Quarterly reports

OzFoodNet quarterly report, 1 April to 30 June 2008

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. 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 2008.

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 second quarter of 2008, OzFoodNet sites reported 397 outbreaks of enteric illness, including those transmitted by contaminated food. Outbreaks of gastroenteritis are often not reported to health agencies or the reports are delayed, meaning that these figures under-represent the true burden of enteric illness. In total, these outbreaks affected 6,295 people, of which 202 were hospitalised and 18 people died. The majority (84.6%, n=335) of outbreaks were due to person-to-person transmission (Table 1).

Foodborne disease outbreaks

There were 25 outbreaks during this quarter where consumption of contaminated food was suspected or confirmed as the primary mode of transmission (Table 2). These outbreaks affected a total of 393 people and resulted in 21 being admitted to hospital. There were 3 deaths. This compares with 34 outbreaks for the second quarter of 2007[1] and 29 outbreaks in the first quarter of 2008.[2]

Table 1. Mode of transmission for outbreaks of gastrointestinal illness reported by OzFoodNet sites, 1 April to 30 June 2008

Transmission mode	Number of outbreaks	Per cent of total
Foodborne	25	6.3
Person-to-person	335	84.6
Unknown	30	7.6
Salmonella cluster	5	1.3
Other pathogen cluster	2	0.5
Total	397	100.0

Salmonella was implicated in 11 outbreaks during this quarter, with *S.* Typhimurium being the most common serotype. There were 2 outbreaks each due to *S.* Typhimurium phage types 135a, 44 and U290, and 1 each due to phage type 9 and phage type 135. One outbreak was due to *S.* Johannesburg.

There were 4 foodborne outbreaks of norovirus during this quarter. There were 3 foodborne toxin-related outbreaks during the quarter, including 2 *Clostridium perfringens* outbreaks and 1 ciguatera fish poisoning outbreak. There was 1 outbreak due to hepatitis A. The remaining 6 outbreaks were caused by unknown aetiological agents.

Thirteen outbreaks reported in this quarter were associated with food prepared in restaurants, 3 with food prepared in private residences, 3 with food prepared by a commercial caterer, 2 in aged care facilities and 1 outbreak each in a correctional facility and a school. One outbreak was associated with primary produce, and 1 was a community outbreak.

To investigate these outbreaks, sites conducted 6 cohort studies and collected case series data for 18 investigations. Investigators obtained analytical epidemiological evidence in 4 outbreaks and microbiological evidence in 3 outbreaks. For the remaining 18 outbreaks, investigators obtained descriptive evidence implicating the food vehicle or suggesting foodborne transmission.

The following jurisdictional summaries describe key outbreaks and public health actions which occurred in this quarter. The Australian Capital Territory and the Northern Territory did not report any foodborne outbreaks during this quarter.

New South Wales

New South Wales reported 11 foodborne outbreaks during this quarter.

Table 2. Outbreaks of foodborne disease reported by OzFoodNet sites,* 1 April to 30 June 2008 (n=25)

State	Month of outbreak	Setting prepared	Infection	Number affected	Evidence	Responsible vehicles
NSW	March†	Commercial caterer	*Salmonella* Typhimurium 135	5	D	Suspected chicken rissoles
	March†	Private residence	*S.* Typhimurium 135	4	D	Suspected eggs
	April	Restaurant	Norovirus	25	D	Unknown
	April	Restaurant	*S.* Typhimurium U290	4	M	Variety of Chinese dishes
	April	Commercial caterer	Clostridium perfringens toxin type A	31	A	Gravy
	April	Restaurant	*S.* Typhimurium U290	7	D	Chilli beef dish
	April	Restaurant	Unknown	7	D	Rice, or salt & pepper prawns
	May	Restaurant	Unknown	17	A	Fattouch salad – Lebanese bread salad
	May	Restaurant	Unknown	2	D	Stir fry beef
	May	Community	Salmonella Typhimurium 9	14	D	Suspected chicken and eggs
	June	Correctional facility	Unknown	14	D	Lasagne meal
Qld	March†	Primary produce	Ciguatera	6	D	Black kingfish
	April	Restaurant	Clostridium perfringens	2	M	Refried Mexican beans
SA	June	Aged care facility	*S.* Typhimurium 135	38	A	Vitamised foods
Tas	April	Private residences	*S.* Typhimurium 135a	3	D	Suspected eggs
Vic	April	Restaurant	*S.* Typhimurium 44	4	D	Suspected desserts
	May	Restaurant	*S.* Johannesburg	14	M	Roast pork
	May	Commercial caterer	Unknown	21	A	Chicken curry
	May	Restaurant	Norovirus	14	D	Breakfast meals
	May	Restaurant	Hepatitis A	12	D	Salads and sandwiches
	May	School	*S.* Typhimurium 44	26	D	Unknown
	June	Restaurant	Unknown	9	D	Multiple ready to eat foods
	June	Private residence	*S.* Typhimurium 135a	4	D	Suspect egg/custard dessert
WA	April	Restaurant	Norovirus	75	D	Unknown
	April	Aged care facility	Norovirus	42	D	Unknown

* No foodborne outbreaks were reported in Australian Capital Territory, the Northern Territory or South Australia during the quarter.

