

Quarterly reports

OzFoodNet QUARTERLY REPORT, 1 JANUARY TO 31 MARCH 2010

The OzFoodNet Working Group

Introduction

The Australian Government Department of Health and Ageing established OzFoodNet in 2000 to collaborate nationally to investigate foodborne disease. OzFoodNet conducts studies on the burden of illness, co-ordinates national investigations into outbreaks of foodborne disease, develops nationally standardised protocols and tools for surveillance, identifies foods or commodities that may cause human illness and trains people to investigate foodborne illness. This quarterly report documents investigation of outbreaks of gastrointestinal illness and clusters of disease potentially related to food, occurring in Australia from 1 January to 31 March 2010.

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 1st quarter of 2010, OzFoodNet sites reported 306 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 illness. In total, these outbreaks affected 5,270 people, of whom 74 were hospitalised. There were 3 deaths reported during these outbreaks. The majority of outbreaks (71%, $n = 216$) were due to person-to-person transmission (Table 1).

Foodborne and suspected foodborne disease outbreaks

There were 45 outbreaks during this quarter where consumption of contaminated food was suspected or confirmed as the primary mode of transmission (Table 2). These outbreaks affected 271 people and resulted in 23 hospitalisations. There were no deaths reported during these outbreaks. This compares with a 5-year average of 34 foodborne outbreaks for the 1st quarter between 2005 and 2009 and 42 foodborne outbreaks during the 4th quarter of 2009.¹

Salmonella was the aetiological agent for 22 outbreaks during this quarter, with *S. Typhimurium* being the

Table 1: Mode of transmission for outbreaks of gastrointestinal illness reported by OzFoodNet, 1 January to 31 March 2010

| Transmission mode | Number of outbreaks | Per cent of total |
|-----------------------------------|---------------------|-------------------|
| Foodborne and suspected foodborne | 45 | 15 |
| Person-to-person | 216 | 71 |
| <i>Salmonella</i> cluster | 10 | 3 |
| Other pathogen cluster | 2 | 1 |
| Unknown | 33 | 11 |
| Total | 306 | 100* |

* Percentages do not add up due to rounding.

most common serotype ($n = 21$). Of the remaining 23 outbreaks, three were due to *Clostridium perfringens*, two to ciguatera fish poisoning and one each to norovirus, suspected scombroid fish poisoning and *Campylobacter*. For 15 outbreaks, the aetiological agent was unknown or not specified.

Eighteen outbreaks (40%) reported in this quarter were associated with food prepared in restaurants, 9 (20%) were associated with private residences, 6 (13%) with aged care facilities, 4 (9%) with takeaway food outlets and two each (4%) with bakeries and commercial caterers. Single outbreaks (2%) were associated with commercially manufactured food, a national franchised fast food outlet and primary produce. In 1 outbreak the setting was unknown.

To investigate these outbreaks, sites conducted 7 cohort studies and collected descriptive case series data for 36 investigations, while for 2 outbreaks no individual patient data were collected. As evidence for the implicated food vehicle, investigators obtained both microbiological and analytic evidence for 2 outbreaks, relied on microbiological evidence in 3 outbreaks and analytical evidence alone for 1 outbreak. Descriptive evidence alone was obtained in 39 outbreaks.

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

Australian Capital Territory

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

Following a dinner party at a private residence, four of the 5 persons attending became unwell. Two cases were confirmed with *S. Typhimurium* phage type (PT) 170. A chocolate mousse was the suspected food vehicle.

In addition, 3 residents of the Australia Capital Territory with confirmed *S. Typhimurium* PT 9 infections, were linked to an interstate outbreak occurring at a hamburger restaurant (reported under Foodborne outbreaks, New South Wales).

New South Wales

There were 18 reported outbreaks of foodborne or suspected foodborne illness during the quarter.

Five people presented to an emergency department with symptoms of hypotension, rash, numbness and tingling, vomiting and diarrhoea, following the consumption of mahi-mahi fillets at 2 different restaurants in the same area. Mahi-mahi is a fish known to be associated with scombroid (histamine) fish poisoning and cases were treated with antihistamine. Both restaurants bought their fish from 1 supplier, who withdrew the suspected batch from sale.

Seven outbreaks of *S. Typhimurium* were investigated.

