

OzFoodNet Quarterly Report, 1 April to 30 June 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 April to 30 June 2011.

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.

During the 2nd quarter of 2011, OzFoodNet sites reported 553 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 10,085 people, of whom 242 were hospitalised. There were 23 deaths reported during these outbreaks. The majority of outbreaks (83%, $n = 457$) were due to person-to-person transmission (Table 1).

Table 1: Outbreaks and clusters of gastrointestinal illness reported by OzFoodNet, 1 April to 30 June 2011, by mode of transmission

Transmission mode	Number of outbreaks and clusters	Per cent of total
Foodborne and suspected foodborne	35	6
Person-to-person	457	83
Unknown (<i>Salmonella</i> cluster)	10	2
Unknown (other pathogen cluster)	4	1
Unknown	47	8
Waterborne	0	0
Total	553	100

Foodborne and suspected foodborne disease outbreaks

There were 35 outbreaks during this quarter where consumption of contaminated food was suspected or confirmed as the primary mode of transmission (Table 2). These outbreaks affected 493 people and resulted in 42 hospitalisations. There was 1 death reported during these outbreaks. This compares with 35 outbreaks for the second quarter of 2010¹ and a 5-year mean of 29 outbreaks for the 2nd quarter between 2006 and 2010.

Salmonella enterica was the aetiological agent for 13 outbreaks during this quarter, all of them due to *S. enterica* ser Typhimurium. Of the remaining outbreaks, 4 (11%) were due to *Clostridium perfringens* and 4 (11%) due to norovirus. There was 1 outbreak (3%) of *Campylobacter jejuni*. In 13 outbreaks (37%), the aetiological agent remained unknown.

Ten outbreaks (29% of foodborne outbreaks) reported in this quarter were associated with food prepared in restaurants, 9 outbreaks (26%) in aged care facilities, 8 outbreaks (24%) in private residences and 3 outbreaks (9%) with food prepared by a commercial caterer. Five single outbreaks (3%) were reported from a range of other settings.

To investigate these outbreaks, sites conducted 9 cohort studies, 1 case control study and collected descriptive case series data for 24 investigations, while for 1 outbreak no individual patient data were collected. As evidence for the implicated food vehicle, investigators collected both microbiological and analytical evidence for 1 outbreak, relied on microbiological evidence alone for 3 outbreaks and analytical evidence alone for 4 outbreaks. Descriptive evidence alone was obtained for 27 outbreak investigations.

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

Australian Capital Territory

There were 2 reported outbreaks of foodborne or suspected foodborne disease during the quarter.

Five persons with a non-English speaking background became unwell with symptoms of diarrhoea, abdominal pain and fever following a privately prepared pig on a spit meal. One case was hospital-

ised with gastroenteritis and acute renal failure that required dialysis. A faecal culture for this case was positive for *S. Typhimurium* phage type (PT) 135. No others who ate the implicated meal were tested. A likely secondary case of *S. Typhimurium* PT 135 was also identified in a family member of the hospitalised case. Details on the preparation of the pig was limited, but it would seem there was opportunity for cross contamination and bacterial growth as the pig was cooked 2 days prior to it being eaten. Storage and transportation conditions were inappropriate.

Six of 7 people who had shared a pub lunch became unwell with gastroenteritis. Meals included burgers and schnitzels with chips and salads. No samples were collected. An inspection of the kitchen identified no apparent issues and there were no reports of recent or ongoing illness among kitchen staff. Anecdotally, a number of co-workers of those affected also reported illness after eating lunch at the same venue on the same day. However, they could not be contacted to verify this. No other complaints were received from other patrons. The cause remains unknown.

New South Wales

There were 10 reported outbreaks of foodborne or suspected foodborne illness during the quarter.

