

## Quarterly reports

# OzFoodNet QUARTERLY REPORT, 1 JULY TO 30 SEPTEMBER 2007

The OzFoodNet Working Group

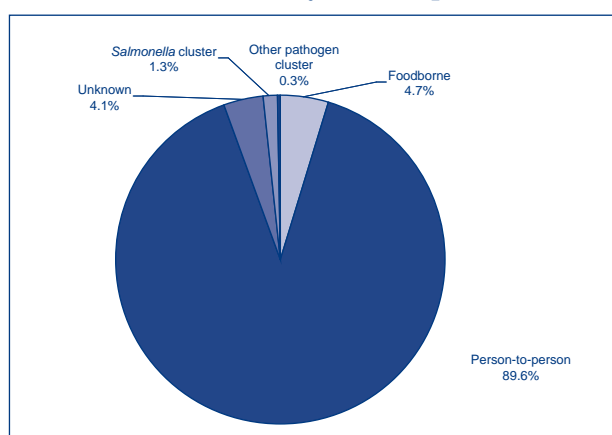
## Introduction

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 July to 30 September 2007.

Data were received from OzFoodNet representatives in all Australian states and territories and a sentinel site in the Hunter/New England region of New South Wales. The data in this report are provisional and subject to change as the results of outbreak investigations can take months to finalise.

During the third quarter of 2007, OzFoodNet sites reported 761 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 16,058 people, of which 281 were hospitalised and 53 people died. The majority (90%, n=682) of outbreaks resulted from infections due to person-to-person transmission (Figure 1).

**Figure 1. Mode of transmission for outbreaks of gastrointestinal illness reported by OzFoodNet sites, 1 July to 30 September 2007**



## Foodborne disease outbreaks

There were 36 outbreaks during this quarter where consumption of contaminated food was suspected or confirmed as the primary mode of transmission (Table). These outbreaks affected 502 people and resulted in 12 people being admitted to hospital. There were no deaths. This compares with 23 outbreaks for the third quarter of 2006 and 34 outbreaks in the previous quarter of 2007.

*Salmonella* was responsible for eight outbreaks during this quarter, with *Salmonella* Typhimurium being the most common serotype. *S.* Typhimurium 135a was responsible for two outbreaks, *S.* Typhimurium 44 and *S.* Typhimurium 193 were each responsible for one outbreak. The other *Salmonella* serotypes causing outbreaks were *S.* Virchow 45, *S.* Dublin, *S.* Oslo and *S.* Singapore.

Norovirus was associated with eight foodborne outbreaks during this quarter. *Campylobacter* was identified in three outbreaks and there was one outbreak of *Shigella sonnei* biotype g. There were three toxin-related outbreaks during the quarter including two ciguatera fish poisoning outbreaks and a *Clostridium perfringens* intoxication outbreak. The remaining 13 outbreaks were caused by unknown aetiological agents.

Thirteen outbreaks reported in this quarter were associated with food prepared by restaurants, six from food prepared in aged care facilities, six from food prepared by commercial caterers, five from food prepared by takeaway outlets, and three outbreaks were from contaminated primary produce. Single outbreaks were associated with food prepared in an institution and private residence. There was one outbreak where the food preparation setting was unknown.

To investigate these outbreaks, sites conducted seven cohort studies and one case control study, and collected case series data on 22 outbreaks. There were six outbreaks where no individual patient data were collected. Investigators obtained analytical epidemiological evidence in four outbreaks and microbiological evidence in one outbreak. For the remaining 31 outbreaks, investigators obtained descriptive epidemiological evidence implicating the food vehicle or suggesting foodborne transmission.