- Five of seven people who consumed a home-made seafood casserole with a raw egg mayonnaise dressing developed diarrhoea and/or vomiting. Four people were hospitalised and each case was positive for *S. Typhimurium* PT 170, multi-locus variable number of tandem repeats analysis (MLVA) 3-(9)10-7-15-523.* The farm from which the eggs used to prepare the mayonnaise were sourced was inspected and 50 samples (faecal matter, swabs, eggs) tested negative for *Salmonella*.
- An outbreak of *S. Typhimurium* MLVA type 3-(9)10-7-15-523 was reported amongst 7 people from a group of 100, who developed vomiting, diarrhoea, abdominal cramps and fever after consuming food at a wedding, prepared by a friend. Five people submitted stool samples, and all five were positive for *S. Typhimurium*, with MLVA patterns as follows: MLVA 3-10-7-15-523 (n = 3), MLVA 3-9-7-15-523 (n = 1) (1 MLVA typing outstanding). The food vehicle suspected to be the source of infection (eaten by only a few

people at the function) was a tiramisu prepared with raw eggs. No environmental assessment was conducted.

- An outbreak of *S. Typhimurium* MLVA 3-9-7-13-523 occurred in a nursing home, where 2 residents developed diarrhoea due to *S. Typhimurium* infection. Both residents were on a pureed diet. No other residents in the facility were unwell and no source of infection could be identified.
- Four people from a family of five developed diarrhoea, vomiting and fever after consuming BBQ pork from an Asian takeaway. Three were admitted to hospital and their stool samples tested positive for *S. Typhimurium* MLVA type 3-11-10-9-523. Samples of raw pork, and swabs from the cutting board and the preparation bench were also positive for the *S. Typhimurium* (cutting board MLVA type 3-11-10-6-523, preparation bench MLVA type 3-11-10-9-523, and raw pork MLVA type pending). A sample of another batch of BBQ pork was negative for pathogens.
- Two of a family of four developed diarrhoea after eating a pork bun (the only common food eaten by both cases) at a Yum Cha restaurant. Stool specimens for both were positive for *S. Typhimurium* MLVA type 3-10-15-12-496. Environmental samples were all negative except for a swab taken from a table used to prepare raw pork, which was positive for *S. Agona*.
- Ten *S. Typhimurium* cases in December were investigated and four of these had identical MLVA type (3-14-8-12-523) while others had minor variations in MLVA type. This MLVA type is uncommon in New South Wales. The only link identified between three of the cases was the consumption of pork rolls: 2 cases consumed pork rolls from 1 bakery and 1 case from another bakery in a different part of Sydney. The bakery where two of the cases had eaten was inspected by the New South Wales Food Authority (NSWFA) and a number of issues were found regarding hygiene and cleanliness of the premises. The business was also producing raw egg mayonnaise and making other ingredients, such as pate, for the pork rolls on site. All food and environmental samples tested negative for *Salmonella*. The NSWFA issued a warning letter to the bakery on the use of raw egg foods along with an improvement notice.
- An outbreak of *S. Typhimurium* PT 9 was investigated amongst patrons of a takeaway food business in Albury. Illness was associated with the consumption of foods containing an aioli prepared with raw eggs. Interviews were con-

* Reported in Australian nomenclature used by the Institute of Clinical Pathology and Medical Research.

ducted with 206 people who ate at the outlet over a period of 6 days and 170 reported symptoms of diarrhoea and/or vomiting, fever, abdominal pain, myalgia and bloody stools, 102 were laboratory confirmed cases of *Salmonella*, with 87 of these typed as *S. Typhimurium* PT 9. This pathogen was also isolated from the aioli and from a swab taken from chopping boards. The egg farm that supplied the eggs used to prepare the aioli was inspected but no *Salmonella* was detected in environmental samples.

- During an investigation into an increase of *S. Singapore* notifications in the Hunter New England area, a small outbreak was identified amongst 5 people (three with laboratory confirmed *S. Singapore* infection) who had consumed food from a kiosk. Two cases consumed meals containing egg (salad and wrap). A trace-back investigation identified that the eggs were supplied by an egg producer previously implicated in another *S. Singapore* outbreak affecting 3 people who dined at a common local restaurant.¹ An environmental investigation of the egg farm resulted in the identification of *S. Singapore* from swabs taken from the egg grading machine.

There were a further 9 reports of suspected foodborne outbreaks during the quarter that were of unknown aetiology. In New South Wales, foodborne outbreaks are often reported to the NSWFA Consumer Complaints Line by members of the public. This results in a large number of outbreaks affecting small numbers of people being referred to public health units. These outbreaks usually require limited epidemiological investigation and often the aetiology remains unknown.

Northern Territory

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

Queensland

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

In January, 6 people reported gastrointestinal illness after a privately catered function attended by 30 to 40 people on New Year's Eve. One case (a 2-year-old female) presented to hospital with watery diarrhoea and vomiting. Norovirus genotype II was detected in a faecal specimen. Foods consumed at the gathering included salads, sausages, garlic eggs and deer meat that was cooked in a hāngi. Investigators were unable to determine the food vehicle and participants were unwilling to co-operate with the investigation.

