Quarterly report

OzFoodNet quarterly report, 1 July to 30 September 2013

The OzFoodNet Working Group

Introduction

OzFoodNet is Australia's enhanced foodborne disease surveillance network, funded since 2000 by the Australian Government Department of Health to collaborate nationally to investigate foodborne disease. In each Australian state and territory OzFoodNet epidemiologists investigate outbreaks of enteric infection. OzFoodNet conducts studies on the burden of illness and coordinates national investigations into outbreaks of foodborne disease. This quarterly report documents investigations of outbreaks of gastrointestinal illness and clusters of disease potentially related to food, which commenced in Australia between 1 July and 30 September 2013.

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

During the 3rd quarter of 2013, OzFoodNet sites reported 613 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 10,458 people, of whom 315 were hospitalised. There were 51 deaths reported during these outbreaks. The majority of outbreaks (497) were due to person-to-person transmission (Table 1), with 51% (251/497) of these occurring in residential aged care facilities and 26% (129/497) occurring in child care centres.

Foodborne and suspected foodborne disease outbreaks

There were 27 outbreaks during this quarter where consumption of contaminated food was suspected or confirmed as being the primary mode of transmission (Appendix). These outbreaks affected 315 people and resulted in 25 hospitalisations. There were 2 deaths reported during these outbreaks. This compares with 31 outbreaks in the 3rd quarter of 2012[1] and a 5-year mean of 29 outbreaks for the 3rd quarter between 2008 and 2012. A limitation of the outbreak data provided by OzFoodNet sites for this report was the potential for variation in the categorisation of the features of outbreaks depending on circumstances and investigator interpretation. Changes in the number of foodborne outbreaks should be interpreted with caution due to the small number each quarter.

Salmonella Typhimurium was identified as, or suspected to be, the aetiological agent in 11 (41%) foodborne or suspected foodborne outbreaks during this quarter. This was two more than the number reported in the same quarter in 2012. The aetiological agents for the remaining outbreaks included: *Clostridium perfringens* in 3 outbreaks (11%); norovirus in 2 outbreaks (7%); and *S.* Virchow phage type (PT) 23 and *Campylobacter*

Table 1: Outbreaks and clusters of gastrointestinal illness reported by OzFoodNet, 1 July to 30 September 2013, by mode of transmission

Transmission mode	Number of outbreaks and clusters	Per cent of total
Foodborne and suspected foodborne	27	4.4
Waterborne and suspected waterborne	6	1.0
Person-to-person	497	81.1
Animal-to-person	1	0.2
Unknown (*Salmonella* cluster)	13	2.1
Unknown (other pathogen cluster)	1	0.2
Unknown	68	11.1
Total	613	100*

* Percentages do not add to 100 due to rounding.

jejuni in 1 outbreak each (4%). For 9 outbreaks (33%), the aetiological agent was unknown. The 3 *Cl. perfringens* outbreaks affected 58 people including 2 hospitalisations. In comparison, there was only 1 *Cl. perfringens* outbreak recorded in the 3rd quarter of 2012 affecting 7 people, with no hospitalisations reported.[1]

Eighteen outbreaks (67% of all the foodborne or suspected foodborne outbreaks) reported in this quarter were associated with food prepared in restaurants (Table 2), compared with 15/31 (48%) foodborne or suspected foodborne outbreaks in the 3rd quarter of 2012.[1]

Table 2: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet, 1 July to 30 September 2013, by food preparation setting

Food preparation setting	Outbreaks
Restaurant	18
Private residence	3
Hospital	2
Commercial caterer	1
Aged care	1
Takeaway	1
School	1
Total	27

To investigate these outbreaks, sites conducted 6 cohort studies, 2 case control studies and collected descriptive case series data for 14 investigations, while for 5 outbreaks no individual patient data were collected. In outbreak investigations where a food vehicle was implicated, the evidence used to implicate the food included analytical evidence in 4 outbreaks and descriptive evidence in 6 outbreaks.