### Outbreaks of foodborne disease reported by OzFoodNet sites,\* 1 July to 30 September 2007

State	Month of outbreak	Setting prepared	Infection	Number affected	Evidence	Responsible vehicles
NSW	July	Restaurant	Unknown	6	D	Suspected mushrooms and cos lettuce
	July	Restaurant	Unknown	5	D	Suspected chicken schnitzel
	July	Restaurant	Unknown	3	D	Suspected bruschetta and parmesan cheese
	August	Takeaway	Unknown	2	D	Suspected cooked rice
	August	Takeaway	Unknown	4	D	Beef and chicken kebabs
	August	Takeaway	Unknown	5	D	Unknown
	August	Restaurant	Unknown	3	D	Unknown
	August	Aged care facility	Unknown	9	D	Suspected beef sausages
	September	Restaurant	Norovirus	19	A	Oysters
	September	Takeaway	Unknown	3	D	Unknown
	September	Restaurant	<i>Salmonella</i> Singapore	5	D	Unknown
	September	Unknown	Unknown	2	D	Unknown
	September	Aged care facility	Unknown	6	D	Suspected tiramisu and cream, fruit salad, strudel and custard
	September	Commercial caterer	Unknown	17	D	Unknown
NT	July	Contaminated primary produce	Ciguatera fish poisoning	2	D	Reef cod
	August	Commercial caterer	<i>Salmonella</i> Oslo	3	D	Suspected roast pork
	September	Commercial caterer	Norovirus	8	D	Ill food handler suspected
Qld	August	Restaurant	Norovirus	24	A	Ill food handler suspected
	August	Restaurant	<i>S. Typhimurium</i> 135a	8	D	Duck pate
	August	Contaminated primary produce	<i>Shigella sonnei</i> biotype g	55	M	Baby corn
	September	Contaminated primary produce	Ciguatera fish poisoning	5	D	Coral trout
	September	Institution – other	Norovirus	35	D	Ill food handler suspected
SA	July	Private residence	<i>S. Typhimurium</i> 193	13	A	Unknown
	July	Restaurant	Norovirus	14	D	Unknown
	August	Aged care facility	<i>Campylobacter</i>	6	D	Unknown
	September	Commercial caterer	Norovirus	24	D	Unknown
Tas	September	Restaurant	<i>S. Typhimurium</i> 135a	2	D	Sushi
Vic	July	Restaurant	Norovirus	21	D	Ill food handler suspected
	July	Aged care facility	<i>Campylobacter</i>	6	D	Unknown
	July	Aged care facility	<i>Clostridium perfringens</i>	30	D	Several foods were suspected
	August	Commercial caterer	Unknown	20	A	Roast chicken and/or stuffing
	August	Aged care facility	<i>Campylobacter</i>	6	D	Unknown
	August	Restaurant	<i>Salmonella</i> Dublin	6	D	Unknown
	September	Restaurant	Norovirus	96	D	Ill food handler suspected
WA	August	Commercial caterer	<i>S. Typhimurium</i> 44	7	D	Unknown
	September	Takeaway	<i>S. Virchow</i> 45	22	D	Suspected sushi

\* No foodborne outbreaks were reported in the Australian Capital Territory during the quarter.

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.

The following jurisdictional summaries describe key outbreaks which occurred in this quarter.

### New South Wales

New South Wales reported 14 outbreaks of foodborne illness during this quarter. Norovirus caused 19 restaurant patrons to be ill in one outbreak during September. A cohort investigation showed a strong association between illness and oyster consumption (estimated RR11.2, 95%CI, 1.6–77.3). *Salmonella* Singapore affected five people over a 6-week period and all cases implicated a single restaurant. Four cases had a positive stool result for *S.*Singapore. Investigators were unable to identify a common food source. An aetiological agent was not identified for the remaining 12 outbreaks, which affected between two and 17 people.

### Northern Territory

The Northern Territory reported three outbreaks during the quarter. Norovirus caused an outbreak at a remote mine site where food was provided by a commercial catering company on site. The spread of illness was likely to have been foodborne as a seconded staff member, not trained in food handling, worked while symptomatic with gastroenteritis illness. Norovirus was detected in a clinical specimen from the ill food handler while in hospital. *Salmonella* Oslo was identified in two people who were ill after eating roast pork prepared by a catering company and eaten at a private party. The roast pork was reportedly undercooked and the catering business was unregistered. Another case became ill after they consumed left over roast pork during a picnic the next day.

### Queensland

Queensland reported five outbreaks during the quarter. Norovirus caused two outbreaks of gastrointestinal illness and the spread of illness for both was due to food handlers working while they were unwell. There was an outbreak of norovirus where salad was significantly associated with illness among 24 patrons who had dined at a restaurant, and there was an outbreak of norovirus associated with a breakfast meal that caused illness among 35 students of a residential college.

*Salmonella* Typhimurium 135a contaminated a duck liver pate that caused illness among eight restaurant patrons. The making of the pate did not include a satisfactory cooking or cleaning process of the duck livers before preparation. *S.* Typhimurium (not 135a) was detected in a sample of raw duck liver from the restaurant.

*Shigella sonnei* biotype g caused a community-wide outbreak of foodborne illness during August. Initially, this outbreak was identified in a film production crew with 43 epidemiologically linked cases reported to Queensland Health. Further cases were subsequently reported from the wider community. A concurrent outbreak of *Shigella sonnei* biotype g associated with fresh baby corn was reported in Denmark.<sup>1</sup> Clinical specimens from cases in Australia and Denmark had indistinguishable pulsed-field gel electrophoresis (PFGE) patterns and identical antibiograms.<sup>2</sup> All Australian cases, and a New Zealand case that had stayed at a Queensland resort, reported consumption of fresh baby corn prior to illness onset. The fresh baby corn was imported from Thailand in a consignment during late July by a single wholesaler in Queensland. Investigators were able to establish a common source for the fresh baby corn in both the Danish and Queensland outbreaks.<sup>3</sup>

### South Australia

South Australia reported four outbreaks during the quarter. There was an outbreak of *Campylobacter* in six residents from an aged care facility. The food causing this outbreak was not identified despite a food and environmental investigation of the facility.

