OzFoodNet: enhancing foodborne disease surveillance across Australia: quarterly report, January to March 2002

The OzFoodNet Working Group

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 (CDNA) since 2001.

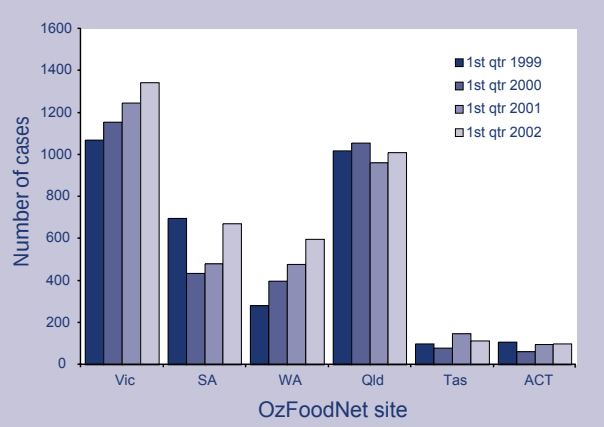
This first quarterly report of OzFoodNet for 2002 summarises the incidence of foodborne disease in the 6 States of Australia and the Australian Capital Territory between January and March 2002. During the first quarter of 2002, OzFoodNet continued to collect data on the incidence of gastroenteritis and its causes around Australia. All Australian jurisdictions collaborate in OzFoodNet. 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 in the first quarter

In the first 3 months of 2002, notifications of *Campylobacter* infection continued to be higher than historical means, except for Queensland and the Australian Capital Territory (Figure 1). During the first quarter 2002, OzFoodNet sites reported 3,842 notifications of campylobacteriosis, which represented a 19.6 per cent increase over the mean for the same quarter for the years 1998 to 2001. This does not include data for New South Wales or the Hunter Area Health Service, as *Campylobacter* is not notifiable in this State. The median age of cases ranged between 26 to 30 years. The male to female ratio of cases ranged from 1.1–1.5:1.0 across all jurisdictions. There were no reported outbreaks of *Campylobacter* infection during the quarter, although Tasmania investigated a localised increase in northern Tasmania.

Figure 1. Notifications of campylobacteriosis in OzFoodNet sites during the first quarter in the years 1998 to 2002



The incidence of salmonellosis was higher than previous years in all OzFoodNet sites, except for South Australia and Western Australia. Sites reported a total of 2,162 cases of salmonellosis during the first quarter of 2002, which represented a 20.6 per cent increase over the mean for the

The OzFoodNet Working Group is (in alphabetical order): Rosie Ashbolt (Tas), Robert Bell (Qld), Scott Crerar (FSANZ), Craig Dalton (Hunter PHU), Rod Givney (SA), Joy Gregory (Vic), Gillian Hall (NCEPH), Brigid Hardy (AFFA), Geoff Hogg (MDU), Rebecca Hundy (SA), Martyn Kirk (FSANZ), Karin Lalor (Vic), Ian McKay (DoHA), Vanessa Madden (Tas), Peter Markey (NT), Lynn Meuleners (WA), Tony Merrett (Hunter PHU), Geoff Millard (ACT), Jane Raupach (SA), Paul Roche (DoHA), Mohinder Sarna (WA), Craig Shadbolt (DoHA), Russell Stafford (Qld), Nola Tomaska (NCEPH), Leanne Unicomb (Hunter PHU), Craig Williams (FSANZ)

Corresponding author: Mr Martyn Kirk, Coordinating Epidemiologist, OzFoodNet, c/o National Public Health Partnership, 589 Collins Street, Melbourne, VIC 3000, Australia. Telephone: +61 3 9616 1522. Facsimile: +61 3 9616 1500. E-mail: martyn.kirk@dhs.vic.gov.au.

same quarter for the years 1998 to 2001. The median ages of cases ranged from 9 to 26 years in OzFoodNet sites. The Queensland OzFoodNet site reported the highest rate of salmonellosis and the lowest median age of cases (9 years). The male to female ratio differed appreciably in different sites, with the Australian Capital Territory recording 0.4 males for every female, through to Western Australia recording 1.4 males to every female. Sites reported six *Salmonella* outbreaks during the quarter.