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

Australian Capital Territory

There were no outbreaks of foodborne or suspected foodborne illness reported in the Australian Capital Territory during this quarter.

New South Wales

There were 10 outbreaks of foodborne or suspected foodborne illness reported in New South Wales during this quarter. The aetiological agents were identified as norovirus for 2 outbreaks and *Ca. jejuni* for 1 outbreak. The aetiological agent was unable to be determined for 7 outbreaks.

Description of key outbreak

An outbreak of campylobacteriosis was reported in September associated with a wedding in the Hunter Valley region of New South Wales that took place in July. Seventeen of 50 attendees were affected. One attendee was hospitalised. One stool specimen had been collected and confirmed positive for *Ca. jejuni*. A retrospective cohort study found that consumption of a duck entrée, including duck liver parfait, was significantly associated with illness (relative risk [RR] 4.3, 95% confidence intervals [CI] 1.2–15.5). Fifteen of the 17 cases (88.2%) ate the duck entrée. The NSW Food Authority reviewed the preparation and handling of foods served at the reception and provided advice on cooking temperatures required to render poultry livers free from bacterial pathogens. A full report on this outbreak is published in a previous issue of *Communicable Diseases Intelligence*.[2]

Northern Territory

There were no outbreaks of foodborne or suspected foodborne illness reported in the Northern Territory during this quarter.

Queensland

There were 2 outbreaks of foodborne or suspected foodborne illness reported in Queensland during this quarter. The aetiological agents were identified as *S.* Typhimurium PT 16 (multi-locus variable number tandem repeat analysis [MLVA] profile 03-13-10-11-524) and *S.* Typhimurium PT 135 (MLVA 03-13-10-11-524) respectively.

Description of key outbreak

An outbreak of gastrointestinal illness was reported in July affecting 30 people who had eaten at the same Brisbane café. A total of 22 cases were laboratory confirmed with *S.* Typhimurium PT 16 (MLVA 03-13-10-11-524). Three people were hospitalised. A case control study was performed using food histories from multiple groups who had attended the café. Persons who had consumed eggs Benedict (odds ratio [OR] undefined,* 95% CI undefined, $P<0.001$) and any meals that contained eggs (OR 6.0, 95% CI 1.1–34.1, $P=0.05$)

* Undefined: this occurs when there is a zero (0) in the denominator of an odds ratio calculation. This happens when all cases report the exposure of interest or none of the controls report the exposure of interest. In this case all the ill patrons reported consuming eggs Benedict rendering the odds ratio incalculable.

were significantly more likely to have developed illness. However, an environmental investigation at the premises did not detect *Salmonella* species.

South Australia

There were 5 outbreaks of foodborne or suspected foodborne illness reported in South Australia during this quarter. The aetiological agents were identified as *S.* Typhimurium PT 9 (MLVA 03-24-11/12-10-523) in 2 outbreaks and *S.* Virchow PT 23, *S.* Typhimurium PT 135a (MLVA 03-14-10-10-523), and *S.* Typhimurium PT 135 (MLVA 03-12-09-11-523) in 1 outbreak each.

Description of key outbreak

An outbreak of gastroenteritis was detected in September following a medical notification of a confirmed case of salmonellosis and a report of several others ill after attending a private function at a restaurant. Foods at the function were prepared and supplied by the restaurant, with a cake from a separate commercial caterer. A retrospective cohort study was conducted with 52/60 (87%) attendees. Diarrhoea was reported by 15/52 (29%) attendees. Three faecal samples were submitted and all were confirmed as *S.* Typhimurium PT 9. Multivariate analysis found consumption of coleslaw to be significantly associated with illness, (adjusted odds ratio [AOR] 5.3, 95% CI 1.2–23.1, $P=0.03$). The coleslaw was prepared with a raw egg aioli. An environmental investigation identified several issues with the preparation and storage of the raw egg aioli.

