Quarterly reports

OzFoodNet quarterly report, 1 April to 30 June 2012

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, which occurred in Australia between 1 April and 30 June 2012.

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 some months to finalise.

During the 2nd quarter of 2012, OzFoodNet sites reported 501 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 8,585 people, of whom 186 were hospitalised. There were 19 deaths reported during these outbreaks. The majority of outbreaks (79%, n=394) were due to person-to-person transmission (Foodborne and suspected foodborne disease outbreaks), with 56% (221/394) of these occurring in residential aged care facilities.

Foodborne and suspected foodborne disease outbreaks

There were 31 outbreaks during this quarter where consumption of contaminated food was suspected or confirmed as being the primary mode of transmission. These outbreaks affected 382 people, resulted in 26 hospitalisations and no deaths. This compares with 51 outbreaks in the 1st quarter of 2012[1] and a 5 year mean of 33 outbreaks for the 2nd quarter between 2007 and 2011.

Salmonella enterica serotypes were identified as the aetiological agent in 17 outbreaks (55%) during this quarter (14 *S.* Typhimurium, Appendix 1). Of the remaining outbreaks, 3 (10%) were due to scombroid poisoning, 2 (6%) were due to *Campylobacter*, and 1 each due to norovirus, *Staphylococcus aureus* and an unspecified viral agent. In 5 outbreaks (16%), the aetiological agent was unknown.

Thirteen outbreaks (42% of foodborne or suspected foodborne outbreaks) reported in this quarter were associated with food prepared in restaurants (Table 2).

To investigate these outbreaks, sites conducted 5 cohort studies, 1 case control study and collected descriptive case series data for 22 investigations, while for 3 outbreaks, no individual patient data were collected. The evidence used to implicate food vehicles included analytical evidence in 2 outbreaks, microbiological evidence in 3 outbreaks and both analytical and microbiological evidence in 3 outbreaks. Descriptive evidence alone was obtained in 23 outbreak investigations.

Table 1: Outbreaks and clusters of gastrointestinal illness reported by OzFoodNet, 1 April to 30 June 2012 by mode of transmission

Transmission Mode	Number of outbreaks and clusters	Per cent of Total
Foodborne and suspected foodborne	31	6%
Waterborne and suspected waterborne	4	1%
Person-to-person	394	79%
Animal-to-person	2	<1%
Unknown (Salmonella cluster)	18	4%
Unknown (Other pathogen cluster)	3	1%
Unknown	49	10%
Total	501	100%*

* Percentages do not add up due to rounding.

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 illness during the quarter, of which 1 was due to *S.* Typhimurium and the other due to *Campylobacter*.

Description of key outbreaks

An increase in *Salmonella* notifications led to the detection of an outbreak of 20 cases (2 hospitalised) of *S.* Typhimurium phage type (PT) 135a multi-locus variable number of tandem repeats analysis (MLVA) profile 03-13-11-10-523 linked to a café. A case control study was undertaken, with univariate analysis showing that eating eggs benedict was significantly associated with illness (OR 63, 95% CI 6.1, 2771.7 p <0.001). An inspection of the café did not identify any serious food safety breaches however, the outbreak strain was identified in swabs of a fridge door and a cool room door handle. Traceback identified a New South Wales-based egg grading facility as the likely eggs supplier for the café. The facility was not linked to any previous outbreaks.[2]

Routine follow-up of a case of co-infection with *Salmonella* and *Campylobacter* identified an outbreak of 7 cases of gastrointestinal illness (2 confirmed *Campylobacter* cases and the mixed *Campylobacter/Salmonella* infection) associated with the consumption of home prepared chicken liver paté. No remaining paté was available for microbiological testing. It is suspected that some of the livers used in the paté were not cooked thoroughly.

Table 2: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet, 1 April to 30 June 2012 by food preparation setting

Food Preparation Setting	Outbreaks
Restaurant	13
Private residence	6
Commercial caterer	3
National franchised fast food	1
Aged care	1
Institution	1
Fast food restaurant	1
School	1
Bakery	1
Takeaway venue	1
Other	1
Unknown	1
Total	31

New South Wales

There were 13 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which 6 were due to *S.* Typhimurium and 1 each due to *S. aureus*, scombroid poisoning and a suspected viral agent. For the others no pathogen could be identified.