Two complaints were received from the New South Wales Food Authority (NSWFA) about 4 people who consulted a general practitioner (GP) after becoming ill with diarrhoea 19–34 hours after eating prawn dumplings at a café over a 2-day period. Two people were hospitalised. Three of the 4 submitted stool specimens were positive for *S. Typhimurium* PT 135, multi-locus variable number of tandem repeats analysis (MLVA) profile 3-13-11-9-523.* A NSWFA inspection found that the premises was clean and food handling practices were appropriate. The staff at the premises stated that prawn dumplings were made fresh each day using frozen prawns, coriander and egg to bind. Prawn dumplings were served with a tomato relish. A number of food specimens (prawn dumplings – cooked and raw but a different batch from that eaten by the cases, eggs, coriander and raw green prawns) were taken, as well as environmental samples. All samples were negative for pathogens. The small number of cases specific to the batch of prawn dumplings served over the 2 days suggests that this food was most likely the source, but the cause remains unknown.

A small outbreak of *S. Typhimurium* MLVA profile 3-13-12-10-523 (no phage type available but historically associated with PT 135a and PT 170) was identified through routine surveillance. All 3 cases

had consumed a home-made semifreddo and hollandaise sauce in a private household 22–48 hours prior to the onset of symptoms. It was estimated that there were 8–10 eggs used to make both dishes, with minimal heat treatment used. Education about safe egg handling and preparation was given.

An outbreak of salmonellosis was reported by a hospital clinician when 3 of 4 family members became unwell with gastroenteritis after eating at an Asian restaurant in May. *Salmonella* spp. was isolated from the stool specimen of a hospitalised case. A second report of illness affecting 2 persons from a group of 3 people, was received by the NSWFA. All additional notified cases of salmonellosis were interviewed as part of active case finding, and the local GP was requested to review case histories of people presenting to the practice with symptoms of diarrhoea. A booking list was not available for further case identification. In total, 8 of 21 people who ate at the restaurant on the same night reported symptoms of gastroenteritis. All cases consumed a chicken and corn soup or other dishes containing chicken. Five people (from 5 separate groups) who had submitted stool specimens were positive for *S. Typhimurium* (MLVA profile 3-10-8-9-523, historically associated with PT 44). No food hygiene or food safety issues were identified on inspection, however a sample of raw chicken strips, which was used for both the chicken and corn soup, and other chicken dishes, were positive for *S. Typhimurium* with a MLVA profile matching the cases and with the PT confirmed as PT 44. Other food items and swabs taken as part of the environmental investigation were negative for pathogens.

Two separate complaints were received from the NSWFA about several groups of people who developed vomiting and diarrhoea 24 hours after eating at a bowling club. The venue only served food on weekends. On a single weekend, 415 people ate at the bowling club, 110 of these were interviewed and 79 (70%) reported being unwell with gastroenteritis. Twelve people were hospitalised and 2 stool specimens were positive for norovirus. A cohort study could not identify any particular food associated with illness. There were reports of the chef working while ill. The NSWFA issued a prohibition order to stop the venue from preparing food until kitchen and staff management knowledge and practices met required standards. A stool sample submitted by the chef was negative for norovirus and bacterial pathogens. There were 4 positive norovirus results from environmental samples (the metal handle of a ladle from the kitchen, a swab from a tap in the ladies toilet, a microwave metal door release and an oven handle). The outbreak was most likely caused by norovirus transmitted from person-to-food-to-person via an infected food handler.

* Reported in the nomenclature used by the Institute of Clinical Pathology and Medical Research (ICPMR).

Table 2: Outbreaks of foodborne disease reported by OzFoodNet sites,* 1 April to 30 June 2011 (n=35)