† Outbreak first detected in April 2008, first case of illness onset in March 2008.

D Descriptive evidence implicating the suspected vehicle or suggesting foodborne transmission.

A Analytical epidemiological association between illness and one or more foods.

M Microbiological confirmation of agent in the suspect vehicle and cases.

In an outbreak of *S.* Typhimurium phage type 135 with multi-locus variable number tandem repeat analysis (MLVA) pattern 3-12-9-10-550, 5 cases reported eating Thai chicken rissoles from 5 different food premises that were supplied by a common gourmet food producer. A swab from the floor of the kitchen of the gourmet food producer was positive for a molecular strain of *S.* Typhimurium indistinguishable from that of the human cases. In another outbreak, 4 cases of *S.* Typhimurium MLVA 3-12-9-10-550 were linked to a small scale local egg producer. Samples collected from the egg farm were negative for the outbreak strain but positive for 3 other *Salmonella* serovars. The gourmet food producer involved in the first outbreak may have purchased eggs from the small scale egg farm involved in the second outbreak. These 2 outbreaks were linked to a community-wide cluster of at

least 135 cases of *S*. Typhimurium with the same MLVA-type, with 83% of isolates identified as phage type 135 and the remaining isolates phage types 135a, 197, 6, 6 var 1 and U307.

An outbreak of *Clostridium perfringens* toxin type A affected 31 of 100 staff at a local high school who had attended a catered lunch at the school. The lunch was provided by a commercial caterer/ takeaway store. Cases reported symptoms of diarrhoea with abdominal pains (median duration of 18 hours), with a median onset of 14 hours after the catered lunch. A retrospective cohort study showed that consumption of gravy was independently associated with illness (RR=5.0, 95% CI 1.7–14.8). Two of the 3 faecal specimens submitted were positive for *C. perfringens* toxin type A. It is likely that inadequate cooling and reheating of the gravy prior to consumption contributed to the outbreak.

Two outbreaks of *S*. Typhimurium U290 (MLVA 3-12-10-12-523) affected 2 separate groups eating at Chinese restaurants. The first group of 4 ill people (1 laboratory-confirmed *S*. Typhimurium U290) had a shared meal which included a wide variety of Chinese foods. Symptoms of diarrhoea, abdominal cramps, vomiting and fever developed 36 hours after the shared meal. One case was hospitalised. An environmental investigation identified *S*. Typhimurium U290 from the kitchen preparation bench and a wooden chopping block on the bench. The second group of 7 ill people (5 laboratory-confirmed *S*. Typhimurium U290) shared a meal from a Chinese restaurant on the same street as the Chinese restaurant implicated in the first group of ill persons. Four cases became ill after eating at the restaurant, and 3 cases became ill after eating leftovers from that meal. While not confirmed, it is highly likely that the same establishment was responsible for both outbreaks.

An outbreak of *S*. Typhimurium 9 (MLVA 3-10-14-11-496) affected 14 people in the community. Consumption of egg and/or chicken products was suspected as the source of illness for these cases.

A probable foodborne outbreak due to norovirus affected 25 of 45 people on a bus tour in April. A cohort study did not identify any specific food items associated with illness; but an ill food handler who prepared food for the tour group at one of the premises visited on the tour was the likely source of the infection. Recommendations about food safety principles including exclusion of workers with gastroenteritis was made to the premises.

New South Wales also reported 4 suspected foodborne outbreaks with an unknown aetiology. A point source outbreak affected 14 of 49 people in a correctional facility following the consumption of a lasagne meal. The other 3 outbreaks occurred in restaurant settings and affected a total of 26 people.

Queensland

Queensland reported 2 outbreaks of foodborne illness during this quarter. In the first outbreak, 6 cases of ciguatera fish poisoning were associated with the consumption of black kingfish caught by recreational fishermen. Symptoms included reverse temperature sensation, numbness of hands, mouth and feet, skin rash and muscle pain. In the second outbreak, 2 males became ill with diarrhoea and stomach cramps approximately 12 hours after consuming chicken enchiladas with refried beans and rice from a Mexican restaurant in Brisbane. Food samples collected for testing included chicken enchiladas, refried beans and rice. High spore counts of *Clostridium perfringens* were detected in one faecal specimen and the refried bean food sample. Other food samples were negative for *C. perfringens*. Results suggested that time-temperature abuse of the refried beans was the contributing factor for this outbreak.

