



**OzFoodNet — Enhancing Foodborne
Disease Surveillance Across Australia.**

**NSW Fourth Quarter (October –
December) 2007 OzFoodNet Report**

and

NSW 2007 OzFoodNet Annual Report

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Introduction

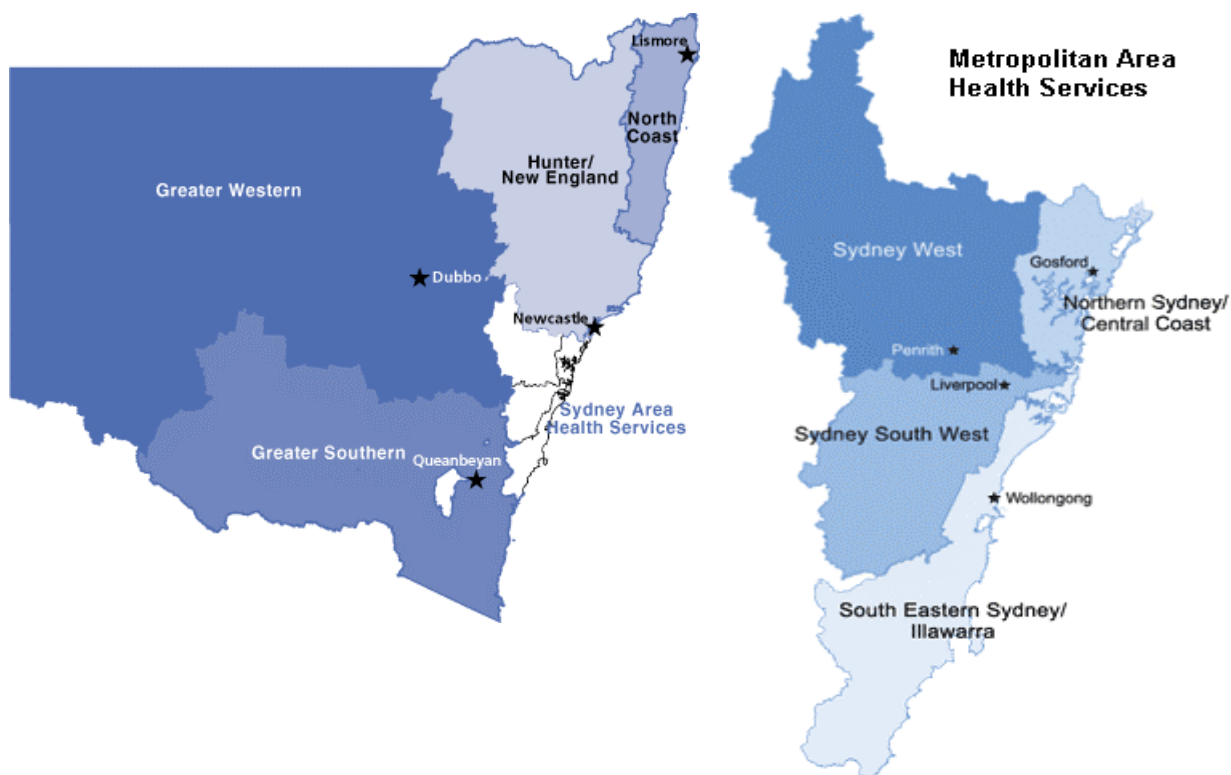
This report incorporates both the NSW OzFoodNet Fourth Quarter 2007 Report and the 2007 Annual OzFoodNet Reports.

The report describes the following enteric diseases and conditions that are notifiable in NSW: salmonellosis; listeriosis; shigellosis; haemolytic uraemic syndrome (HUS); Shiga Toxin -producing *Escherichia coli* (STEC) infections; typhoid; paratyphoid; cryptosporidiosis; giardiasis and hepatitis A.

The data in this report is derived from disease surveillance and outbreak investigation activities undertaken by staff from NSW public health units, Communicable Diseases Branch (CDB) of the NSW Department of Health (NSW DOH), OzFoodNet (OFN) staff and the NSW Food Authority.

In parts, this report describes incidence of disease by the geographical boundaries of the eight Area Health Services in NSW (Figure 1).

Figure 1: NSW Area Health Service boundaries.



NSW Health Department (2005)

There are two OzFoodNet (OFN) sites in NSW - one based in Sydney at the Communicable Diseases Branch of NSW Health and the other in Newcastle at Hunter New England Population Health.

The Sydney site's primary role is to coordinate, monitor and report state-wide enteric disease surveillance, investigate state-wide outbreaks and to contribute to enteric

disease related policy development in NSW. The team at this site consists of an OFN epidemiologist and, since August 2007, an OFN surveillance officer.