In January, four of 5 people became ill after attending a restaurant where they consumed a range of chicken dishes with fried rice. No aetiological agent was identified.

Four outbreaks were due to *Salmonella* and all occurred in restaurant settings.

- Three cases of *S. Typhimurium* PT 170 (MLVA 1-13-3-21-3[†]) and 3 epidemiologically linked cases of infection were reported amongst people who had dined at a Brisbane café in January. All cases had consumed breakfast meals consisting of egg dishes only. The 3 laboratory-confirmed cases were unknown to each other and attended the café at separate times on the same day. No source of infection was identified.
- Three adults became ill after attending an Asian restaurant on the same day in January, all were confirmed to have been infected with *S. Typhimurium* PT 170 (MLVA profile 1-13-3-21-3). Meals consumed included fried rice, chicken and deep fried ice cream. *S. Typhimurium* with the same MLVA profile was detected in 2 samples of uncooked ice cream balls covered in an egg-based batter. *S. Typhimurium* was also detected in raw chicken samples collected from the restaurant. These cases were identified as part of a wider cluster investigation following an increase in *S. Typhimurium* (MLVA 1-13-3-21-3) cases in the Brisbane area.
- Four adults who attended an Asian restaurant over a 3-day period in January became ill and were confirmed to have been infected with *S. Typhimurium* PT 89 (MLVA 3-9-19-3-1). All 4 cases reported the consumption of lightly cooked egg-based calamari. *S. Infantis* was cultured in two of 6 pooled samples from 6 dozen eggs that were collected from the egg wholesaler that supplied the restaurant; however no *S. Typhimurium* was isolated. The implicated egg farm was audited by Safe Food QLD with further specimens (drag swabs, eggs, wash water etc.) collected. *S. Typhimurium*, *S. Infantis*, *S. Mbandaka*, *S. subsp I* and *S. Orion* were detected in drag swabs. *S. Typhimurium* was subtyped as MLVA 3-9-19-3-1; the same profile as the restaurant outbreak cases.

Nine cases of *S. Typhimurium* PT 89 (MLVA profile 1-5-5-2-3) were identified among people who had consumed sushi meals from a Brisbane sushi restaurant. The meals were purchased between 6 and 21 February 2010. One case was hospitalised. The food business was temporarily closed by the

[†] Reported in the European nomenclature used by Queensland Health Forensic and Scientific Services.

local council due to poor food hygiene and handling practices. Multiple food vehicles were associated with illness but no source of infection was identified. No *Salmonella* was detected in environmental or food samples despite extensive sampling.

Two outbreaks of ciguatera fish poisoning were reported.

- Four of 8 people became ill with ciguatera-like symptoms in January after consuming a Spanish mackerel soup. The incubation period was between four and 7 hours. All 4 cases were admitted to hospital with three of these cases treated in intensive care. The soup was made using a 2 kg mackerel fish head that was purchased from a local Brisbane fish market. Some of the remaining fish had been sold to the public; however Environmental Health were able to remove the left over fish from sale. Trace-back investigations identified that the mackerel was caught in a channel off Bribie Island.
- Six people became ill after consuming a home made fish curry using an unknown species of fish. Illness began between two and 12 hours after consuming the fish, with symptoms typical of ciguatera fish poisoning, including numbness or tingling of skin, diarrhoea, vomiting and reversed temperature sensation. The fish was purchased from a local seafood outlet in Brisbane but no trace-back could be conducted as the fish species was unknown.

South Australia

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

Following an increase in *S. Typhimurium* PT 9 notifications in January 2 separate outbreak investigations were conducted.

- Nine cases were associated with a local bakery. No specific food source was identified; however, an inspection of the food premises identified a number of issues with food handling in the bakery, which were addressed.
- Three cases of *S. Typhimurium* PT 9 were associated with a group function held at a private residence. Nine people attended the function and another ate leftovers. A cohort study was conducted to investigate the outbreak, but no specific food source could be identified.

Tasmania

Twenty-six of 43 people reported gastroenteritis after attending a 50th wedding anniversary luncheon at

a restaurant in March. Consumption of a creamy chicken dish was the only food item significantly associated with illness (RR = 2.02, 95% CI 1.21 to 3.37). All faecal specimens (n = 5) and food samples tested negative for viral and bacterial pathogens and no aetiological agent could be identified. No food safety breaches were identified.

Victoria

There were 12 reported outbreaks of foodborne or suspected foodborne illness during the quarter.