Tasmania

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

Victoria

There were 5 outbreaks of foodborne or suspected foodborne illness reported in Victoria during this quarter. The aetiological agents were identified as *S.* Typhimurium PT 126, *S.* Typhimurium PT 135, *S.* Typhimurium PT 135a, and *Cl. perfringens* for 1 outbreak each. The aetiological agent was unable to be determined for 1 outbreak.

Description of key outbreak

An outbreak of gastroenteritis was reported in September among attendees of a wedding reception. Illness was reported by 24/245 attendees. A case control study was conducted with a random sample of 75/245 attendees interviewed, based on a reported attack rate of approximately 20%. Analysis of foods consumed identified two foods as having statistically significant associations with consumption and illness. Consumption of hot savouries (OR 3.3, 95% CI 1.1–10.9, $P=0.023$) and chicken vol-au-vents (OR 4.3, 95% CI 1.3–15.2, $P=0.006$) were significantly associated with illness. Combining these foods increased the association (OR 6.3, 95% CI, 1.5–35.6, $P=0.004$). The incubation period, symptoms, duration of illness and the identification of secondary cases among family members who did not attend the reception, were consistent with a point-source outbreak of viral gastroenteritis. However, the mode of transmission was not confirmed as no faecal specimens were submitted for testing. The source of contamination of the food was not identified.

Western Australia

There were 5 outbreaks of foodborne or suspected foodborne illness reported in Western Australia during this quarter. The aetiological agents were identified as *Cl. perfringens* for 2 outbreaks and *S.* Typhimurium PT 170/108† (pulsed-field gel electrophoresis [PFGE] type 11) and *S.* Typhimurium PT 135a (PFGE type 39) for 1 outbreak each. The aetiological agent was unable to be determined for 1 outbreak.

Description of key outbreak

An outbreak of gastroenteritis was reported in August among students from a high school. Approximately 34 students reported symptoms of gastroenteritis. Information was obtained for 21 students who reported diarrhoea, including 3 students who reported diarrhoea and vomiting. The median duration of diarrhoea was 12 hours. No information was able to be obtained for students who remained well after the meal. All ill students reported eating a Thai chicken curry prepared at the school. No other specific food item had been consumed by more than 50% of cases. The median incubation period was 12 hours from consumption of the chicken curry. Faecal specimens were submitted by 3 cases with 1 positive for *Cl. perfringens*. An environmental investigation at the school did not identify any major food safety risks.

Multi-jurisdictional investigations

There were no multi-jurisdictional outbreak investigations conducted during this quarter.

† Classification of this organism differs between laboratories, with the Microbiological Diagnostic Unit using PT 170 to classify this type of *Salmonella* Typhimurium and SA Pathology using PT 108 due to a difference in the interpretation of one phenotypic characteristic.

Cluster investigations

During the quarter, OzFoodNet sites conducted investigations into 14 clusters of infection for which no common food vehicle or source of infection could be identified. Aetiological agents identified during the investigations included 7 *S.* Typhimurium clusters, 2 monophasic *S.* Subsp I clusters and 1 cluster each of: *S.* Infantis; *S.* Oslo; *S.* Hadar; *S.* Kiambu; and Shiga toxin-producing *Escherichia coli*.

Comments

The majority of reported outbreaks of gastrointestinal illness in Australia are due to person-to-person transmission, and in this quarter 81% of outbreaks (n=497) were transmitted via this route. The number of foodborne outbreaks this quarter (n=27) was lower than for the 3rd quarter of 2012 (n=31) and the 3rd quarter 5-year mean (2008–2012) of 29 outbreaks.

Salmonella species were identified as the aetiological agent in 12 (44%) of the 27 foodborne or suspected foodborne outbreaks during the quarter (Appendix), with 11/12 outbreaks being due to *S.* Typhimurium and 1 outbreak due to *S.* Virchow. Of the 3 confirmed foodborne outbreaks where there was an analytical association between illness and the implicated food, two-thirds (2/3, 67%) were due to *S.* Typhimurium and associated with the consumption of raw or minimally cooked egg dishes.