State	Month	Setting prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
ACT	Jun	Private residence	S. Typhimurium PT 135	5	1	D	Spit roast pig
	Jun	Restaurant	Unknown	6	0	D	Burgers, schnitzels and chips
NSW	Apr	Other	Unknown	80	0	D	Unknown
	Apr	Private residence	S. Typhimurium (MLVA profile 3-13-12-10-523)	3	0	D	Eggs in home-made hollandaise sauce and a homemade semifreddo†
	Apr	Restaurant	Unknown	3	0	D	Unknown. Suspect prawn and pesto pizza
	Apr	Restaurant	Unknown	6	0	D	Unknown
	May	Commercial caterer	Norovirus G II-6	23	0	D	Suspect chocolate and mandarin pie
	May	Restaurant	Norovirus	79	12	M	Person to food to person transmission via infected food handler
	May	Restaurant	S. Typhimurium PT 135 (MLVA profile 3-13-11-9-523)	4	2	A	Suspect prawn dumplings prepared with minced prawn, coriander and egg to bind
	May	Takeaway	Unknown	4	0	D	Unknown
	Jun	Commercial caterer	Unknown	13	Unknown	D	Unknown
	May	Restaurant	S. Typhimurium (MLVA profile 3-10-9-8-523)	8	0	D	Chicken; eggs†
	May	Private residence	S. Typhimurium PT 141	5	0	D	Unknown
	Qld	Jun	Picnic	C. jejuni	4	0	D
SA	Apr	Community	S. Typhimurium PT 9	48	11	M	Eggs†
Vic	Apr	Aged care	C. perfringens	5	0	D	Unknown
	Apr	Private residence	S. Typhimurium PT 141	2	0	D	Chocolate mousse (raw eggs)†
	Apr	Private residence	S. Typhimurium PT 135a	9	5	A	Potato salad with raw egg mayonnaise†
	Apr	Private residence	S. Typhimurium PT 170	2	0	D	Raw muffin batter†
	Apr	Private residence	S. Typhimurium PT 170	2	2	M	Raw pancake batter†
	Apr	Restaurant	S. Typhimurium PT 170	15	2	AM	Fried ice cream†
	May	Aged care	Unknown	6	0	D	Unknown
	May	Aged care	Unknown	10	0	D	Unknown
	May	Aged care	Unknown	12	0	D	Unknown
	May	Aged care	C. perfringens	8	0	D	Unknown
	May	Aged care	C. perfringens	13	0	D	Unknown
	May	Private residence	S. Typhimurium PT 9	9	1	D	Unknown
	May	Restaurant	Norovirus	26	4	A	Chicken parmigiana

Table 2 continued: Outbreaks of foodborne disease reported by OzFoodNet sites,* 1 April to 30 June 2011 (n=35)

State	Month	Setting prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
Vic, cont'd	Jun	Aged care	Unknown	5	0	D	Unknown
	Jun	Aged care	Unknown	8	0	D	Vitamised food suspected
	Jun	Hospital	<i>C. perfringens</i>	11	0	D	Unknown
	Jun	Restaurant	Norovirus	15	0	A	Fruit platter
	Jun	Restaurant	Unknown	9	0	D	Curries suspected
	WA	Apr	Commercial caterer	<i>S. Typhimurium</i> PT 193 (PFGE type 0386)	30	2	D

* No foodborne outbreaks were reported by Tasmania.

† Suspected/confirmed egg associated outbreaks.

A Analytical epidemiological association between illness and one 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.

PFGE Pulsed-field gel electrophoresis.

An outbreak of norovirus was investigated amongst guests at a wedding. Twenty-three of 61 people became unwell with diarrhoea and/or vomiting a median of 34 hours (range 18–39 hours) after consuming the meal. There was no illness identified in wedding attendees prior to or at the wedding ceremony or reception. Seven people visited a medical practitioner, and 3 faecal specimens were positive for norovirus (genotype GII-6) by polymerase chain reaction. A cohort study was conducted, and the consumption of a chocolate and mandarin pie had a statistically significant association with illness (relative risk [RR]: 2.94, 95% confidence interval [CI] 1.28–6.72, $P = 0.0003$). There were no reports of illness in food handlers or waiting staff, and there had been no reports of illness in groups using the function room prior to or after the implicated function. An environmental investigation was conducted by the NSWFA, who as a result issued a warning letter prohibiting the use of minimally heat treated eggs for ready-to-eat products.