South Australia

South Australia reported one outbreak of suspected foodborne illness this quarter. An investigation was undertaken in an aged care facility with 21 confirmed cases of *Salmonella* Typhimurium phage type 135. An association was found between illness and the consumption of vitamised and soft food diets. Advice on infection control measures and kitchen hygiene practices was provided to the facility.

Tasmania

Tasmania reported an outbreak of *S*. Typhimurium 135a that affected 3 people in southern Tasmania. Illness was associated with the consumption of uncooked eggs from the same egg supplier. Two of the cases were children from the same household. The children consumed uncooked cake batter containing raw egg in their home the day prior to onset of their illness. The third case was a female who had also eaten uncooked muffin mix containing raw egg in her home approximately 36 hours prior to onset of illness. No eggs were available for sampling from either household. The implicated egg supplier is not the same as the supplier implicated in outbreaks of *Salmonella* in Tasmania during 2005, 2007 and in the first quarter of 2008.[2]

Victoria

Victoria reported 8 outbreaks of foodborne illness this quarter.

Two outbreaks of *S*. Typhimurium 44 were reported during the quarter. In the first outbreak, 4 confirmed cases of *S*. Typhimurium 44 were diagnosed in people from 2 separate groups who dined at the same restaurant on the same night. The source of illness was suspected to be an undercooked egg-containing dessert (chocolate mousse, ice cream or chocolate pudding). In the second *S*. Typhimurium 44 outbreak, 26 of 66 people from a rural boarding school were affected. The descriptive epidemiology of the outbreak suggested a point source foodborne outbreak. A retrospective cohort study was conducted, but a specific source could not be identified.

An outbreak of *S*. Johannesburg was linked to contaminated pork that was prepared at a restaurant. Twelve cases (10 laboratory confirmed *S*. Johannesburg) ate the pork during a 3 week period, most of them on a single weekend. The outbreak was first reported after 2 people became ill after consuming takeaway pork purchased from the restaurant. Leftover pork from the meal was positive for *S*. Johannesburg. Faecal specimens from 2 food handlers at the restaurant (one of whom was asymptomatic) were also positive for *S*. Johannesburg. A sample of raw pork obtained from the pork supplier was positive for *S*. Johannesburg.

An outbreak of gastrointestinal illness was reported amongst 21 people from approximately 240 guests at a commercially catered function where a selection of curries and various other types of Sri Lankan foods were served. The suspected aetiology was *Clostridium perfringens* based on the incubation period, symptoms and duration of illness, but faecal specimens, collected over a week after symptoms resolved, were negative for bacterial and viral pathogens. There was a statistically significant association with consumption of chicken curry and illness (RR 4.6, 95% CI 1.23–17.21; p=0.004). Temperature abuse of food was suspected but this could not be confirmed.

An outbreak of norovirus was notified in 2 separate groups of people who attended a café. The first group reported 8 people ill from a group of 9 and the second reported 6 ill from a group of 7. Norovirus was detected in 6 of 8 faecal specimens collected from cases. No illness was reported amongst food handlers at the café. It is suspected that the outbreak was foodborne, based on 2 separate groups being affected, and the incubation periods.

Routine follow-up of a case of hepatitis A notified in May revealed that the case was a part owner of a café. In late May another case was notified and the case mentioned eating at this café during their incubation period. In total, 10 notified cases of hepatitis A had eaten foods such as sandwiches and salads from this café during their incubation period. In addition, there was one confirmed case notified in a household contact of one of these 10 cases.

An outbreak of *S*. Typhimurium 135a affected 4 of 5 family members who consumed a dessert made with lightly cooked eggs that had been left at room temperature overnight. No leftover foods were available for testing and *Salmonella* was not detected in or on the surface of eggs purchased from the same food premises as those used in preparation of the dessert.

An outbreak of suspected viral gastroenteritis affected 9 people from 14 separate groups who dined at the restaurant on the same day. During the investigation it was discovered that a food handler who was responsible for preparing mixed ready to eat foods worked at the restaurant preparing food whilst he was symptomatic with vomiting and diarrhoea.

Western Australia

Western Australia reported 2 outbreaks of suspected foodborne illness this quarter.

In April, an outbreak of norovirus occurred in staff and residents in an aged care facility. The index case was a chef who had prepared food while he was ill with gastroenteritis. Other staff and residents subsequently became ill over a 24 hour period. Faecal specimens from 8 residents were positive for norovirus. The epidemiological picture was consistent with foodborne transmission.