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References

1. The OzFoodNet Working Group. OzFoodNet quarterly report, 1 July to 30 September 2012. *Commun Dis Intell* 2013;37(3):260–266.
2. Hope KG, Merritt TD, Durrheim DN. Short incubation periods in *Campylobacter* outbreaks associated with poultry liver dishes. *Commun Dis Intell* 2014;38(1):20–23.

Appendix: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites,* 1 July to 30 September 2013 (n=27)

State or territory	Month†	Setting prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
NSW	July	Takeaway	Unknown	6	0	D	Hamburger with salad
NSW	July	Restaurant	Unknown	12	0	D	Unknown
NSW	July	Restaurant	Unknown	8	0	D	Unknown
NSW	August	Restaurant	Unknown	38	0	D	Unknown
NSW	August	Restaurant	Unknown	6	0	D	Unknown
NSW	August	Restaurant	Unknown	3	0	D	Unknown
NSW	August	Restaurant	Norovirus	16	0	D	Unknown
NSW	September	Restaurant	Norovirus	5	0	D	Unknown
NSW	September	Restaurant	*Campylobacter jejuni*	17	1	A	Duck liver parfait
NSW	September	Restaurant	Unknown	2	0	D	Unknown
Qld	July	Restaurant	*S.* Typhimurium PT 16, MLVA 03-13-10-11-524	30	3	A	Eggs Benedict
Qld	August	Restaurant	*S.* Typhimurium PT 135, MLVA 03-13-10-11-524	10	0	D	Unknown
SA	July	Restaurant	*S.* Virchow PT 23	6	1	D	Unknown
SA	August	Restaurant	*S.* Typhimurium PT 135a, MLVA 03-14-10-10-523	9	3	D	Tartare sauce
SA	August	Private residence	*S.* Typhimurium PT 9, MLVA 03-24-11-10-523	4	0	D	Unknown
SA	September	Restaurant	*S.* Typhimurium PT 135, MLVA 03-12-09-11-523	4	2	D	Unknown
SA	September	Restaurant	*S.* Typhimurium PT 9, MLVA 03-24-12-10-523	15	1	A	Coleslaw made with raw egg
Vic.	July	Private Residence	*S.* Typhimurium PT 126	4	2	D	Suspected BBQ chicken
Vic.	July	Restaurant	*S.* Typhimurium PT 135a	6	0	D	Suspected bacon and egg pide
Vic.	August	Hospital	*Clostridium perfringens*	12	2	D	Unknown
Vic.	September	Commercial caterer	Unknown	24	0	A	Hot savouries and/or chicken vol-au-vents
Vic.	September	Hospital	*S.* Typhimurium PT 135	9	0	D	Unknown
WA	July	Private residence	*S.* Typhimurium PT 170/108, PFGE 11	8	6	D	Unknown
WA	July	Restaurant	*S.* Typhimurium PT 135a, PFGE 39	12	4	D	Eggs
WA	July	Restaurant	Unknown	3	0	D	Unknown
WA	August	School	*Cl. perfringens*	34	0	D	Chicken curry
WA	September	Aged care	*Cl. perfringens*	12	0	D	Unknown

* No foodborne or suspected foodborne outbreaks were reported by the Australia Capital Territory, the Northern Territory or Tasmania.

† Month of outbreak is the month of onset of first case or month of notification/investigation of the outbreak. The number of people affected and hospitalised relate to the findings of the outbreak investigation at the time of writing and not necessarily in the month specified or in this quarter.

A Analytical epidemiological association between illness and 1 or more foods.

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

MLVA Multi-locus variable number tandem repeat analysis.

PFGE Pulsed-field gel electrophoresis.

PT Phage type.