Description of key outbreaks

The following 3 outbreaks were linked to the same egg farm that was linked to an outbreak reported in the previous quarterly report.[1] The New South Wales Food Authority (NSWFA) issued an Improvement Notice to the owner of the egg farm requiring increased cleaning and improvements within the grading facility.

A public health unit follow-up of *Salmonella* cases identified an outbreak of *S.* Typhimurium MLVA profile 03-09-09-12-523 (historically associated with PT 170). Three family groups ate together at the same restaurant with 12 of 15 people becoming ill after consuming deep fried ice-cream. This restaurant was investigated in March 2012 following an outbreak of the same strain associated with the consumption of a raw egg dessert. The NSWFA issued a warning letter after the March outbreak highlighting the risk of illness associated with the use of raw and undercooked eggs. Traceback of the eggs during the March outbreak identified the egg farm described above.

Investigators were notified of an outbreak of *S.* Typhimurium MLVA profile 03-09-09-12-523 (historically associated with PT 170) involving 5 cases from a group of 49 who had eaten at the same restaurant as the outbreak above, but on a separate date. All those who were ill had eaten deep fried ice-cream. The outbreak strain was isolated from a sample of uncooked deep fried ice-cream taken from the premises. As a result of this outbreak, the NSWFA issued a Prohibition Order, prohibiting the use of raw and minimally cooked eggs/egg products.

Follow-up of a cluster of *S.* Typhimurium MLVA profile 03-09-09-12-523 (historically associated with PT 170) cases, identified 27 cases linked to a single bakery. This bakery was also supplied with eggs from the egg farm implicated in the restaurant outbreaks above. A NSWFA inspection of the bakery resulted in the outbreak strain being isolated from swabs/samples of re-usable piping bags, machine nozzles and freshly whipped cream. The business is now using only disposable piping bags and no further cases linked to this bakery have been reported since the NSWFA intervention.

Public Health authorities were notified of 22 individuals with gastrointestinal illness after attending a

sports championship event. The 22 ill were from a group of 40 people who ate the same meal. Of the 35 people interviewed, only the 22 who were ill had eaten fried rice. *Staphylococcus aureus* was grown from one stool specimen and *S. aureus* toxin was detected in another.

A Public Health Unit investigated an outbreak of *Salmonella* Typhimurium MLVA profile 03-10-07-13-523 (historically associated with PT 170) associated with a Vietnamese bakery. A total of 12 confirmed cases of *Salmonella* (11 cases MLVA profile 03-10-07-13-523 and 1 case MLVA profile 03-09-08-14-523) and 2 suspected cases were identified as part of the outbreak. All cases reported consuming a variety of rolls and sandwiches containing meat and/or salad items. The NSWFA investigation revealed that food for the bakery was prepared at a private residence and transported to the shop for sale. Foods were not held at an appropriate temperature and the premises was lacking an appropriate sanitiser. Sampled foods were found to have unacceptable growth of coliforms but no *Salmonella* was detected. The NSWFA prohibited the sale of all goods with the exception of bread until a subsequent inspection was passed where the defects had been corrected.

A Public Health Unit investigated an outbreak of *S.* Typhimurium MLVA profile 03-09-07-12-523 (historically associated with PT 170) in a family who ate at a restaurant. Three of 5 family members became ill after sharing a 'Tasting Platter of Desserts' which included a raw egg ice-cream. The restaurant used eggs from a local unlicensed egg producer and following an inspection of the egg farm, swabs of the egg shed and chicken faeces tested positive for *Salmonella* (*S.* Typhimurium MLVA profile 05-15-14-00-490).

Northern Territory

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

Queensland

There were 4 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which 2 were due to *S.* Typhimurium, and 1 each due to *Salmonella* sub species I and scombroid poisoning.

South Australia

There were 3 outbreaks of foodborne and suspected foodborne illness investigated during the quarter. One was due to *S.* Typhimurium and for the others no pathogen could be identified.

Description of key outbreak

Investigators were notified of an outbreak of *S.* Typhimurium PT 44 at 2 separate private functions catered by the same commercial caterer. Twenty-seven of 63 attendees (6 confirmed *S.* Typhimurium PT 44 cases) at the first function and 23 of 58 attendees (7 confirmed *S.* Typhimurium PT 44 cases) at the second function reported illness. An analytical study identified multiple foods with an association between illness and consumption; including chicken dishes, veal parmigiana and salads. Leftover food samples of some items were collected from the second function and beef lasagne was positive for *S.* Typhimurium PT 44. Illness is likely to have resulted from cross contamination of food due to poor hygiene and inadequate food handling procedures. Action was taken by the local council and state authorities to address a number of food handling issues identified during the investigation.

