OzFoodNet: enhancing foodborne disease surveillance across Australia: Quarterly report, April to June 2005

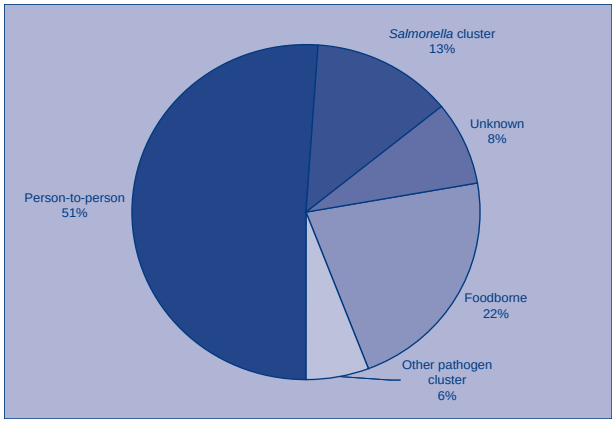
Introduction

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 report summarises the occurrence of foodborne disease outbreaks and cluster investigations between 1 April and 30 June 2005. 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 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 health as well as public health laboratories and local government environmental health officers who collected data used in this report.

During the second quarter of 2005, OzFoodNet sites reported 123 outbreaks of foodborne or enteric illness. Outbreaks of gastroenteritis are often not reported to health agencies or the reports are delayed, meaning that these figures significantly under-represent the true burden of these infections. In total, these outbreaks affected more than 1,661 people and resulted in 64 persons being admitted to hospital. No deaths were reported. As has been the case in previous reports, the majority (51%, n=63) of outbreaks resulted from infections suspected to be spread by person-to-person transmission (Figure). Twenty-seven per cent of these person-to-person outbreaks occurred in aged care facilities, 21 per cent in child care centres and 16 per cent in the community.

Figure. Mode of transmission for outbreaks of gastrointestinal illness reported by OzFoodNet sites, 1 April to 30 June 2005



Foodborne disease outbreaks

There were 27 outbreaks of illness where consumption of contaminated food was suspected or proven to be the primary mode of transmission. These outbreaks affected 327 people. This compares with 37 outbreaks for the second quarter of 2004 and 31 outbreaks in the first quarter of 2005.

Salmonella Typhimurium was responsible for six outbreaks and *Campylobacter* for two outbreaks. *Staphylococcus aureus* was confirmed as responsible for one outbreak and suspected to be the cause of another. The remaining two outbreaks, where an agent was identified, were caused by ciguatoxin and Norovirus. No aetiological agent was identified for the remaining 58 per cent (15/26) of outbreaks.

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

Nine of the outbreaks reported in the quarter were associated with meals served in restaurants, five with food prepared in private homes and five with food prepared by commercial caterers. Of the outbreaks caused by food prepared by commercial caterers, two occurred at functions and single outbreaks occurred at a camp, a hospital and in a private home. Food from bakeries and nationally franchised fast food restaurants were responsible for two outbreaks each. Single outbreaks were associated with food prepared at a hospital, a takeaway store, a delicatessen and an unknown setting. Nine of the outbreaks occurred in April, eleven in May and seven in June.

To investigate these outbreaks, sites conducted nine cohort studies and two case control studies. For 16 outbreaks, only descriptive data were collected. Investigators obtained microbiological evidence linking a food vehicle to illness in three outbreaks and analytical epidemiological evidence in six outbreaks. For the remaining outbreaks, investigators obtained descriptive epidemiological evidence implicating the food vehicle or suggesting foodborne transmission.

In New South Wales there were 12 outbreaks of foodborne illness reported during the quarter. Two outbreaks of *Salmonella* Typhimurium 9 were associated with a larger cluster investigated in May and June. One outbreak involved 24 cases who ate Vietnamese pork and chicken rolls from three different bakeries in Sydney. The second outbreak was associated with a meal at a restaurant where three unrelated groups dined on the same evening, resulting in five microbiologically confirmed and three epidemiologically linked cases. No food vehicle was identified for this outbreak, although the restaurant used an egg supplier that was common to two of the bakeries in the first outbreak. The New South Wales Food Authority traced the supply of eggs back to a single farm and tested samples of egg washings and chicken litter, which were positive for *Salmonella* Typhimurium 9.

In the other 10 outbreaks reported by New South Wales, no aetiological agent was identified although three outbreaks were suspected to be caused by viruses. These were likely to be due to person-to-food-to-person transmission caused by ill food handlers or patrons. Four of these involved restaurants. Three of these followed the consumption of meals of chicken salad, lamb and beef dishes and chicken schnitzel. The food vehicle was unknown in the other one. These restaurant-related outbreaks affected between two and 12 people each. Two of the six remaining outbreaks of unknown aetiology occurred following the consumption of hamburgers from a nationally franchised fast food outlet (2 cases each). A further two outbreaks involved food prepared by commercial caterers. In one of these the food was provided to a hospital (11 cases) but the responsible food vehicle was not identified. In the other (28 cases), the food was consumed at a private residence and a potato bake was suspected to be the cause of illness. The remaining two outbreaks occurred in private residences and both involved chicken dishes, one prepared in the home (2 cases) and the other prepared elsewhere (3 cases).