For the other 6 suspected foodborne outbreaks, the aetiology and source of infection could not be established:

- The NSWFA received a complaint about 17 of 50 people who developed nausea, vomiting and diarrhoea approximately 24 hours after eating assorted sandwiches, rolls and pastries at a wake at a reception centre. A point source cohort study was conducted, with 9 of 31 interviewed people reporting being unwell before attending the function. There was some indication that there were secondary cases after the function. No specific foods were epidemiologically associated with the illness. A NSWFA inspection revealed that the chef had returned to work following gastrointestinal illness on the same day as symptoms ceased, and prepared foods for the function. This outbreak was likely to have been caused by a viral pathogen, transmitted from person-to-person. There was insufficient evidence to say that the outbreak was caused by person-to-food-to-person transmission (by the chef). No human, food or environmental specimens were available for testing. The NSWFA issued an improvement notice to the function centre.
- A complainant reported to the NSWFA that 80 of 90 people developed abdominal cramps and diarrhoea between 9 and 15 hours after eating assorted Indian dishes and salad at a family gathering at a community centre in April. Hot food was brought in by a caterer and the complainant prepared some salads, dry snacks and rice. The public health unit conducted a cohort study and received information about 28 people of which 25 had developed illness. No stool samples were collected. The caterer who prepared the foods was not planning to cater for any functions in the near future.
- A complainant reported to the NSWFA that all senior citizens from a group of 6 developed diarrhoea and vomiting a median of 10 hours after eating at a lunch buffet in April. Foods served included cooked meats, vegetables, prawns, fish and salad with egg. Five cases were interviewed and 2 cases reported prolonged symptoms (up to 28 days). One person had a stool sample taken shortly after illness onset. The sample was negative for bacterial pathogens and was not tested for viral pathogens.
- All work colleagues from a group of four developed vomiting and diarrhoea, fever and abdominal cramps 1 to 7 hours after eating beef kebab with tomato, lettuce, cheese, onion, BBQ sauce and chilli sauce. Six of their colleagues, who remained at the workplace (and did not eat the kebabs), did not report illness. This was the only common meal between the four. No stool specimens were submitted. Due to the short incubation period it was thought unlikely that the implicated food was the cause of illness.
- Organisers of a training workshop in June reported an outbreak of gastroenteritis affecting 13 of 30 attendees who became unwell 1–2 days after the workshop. An online survey tool was used to collect risk factor information from the cohort. No illness was identified in attendees either prior to or at the workshop, nor was there any illness reported in family members of attendees prior to the workshop. The workshop was the only exposure common to all cases in the 7 days preceding the outbreak. The clinical profile and the occurrence of secondary cases in family members is suggestive of a viral illness, possibly norovirus, but no stool samples were submitted so the illness could not be confirmed. None of the foods consumed were found to have a statistical association with illness, and none of the food handlers reported having symptoms of gastroenteritis on the day the workshop was catered. There was no illness amongst another group who were provided the same foods from the caterer on the same day.
- In May, an outbreak of gastroenteritis was investigated, affecting 3 of 6 people. All cases consumed a prawn and pesto pizza from a restaurant. Incubation time and symptoms were indicative of an illness caused by a preformed toxin, but this could not be confirmed. No booking list was available. A local council inspection did not find any significant issues.

Northern Territory

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

Two confirmed and 3 probable cases of *S. Typhimurium* PT 141 were associated with foods prepared by a commercial caterer and served at a sports event with several hundred people in attendance. Foods were prepared by the commercial caterer at a private residence, and there were issues with inexperienced and untrained food handlers (including children). Cleaning practices and hand washing facilities were inadequate in the food preparation area. Whilst most cases reported eating a curry/rice dish, which is the suspected vehicle, this dish was not on the menu provided by the caterers and it is unclear whether the caterer provided meals on both of the days that cases were exposed.

Queensland

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

Four people amongst 16 became ill after attending a barbecue meal on consecutive nights in June. The cases were all males aged 26–56 years with onsets of illness over a 2-day period. Three of 4 stool specimens submitted by cases were positive for *Campylobacter*. Chicken kebabs was the suspected vehicle of transmission, however no food samples were collected. No other chicken meat was reportedly consumed by these cases during their exposure period and no other potential risk factors were identified.