Tasmania

There was 1 reported outbreak of foodborne illness during the quarter, due to *S.* Typhimurium.

Investigators were notified of an outbreak of *S.* Typhimurium PT 135 (11 confirmed and 33 suspected cases) on board a vessel anchored in Tasmanian waters. Meals were served on board the vessel, and 2 food items that contained raw eggs were served at the time of the outbreak (mayonnaise and tartare sauce). These items were not available for sampling at the time the outbreak was reported, and all other environmental and food samples taken during the site inspection were negative for *Salmonella*. The vessel has stopped serving the dishes containing raw egg.

Victoria

There were 6 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which 2 were due to *S.* Typhimurium, and 1 each due to norovirus, *S.* Newport, *Salmonella* sub species I and scombroid poisoning.

Description of key outbreaks

Investigators were notified of an outbreak of *Salmonella* sub species I (ser 4,5,12:i:-) PT 193 affecting 14 people (8 confirmed *Salmonella*) following a party at a private residence. Four leftover food samples (ice-cream cake made with raw eggs, leftover eggs from the same batch used to make the cake, a tuna rice salad and a cheesecake) were positive for the outbreak strain of *Salmonella*. It is suspected that the rice salad and cheesecake were cross contaminated with the ice-cream cake during serving and or storage.

Investigators were notified of an outbreak of salmonellosis involving 12 cases (4 confirmed *S.* Typhimurium PT 170) at an aged care facility. There was a statistically significant association between consumption of vitamised/minced meals and illness (RR 8.2, 95% CI 3.1 – 21.9; p<0.001). A review of food preparation and processing procedures revealed that the equipment used to vitamise/mince meals was also used to process raw ingredients (e.g. cake batters containing raw eggs). It is suspected that this outbreak may have been caused by cross contamination due to the use of inadequately cleaned and sanitised vitamising equipment between uses.

Western Australia

There were 2 reported outbreaks of foodborne or suspected foodborne illness during the quarter, of which 1 was due to *S.* Typhimurium and the other due to *Campylobacter*.

Investigators were notified of an outbreak of *S.* Typhimurium pulsed-field gel electrophoresis (PFGE) pattern 0436 PT 135a involving 4 cases (2 hospitalised) who had eaten separately at the same café. One additional case reported that they may have visited this café during their incubation period but this was not confirmed. This café is part of a franchise chain; an additional four outbreaks associated with this chain have been reported in the last five years. An environmental investigation of the café found food handling and cleanliness deficiencies. Food samples collected during the inspection were negative for *Salmonella* and the source of the infection was not determined.

Comments

The majority of reported outbreaks of gastrointestinal illness in Australia are due to person-to-person transmission, and in this quarter, 79% of outbreaks (n=394) were transmitted via this route. The number of foodborne outbreaks this quarter (n=31) is a decrease from the previous quarter and is consistent with the 5-year mean (2007-2011). *S.* Typhimurium continues to be a leading cause of foodborne outbreaks in Australia, with 58% (14/24) of outbreaks this quarter with a known *Salmonella* aetiology being due to this serotype.

Foodborne disease outbreak investigations this quarter have highlighted a range of high risk practices, many occurring in food service settings. Thirteen foodborne or suspected foodborne disease outbreaks were associated with foods prepared in a restaurant, while a further 3 were associated with foods prepared by caterers. Catering for large groups presents particular challenges in adequately controlling the temperature 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.

Almost half (8/17) of the foodborne or suspected foodborne outbreaks where *Salmonella* was implicated as the responsible agent were associated with raw or undercooked egg products (raw egg dressings, raw/undercooked egg desserts). To address this continuing issue, members of the OzFoodNet Egg Working Group are working towards describing the national epidemiology of egg-associated outbreaks. Jurisdictional food safety authorities are focussing on communication and education in relation to the use of raw egg products in commercial settings.

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.

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Reference

1. OzFoodNet Working Group. OzFoodNet quarterly report, 1 January to 31 March 2012. *Commun Dis Intell* 2012;36(4):E353-359.
2. Moffatt CR, Appuhamy R, Kaye A, Carswell A, Denehy D. An outbreak of *Salmonella* Typhimurium phage type 135a gastroenteritis linked to eggs served at an Australian Capital Territory cafe. *Commun Dis Intell* 2012;36(3):E281-285.

