OzFoodNet: enhancing foodborne disease surveillance across Australia: quarterly report, April to June 2002

The OzFoodNet Working Group[1]

Introduction

OzFoodNet is a collaborative network of epidemiologists, microbiologists and food safety specialists conducting applied epidemiological research into foodborne disease and improving existing surveillance mechanisms for foodborne disease. The Commonwealth Department of Health and Ageing established OzFoodNet in 2000 and the network has had representation on the Communicable Diseases Network Australia since 2001. All Australian jurisdictions participate in OzFoodNet.

This second quarterly report of OzFoodNet for 2002 summarises the incidence of foodborne disease in the 6 States of Australia and the Australian Capital Territory between April and June 2002. During the second quarter of 2002, OzFoodNet continued to collect data on the incidence of gastroenteritis and its causes around Australia. The New South Wales Health Department has enhanced surveillance in the Hunter Region, although data are reported for all of New South Wales where available. The Northern Territory participates as an observer, and data are only included where specified. All data are reported using the date the report was received by the health agency. Notifications received in the current quarter are compared against 4-year historical means for the years 1998 to 2001.

Notifications in the second quarter

In the second quarter of 2002, there were 3,180 notifications of *Campylobacter* infection, which was slightly higher (7.4%) than the historical mean. South Australia had a 1.4 per cent decrease in the number of notifications, while the Australian Capital Territory experienced the largest increase of 24.4 per cent. The median age of cases in different sites was similar for the previous quarter and ranged from 27 to 30 years of age. Sites reported that the male to female ratio of cases ranged from 0.9–1.2:1.0. There were no reported outbreaks of *Campylobacter* infection during the quarter.

The incidence of salmonellosis in the second quarter 2002, was higher than in the previous 4 years in all OzFoodNet sites, except for Western Australia (Figure 1). Sites reported a total of 2,120 cases of salmonellosis during the second quarter of 2002, which represented a 26.5 per cent increase over the historical mean. All of New South Wales and the Australian Capital Territory combined, saw a marked increase in the number of notifications (58.1%) compared to the historical mean. OzFoodNet sites recorded that the median ages of cases ranged from 9 to 28 years. The lowest median ages of notified cases were recorded in Queensland (6.5 years), Tasmania (9 years) and Western Australia (11 years), while the remaining sites reported that the median age of notified cases was greater than 20 years. The male to female ratio ranged from 0.8–1.2:1.0.

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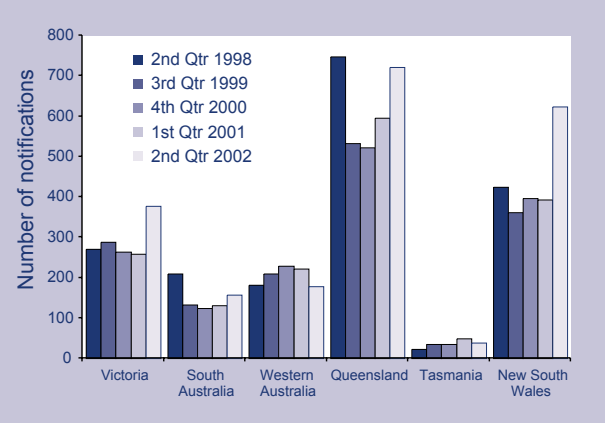
Figure 1. Notifications of salmonellosis in OzFoodNet sites during the second quarter in the years 1999 to 2002



During the quarter, there were four serovars that were among the most common in three or more states: *Salmonella* Typhimurium (phage types 9, 126, and 135), and *S.* Saintpaul. New South Wales experienced community-wide increases in several serovars, including 52 cases of *S.* Bovismorbificans phage type 24. In this quarter, *S.* Typhimurium 170 and *S.* Heidelberg continued to emerge as significant serovars in Queensland. The Victorian Department of Human Services reported continued emergence of *S.* Typhimurium 170. South Australia reported the emergence of two serovars that were previously uncommon in that State; *S.* Typhimurium 8 and *S.* Typhimurium 145. The OzFoodNet-Tasmania site reported a case of *S.* Kalumburu; a serovar that had not previously been isolated from humans. There was no obvious source for the infection. The Victorian site reported investigating four small clusters of *Salmonella*, including 3 cases of *S.* Mississippi. Two cases of *S.* Mississippi had travelled to Tasmania, and the third had eaten Tasmanian produce. Table 1 shows the five most common *Salmonella* infections reported to OzFoodNet during the quarter compared to the same quarter last year.