Victoria reported two outbreaks of foodborne disease for the quarter. An aetiological agent was not identified for either outbreak. One outbreak affecting 17 people was associated with a meal of pork and gravy prepared by a commercial caterer. Cases showed symptoms consistent with Norovirus. The second outbreak affected 11 people in an aged care facility who showed symptoms consistent with *Clostridium perfringens* infection. Three faecal specimens tested showed heavy growth of *C. perfringens* while a fourth showed medium growth. Food for the facility was prepared by a hospital but the responsible food vehicle could not be identified.

Queensland reported six outbreaks of foodborne illness for the second quarter. One outbreak was due to ciguatera fish poisoning caused by Spanish mackerel caught off Hervey Bay in Northern Queensland. The fish were distributed to five retailers. Seventeen people, in five unrelated groups, were affected after preparing and consuming the fish at private residences and two people were hospitalised.

Queensland also reported two outbreaks of *Salmonella* Typhimurium. Fourteen people were ill with *S.* Typhimurium 197 after consuming egg based products purchased at a range of outlets but prepared by a single bakery. As part of a *S.* Typhimurium 108/170 cluster investigation, two people reported ill after eating takeaway chicken traced back to a New South Wales poultry supplier linked to another *S.* Typhimurium 108/170 outbreak in New South Wales.

In other Queensland outbreaks, two people became ill after eating custard filled dumplings purchased from a grocery store. *Staphylococcus aureus* was isolated from the dumplings and from faecal samples. One faecal specimen was positive for staphylococcal enterotoxin. No food vehicle was identified in the remaining two outbreak investigations where *Campylobacter jejuni* infected five people after a common meal at a private residence and an undetermined pathogen infected 11 people following consumption of food from a commercial caterer.

South Australia reported that 81 people were infected with *Salmonella* Typhimurium 64 after eating bread, rolls and baguettes with various fillings. A café prepared the rolls over a five day period for six different functions. People eating chicken rolls and hamburgers purchased directly from the café also became ill. Both a chicken roll and raw chicken obtained from the café tested positive for *S.* Typhimurium 64. Trace back identified that a Victorian chicken processor supplied the chicken.

South Australia also reported an outbreak of *Salmonella* Typhimurium 108/170 in which nine people became ill after eating at the same restaurant over a three day period. A case control study identified that the food vehicle responsible for the illness to be marinated chicken roll and the chicken meat was traced to a Victorian chicken processor.

There were two foodborne outbreaks reported by Western Australia for the quarter. Neither the aetiological agent nor the food vehicle responsible were identified in these outbreaks. A commercial caterer supplied food to a camp, where 20 people became ill with gastroenteritis. In the second outbreak 17 people at a work function became ill after consuming food prepared in private homes.

The Northern Territory reported an outbreak following the consumption of Vietnamese pork rolls associated with a stall at a market. Environmental investigations suggest a possible hygiene break-down during the food preparation at a private residence prior to market or inadequate heating of the pork in the bain-marie at the market stall as potential causes. The causative agent was not identified, although five cases presented to hospital emergency departments with symptoms consistent with *Staphylococcus aureus* intoxication.

The Australian Capital Territory reported two foodborne outbreaks. One outbreak affecting 11 people was due to *Campylobacter* infection following the consumption of warm chicken salad and chicken and mushroom pasta served at a restaurant. In the second outbreak, at least 35 people became ill with norovirus infection following a function catered for by a restaurant. Those ill were more likely to have eaten duck and quince tartlets or roast pork on bruschetta.

Tasmania did not report any foodborne outbreaks during the quarter.

Comments

During the second quarter of 2005, contaminated eggs were suspected as the cause of three outbreaks. Two of these outbreaks were due to *S.* Typhimurium 9, which was the same pathogen causing two egg-related outbreaks in the first quarter of 2005. *S.* Typhimurium 9 was isolated from egg washings on the farm that supplied eggs used raw in mayonnaise for Vietnamese pork and chicken rolls. Vietnamese pork rolls also caused an outbreak of suspected staphylococcal intoxication in the Northern Territory. These rolls are a high-risk food due to the ingredients, and intensive handling required to prepare them. In the past they have caused very large outbreaks of salmonellosis that have involved fatalities.[1] Food safety agencies and Vietnamese communities need to consider new ways to make these foods safer.

There were three outbreaks of salmonellosis and an outbreak of campylobacteriosis associated with chicken meat during the quarter. Raw chicken meat is commonly contaminated with *Salmonella* and *Campylobacter*, which regularly results in outbreaks where the meat is inadequately cooked or cross contamination occurs. The outbreak of *S.* Typhimurium 64 in South Australia was unusual in that human infections with this phage type have become very rare in recent years. *S.* Typhimurium 64 was one of the most common salmonella types infecting humans in the late 1990s.