During the quarter, there were 3 serovars that were common in three or more states: *Salmonella* Typhimurium (phage types 9, and 135), and *S*. Saintpaul (Table 1). The Victorian Department of Human Services reported the continued emergence of *S*. Typhimurium 170, which also increased in New South Wales and Queensland.[1] The Communicable Diseases Network Australia requested that OzFoodNet coordinate the multi-state investigation of this phage type. The investigation required intensive efforts from the three states, but did not identify any conclusive source for the increase (see section on outbreaks).

There was also a significant increase in the incidence of *S*. Typhimurium 9 in New South Wales and Western Australia. Queensland reported a major increase in cases of *S*. Hvittingfoss, although no obvious source of infection was identified. The OzFoodNet site in Tasmania reported that there were fewer cases of *S*. Mississippi compared to the same quarter in the previous year (ratio of cases in the first quarter 2002 to the mean number of cases in the first quarter for the last 4 years = 0.6).

During the first quarter of 2002, the National Enteric Pathogen Surveillance Scheme reported that the five most common *Salmonella* infections nationally were *S*. Typhimurium 9 (279 cases), *S*. Typhimurium 135 (262 cases), *S*. Saintpaul (145 cases), *S*. Virchow 8 (137 cases), and *S*. Typhimurium 170 (132 cases) (personal communication, Mark Veitch, The University of Melbourne, 13 April 2002).

State health departments received 15 notifications of listeriosis during the first quarter of 2002, which was 20 per cent lower than the number of notifications for the previous 4 years (20 cases). All of these cases were reported in older people with severe immunocompromising conditions. The median age of cases ranged from 74 to 81 years, and the overall male to female ratio was 1.5:1.0. There were no materno-foetal infections reported during the quarter.

OzFoodNet sites reported 19 cases of shiga-toxin producing *E. coli* infections during the quarter; with cases notified from South Australia (n=13), Western Australia (n=3), Queensland (n=2), and New South Wales (n=1). There were no common links identified between the cases. No serotype was recorded for 53 per cent (10/19) of infections. Seven were reported as *E. coli* O157 infections. The median ages of cases in different sites ranged from 34 to 76 years, with females predominating (1.0:1.5). There were 2 cases of haemolytic uraemic syndrome reported, one in Victoria and one in New South Wales. The case in Victoria was due to *E. coli* Ont:H-, and no serotype was reported for the New South Wales case.

OzFoodNet sites reported that during the quarter there were 35 cases of typhoid, which represented a 37 per cent increase on the mean of the previous 4 years. Sites also reported 99 cases of shigellosis and 23 cases of yersiniosis, which represented decreases of 18 per cent and 54 per cent from the mean of the previous 4 years, respectively.

Foodborne disease outbreaks

During the first quarter of 2002, OzFoodNet sites reported 26 outbreaks of gastrointestinal infections with a probable food source, compared to 25 outbreaks for the first quarter of 2001. The outbreaks affected an estimated 784 people, of whom 34 were hospitalised and one person died (Table 2). Sites conducted 12 retrospective cohort studies to investigate these outbreaks, and the remainder of investigations relied on descriptive information.

Table1. Number of notifications for the five most common *Salmonella* infections reported to OzFoodNet sites for the first quarter 2002 compared to the first quarter 2001

OzFoodNet site	Top 5 *Salmonella* infections	Number of cases				
		1st Qtr 2002	1st Qtr 2001	YTD 2002	Total 2001	Ratio*
ACT	S. Typhimurium 9	14	4	14	10	3.5
	S. Typhimurium 135	3	2	3	2	1.5
	S. Typhimurium 64	2	1	2	2	2.0
	S. Infantis	1	3	1	3	0.3
	S. Hvittingfoss	1	0	1	1	–
Hunter	S. Typhimurium 135	10	6	10	15	1.7
	S. Typhimurium 9	10	2	10	3	5.0
	S. Potsdam	8	2	8	2	4.0
	S. Montevideo	4	0	4	1	–
	S. Typhimurium U290	4	0	4	3	–
New South Wales	S. Typhimurium 9	145	58	145	132	2.5
	S. Typhimurium 135	78	75	78	201	1.0
	S. Typhimurium 170	56	2	56	33	28.0
	S. Birkenhead	42	33	42	88	1.3
	S. Typhimurium 4	17	20	17	41	0.9
Queensland	S. Virchow 8	137	63	137	177	2.2
	S. Saintpaul	112	66	112	169	1.7
	S. Birkenhead	57	62	57	134	0.9
	S. Aberdeen	56	29	56	81	1.9
	S. Hvittingfoss	51	12	51	52	4.3
South Australia	S. Typhimurium 126	17	14	17	110	1.2
	S. Typhimurium 108	11	1	11	31	11.0
	S. Typhimurium 9	10	19	10	49	0.5
	S. Agona	7	3	7	6	2.3
	S. Typhimurium 4	7	0	7	7	–
Tasmania	S. Mississippi	33	56	33	102	0.6
	S. Typhimurium 135	8	1	8	5	8.0
	S. Typhimurium 9	3	3	3	12	1.0
	S. Anatum	1	0	1	0	–
	S. Hadar 14	1	0	1	0	–
Victoria	S. Typhimurium 135	66	43	66	92	1.5
	S. Typhimurium 170	48	17	48	72	2.8
	S. Typhimurium 9	34	56	34	127	0.6
	S. Typhimurium 126	21	2	21	16	10.5
	S. Saintpaul	12	2	12	10	6.0
Western Australia	S. Typhimurium 135	35	35	35	51	1.0
	S. Typhimurium 9	22	4	22	15	5.5
	S. Saintpaul	13	20	13	47	0.7
	S. Typhimurium 135a	9	10	9	17	0.9
	S. Muenchen	7	11	7	26	0.6