Norovirus is suspected to have caused two groups of people to develop gastroenteritis after eating at the same restaurant on the same day. A faecal specimen from one of the cases tested positive for norovirus. All other food and environmental sampling did not detect norovirus or other pathogens. Norovirus is also suspected to have caused illness on a film set operating in rural South Australia. Foodborne transmission was suspected because 24 of 55 participants had an onset of illness within a two hour period. Two clinical samples were positive for norovirus but a food and environmental investigation was unable to identify the source of infection.

South Australia also investigated an outbreak of *Salmonella* Typhimurium 193 among 13 people associated with a meal at a private residence. The aetiological agent was detected in clinical specimens from eight of these cases. The food vehicle for this outbreak was not identified despite an investigation that included food and environmental sampling.

### Tasmania

Tasmania reported a single outbreak of two cases of *Salmonella* Typhimurium 135a during the quarter. The onsets of infection for the two cases were one day apart, in late September, and food histories from both cases included eating at a common

sushi restaurant. Investigators found no links from the restaurant to businesses associated with recent *S. Typhimurium* 135a outbreaks in Tasmania<sup>4</sup>.

## Victoria

Victoria reported seven outbreaks of foodborne illness during the third quarter. Norovirus caused two outbreaks where the food was likely to have been contaminated with norovirus by food handlers working while they were infectious. In one of these outbreaks, 96 people from 13 different groups (total 290 people) reported gastroenteritis after eating at the restaurant. In the second norovirus outbreak, illness was identified in at least four different groups (21 cases) who ate at the same restaurant on the same day.

*Salmonella* Dublin caused illness in three separate groups (6 cases) that dined at the same restaurant. The restaurant was located in a rural area and was connected to tank water. Eggs were sourced from the proprietor's own chickens and also from a commercial brand. Raw eggs were used in a tiramisu dessert served on the day that cases dined. Water, eggs, and various animal faecal specimens from the proprietor's farm were tested and all were negative for *Salmonella*. Food handlers were interviewed and none reported illness—they were all screened and were negative for *Salmonella*. The source of the outbreak was not identified.

Victoria investigated two separate outbreaks of gastroenteritis among residents of aged care facilities. In each outbreak there were six cases, two of whom were confirmed with *Campylobacter* infection. The mode of transmission was suspected to have been foodborne for both of these outbreaks due to clustering of illness onsets but a specific food source could not be identified for either.

*Clostridium perfringens* caused 30 cases of illness among residents of a Victorian aged care facility. *C. perfringens* enterotoxin was detected in faecal specimens of 13 cases. It is suspected that inappropriate use of leftover foods and inadequate cooling and reheating of foods were the contributing factors in the outbreak.

Victoria investigated an outbreak of unknown aetiology among 20 of 85 guests attending a wedding. A commercial caterer provided foods that included roast chicken with stuffing. It is suspected that either *C. perfringens* enterotoxin or *Bacillus cereus* diarrhoeal enterotoxin was the aetiological agent for this outbreak due to the incubation period, the duration of illness and symptoms. One specimen from a case was positive for *C. perfringens* enterotoxin and grew

*B. cereus* in culture. Inadequate cooling and reheating of chicken and its stuffing was thought to have caused the outbreak.

## Western Australia

Western Australia reported two outbreaks of foodborne illness during the quarter. *Salmonella* Virchow 45 affected 22 people in an outbreak associated with sushi. Cases reported eating from two sushi outlets that were owned and operated by the same people. The mayonnaise used in the sushi at both outlets was prepared by one person, and was made using raw eggs from a Queensland supplier. The PFGE profile of the *S. Virchow* isolates from WA outbreak cases was indistinguishable from three clinical and two egg pulp isolates collected from Queensland during 2007. *Salmonella* Typhimurium 44 affected five people in an outbreak associated with a university college. However, a further two cases of *S. Typhimurium* 44 with indistinguishable PFGE type did not eat at the college. Environmental samples and faecal samples from food handling staff were negative for *Salmonella*. The source of the outbreak was not identified.