Appendix 1: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites, 1 April to 30 June 2012 (n=31)

State	Month	Setting Prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
ACT	April	Restaurant	*S.* Typhimurium PT 135a (MLVA profile 03-13-11-10-523)	20	2	AM	Eggs Benedict
ACT	May	Private residence	Campylobacter	7	0	D	Chicken liver pate
NSW	April	Private residence	Viral Suspected	19	0	A	Home-made cake
NSW	April	Restaurant	Unknown	3	0	D	Unknown
NSW	April	Restaurant	*S.* Typhimurium MLVA profile 03-09-09-12-523 (historically associated with PT 170)	5	1	D	Deep fried ice-cream
NSW	April	Take-away	*S.* Typhimurium MLVA profile 03-10-07-13-523 (historically associated with PT 170)	14	0	D	Vietnamese bakery goods
NSW	May	Bakery	*S.* Typhimurium MLVA profile 03-09-09-12-523 (historically associated with PT 170)	27	Unknown	M	Multiple bakery goods
NSW	May	Commercial caterer	Unknown	5	0	D	Unknown
NSW	May	Private residence	Scombroid poisoning	3	0	D	Tuna
NSW	May	Restaurant	*S.* Typhimurium MLVA profile 03-09-09-12-523 (historically associated with PT 170)	12	0	M	Deep fried ice-cream
NSW	May	Institution	*S.* Typhimurium MLVA profile 03-14-09-14-523	3	0	D	Unknown
NSW	June	Commercial caterer	*Staphylococcus. aureus*	22	6	AM	Suspected fried rice
NSW	June	National franchised fast food	Unknown	7	0	D	Unknown
NSW	June	Restaurant	Unknown	35	0	D	Unknown
NSW	June	Restaurant	*S.* Typhimurium MLVA profile 03-09-07-12-523 (historically associated with PT 170)	3	0	D	Ice-cream containing raw egg
QLD	April	Restaurant	*S.* Typhimurium PT 193 MLVA profile 03-13-14-10-524	3	0	D	Unknown
QLD	May	Private residence	Scombroid poisoning	4	0	D	Suspected seafood meal
QLD	May	Unknown	*Salmonella* sub species I ser 4,5,12:-:1,2 MLVA profile 03-14-00-00-490	10	3	D	Unknown
QLD	June	Restaurant	*S.* Typhimurium MLVA profiles 03-12-15-09-524 and 03-12-16-09-524	2	2	D	French Toast
SA	May	Commercial caterer	*S.* Typhimurium PT 44	50	2	AM	Suspected cross contamination
SA	May	Restaurant	Unknown	3	0	D	Unknown

Appendix 1 *continued*: Outbreaks of foodborne or suspected foodborne disease reported by OzFoodNet sites, 1 April to 30 June 2012 (n=31)

State	Month	Setting Prepared	Agent responsible	Number affected	Hospitalised	Evidence	Responsible vehicles
SA	May	Fast food restaurant	Unknown	4	0	D	Unknown
TAS	April	Other	*S.* Typhimurium PT 135	44	2	D	Suspect raw egg mayonnaise and/or tartare sauce
VIC	April	Private residence	*Salmonella* sub species I ser 4,5,12:i:- PT 193	14	2	M	Raw egg ice-cream cake
VIC	April	Private residence	*S.* Typhimurium PT 4	4	4	D	Raw egg smoothies
VIC	April	Restaurant	Norovirus	27	0	D	Multiple foods
VIC	April	Aged care	*S.* Typhimurium PT 170	12	1	A	Vitamised meals
VIC	May	School	Scombroid poisoning	4	0	D	Tuna
VIC	June	Restaurant	*S.* Newport	10	0	D	Kebabs
WA	April	Restaurant	*S.* Typhimurium PFGE pattern 0436, PT 135a	4	1	D	Unknown
WA	May	Restaurant	*Campylobacter*	4	0	D	Suspected chicken liver pate

A Analytical epidemiological association between illness and 1 or more foods.
D Descriptive evidence implicating the suspected vehicle or suggesting foodborne transmission.
M Microbiological confirmation of agent in the suspected vehicle and cases.
MLVA Multi-locus variable number tandem repeat analysis.
PFGE Pulsed-field gel electrophoresis.
PT Phage type.