During the second quarter of 2002, the National Enteric Pathogen Surveillance Scheme reported that the five most common *Salmonella* infections nationally were *S.* Typhimurium 135 (168 cases), *S.* Typhimurium 9 (134 cases), *S.* Typhimurium 170 (122 cases), *S.* Saintpaul (99 cases), and *S.* Typhimurium 126 (72 cases). (Joan Powling, The University of Melbourne, personal communication, 18 July 2002).

State health departments received 17 notifications of listeriosis during the second quarter of 2002, which was 27 per cent higher than the historical mean for the previous four years (14 cases). All of these cases were reported in older people with severe immunocompromising conditions. The Queensland site reported 47 per cent (8/17) of cases. Isolates from three of the five Queensland cases notified in April and May had indistinguishable Pulse Field Gel Electrophoresis patterns, although these patterns were also seen in isolates from two historical cases. There were no common foods identified in food histories of patients. The median age of cases from all sites ranged from 66 to 74 years, and the overall male to female ratio was 1.0:1.1. There were no materno-foetal infections reported during the quarter.

OzFoodNet sites reported 13 cases of entero-haemorrhagic *E. coli* infections during the quarter, which was a 58 per cent increase over the historical mean. The majority of cases were notified from South Australia (n=7) where enhanced surveillance is undertaken. Cases were also reported from New South Wales (n=2), Victoria (n=2), Western Australia (n=1), and Queensland (n=1). There were no common links identified between cases. No serotype was recorded for 62 per cent (8/13) of infections. Five were reported as *E. coli* O157 infections. The median ages of cases in different sites ranged from 39 to 68 years. Notifications were common among females (male to female ratio was 1.0:1.6), which was similar to the first quarter of 2002. There were three cases of haemolytic uraemic syndrome reported during the quarter, all of which were in New South Wales. Details of infecting *E. coli* serotype were not available.

OzFoodNet sites reported that during the quarter there were 8 cases of typhoid, which represented a 36 per cent decrease on the mean of the previous four years. Sites also reported 88 cases of shigellosis and 22 cases of yersiniosis, which represented decreases of 12 per cent and 14 per cent from the mean of the previous four years, respectively.

Foodborne disease outbreaks

During the second quarter of 2002, OzFoodNet sites reported 22 outbreaks of gastrointestinal infections with a probable food source, compared to 16 outbreaks for the second quarter of 2001. The outbreaks affected an estimated 642 people, of whom 26 were hospitalised (Table 2). There were no deaths associated with foodborne disease outbreaks during the period. Sites conducted nine retrospective cohort studies and four case control studies to investigate these outbreaks, with the remaining nine investigations relying on descriptive information. Forty-five per cent (10/22) of outbreaks for the quarter occurred in April. The majority of outbreaks (41%) occurred in conjunction with meals at restaurants, while 23 per cent occurred following functions or meals in homes. Nine of the outbreaks were of unknown aetiology.

Table 1. Number of notifications for the five most common *Salmonella* infections reported to OzFoodNet sites for the second quarter 2002 compared to second quarter 2001