Five were outbreaks of *Salmonella*.

- Six of the 14 guests at a party were confirmed with *S. Typhimurium* PT 170 and one was hospitalised. Home-made mayonnaise using raw eggs was used as a dressing for a crab salad and also as a dip. All confirmed cases ate either or both of these dishes. The host purchased the eggs used in the mayonnaise from a large supermarket chain, but could not recall the type or brand of eggs purchased.
- Analysis of surveillance data detected 3 cases of *S. Typhimurium* PT 9 associated with dining at a restaurant on a single day in January. Other groups booked at the restaurant for the same weekend were contacted, and a further 10 people reported illness with onsets from 1 to 2 days after their meal. Cases had consumed a degustation menu with approximately 10 courses. All cases had consumed an egg dish with the yolks served warm but uncooked. Eggs sampled from the restaurant tested negative for *Salmonella*. The eggs were supplied directly to the restaurant by an egg producer. All drag swabs and eggs collected from the farm also tested negative for *Salmonella*. The restaurant removed the egg dish from the menu.
- In February, analysis of surveillance data detected 2 cases of *S. Typhimurium* PT 9 linked to the same restaurant/café. Investigations revealed that 8 people from 4 separate groups who had eaten at the café on consecutive days also reported illness. Most cases had consumed dishes containing scrambled eggs, which the proprietor said were cooked for only 30 seconds. Eggs were supplied to the café by the same egg producer implicated in an outbreak of *S. Typhimurium* PT 9 in January (described above). Eggs sampled from the café and drag swabs and eggs collected from the farm all tested negative for *Salmonella*.
- A case confirmed with *Salmonella* was found to have attended a party held in a community hall in February, with 14 of approximately 90 guests reporting gastrointestinal symptoms

two to 4 days after the party. Five cases were subsequently confirmed with *S. Typhimurium* PT 141. The party was catered by a local butcher with a variety of salads, meats and desserts purchased from a bakery. The butcher was not registered with the council as a caterer. Interviews were conducted with 47 party guests, but analysis was inconclusive. *S. Typhimurium* PT 141 was detected in leftover pasta salad. Samples of raw meat and swabs of the preparation area at the home were negative for *Salmonella*.

- A general practitioner reported an outbreak of gastrointestinal illness amongst five of 6 family members. The cases developed diarrhoea and abdominal pain the day after consuming take-away chicken and salad rolls and an egg and sausage meal at home. Stool specimens from all 5 cases tested positive for *S. Typhimurium* PT 135a. Chicken was sampled from the take-away premises, and this was negative for *Salmonella*. The eggs consumed could not be identified as the family purchases a variety of brands of eggs from a major supermarket chain.

Three were outbreaks of *C. perfringens*.

- In February, a regional environmental health officer reported an outbreak of gastrointestinal illness in an aged care facility, with 8 of 60 residents ill with diarrhoea and/or vomiting. Meals were provided to the facility (and several other facilities) by a local hospital kitchen. No illness was reported in the other facilities. Of the 7 faecal specimens collected two were positive for *C. perfringens* enterotoxin. All ill residents had consumed roast beef the evening before onset of illness. The roast beef was cooked the day before service, cooled and then sliced. One-third of the residents consume vitamised foods. Before serving, the meat was reheated in a way that may have allowed bacteria to grow and foods were not subjected to a further heating step after vitamising. The council and the Food Safety unit addressed these issues with the facility.
- The Director of Nursing of an aged care facility reported gastrointestinal illness amongst 16 of 52 residents; all with onset of diarrhoea on the same day in March. Three faecal specimens were collected and all were positive for *C. perfringens* enterotoxin. It appears that foods (particularly meat dishes) were prepared a day before being served and cooled, stored refrigerated and then reheated prior to serving. Vitamising was conducted after the reheating step, and no further heating was conducted after this process step. Council was requested to address these issues with the facility, as well as the issue of incomplete food safety records.

- The clinical manager of an aged care facility reported gastrointestinal illness amongst 16 of 30 residents with onsets of diarrhoea clustered around one day in March. Three cases also had vomiting. Five of the 14 faecal specimens were positive for *C. perfringens* enterotoxin. Menus and food process details were requested, but insufficient information was provided to enable the source, or any issues with process steps, to be identified.

An outbreak of gastrointestinal illness was reported amongst 19 people from 35 who had attended a party in a private residence in January. Seven faecal specimens were tested and one was positive for *Shigella*. The remainder were negative for bacterial and viral pathogens. The *Shigella* case was the party host, who prepared all the food for the party. Several leftover foods were sampled and all were negative for bacterial pathogens.