South Australia

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

During the investigations of *S. Typhimurium* PT 9 in January 2011,² a particular MLVA profile was predominant. After the point source outbreaks had ended, sporadic cases of the outbreak MLVA profile were still being reported from the community in the 2nd quarter of 2011. Whilst investigations during the January outbreaks did not reveal any common ingredients or suppliers to the 2 bakeries involved, further traceback of ingredients conducted subsequently found a common supplier of eggs. An investigation was conducted at the egg farm and specimens were collected. Of the 26 samples collected, three were positive for *S. Typhimurium* PT 9 with the outbreak MLVA profile. Further investigations are being conducted to determine whether this particular MLVA profile of *S. Typhimurium* PT 9 is present on other farms.

Tasmania

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

Victoria

There were 19 reported outbreaks of foodborne or suspected foodborne illness during this quarter.

In April, the registrar from a metropolitan hospital notified the Communicable Disease Prevention and Control Unit (CDPCU) of 3 children from the same family admitted with gastroenteritis. These cases were subsequently confirmed with salmonellosis and 3-day food histories implicated home cooked meals and a restaurant. Local council investigations included inspection and food sampling at the restaurant and sampling of leftover eggs from the family home. An outbreak investigation was initiated when 2 further notified cases of salmonellosis were linked to the same restaurant. Further cases were identified through interviews with patrons from the booking list and active surveillance for notified cases of salmonellosis living in the same geographical area. In total, 9 confirmed cases of *S. Typhimurium* PT 170 and a further 6 suspected cases had eaten at the restaurant in early April. All cases had consumed fried ice cream and fried ice cream sampled from the restaurant was positive for *S. Typhimurium* PT 170. It is suspected that raw eggs used in the production of the fried ice cream were responsible for this outbreak.

In April, a cluster of *Salmonella* cases from the same rural town was detected through routine surveillance. One of these cases had also been notified by a doctor who reported that several family members had become unwell after eating at a family barbecue. Through an outbreak investigation it was determined that 12 people attended a lunchtime barbecue at a family home. Nine people became ill and 4 cases were confirmed with *S. Typhimurium* PT 135a including one who had a positive blood culture. Five cases were hospitalised. Foods served at the barbecue included commercially made dips, lamb chops, a variety of different sausages, hamburgers, duck, salads (green, potato and noodle), chocolate cake, tea cake and commercial ice cream. The potato salad was made with a raw egg mayonnaise and seven of the cases definitely ate this food. In addition, the person who prepared the potato salad was the case with the first onset and she had eaten some of the potato salad the night before the barbecue. The eggs used in the mayonnaise were purchased from a large supermarket chain store in the rural town. Eggs were suspected as the source of this outbreak.

Three small outbreaks of *Salmonella* associated with the consumption of raw egg foods prepared in private residences were investigated in April as follows:

- 2 cases of *S. Typhimurium* PT 170 who consumed raw pancake batter. Leftover eggs from the cases' home were sampled and *S. Typhimurium* PT 170 was isolated from the outside of the eggs;

- 2 cases of *S. Typhimurium* PT 170 who consumed raw muffin batter; and
- 2 cases of *S. Typhimurium* PT 141 who consumed chocolate mousse made with raw eggs.

Nine of 13 family members became ill after eating a home-prepared meal in early April. The meal consisted of a variety of foods, including a lasagne. Three of the cases were confirmed with *S. Typhimurium* PT 9 infection. Analysis of foods consumed by guests indicated that the lasagne may have been the source of the outbreak but information provided about how the lasagne was prepared failed to identify any issues. There were no leftover foods available for testing.

CDPCU was notified of vomiting and diarrhoea amongst a group of 10 people who attended a local hotel for dinner in May. The Council also received a complaint from a group of 30 who had visited the hotel on the same night for a birthday function and subsequently developed gastroenteritis. A total of 24 cases were identified from interviews with 39 attendees. Three cases were confirmed with norovirus. Two cases were considered to have been secondary cases. Analysis of foods consumed by the cohort identified chicken parmigiana as a possible source (RR:1.9; 95% CI 1.06–3.29) with 13 cases (59%) having consumed this food. However, food-borne norovirus outbreaks often have multiple food vehicles contributing to infections. The means by which the food was contaminated with norovirus could not be identified.

