

# OzFoodNet: enhancing foodborne disease surveillance across Australia: quarterly report, July to September 2004

*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 around Australia. For information on sporadic cases

of foodborne illness, see Communicable Disease Surveillance, Highlights for 3rd quarter 2004 in this issue of *Communicable Diseases Intelligence*.

This report summarises the occurrence of foodborne disease outbreaks and cluster investigations between July and September 2004. Data were received from OzFoodNet representatives in all Australian states and territories and a sentinel site in the Hunter region of New South Wales. The data in this report are provisional and subject to change, as results of outbreak investigations can take months to finalise. We would like to thank the investigators in the public health units and state and territory departments of

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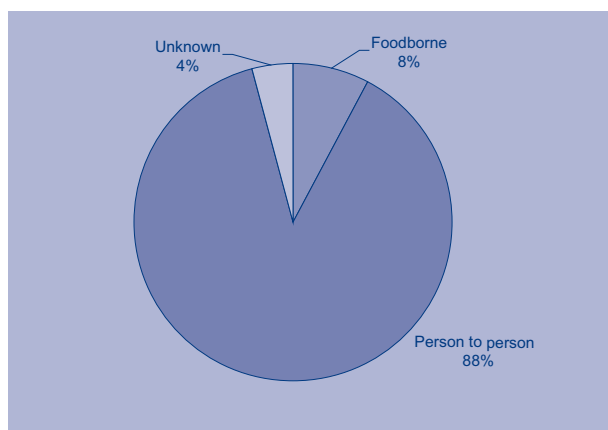
All data are reported using the date the report was received by the health agency.

health as well as public health laboratories and local government environmental health officers who collected data used in this report.

### Foodborne disease outbreaks

During the third quarter of 2004, OzFoodNet sites reported 313 outbreaks of foodborne or enteric illness. As usual the vast majority of these (87%, n=274) resulted from person-to-person spread of infection. The figure shows the proportion of the different modes of transmission. In total, 6,994 people were affected with 113 people hospitalised. Twelve deaths were reported. Ten of the deaths occurred in aged care facilities during outbreaks of norovirus infection while the remaining two deaths were associated with cases of *Listeria* infections in severely ill hospitalised patients.

**Figure.** Mode of transmission for outbreaks of gastrointestinal illness reported by OzFoodNet sites, July to September 2004



There were 25 outbreaks of illness where food was suspected or proven to be the primary mode of transmission. This compares with 24 and 37 outbreaks in the first and second quarters of 2004, respectively. *Salmonella* Typhimurium was the causative agent for six outbreaks, while *Campylobacter* and norovirus were each responsible for three outbreaks. Of the remaining outbreaks, one each was caused by *Clostridium perfringens*, Ciguatera toxin, *Salmonella* Enteritidis, *Salmonella* Virchow, *Salmonella* Stanley and *Listeria monocytogenes*. An aetiological agent was not identified for seven of the outbreaks.

Seven of the outbreaks were associated with meals served in restaurants and another seven with food served in private residences. Two were associated with commercial caterers or take away food outlets. Nine of the outbreaks occurred in July, six in August and 10 in September.

To investigate these outbreaks, sites conducted ten cohort studies and two case control studies. For 11 outbreaks, only descriptive data were collected and in two outbreaks no individual case data was collected. In three outbreaks, investigators obtained microbiological evidence linking a food vehicle to illness, and analytical epidemiological evidence in a single outbreak. For the remaining outbreaks, investigators obtained descriptive epidemiological evidence implicating the food vehicle or suggesting foodborne transmission.

In New South Wales there were six outbreaks of foodborne illness, three of which were associated with different phage types of *Salmonella* Typhimurium. One of these was caused by *S.* Typhimurium U290 linked to homemade Chinese style minced fish balls, which affected 11 people. *Salmonella* Typhimurium 126 was associated with homemade tiramisu in an outbreak affecting 11 people. A sample of a wash from a raw egg used to make the dessert tested positive for *S.* Typhimurium 126. The eggs were traced back to an 'organic' egg farm. There were two outbreaks associated with restaurants and one with a school where no agent or food vehicle were identified.