OzFoodNet site	Top five *Salmonella* infections	Number of cases				
		2nd Qtr 2002	2nd Qtr 2001	YTD 2002	Total 2001	Ratio*
ACT	*S.* Typhimurium 135	5	0	7	2	–
	S. Typhimurium 9	3	0	15	10	–
	S. Typhimurium 126	1	0	1	4	–
Hunter	*S.* Agona	7	0	7	1	–
	S. Typhimurium 170	4	2	5	6	2.0
	S. Typhimurium 195	4	0	4	0	–
	S. Chester	3	0	4	1	–
	S. Javiana	3	0	3	0	–
NSW	*S.* Typhimurium 9	68	30	221	132	2.3
	S. Typhimurium 135	57	34	134	200	1.7
	S. Bovismorbificans phage type 24	52	0	53	1	–
	S. Typhimurium 126	40	8	55	96	5.0
	S. Typhimurium 170	36	8	92	35	4.5
Qld	*S.* Virchow 8	74	62	212	125	1.2
	S. Saintpaul	57	40	170	107	1.4
	S. Hvittingfoss	43	24	94	36	1.8
	S. Chester	31	18	60	49	1.7
	S. Birkenhead	30	33	86	95	0.9
SA	*S.* Typhimurium 8	49	0	53	3	–
	S. Typhimurium 145	16	0	17	0	–
	S. Typhimurium 126	9	25	27	110	0.4
	S. Saintpaul	7	0	9	5	–
	S. Typhimurium 108	7	5	19	31	1.4
Tas	*S.* Mississippi	26	30	59	102	0.9
	S. Typhimurium 135	4	1	12	4	4.0
	S. Typhimurium 4	1	2	1	1	0.5
	S. Typhimurium 195	1	0	1	0	–
	S. Typhimurium U290	1	0	2	0	–
Vic	*S.* Typhimurium 170	78	3	126	72	26.0
	S. Typhimurium 135	67	18	134	92	3.7
	S. Typhimurium 9	63	33	97	127	1.9
	S. Typhimurium 126	15	7	36	16	2.1
	S. Saintpaul	15	2	27	10	7.5
WA	*S.* Typhimurium 135	16	13	53	89	1.2
	S. Saintpaul	14	16	29	45	0.9
	S. Typhimurium 9	11	2	33	18	5.5
	S. Muenchen	10	7	18	26	1.4
	S. Typhimurium 141	8	5	10	9	1.6

* Ratio of cases for the second quarter 2002 to the second quarter of 2001

Table 2. Outbreaks reported by OzFoodNet sites, April to June 2002

State	Month of outbreak	Setting category	Agent responsible	Number affected	Evidence	Responsible vehicles
ACT	April	Miscellaneous	Suspected virus	192	D	Unknown
NSW (Hunter)	April	Takeaway	Unknown	5	D	Pizza with seafood topping
	May	Restaurant	Unknown	3	D	Suspected seafood
	May	Restaurant	Unknown	5	D	Unknown
	June	Restaurant	Unknown	4	D	Unknown
	June	Restaurant	Unknown	4	D	Suspected seafood
Qld	April	Home	Ciguatera fish poisoning	3	D	Grunter bream
	May	Restaurant	Unknown	7	D	Unknown
	May	Restaurant	Unknown	4	D	Unknown
	June	Home	*Bacillus cereus*	37	A, M	Rice
SA	April	Restaurant	*S.* Typhimurium 8	78	A, M	Caesar salad
	April	Community	*S.* Typhimurium 43	5	A	Sliced ham
	May	Home	*C. perfringens*	8	A, M	Potato pie
Vic	April	Home	*S.* Typhimurium 135	6	D, M	Home barbequed chicken
	April	Aged care/ health care	*S.* Typhimurium 9	18	D	Unknown
	April	Home	*S.* Typhimurium 170	6	M	Suspected eggs
	April	Child care centre	*Staphylococcus aureus*	7	M	Rice
	April	Cruise	*Clostridium perfringens*	18	D	Unknown
	May	Restaurant	Suspected *C. perfringens*	10	A	Pea and ham soup
	May	Restaurant	Norwalk virus	192	D	Unknown
	May	Community	*S.* Typhimurium U290	10	A	Cream filled cakes/pastries
	June	Community	*S.* Typhimurium 135	20	D	Vietnamese pork rolls

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

A Statistical association between illness and one or more foods.

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

* The number affected is calculated from the proportion of people interviewed who were ill, multiplied by the number of people exposed.

Seven outbreaks were due to *Salmonella* contamination. *Salmonella* Typhimurium 135 infection was responsible for two of the outbreaks, one of which was associated with barbecued chicken, and one associated with Vietnamese pork rolls. The 20 cases of *S.* Typhimurium 135 associated with the pork rolls were detected through surveillance. All cases reported eating products from the same premises on the same day. The pork rolls consisted of bread rolls with a raw egg mayonnaise, cooked meats, salad and pate. No specific problems with food safety were identified but the rolls were sometimes stored at room temperature. Vietnamese pork rolls have been responsible for large outbreaks in Australia, and were recently identified as the cause of an outbreak of *S.* Typhimurium 126 in New South Wales.[1,2]

South Australia reported a large outbreak of *S.* Typhimurium 8 associated with Caesar salad from a restaurant. Several salad ingredients tested positive for *S.* Typhimurium phage type 8 including the salad dressing, anchovies and parmesan cheese. Victoria reported an outbreak due to *S.* Typhimurium U290 that was epidemiologically associated with consumption of cream and/or custard filled pastries from a bakery.