In early June, an outbreak of *C. perfringens* was reported to CDPCU in 2 groups of people who attended an Indian restaurant on the same night. Eleven people were interviewed and nine developed diarrhoea and abdominal pain between 5 and 16 hours after eating various curries. Two faecal specimens collected 5 days after the onset of symptoms, were negative for bacterial and viral pathogens. A specific food source was not identified but *C. perfringens* enterotoxin was suspected as the outbreak aetiology.

An outbreak with symptoms of vomiting and diarrhoea occurred in a group of 28 people who attended a catered workshop at a hotel in June. Investigations determined that 13 workshop attendees and 2 staff were ill. Five faecal specimens were collected and four were positive for norovirus. The ill food handlers had an onset of symptoms at the same time as the workshop attendees. Analysis of food histories of the function attendees found a statistically significant association with people who consumed fruit from a platter and illness (RR 3.7; 95% CI 1.02 – 13.14).

There were 9 outbreaks in aged care facilities and one in a hospital where the aetiology was either confirmed or suspected as being caused by *C. perfringens* enterotoxin as follows:

- An outbreak of *C. perfringens* affecting 5 residents of an aged care facility was notified to CDPCU in April. Onsets for cases ranged over a 48-hour period and median duration of diarrhoea was 12 hours. Four faecal specimens were collected and *C. perfringens* enterotoxin was detected in three of these. A food source for this outbreak was not identified.
- An outbreak of *C. perfringens* affecting 10 residents and 3 staff members of an aged care facility was notified to CDPCU in May. The majority of cases (11) had onsets over a 5-day period and one case had a second onset 5 days after the initial symptoms had resolved and was counted as a case twice. Faecal specimens were taken from 6 cases and four were confirmed with *C. perfringens* enterotoxin. A food source for this outbreak was not identified.
- An outbreak of *C. perfringens* affecting 7 residents and 3 staff members of an aged care facility was notified to CDPCU in May. Onsets ranged over a 4-day period (50 % in the first 24 hours). There was only 1 faecal specimen collected and this was positive for *C. perfringens* enterotoxin. A food source for this outbreak was not identified.
- An outbreak of *C. perfringens* affecting 8 residents from an aged care facility was notified to CDPCU in May. Onsets occurred in 2 discrete time periods. One of the cases had an episode of diarrhoea in both clusters and was counted as a case twice. Duration of diarrhoea was a median of 1.5 days. Four faecal specimens were collected and all were positive for *C. perfringens* enterotoxin. A food source for this outbreak was not definitively identified but vegetable soups served on a number of occasions during this period were identified as a possible source.
- An outbreak of *C. perfringens* affecting 11 residents and 1 staff member from an aged care facility was notified to CDPCU in May. Onsets ranged over a 6-day period (7 cases within the first 24 hours). Three faecal specimens were collected and one was positive for *C. perfringens* enterotoxin. A food source for this outbreak was not identified.
- An outbreak affecting 6 residents from an aged care facility was notified to CDPCU in May. Onsets were all on the same day. No faecal specimens were collected but the clustered onsets, duration and symptoms were consistent with *C. perfringens*. A food source for this outbreak was not identified.

- An outbreak affecting 8 residents from one section of an aged care facility was notified to CDPCU in June. Onsets were over a 3-day period. One faecal specimen was collected, which was negative for bacterial and viral pathogens but the clustered onsets, duration and symptoms were consistent with *C. perfringens*. A cohort analysis of whether residents ate texture modified foods showed an association with consumption of vita-mised food and illness (RR 4.9; 95% CI 1.4–16.7; $P = 0.03$).
- An outbreak affecting 5 residents from an aged care facility was notified to CDPCU in June. Onsets were in a 24-hour period. One faecal specimen was collected, which was negative for bacterial and viral pathogens but the clustered onsets, duration and symptoms were consistent with *C. perfringens*. A food source for this outbreak was not identified.
- An outbreak of *C. perfringens* affecting 5 residents from an aged care facility was notified to CDPCU in June. Onsets were in a 24-hour period. One faecal specimen was collected, which was positive for *C. perfringens* enterotoxin. A food source for this outbreak was not identified.
- An outbreak of *C. perfringens* affecting 11 patients and one staff member from a hospital was notified to CDPCU in June. Onsets ranged over a 5-day period (8 were over the first 24 hours). Six faecal specimens were collected and three were positive for *C. perfringens* enterotoxin. A food source for this outbreak was not identified.