* Ratio of cases for the first quarter 2002 to the first quarter 2001.

Table 2. Outbreaks transmitted by food or water reported by OzFoodNet sites, January to March 2002

State	Month of outbreak	Setting	Agent responsible	Number affected*	Hospitalied	Evidence	Responsible vehicles
ACT	March	Miscellaneous	Unknown	131	0	D	Unknown
	March	Hotel	Unknown	82	0	D	Unknown
Hunter	February	Restaurant	S. Potsdam	17	2	M	Egg based dressings
	February	Restaurant	*V. parahaemolyticus*	2	0	D	Unknown
	February	Conference/ function	*C. perfringens*	16	0	M	Spit roasted beef and/or pork
Qld	January	Aged care/ healthcare setting	S. Typhimurium 102	12	2	D	Unknown
	January	Restaurant	*C. perfringens*	2	0	D	Unknown
	February	Restaurant	Unknown	6	0	D	Unknown
	February	Home	Ciguatera	2	1	D	Striped perch
	February	Takeaway	*S. aureus*	8	0	D	Pizza
	February	Restaurant	Unknown	6	0	D	Unknown
	February	Institution	S. Potsdam	2	0	D	Unknown
	March	Home	S. Typhimurium 135a	10	8	D	Salmon rice patties
	March	Home	Ciguatera	2	0	D	Spanish mackerel
SA	January	Community	S. Typhimurium 78	5	2	D	Unknown
Tas	March	Restaurant	S. Typhimurium 135	5	3	D	Suspected chicken stock
Vic	February	Conference/ function	Unknown	32	1	S	Chocolate mud cake
	February	Hotel	Human calicivirus	12	0	D	Unknown
	February	Hotel	Unknown	18	0	D	Unknown
	February	Aged care/ healthcare setting	Unknown	13	N/A	D	Suspect chemical poisoning
	March	Restaurant	Unknown	8	0	D	Unknown
	March	Home	S. Typhimurium 135	19	2	S	Roast chicken
	March	Conference/ function	Unknown	12	0	D	sandwiches suspected
	March	Conference/ function	Mixed aetiology	272	13	M	Meal of rice, meat, salad, bread and yoghurt
WA	February	Restaurant	Human calicivirus	60	0	M	Seafood salad
	February	Conference/ function	Unknown	30	NK	D	Unknown

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

S = Statistical association between illness and one or more foods.

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

N/A = Not applicable

NK = Not known

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

Fifty-six per cent (14/25) of outbreaks occurred in February. Six outbreaks were due to *Salmonella* contamination and 10 were of unknown aetiology. Two outbreaks were due to *Salmonella* Typhimurium 135, and two due to *Salmonella* Potsdam. There were two outbreaks due to human caliciviruses and two outbreaks of ciguatera poisoning. There were four outbreaks due to bacterial toxins following poor handling in terms of temperature following cooking. The majority of outbreaks (48%) occurred in conjunction with meals at restaurants, conferences or functions.