Victoria reported four outbreaks of foodborne disease. One outbreak of *Salmonella* Stanley in a boarding school affected 33 people, with four admitted to hospital. Food served at the school was considered the most likely source of the infection but there was possible person-to-person spread later in the outbreak. *Salmonella* Typhimurium 126 was associated with an outbreak at a conference centre. There were a total of 24 cases from three groups who attended the conference centre. No food vehicle was identified, although tiramisu made with raw eggs was suspected as the source of illness amongst guests at a wedding reception at the centre. Twenty-four cases were associated with an outbreak of campylobacteriosis in an aged care facility. Most of the cases appeared to contract their illness at a barbecue, although no specific food was identified and there may have been some secondary spread. There was an outbreak of illness associated with a restaurant that affected 45 people. The time of onset of illness and the pattern of illness suggested *Clostridium perfringens* infection and this organism was isolated in high numbers from one faecal sample from a restaurant patron but toxin testing was not carried out. Curries at the restaurant were served banquet style and may not have been kept hot enough to prevent bacterial proliferation.

In Queensland, there were nine outbreaks of foodborne illness investigated. Six people were ill from *Clostridium perfringens* after a meal of take away pizza. *C. perfringens* was isolated from various meats used as toppings and from the stool of

**Table. Outbreaks of foodborne disease reported by OzFoodNet sites,\* July to September 2004**

State	Month	Setting	Agent responsible	Number exposed	Number affected	Evidence <sup>†</sup>	Responsible vehicles
NSW	July/August	Home	<i>S. Typhimurium</i> U290	11	11	M	Chinese style minced fish balls
	August	School	Unknown	300	108	D	Unknown
	September	Restaurant	Unknown	Unknown	11	D	Unknown
	September	Restaurant	Unknown	Unknown	13	D	Unknown
	September	Home	<i>S. Typhimurium</i> 126	14	11	M	Tiramisu dessert
	September	Institution	<i>S. Typhimurium</i> 135a	50	5	D	Unknown
Qld	July	Home	Ciguatoxin	4	4	D	Grey Mackerel
	July	Caterer	Norovirus	Unknown	26	D	Unknown
	July	Bakery	<i>S. Typhimurium</i> 135a	Unknown	5	D	Custard Fruit Tarts
	August	Home	<i>C. perfringens</i>	11	6	M	Meat lovers pizza
	August	Camp	<i>S. Virchow</i> 8	Unknown	5	D	Unknown
	August	Home	Norovirus	9	7	D	Pizza
	September	Home	<i>S. Enteritidis</i> 26	60	17	D	Unknown
	September	Caterer	Norovirus	96	16	D	Unknown
	September	Take-away	<i>Campylobacter</i>	Unknown	2	D	Chicken kebab
SA	July	Restaurant	Unknown	Unknown	4	D	Unknown
	July	Restaurant	<i>Campylobacter</i>	Unknown	4	D	Unknown
	July	Home	<i>S. Typhimurium</i> 9	5	4	D	Home made icecream
	August	Restaurant	Unknown	47	8	D	Unknown
	September	Home	Unknown	Unknown	15	D	Pizza
	September	Hospital	<i>Listeria monocytogenes</i>	Unknown	2	D	Unknown
Vic	July	Caterer	<i>S. Typhimurium</i> 126	139	21	D	Unknown
	July	Institution	<i>S. Stanley</i>	unknown	33	D	Unknown
	August	Restaurant	Unknown	unknown	45	D	Unknown
	September	Aged Care	<i>Campylobacter</i>	79	24	D	Barbecue

\* No foodborne outbreaks reported from the Australian Capital Territory, the Northern Territory, Tasmania or Western Australia.

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

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

one case. Inadequate refrigeration of the meats may have contributed to the proliferation of the organism in the food. *Salmonella* Virchow 8 was isolated from the faeces of five people attending a school camp, although no food vehicle was identified. An environmental health inspection of the camp kitchen found several food hygiene issues including time-temperature abuse during food preparation and storage. After sharing a takeaway pizza meal seven of ten people became ill. While pizza was the common food, no particular variety was consumed by cases and person-food-person transmission of norovirus appeared to be the mode of transmission. There was one outbreak of ciguatera poisoning affecting four people after a meal of grey mackerel. There was one outbreak of norovirus associated with a catered wedding. Food handlers working for the catering company reported family members with similar illness, indicating a mixture of person-food-

person spread. An ill food handler was suspected as the source of illness in another outbreak of norovirus affecting 16 people.