Western Australia

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

Following a birthday party in April with 120 guests, approximately 30 were reported to have become ill with gastroenteritis. Seven cases were confirmed as *S. Typhimurium* pulsed-field gel electrophoresis profile 0386† and 2 isolates were further characterised as *S. Typhimurium* PT 193, both fully susceptible to the antibiotics tested. Interviews were conducted with 31 attendees, and of these 12 reported illness. Two cases were hospitalised. Food eaten at the party included roast beef, bread rolls, gravy, a cake purchased from a bakery and 5 salads prepared by a caterer. The roast beef was whole blade roast, cooked offsite on the morning of the birthday party, then sliced, kept warm in a bain-marie and delivered to the party. The gravy was prepared at the party using a commercial gravy powder and water, and the person who prepared this subsequently became ill. A case control study showed that gravy (odds

ratio [OR] 10.0, CI 1.8–53.7), Waldorf salad (OR 7.0, CI 1.1–42.2) and bread rolls (OR 17.2, CI 2.2–not defined) were associated with illness. Samples of coleslaw, potato salad, macaroni salad, Waldorf salad, Greek salad and commercial mayonnaise were all negative for *Salmonella*, although the salads were from batches different from those served at the party. The source of the *Salmonella* contamination could not be identified.

Multi-jurisdictional outbreak investigations

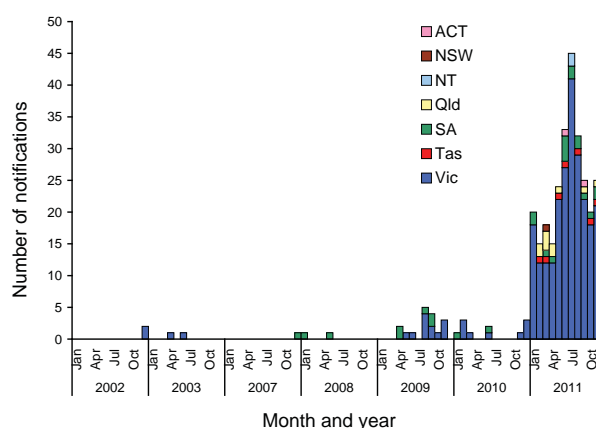
Multi-jurisdictional outbreak investigations into *S. Typhimurium* 170/108 and *S. Virchow* 34 were stood down on 1 June 2011. Outcomes of these investigations were reported in the 1st quarter.²

Cluster investigations

During the quarter, OzFoodNet sites investigated a number of clusters, with four due to *S. Typhimurium*, 1 cluster each of *S. Infantis*, *S. Wangata*, *S. Lansing*, *S. Montevideo* and *S. Saintpaul* infections. Sites also investigated 2 clusters of *Campylobacter* infection, a cluster of Shiga-toxin producing *Escherichia coli* and one of *Vibrio parahaemolyticus*. In these clusters, no particular source or transmission mode could be identified.

South Australia and Victoria both investigated increases in cases of *S. Typhimurium* PT 60 during the quarter. The first report of this phage type in the National Notifiable Diseases Surveillance System (NNDSS) was in 2002, and cases were rare until the recent increases in 2011 (Figure). In Victoria, 44 interviews with cases were completed, and raw chicken was sampled from butchers in three regional towns. *S. Typhimurium* 60 was isolated from each of these samples, and investigations revealed that all

Figure: Notifications of *Salmonella* Typhimurium PT 60, National Notifiable Diseases Surveillance System, Australia, 2002 to 2011, 9 February 2012, by month and year and state or territory



† Tested by PathWest Laboratory Medicine using the PulseNet *Salmonella* protocol.

three butchers received their chicken from the same processor. In South Australia, two of the 4 cases in the cluster were from the same rural town.

