. Typhimurium</i> MLVA 03-10/11-07-12-523	8	2	D	Raw egg mayonnaise
NSW	Feb	Restaurant	Ciguatoxin	5	3	D	Spanish mackerel
NSW	Mar	Bakery	<i>S. Typhimurium</i> MLVA profile 03-09-07-12-523	10	7	M	Multiple foods
NSW	Mar	Private residence	Ciguatoxin	9	9	D	Spanish mackerel
NT	Jan	Private residence	<i>S. Typhimurium</i> PT 6	3	0	D	Turkey
NT	Mar	Restaurant	Unknown	2	0	D	Chicken Caesar salad
Qld	Jan	Institution	<i>S. Typhimurium</i> MLVA profile 03-09-04-12-524	10	3	D	Unknown
Qld	Jan	Private residence	Histamine	2	0	M	Bonito Fish Stew
Qld	Jan	Restaurant	<i>S. Typhimurium</i> PT 135a MLVA profile 03-12-12-09-524	10	1	D	Suspected raw egg sauce
Qld	Jan	Restaurant	<i>S. Typhimurium</i> MLVA profile 04-15-09-09-490	18	3	D	Unknown
Qld	Feb	Community	<i>S. Typhimurium</i> MLVA profile 03-17-09-11-524	12	3	D	Bakery products (various)
Qld	Feb	Private residence	Ciguatoxin	2	0	D	Mackerel
Qld	Feb	Private residence	Ciguatoxin	9	0	D	Spanish mackerel
Qld	Feb	Unknown	Ciguatoxin	18	Unknown	D	Spanish mackerel
SA	Jan	Restaurant	<i>S. Typhimurium</i> PT 9	4	0	D	Unknown
SA	Jan	Takeaway	<i>S. Typhimurium</i> PT 9	5	2	D	Unknown
SA	Feb	Restaurant	<i>S. Typhimurium</i> PT 135	4	2	M	Raw egg aioli
SA	Mar	Fair/festival	<i>Salmonella</i> subsp 1 ser 4, 5, 12: i:-	8	0	D	Unknown
SA	Mar	Restaurant	<i>S. Typhimurium</i> PT 9	33	5	M	Suspected raw egg contamination of pesto
Tas.	Feb	Private residence	<i>S. Typhimurium</i> PT44	3	0	D	Unknown

Appendix (cont'd): Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites, 1 January to 31 March 2014 (n=49)

State or territory	Month*	Setting prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
Vic.	Jan	Private residence	S. Typhimurium PT 9	12	3	D	Unknown
Vic.	Jan	Restaurant	S. Typhimurium PT 135	94	17	D	Unknown
Vic.	Feb	Camp	S. Typhimurium PT 9	4	0	D	Lightly cooked eggs and/or hollandaise sauce
Vic.	Feb	Commercial caterer	Suspected foodborne enterotoxin (<i>Clostridium perfringens</i>)	22	0	A	Suspect dahl
Vic.	Feb	Private residence/restaurant	S. Typhimurium PT 9	2	1	D	Unknown
Vic.	Feb	Restaurant	S. Typhimurium PT 135a	2	0	D	Lightly cooked eggs and/or hollandaise sauce
Vic.	Feb	Restaurant	S. Typhimurium PT 9	2	1	D	Raw egg aioli
Vic.	Feb	Restaurant	S. Typhimurium PT 9	3	1	D	Undercooked eggs
Vic.	Feb	Restaurant	S. Typhimurium PT 9	6	0	D	Undercooked eggs
Vic.	Feb	Restaurant	S. Typhimurium PT 9	15	26	M	Raw egg mayonnaise
Vic.	Feb	Restaurant	S. Typhimurium PT 9	13	1	D	Suspect raw egg aioli
Vic.	Feb	Restaurant	S. Typhimurium PT 9	242	5	D	Lightly cooked eggs
Vic.	Mar	Aged care facility	<i>Campylobacter</i>	14	0	D	Suspect chicken patties
Vic.	Mar	Private residence	S. Typhimurium PT 44	6	3	D	Suspect undercooked eggs in pasta dish
Vic.	Mar	Private residence	S. Typhimurium PT 9	3	0	D	Raw egg tiramisu
Vic.	Mar	Restaurant	S. Typhimurium PT 9	3	2	D	Raw egg aioli
Vic.	Mar	Restaurant	S. Typhimurium PT 9	14	5	M	Undercooked eggs in hollandaise sauce
WA	Jan	Private residence	S. Typhimurium PFGE 39	3	0	D	Multiple foods
WA	Feb	Private residence	S. Typhimurium PFGE 526	3	0	D	Unknown
WA	Feb	Unknown	S. Singapore	6	0	D	Unknown
Total				721	125		

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

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.

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.