Another outbreak of norovirus occurred amongst patrons who had eaten a buffet meal at a restaurant at 2 different sittings in 1 weekend. A total of 366 people were reported to have eaten at these buffet meals, and 92 of them were interviewed in a cohort study. Thai fish curry was the only food with significantly increased relative risk (RR=1.30, p<0.05), but this food was consumed by only 28% of cases. Six faecal specimens obtained were positive for norovirus. An inspection of the premises did not identify any major deficiencies and there were no reports of staff illness. It is likely that one or more foods served at the buffet during the 2 affected meal sittings were contaminated.

Other reports and activities of note

Increase in listeriosis in New South Wales

New South Wales reported a continuing increase in listeriosis cases, with 8 cases this quarter, giving a total of 22 cases for the year to date (the 5-year average of listeriosis in New South Wales is 27 cases per year). Of the 8 cases this quarter, 2 were in pregnant women. Epidemiological investigations were unable

to establish any links between cases. All isolates (n=17) tested by pulse-field gel electrophoresis were distinct from each other with the exception of a maternal-neonatal isolate pair, indicating that cases were not linked to a common source.

Shiga toxin-producing Escherichia coli in a visiting group of students from Japan

Japanese public health officials identified an outbreak of Shiga toxin-producing *Escherichia coli* O26 in Japanese students who had visited Sydney in late February. All cases were diagnosed and notified in Japan. Japanese public health officials contacted NSW Health and local investigators assisted in an environmental investigation at venues visited by the students including a wildlife park and several restaurants. No association was found.

Salmonella Paratyphi B biovar Java linked to sandpits

New South Wales also reported a non-foodborne outbreak of *S*. Paratyphi B biovar Java affecting at least 27 cases this quarter. Epidemiological and environmental investigations identified an association between illness and playing in council playgrounds. *S*. Paratyphi B biovar Java was isolated from sand samples taken from implicated playgrounds. Implicated playgrounds with positive samples have been closed and clean-up efforts have commenced. Animal sampling and further investigations are continuing to determine the source of contamination of the sand.

Comments

Outbreaks associated with eggs and egg-containing products

Eggs and egg-containing foods continue to be a frequent source of foodborne outbreaks of gastrointestinal illness. During this quarter, 25% (6/24) of reported foodborne outbreaks were suspected to be due to eggs or egg-containing foods. *S*. Typhimurium was found to be the aetiological agent in all of these outbreaks, with 4 different phage types (135, 135a, 9 and 44) involved. In most of these outbreaks the consumption of foods containing raw or undercooked eggs was implicated, highlighting the need for thorough cooking of eggs and egg-containing foods or alternatively, substituting pasteurised eggs in dishes that are intended to be consumed uncooked or are only lightly cooked.

Outbreaks of Clostridium perfringens

Two outbreaks during the quarter were due to *Clostridium perfringens* enterotoxin. It was thought that temperature abuse was a contributing factor in these outbreaks and highlights the need for ongoing education of food handlers about correct methods of cooling, reheating and hot-holding of foods.

Outbreak of Salmonella in an aged care facility

The outbreak of *Salmonella* Typhimurium 135 in an aged care facility, reported by South Australia, highlights the potential for outbreaks in aged care settings. Foodborne outbreaks in aged care facilities are rare, about 98% of gastrointestinal outbreaks in aged care facilities are viral gastroenteritis, spread by person to person transmission (OzFoodNet Working Group, unpublished data 2008).

Outbreak of Salmonella Paratyphi B biovar Java linked to a sandpit

Of interest in this quarter's report is the outbreak of *S*. Paratyphi B biovar Java in New South Wales associated with sand in local playgrounds. *Salmonella* has been associated with sandpits and playgrounds in other countries,[3] but this is the first known outbreak of salmonellosis in Australia associated with sandpits. The strain of *S*. Paratyphi B biovar Java in this outbreak is fully sensitive to antibiotics and therefore different from the multi-drug-resistant strain that has previously been associated with contact with tropical fish tanks.[4]

Harmonising systems for the molecular typing of Salmonella species

A community wide cluster of *S*. Typhimurium in New South Wales with 135 cases (including 2 separate point-source outbreaks discussed under foodborne outbreaks) was first detected using MLVA, which has been used to routinely type *S*. Typhimurium isolates in New South Wales in addition to phage typing since October 2007. This cluster highlights one of the challenges associated with the introduction of a new surveillance tool. Experience has shown that a single phage type of *S*. Typhimurium can be associated with multiple MLVA patterns,[2] however in this cluster, one MLVA pattern was associated with at least 6 different phage types. Australia continues to work towards understanding the epidemiological concordance of the different molecular typing methods currently in use by the states and territories and towards a harmonised typing scheme.[5]

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