Comments

The majority of reported outbreaks of gastrointestinal illness in Australia are due to person-to-person transmission, and in this quarter, 83% of outbreaks (n = 457) were transmitted via this route. The number of foodborne outbreaks this quarter (n = 35) exceeded the 5-year average of 29 outbreaks for the same quarter during the past 5 years. *S. Typhimurium* continues to be a leading cause of foodborne outbreaks in Australia, with 59% (13 of 22) of outbreaks with a known aetiology due to this *Salmonella* serotype. Notifications of campylobacteriosis nationally were elevated during the quarter (*Campylobacter* infection is not notifiable in New South Wales), with particular increases noted in Queensland, the Australian Capital Territory, Western Australia and Victoria. Only 1 reported foodborne outbreak and 2 clusters were due to this pathogen.

Foodborne disease outbreak investigations this quarter have highlighted a range of high-risk practices, many occurring in food service settings. Ten foodborne disease outbreaks this quarter were associated with foods prepared in a restaurant, while a further three were associated with foods prepared by caterers (one of them a home-based business). Catering for large groups presents particular challenges in the adequate temperature control 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. The proper education of food handlers and function hosts is essential in preventing foodborne outbreaks of gastrointestinal illness in this setting. Food Standards Australia New Zealand has begun the development of a national standard for catering operations (Proposal P290 – Food Safety Programs for Catering Operations to the General Public), but the development of the standard is currently on hold pending outcomes of a review of the Ministerial Policy Guidelines for Food Safety Management in Australia.⁴

The consumption of dishes containing raw or undercooked eggs continues to account for a large proportion of outbreaks of foodborne disease in Australia. Of the 19 outbreaks in which any food vehicle could be identified, 8 (42%) were associated with the consumption of eggs, and raw or undercooked egg-based dishes, including chocolate mousse, raw pancake batter and hollandaise sauce. In only one of these outbreaks was the aetiological agent isolated from the food vehicle, in one other the organism

was isolated from a wash of leftover eggs, and from one other the infecting organism was isolated from swabs taken on farm following trace back.

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* and other enteric pathogens for their continuing work and advice during the quarter.

OzFoodNet contributors to this report include (in alphabetical order): Mary Barker (WA), Robert Bell (Qld), Barry Combs (WA), Neil Franklin (NSW), Robyn Gibbs (WA), Joy Gregory (Vic), Michelle Harlock (NT), Katina Kardamanidis (NSW), Katrina Knope (DoHA), Karin Lalor (Vic), Megge Miller (SA), Cameron Moffatt (ACT), Sally Munnoch (Hunter New England), Jennie Musto (NSW), Nevada Pingault (WA), Frances Sheehan (Qld), Timothy Sloan-Gardner (DoHA), Kylie Smith (Tas) and Russell Stafford (Qld).

Author details

Correspondence: Katrina Knope, Epidemiologist, Zoonoses, Foodborne and Emerging Infectious Diseases section, Office of Health Protection, Australian Government Department of Health and Ageing, GPO Box 9848, MDP 14, CANBERRA ACT 2601. Telephone: +61 2 6289 2751. Facsimile: +61 2 6289 2500. Email: ozfoodnet@health.gov.au

References

1. OzFoodNet Working Group. OzFoodNet quarterly report, 1 April to 30 June 2010. *Commun Dis Intell* 2010;34(3):345–354.
2. OzFoodNet Working Group. OzFoodNet quarterly report, 1 January to 31 March 2011. *Commun Dis Intell* 2011;35(4):318–328.
3. Australian Government Department of Health and Ageing. National Notifiable Diseases Surveillance System database.
4. Food Standards Australia New Zealand. Proposal P290 – Food Safety Programs for Catering Operations to the General Public. 2010. Accessed on 20 January 2012. Available from: <http://www.foodstandards.gov.au/foodstandards/foodsafetystandardsaustraliaonly/foodsafety-programsfo3800.cfm>