An outbreak of diarrhoea and/or vomiting occurred amongst residents, visitors and staff of an aged care facility who had attended a lunch at the facility in January. Nine out of the 12 people attending the lunch reported illness. Four attendees agreed to be interviewed, with three providing faecal specimens. One faecal specimen tested positive for *Shigella* and another for *Plesiomonas*, while the 3rd was negative for bacterial and viral pathogens. Tuna sandwiches were served at the lunch and samples collected were negative for both *Shigella* and *Plesiomonas*.

An aged care facility reported an outbreak of gastroenteritis amongst 6 residents in February, with three of 5 specimens testing positive for *Campylobacter jejuni*. Onset of illness was over a 7-day period. Food histories for 5 symptomatic residents were examined along with menus provided by the facility, but the source of the outbreak could not be identified.

In February, an aged care facility manager notified illness in 4 of 107 residents with onset of diarrhoea on the same day. One faecal specimen was collected and this was negative for bacterial and viral pathogens. Several foods were sampled and all were negative for pathogens, however the presence of coliforms in some foods indicated post-process contamination. Council was requested to follow-up with the premises regarding issues with food process steps, particularly preparation of food the day before service, as well as cooling, cold storage and reheating steps.

Western Australia

There were 3 outbreaks reported during the quarter that were considered foodborne or suspected foodborne. One of these outbreaks occurred in December but was investigated in January.

Analysis of surveillance data in January revealed that 7 cases of gastrointestinal illness with onset dates over an 18-day period in December, had all eaten food from a metropolitan restaurant. Six cases were diagnosed with *S. Typhimurium* PT 170 (pulsed field gel electrophoresis [PFGE] type 0011). The other case had an illness consistent with *Salmonella* infection. Four cases had eaten scrambled eggs, two had pan fried fish and the last case could not recall what they had eaten. This restaurant was previously associated with an outbreak of the same strain of *Salmonella* in October 2009.¹ The eggs used by the restaurant in October were from the same farm as those used in December. No food was collected during the 2nd outbreak and environmental swabs of the food business were negative for *Salmonella*. In response to this 2nd outbreak the restaurant changed to a different egg supplier.

Twenty-five people became ill in January and at the beginning of February after eating food from a particular restaurant. Onset dates were spread over 21 days. Eighteen cases were diagnosed with *S. Typhimurium* PT 170 (PFGE type 0011) and the remaining 7 cases had an illness consistent with *Salmonella* infection. An aioli was consumed with a variety of foods by 22 of the cases and 2 cases had eaten Caesar salad. Both contained raw eggs. Samples of aioli and a red curry mayonnaise were positive for the outbreak strain but eggs and other sauces including Caesar salad dressing were negative for *Salmonella*. An environmental investigation showed that raw egg products were not stored adequately and batches were used over a long period of time. The eggs used by this restaurant were from the same egg farm that was implicated in 2 previous outbreaks of this *S. Typhimurium* strain in 2009¹ and 1 outbreak investigated in January 2010 (described above). Eggs and drag swabs from this farm were negative for *Salmonella*. In response to the outbreak, the restaurant started using pasteurised eggs for sauces and changed its egg supplier. Information on the risks of using raw eggs in mayonnaise and other products was posted on the Western Australia Department of Health web site and distributed to local government.

In March, an outbreak of gastrointestinal illness of unknown aetiology occurred amongst 11 of 12 tourists and their local guide on the day the group arrived from Japan. The group's driver and Japanese guide were not affected. There were no reports of prior illness among tourists or guides. Food eaten by the group included karaage chicken, rice balls and pickles purchased hot from a Japanese restaurant and served for lunch 12 hours later. No left over food was available for testing and no stool samples were collected. This outbreak was a suspected toxin-mediated illness resulting from inappropriate storage of food.

Multi-jurisdictional outbreak investigations

Hepatitis A

A previously reported multi-jurisdictional investigation into an outbreak of hepatitis A was stood down on 18 March 2010, with reports of new locally-acquired cases of hepatitis A decreasing from early November 2010. This outbreak led to a large increase in the number of hepatitis A cases reported in Australia in 2009, and the 2 peaks of the outbreak can clearly be seen on an epidemic curve (Figure.)

In the 2nd wave of the outbreak, from 29 June 2009 to 18 March 2010, there were 272 cases of hepatitis A in Australia that were known to have been locally acquired, with 119 of these cases reporting consumption of semi-dried tomatoes (44%). Nearly half of these cases (46%, 125/272) were known to have been hospitalised. The majority of cases (71%, 192/272) were from Victoria, where a 2nd case-control study was commenced in October 2009. Univariate analyses showed a significant association between consumption of semi-dried tomatoes and hepatitis A illness (OR = 10.3; 95% CI 4.7–22.7). There were 14 cases in Victoria who had close household contact with a confirmed case, and a further 8 cases who had casual contact with a confirmed case, indicating that at least 22 Victorian cases were likely due to secondary transmission.