There were four outbreaks due to bacterial toxins following time-temperature abuse of the foods, including two due to *C. perfringens*. Queensland reported *Bacillus cereus* as the cause of an outbreak of gastrointestinal illness affecting 37 people. *Bacillus cereus* was identified in samples of rice. Epidemiological investigations found a significant association between the consumption of rice and illness. Rice had been cooked on the morning of the function and left at room temperature for the remainder of the day, prior to reheating for consumption.

Applied research

In the second quarter of 2002, OzFoodNet sites continued to recruit patients and controls for the national case control studies into *Campylobacter*, *Salmonella* Enteritidis, and *Listeria* infections. During the quarter, the Hunter-OzFoodNet site analysed the results of a *Campylobacter* case control study using typing data from nine phenotypic and genotypic methods. This typing comparison has relied on collaboration from many microbiology laboratories around Australia, which have imported data into a bionumerics database held at PathCentre in Western Australia. Preliminary results suggest that incorporating sub-typing of *Campylobacter* into epidemiological analysis reveals temporal clustering and specific risk factors for infection that were previously not recognised.

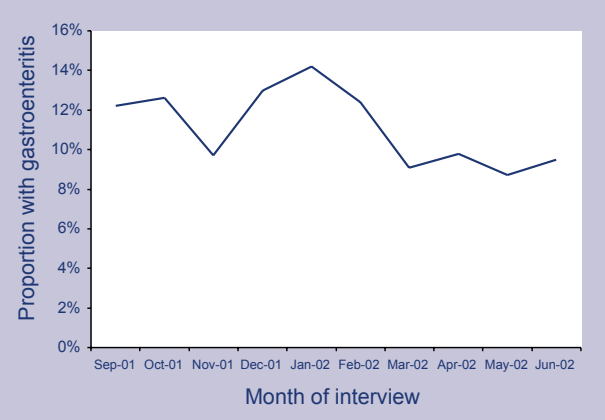
In the second quarter of 2002, 1,280 people were interviewed as part of the national OzFoodNet gastroenteritis survey. Overall 9.4 per cent of people experienced gastroenteritis compared to 12.2 per cent for the first quarter of 2002 (Table 3). There were noticeable differences by season in different jurisdictions, and the prevalence of gastroenteritis was highest in summer (Figure 2). During the quarter, residents of Tasmania reported the lowest crude proportion of people experiencing gastroenteritis in the previous month, and Victoria reported the highest. Nationally, the prevalence of gastroenteritis was highest for respondents interviewed in the month of April (9.8%). This is self-reported gastroenteritis and does not distinguish foodborne illness from other causes of gastroenteritis.

Table 3. Unweighted results of the national OzFoodNet gastroenteritis survey between January and March 2002 and April and June 2002, showing the number and proportion of respondents reporting an episode of gastroenteritis in the previous month

State or Territory	January – March 2002			April – June 2002		
	No. with gastroenteritis	No. interviewed	%	No. with gastroenteritis	No. interviewed	%
New South Wales*	40	255	15.7	13	183	7.1
Northern Territory	28	204	13.7	17	204	8.3
Queensland	22	203	10.8	14	126	11.1
South Australia	22	187	11.8	12	169	7.1
Tasmania	23	215	10.7	9	154	5.8
Victoria	26	229	11.4	34	233	14.6
Western Australia	22	206	10.7	21	211	10.0
Total	**183**	**1,499**	**12.2**	**120**	**1,280**	**9.4**

* Includes the Australian Capital Territory and an over-sample for the Hunter region of New South Wales

Figure 2. Unweighted results of the national OzFoodNet gastroenteritis survey showing the proportion of respondents reporting an episode of gastroenteritis in the previous month (n=5,196), September 2001 to June 2002



During the quarter, OzFoodNet held a workshop at the National Centre for Epidemiology and Population Health to develop the assumptions used in calculating the incidence of gastroenteritis due to food. These assumptions will use data from a variety of sources about the microbiological causes of gastroenteritis in the community.

References

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