One outbreak in Victoria this quarter was suspected to be due to *Clostridium perfringens*. This outbreak was unable to be confirmed microbiologically, as the Australian Quarantine Inspection Service has restricted the importation of toxin-based test kits. Traditionally, case definitions for a *C. perfringens* outbreak use a consistent clinical picture, along with either $\geq 10^5$ organisms per gram of stool from ≥2 or more ill persons, or demonstration of enterotoxin in stool of ≥2 or more ill persons, or isolation of $\geq 10^5$ organisms per gram of epidemiologically implicated food.[2] There is considerable variation as to how different jurisdictions attribute an outbreak to this pathogen. OzFoodNet has sought the assistance of the Public Health Laboratory Network to develop a practical case definition for outbreaks of clostridial toxin poisoning for health agencies.

In June, Victoria identified an increase in cases of a rare *Salmonella* serotype—Hvittingfoss. Other eastern Australian jurisdictions also reported cases. Normally *S.* Hvittingfoss infects young children in Far North Queensland. In this instance cases occurred from southern Queensland down to Victoria and affected all age groups. The National Notifiable Diseases Surveillance System recorded 79 cases of *S.* Hvittingfoss across Australia in the second quarter of 2005, compared to 39 and 24 in 2004 and 2003 respectively (data as at 5 August 2005). OzFoodNet convened an outbreak investigation team on behalf of the Communicable Diseases Network Australia to conduct intensive hypothesis generating interviews and a case control study. The results of the investigation are not yet finalised.

Jurisdictions conducted 15 other investigations into time, place, and person clustering of *Salmonella* infections, including serotypes Birkenhead, Infantis, Liverpool, London, Mbandaka, Mississippi, Reading, Typhimurium 12, Typhimurium 135, Typhimurium 186, Virchow 8, Virchow 25 var 1, Weltevreden, and Zanzibar. There was also a considerable increase in cryptosporidiosis during the quarter, with several jurisdictions reporting cases of infection associated with community swimming pools.

References

1. Andrews R, Feldheim J, Givney R, Carman J, Murray C, Beers M, *et al.* Concurrent outbreaks of *Salmonella* Typhimurium in South Australia. *Commun Dis Intell* 1997;21:61–62.

2. Centers for Disease Control and Prevention. *Guide to Confirming the Diagnosis in Foodborne Diseases.* MMWR CDC Surveill Summ 2000;49:54–62. Available from: http://www.cdc.gov/foodborneoutbreaks/guide_fd.htm Accessed on 8 August 2005.

Table. Outbreaks of foodborne disease reported by OzFoodNet sites,* 1 April to 30 June 2005

State	Month of outbreak	Setting prepared	Infection	Number affected	Evidence	Responsible vehicles
ACT	April	Restaurant	*Campylobacter*	11	A	Warm chicken salad, chicken mushroom pasta,
	June	Restaurant	Norovirus	Unknown	A	Duck and quince tartlets, roast pork on bruschetta
NSW	April	Restaurant	Unknown	2	D	Suspected chicken salad
	April	Takeaway	Unknown	2	D	Suspected hamburger
	April	Restaurant	Unknown	5	D	Suspected lamb & beef dishes
	April	Restaurant	Unknown	5	D	Suspect chicken schnitzel
	May	Home	Unknown	2	D	Suspected chicken kebab
	May	Restaurant	Unknown	12	D	Unknown
	May	Restaurant	*S.* Typhimurium 9	9	M	Unknown vehicle, eggs likely source
	May	Bakery	*S.* Typhimurium 9	24	M	Vietnamese chicken & pork rolls
	May	Other	Unknown	3	D	Suspect chicken schnitzel
	May	Takeaway	Unknown	2	D	Suspect hamburger
	June	Caterer	Unknown	28	A	Suspect potato bake
	June	Caterer	Unknown	11	D	Unknown
NT	May	Home	Unknown	5	D	Vietnamese pork rolls
Qld	April	Store/deli	*Staphylococcus aureus*	2	M	Custard filled dumplings
	April	Caterer	Unknown	11	D	Unknown
	April	Home	Ciguatoxin	17	D	Spanish mackerel
	May	Home	*Campylobacter jejuni*	5	D	Unknown
	May	Takeaway	*S.* Typhimurium 108/170	2	D	Chicken meat
	May	Bakery	*S.* Typhimurium 197	14	D	Egg based bakery products
SA	May	Restaurant	*S.* Typhimurium 108/170	9	A	Marinated chicken roll
	June	Restaurant	*S.* Typhimurium 64	81	A	Bread roll with fillings
Vic	June	Hospital	Unknown	11	D	Unknown
	June	Caterer	Unknown	17	A	Pork & gravy
WA	April	Caterer	Unknown	20	A	Salad rolls suspected
	June	Home	Unknown	17	D	Unknown

* No foodborne outbreaks reported in Tasmania 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.