Cluster investigations

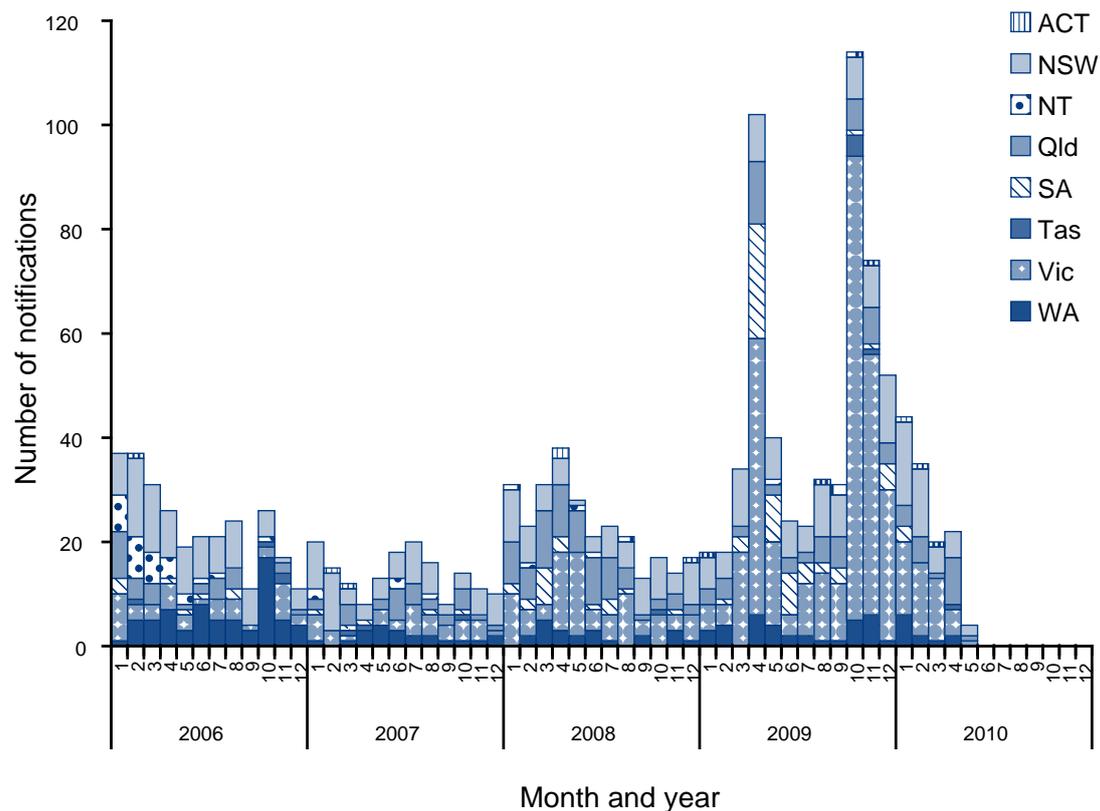
During the quarter, OzFoodNet sites conducted investigations into a number of clusters of infection for which no common food vehicle or source of infection could be identified. Clusters investigated included Shiga toxin producing *Escherichia coli* (STEC) serogroup O157 and shigellosis. A number of *Salmonella* serotypes were also investigated; *S. Hvittingfoss*, *S. Infantis*, *S. Wangata*, *S. Potsdam*, *S. Montevideo*, *S. Bredeney* and *S. Saintpaul* and *S. Typhimurium* (PT 9 and PT 135a).

Comments

The number of foodborne outbreaks reported during the quarter ($n = 45$) exceeded the average number during the same quarter over the past 5 years ($n = 34$). This increase in the number of foodborne outbreaks coincided with a general increase in the number of notifications of salmonellosis to the Nationally Notifiable Diseases Surveillance System (NNDSS), with 4,038 notifications of salmonellosis during the quarter compared with a mean of 3,106 notifications for the same period over the past 5 years.

Establishing relatedness between isolates of a particular pathogen using methods such as MLVA

Figure: Epidemic curve of hepatitis A infections, Australia, 1 January 2006 to 20 May 2010, Nationally Notifiable Diseases Surveillance System, by month and year of diagnosis



and PFGE is an essential component of foodborne disease surveillance. For inter-jurisdictional identification of clusters, the availability of a particular test across the jurisdictions, consistent methodology and nomenclature for the chosen method is essential. OzFoodNet continues to work with public health laboratory staff and the Public Health Laboratory Network of Australia towards achieving this. NNDSS and most jurisdictional notification systems in Australia have a limited capacity to store typing information beyond serotype and phage type. The capacity of these systems needs to be evaluated, and improved where possible.