Queensland also reported five cases of *Salmonella* Typhimurium 135a following consumption of apple tarts and custard fruit tarts from a single bakery. An almond sauce containing raw eggs on the tarts was suspected as the source of the outbreak. An investigation of the farm supplying the eggs found no *Salmonella*, but the farm had no quality assurance program and eggs were inadequately cleaned. Seventeen of 60 people became ill with *Salmonella* Enteritidis 26 infection following a wedding reception held at a private home. A wide variety of foods were served, but no particular vehicle was identified. A kebab shop was associated with two cases of campylobacteriosis. Cases purchased the food during busy periods, possibly indicating inadequate cooking and cross contamination.

A total of six outbreaks were investigated in South Australia during the quarter. Two cases of listeriosis were associated with the same hospital. Pulsed field gel electrophoresis profiles of isolates from patients suggested the strains were related but a review of food histories did not identify a common food exposure. Four out of five people became ill with *Salmonella* Typhimurium 9 infection after eating homemade ice cream which contained raw eggs. Tracing back the eggs to an individual farm was not possible due to many farms supplying a single facility. There were four cases of campylobacteriosis associated with a restaurant. No definitive food vehicle was established but an inspection of the restaurant revealed a number of food safety breaches including inadequate temperature control. There were three other outbreaks where foodborne transmission was suspected but no pathogen was identified. One of these was an outbreak associated with a national franchised pizza chain, where illness was investigated in three cohorts of people. The other two involved outbreaks at restaurants.

### Comments

During the quarter there were two outbreaks of *S. Typhimurium* 126 in two different states with a tiramisu dessert being a possible vehicle of the pathogen for both outbreaks. The raw eggs used to make the dessert for both outbreaks were sourced from different organic egg farms located in each state. A South Australian outbreak of *S. Typhimurium* 9 associated with homemade ice cream also implicated raw eggs. These and other egg-related outbreaks highlight the need for health departments to thoroughly document the sources of contamination. The fact that the South Australian investigation was unable to trace back products to their source highlights a common problem where food ingredients are suspected as the cause of gastroenteritis outbreaks.

The outbreak of *Salmonella* Enteritidis 26 in Queensland was unusual in that outbreaks of this phage type are rare. The vehicle of pathogen in this outbreak was not identified, despite intensive investigation. *Salmonella* Enteritidis is a serious concern for primary industry due to the ability of some Enteritidis phage types to cause intra-ovarian infection in egg-laying poultry and egg infection has major cost implications.<sup>1</sup> In Australia, OzFoodNet investigates all cases of *Salmonella* Enteritidis to monitor for the emergence of invasive phage types, such as phage type 4.

There was an outbreak of *Salmonella* Stanley during the quarter in a Victorian boarding school where the source was not identified. *Salmonella* Stanley infections are commonly acquired in Asia, although a small number of infections are acquired in Australia each year. In 2001, this serotype was the cause of an international outbreak associated with Chinese peanuts.<sup>2</sup>

The outbreak of *C. perfringens* associated with a meal of take away pizza highlights that the length of cooking time for pizza may not kill this anaerobic spore forming organism. It also demonstrates the need to keep ingredients chilled to prevent growth of bacteria. *C. perfringens* is a hardy organism and vegetative organisms can grow at temperatures between 15–50°C.<sup>3</sup> There were three outbreaks of illness due to pizza during the quarter. OzFoodNet sites carefully reviewed the results of these investigations to determine if there were any links between the outbreaks, as some franchised chains centralise food preparation and distribution.

### References

1. Mumma GA, Griffin PM, Meltzer MI, Braden CR, Tauxe RV. Egg quality assurance programs and egg-associated *Salmonella* enteritidis infections, United States. *Emerg Infect Dis* 2004;10:1782–1789.
2. Kirk MD, Little CL, Lem M, Fyfe M, Genobile D, Tan A. An outbreak due to peanuts in their shell caused by *Salmonella* enterica serotypes Stanley and Newport—sharing molecular information to solve international outbreaks. *Epidemiol Infect* 2004;132:571–517.
3. Taormina PJ, Dorsa WJ. Growth potential of *Clostridium perfringens* during cooling of cooked meats. *J Food Prot* 2004;67:1537–1547.