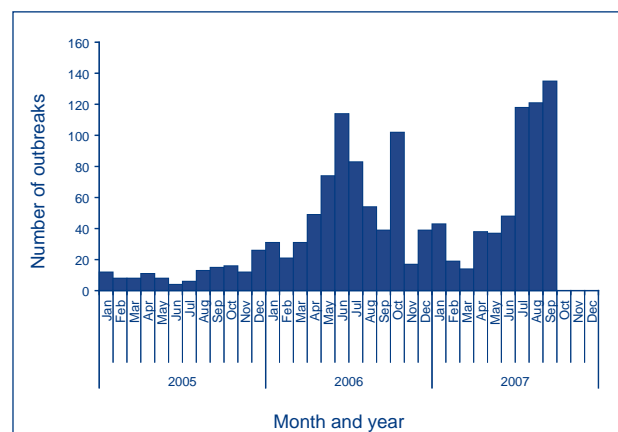
## Australian Capital Territory

The Australian Capital Territory did not report any foodborne outbreaks during this quarter of 2007.

## Comments

OzFoodNet sites reported 374 outbreaks due to person-to-person transmission of norovirus during this quarter of 2007 and 573 outbreaks of person-to-person norovirus for the first 9 months of 2007 (Figure 2). This compares with 176 person-to-person norovirus outbreaks for the third quarter of 2006.

**Figure 2. Outbreaks of non-foodborne norovirus, Australia, January 2005 to September 2007, by month of notification to OzFoodNet sites**



Source: OzFoodNet sites



During this quarter of 2007 a new strain of norovirus, designated 2006b, which had previously affected Europe during 2006,<sup>5</sup> caused widespread outbreaks of disease in eastern states of Australia (personal communication, W Rawlinson, October 2007).

Gastroenteritis outbreaks caused by norovirus occur all year round and are more commonly reported where people are in 'communal arrangements', for example, aged care homes, hospitals, schools, and cruise ships. Norovirus is highly infectious and easily spread from one infected person to another. The onset of illness often includes sudden vomiting, where infectious airborne particles can be easily spread to surfaces where virus survive for long periods of time.<sup>6</sup> Outbreaks of non-foodborne gastroenteritis caused by norovirus are common with hundreds of outbreaks reported to state and territory health departments each year.<sup>7</sup> Guidelines for managing gastroenteritis outbreaks due to norovirus are available from state and territory health departments.

Food handlers, who worked while infectious are suspected to have contaminated food in more than half of the foodborne outbreaks of norovirus (five of eight outbreaks) during this quarter of 2007. These outbreaks highlight the need to maintain procedures that prevent the contamination of food during preparation.<sup>6</sup> Some states require food handlers to be excluded from food handling for at least 48 hours after the resolution of symptoms. Norovirus can be excreted for some time after symptoms resolve, therefore it is important that food handlers maintain good personal hygiene on returning to work to protect food from contamination.

The outbreak of shigellosis associated with baby corn highlighted the increasing importance of imported food as a potential source of disease. There have been 14 outbreaks due to imported food since 2001, many of which are due to novel infections, such as multi-drug resistant *Shigella sonnei* biotype g (OzFoodNet unpublished data). The global nature of foodborne illness highlights the importance of rapid communication tools, such as Eurosurveillance and Promed for alerting countries to potential multi-country spread of disease.<sup>3</sup>

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## References

- Lewis HC, Ethelberg S, Lisby M, Madsen SB, Olsen KE, Rasmussen P, et al. Outbreak of shigellosis in Denmark associated with imported baby corn, August 2007. *Euro Surveill* 2007;12:E070830-070831.
- Stafford R, Kirk M, Selvey C, Staines D, Smith H, Towner C, et al. An outbreak of multi-resistant *Shigella sonnei* in Australia: possible link to the outbreak of shigellosis in Denmark associated with imported baby corn from Thailand. *Euro Surveill* 2007;12:E070913-070911.
- Lewis HC, Kirk M, Ethelberg S, Stafford R, Olsen KEP, Nielsen EM, et al. Outbreaks of shigellosis in Denmark and Australia associated with imported baby corn, August 2007 – final summary. *Euro Surveill* 2007;12.
- Stephens N, Sault C, Firestone SM, Lightfoot D, Bell C. Large outbreaks of *Salmonella* Typhimurium phage type 135 infections associated with the consumption of products containing raw egg in Tasmania. *Commun Dis Intell* 2007;31:118–124.
- Kroneman A, Vennema H, Harris J, Reuter G, von Bonsdorff CH, Hedlund KO, et al. Increase in norovirus activity reported in Europe. *Euro Surveill* 2006;11: E061214-061211.
- Tan M, Sun X, Jiang X. Norovirus gastroenteritis – New strategies of control and prevention. In: Bristow H, editor. *US Special Populations Pediatrics Review 2006 – January 2007*. London: Touch Briefings; 2006. p. 21–24.
- OzFoodNet Working Group. Burden and causes of foodborne disease in Australia: Annual report of the OzFoodNet network, 2005. *Commun Dis Intell* 2006;30:278–300.