The Hunter reported an outbreak of *C. perfringens* poisoning due to a function where meats were cooked on a spit roast. The meat was prepared by a company in Sydney and transported to the Hunter. The outbreak was very similar to outbreaks that the Australian Capital Territory reported immediately prior to Christmas.[1] Discussion amongst investigators identified that these separate events were supplied by the same company operating under different names. OzFoodNet sites identified several other outbreaks from previous years that were associated with this company in Western Australia, New South Wales and Queensland. Many of the outbreaks appeared to be caused by spit roast meats that remained at temperatures allowing bacterial toxin production for long periods of time. This outbreak highlighted the benefits of regular communication amongst investigators and the regulatory challenges for food safety in Australian jurisdictions.

During the quarter, Queensland, New South Wales and Victoria collaborated in an investigation of a large community-wide increase of *S.* Typhimurium 170 (not included in outbreak table). One hundred and nine cases were notified between October 2001 and March 2002. The majority of these cases occurred in Victoria, with this state also recording the first cases in this outbreak. Cases occurred in rural and urban areas and there was no obvious geographic clustering. Despite conducting many comprehensive hypothesis-generating interviews the investigation team was unable to definitively identify a vehicle or source for the outbreak. There were several anecdotal links to consumption of red meat and chicken, including:

- several human cases in Queensland purchasing meats from the same butcher, which was supplied by a Victorian distributor;
- concurrent animal isolates of the same organism at similar times and geographic locations (National Enteric Pathogen Surveillance Scheme);
- *S.* Typhimurium 170 commonly isolated from chicken meat (National Enteric Pathogen Surveillance Scheme);
- a subset of cases were infected with *S.* Typhimurium 170 that was resistant to either kanamycin and/or neomycin, which are aminoglycoside antibiotics used in veterinary applications; and
- infections in people in contact with cow herds that were also infected with *S.* Typhimurium 170.

These links were difficult to confirm, but highlighted the need for understanding the animal sources of *Salmonella*. The investigation team recommended improved collaboration between the health and agricultural portfolios for the purposes of disease investigation and data collection.

Applied research

In the first quarter of 2002, a further two OzFoodNet sites commenced recruiting patients and controls for the national *Campylobacter* case control study, bringing the total to five sites. Sites will continue to collect data for the *Campylobacter* case control study until September 2002. The South Australian site commenced a case control study into risk factors for acquiring shiga-toxin producing *E. coli*. This study is not expected to finish for two years, as there are so few cases reported. OzFoodNet sites started interviewing patients for the *Listeria* case control study, although only two sites (Queensland and Hunter) are recruiting controls. Sites continued to recruit patients and controls for the national *Salmonella* Enteritidis case control study and studies into locally endemic *Salmonella* serovars.

In the first quarter of 2002, 1,599 people were interviewed as part of the national OzFoodNet gastroenteritis survey. Overall 12.2 per cent of people experienced gastroenteritis compared with 11.8 per cent for the previous quarter. There were noticeable differences by season in different jurisdictions (Table 3). During January and February 2002, residents of New South Wales reported the highest crude proportion of people experiencing gastroenteritis in the previous month, and Tasmanian and Western Australian residents reported the lowest. Nationally, the prevalence of gastroenteritis was highest for respondents interviewed in the month of January (14.2%) (Figure 2). This survey records self-reported gastroenteritis and does not distinguish foodborne illness from other causes of gastroenteritis.

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 = 3,916), September 2001 to March 2002

The data collected in this survey will contribute to OzFoodNet's calculation of an estimate of the proportion of gastroenteritis due to food. During the quarter, OzFoodNet held discussions with international programs researching gastrointestinal disease and agreed to compare survey date and findings.

References

1. The OzFoodNet Working Party. OzFoodNet: enhancing foodborne disease surveillance across Australia: quarterly report, October to December 2001. *Commun Dis Intell* 2002;26:248–252.

Table 3. Unweighted results of the national OzFoodNet gastrointestinal survey between October and December 2001 and January and February 2002, showing the number and proportion of respondents reporting an episode of gastroenteritis in the previous month

State or Territory	October – December 2001			January – February 2002		
	No. with gastroenteritis	No. interviewed	%	No. with gastroenteritis	No. interviewed	%
NSW*	38	357	10.4	40	255	15.7
NT	40	202	19.8	28	204	13.7
Qld	27	286	9.4	22	203	10.8
SA	37	292	12.7	22	187	11.8
Tas	29	268	10.8	23	215	10.7
Vic	30	250	12.0	26	229	11.4
WA	22	229	9.6	22	206	10.7
Total	**223**	**1,884**	**11.8**	**183**	**1,499**	**12.2**

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