Sharing information about the multi-jurisdictional outbreak of hepatitis A in Australia was vital to investigators finding the source of infection for outbreaks occurring overseas. The information provided through a notification under the WHO *International Health Regulations* (2005), via the WHO International Food Safety Authorities Network and the European Centre for Disease Control prompted the Euro virology network to compare sequences and identify a related cluster in the Netherlands. The sequences of the Australian outbreak strain and the cluster in the Netherlands were found to be identical.² The sequence of the hepatitis A virus from the outbreak in France was similar but not the same as the virus from The

Netherlands and Australian outbreaks.² In an outbreak in France, investigators were alerted to the possibility of an epidemiological link with semi-dried tomatoes. Case-control studies identified semi-dried tomatoes as the source of infection in both countries.²⁻³

Outbreaks of foodborne disease associated with eggs are of continuing concern in Australia. During the quarter, 24% (11/45) of outbreaks of foodborne illness were suspected or confirmed to have been associated with the consumption of eggs. In particular, a high risk practice identified this quarter from the food service sector was the use of mayonnaise and aioli that has been prepared on one day for use over subsequent days.

During the quarter, OzFoodNet provided epidemiological support to the investigation of a non-microbial food incident—thyroid dysfunction associated with the consumption of a soy milk product that contained seaweed. In December 2009, clinicians at a New South Wales hospital investigated a case of neonatal hypothyroidism, which was suspected to be linked to the mother's high levels of consumption of a seaweed-enriched soy milk product. The hospital laboratory found that the soy milk product contained very high levels of iodine. An endocrinologist in New

South Wales subsequently reviewed adult cases of thyroid dysfunction (hyperthyroidism and hypothyroidism) in their practice, and found that there were 9 cases that were suspected to be associated with consumption of the same product, and the cluster was reported to local public health authorities. Further testing on the soy milk product was conducted at an accredited laboratory and confirmed the product contained very high levels of iodine, with tolerable daily iodine intake levels for an adult likely to have been exceeded with the consumption of as little as 30 mL per day.⁴ The product was subsequently voluntarily recalled by the Australian importer. Between 23 December 2009 and 31 March 2010, 40 cases of thyroid dysfunction suspected to be associated with the consumption of the recalled soy milk product were reported to the national database.

OzFoodNet conducted an outbreak debrief of response to the multi-jurisdictional outbreak of listeriosis that occurred in 2009.⁵ Several recommendations were made to improve co-ordination of outbreaks and surveillance for listeriosis. A key recommendation was to develop a surveillance plan for listeriosis, under which all *Listeria* isolates from human cases would be initially typed by molecular serotype and binary gene type and all epidemiological data would be collected in a national database. Weekly review of subtyping data would enable rapid identification of clusters and collecting all epidemiological data in a central database would facilitate rapid case–case analyses of potential clusters. Definitive sub-typing methods would be used to provide further evidence for the cluster.

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 reported should be interpreted with caution due to the small numbers 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 and local government environmental health officers who provided data used in this report. We would also like to thank laboratories conducting serotyping, molecular typing and phage typing of *Salmonella* and other pathogens for their continuing work during this quarter.

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Table 2: Outbreaks of foodborne disease reported by OzFoodNet sites,* 1 January to 31 March 2010 (n = 45)

| State | Month of outbreak | Setting prepared | Agent | Number affected | Hospitalised | Evidence | Responsible vehicles | |
|-------|-------------------|-------------------------------|--|--------------------------|--------------|----------|--|---------------|
| ACT | Mar | Private residence | S. Typhimurium PT 170 | 4 | 0 | D | Suspected chocolate mousse containing raw egg | |
| NSW | Jan | Takeaway | S. Singapore | 5 | 0 | D | Suspected foods containing eggs (egg and salad wrap, egg salad) | |
| | Jan | Bakery | S. Typhimurium | 10 | 0 | D | Suspected pork roll | |
| | Jan | Restaurant | S. Typhimurium | 2 | 1 | D | Suspected pork buns | |
| | Jan | Unknown | S. Typhimurium | 2 | 0 | D | Unknown pureed food | |
| | Jan | Private residence | S. Typhimurium PT 170 | 5 | 4 | D | Suspected mayonnaise prepared with raw eggs | |
| | Jan | National franchised fast food | S. Typhimurium PT 9 | Unknown | Unknown | AM | Aioli prepared with raw egg | |
| | Jan | Restaurant | Suspected scombroid (histamine) fish poisoning | 5 | 0 | D | Mahi-mahi fish filets | |
| | Jan | Restaurant | Unknown | 25 | 0 | D | Unknown | |
| | Jan | Takeaway | Unknown | 3 | 0 | D | Suspected assorted pizzas | |
| | Feb | Restaurant | Unknown | 3 | 0 | D | Unknown | |
| | Feb | Takeaway | S. Typhimurium | 4 | 3 | M | Barbecued pork | |
| | Feb | Restaurant | Unknown | 3 | 0 | D | Suspected chicken or beef | |
| | Feb | Restaurant | Unknown | 4 | 0 | D | Suspected lamb, beef and chicken skewers and an assortment of vegetables | |
| | Feb | Restaurant | Unknown | 4 | 0 | D | Unknown | |
| | Mar | Private residence | S. Typhimurium | 9 | 1 | D | Suspected tiramisu prepared with raw eggs | |
| | Mar | Commercial caterer | Unknown | 50 | 0 | A | Suspected fruit kebabs | |
| | Mar | Commercial manufactured food | Unknown | 3 | 0 | D | Suspected orange and mango fruit drink | |
| | Mar | Takeaway | Unknown | 3 | 1 | D | Unknown | |
| | Qld | Jan | Primary produce | Ciguatera fish poisoning | 6 | 0 | D | Fish curry |
| | | Jan | Private residence | Ciguatera fish poisoning | 4 | 4 | D | Mackerel soup |
| Jan | | Private residence | Norovirus | 6 | 1 | D | Unknown | |
| Jan | | Restaurant | S. Typhimurium PT 170 | 6 | 1 | D | Unknown | |
| Jan | | Restaurant | S. Typhimurium PT 170 | 3 | 0 | M | Deep fried ice cream | |
| Jan | | Restaurant | S. Typhimurium PT 89 | 4 | 0 | D | Unknown | |
| Jan | | Restaurant | Unknown | 4 | 0 | D | Unknown | |
| Feb | | Restaurant | S. Typhimurium PT 89 | 9 | 1 | D | Unknown | |

Table 2: Outbreaks of foodborne disease reported by OzFoodNet sites,* 1 January to 31 March 2010 (n = 45), continued

| State | Month of outbreak | Setting prepared | Agent | Number affected | Hospitalised | Evidence | Responsible vehicles | |
|-------|-------------------|--------------------|------------------------|-----------------------|--------------|----------|--|--------------------------|
| SA | Jan | Bakery | S. Typhimurium PT 9 | 9 | 0 | D | Bakery products, no specific item identified | |
| | Jan | Private residence | S. Typhimurium PT 9 | 6 | 0 | D | Unknown | |
| | Mar | Restaurant | Unknown | 26 | 0 | AM | Unknown | |
| Vic | Jan | Aged care | Not further specified | 9 | 0 | D | Unknown | |
| | Jan | Private residence | Not further specified | 19 | 0 | D | Unknown | |
| | Jan | Private residence | S. Typhimurium PT 170 | 12 | 1 | D | Suspected eggs | |
| | Jan | Restaurant | S. Typhimurium PT 9 | 13 | 1 | D | Suspected eggs | |
| | Feb | Aged care | C. perfringens | 9 | 0 | D | Unknown | |
| | Feb | Commercial caterer | S. Typhimurium PT 141 | 14 | 1 | D | Unknown | |
| | Feb | Restaurant | S. Typhimurium PT 9 | 8 | 1 | D | Suspected eggs | |
| | Mar | Aged care | C. perfringens | 17 | 0 | D | Unknown | |
| | Mar | Aged care | C. perfringens | 16 | 0 | D | Unknown | |
| | Mar | Aged care | Campylobacter | 5 | 0 | D | Unknown | |
| | Mar | Aged care | Not further specified | 4 | 0 | D | Unknown | |
| | Mar | Private residence | S. Typhimurium PT 135a | 5 | 0 | D | Suspected chicken or eggs | |
| | WA | Dec | Restaurant | S. Typhimurium PT 170 | 7 | 1 | D | Scrambled eggs |
| | | Jan | Restaurant | S. Typhimurium PT 170 | 25 | 5 | M | Aioli and Caesar salad |
| | | Mar | Restaurant | Unknown | 12 | 0 | D | Karaage chicken and rice |

The month of outbreak represents the month of onset of outbreak.

- 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.

* No foodborne outbreaks were reported by the Northern Territory.