The Newcastle site's primary role is to conducting enhanced surveillance of foodborne diseases, to investigate outbreaks that occur within the Hunter New England catchment area and participate in enteric disease research. The Hunter OFN site comprises an OFN epidemiologist, a part-time medical epidemiologist and a part-time research officer.

Both sites work closely with a NSW Health enteric diseases epidemiologist and other NSW Health Communicable Disease Branch staff.

The management of suspected foodborne disease outbreaks in NSW is the shared responsibility of NSW Public Health Unit, NSW Health, NSW OFN sites and the NSW Food Authority. NSW Health is responsible for the human health and epidemiological aspects of outbreak investigations and the NSW Food Authority is responsible for the environmental investigation, food testing and food trace-back components of an outbreak investigations. A Memorandum of Understanding between NSW Department of Health and the NSW Food Authority outlines the roles and responsibilities of each agency, and the Investigation of Foodborne Illness Operational Procedures Manual provides a protocol for the communication between agencies and their roles and responsibilities during foodborne illness events.

Notifiable enteric diseases in NSW

Under the NSW Public Health Act, the following enteric diseases and conditions are notifiable in NSW: salmonellosis, listeriosis, shigellosis, Haemolytic Uraemic Syndrome (HUS), Shiga Toxin-producing *Escherichia coli* (STEC), giardiasis, typhoid, paratyphoid, cryptosporidiosis, cholera, institutional gastroenteritis in 2 or more people, foodborne disease in 2 or more people, hepatitis A and hepatitis E. Enteric diseases such as cryptosporidiosis and norovirus infection are not notifiable in NSW, however, as they are significant contributors to the burden of diseases they are included in this report.

NSW laboratories report cases of enteric disease infections to public health units (PHUs) and CDB. Outbreaks of foodborne illness and institutional gastroenteritis (not notifiable by laboratories) are reportable by doctors, hospitals, child care centers and age care facilities. Notifiable disease data is routinely entered into the NSW Notifiable Diseases Database (NDD). Much of the data reported in this document is derived from NDD.2

Data sources for this report

Data in this report has been extracted from the NSW Notifiable Diseases Database, NSW OFN Outbreak Database and the NSW Gastroenteritis in Institutions Database.

Methods

We analysed data for the following notifiable enteric pathogens; *Salmonella*[^], *Listeria monocytogenes*, *Salmonella* Typhi, *Salmonella* Paratyphi, *Shigella*, HUS and STEC. On 17 January 2008, 2007 data was extracted for NDD using 'Health Outcomes Information and Statistical Toolkit' (HOIST).² The NSW estimated resident population

[^] We defined *Salmonella* as all *Salmonella* serovars, excluding *S. Typhi*, in accordance with the definition of *Salmonella* endorsed by the Communicable Diseases Network of Australia (CDNA).³

for 31 December of each year from 2002-2007 was used to calculate crude incidence rates for each disease.⁴

Suspected foodborne and person-to-person spread outbreak data was collected from the OFN Outbreak Summary Form, NSW Food Authority Notification of Foodborne Illness Outbreak Form, Public Health Unit Environmental Request Form and NSW Gastroenteritis in Institution Summary Forms and entered into databases. Data from these registers are analysed using MS Access and MS Excel at NSW Department of Health.

Section 1: NSW OzFoodNet Fourth Quarter (October – December), 2007 Report

Fourth quarter summary

Section 1 of this report summarises the findings of enteric disease surveillance* and outbreak investigation activities conducted in NSW during the fourth quarter of 2007. The following key points are described in section 1:

- Overall, there were 1,246 notifications of enteric notifiable diseases in the fourth quarter of 2007 in NSW, a 33% increase compared with the fourth quarter for the previous 5 years. This was largely due to the increase in cryptosporidiosis and giardiasis notifications.
- Salmonellosis was the most frequently reported enteric condition. There were 491 cases notified in the fourth quarter 2007, a decrease of 1% compared to the fourth quarter average for the previous 5 years.
- Giardiasis were the second most frequent reported enteric condition with 404 cases notified in the fourth quarter 2007, an increase of 59% compared to the fourth quarter average for the previous 5 years.
- There were 276 cryptosporidiosis cases notified in NSW in the fourth quarter of 2007, a 152% increase compared to the fourth quarter average for the previous 5 years. No epidemiological evidence was found to explain the sharp increase in notifications. The number of notifications is similar to numbers reported in summer 2004/05.
- There were 16 Shiga Toxin producing *E.coli* (STEC) cases notified in NSW in the fourth quarter of 2007, a 400% increase compared to the fourth quarterly average of the previous 5 years. Cases were located throughout the state and various subtypes were identified indicating the increase was due to seasonal variation. All cases were interviewed and no common epidemiological links were identified.
- There were 2 typhoid notifications in the fourth quarter of 2007 representing a 76% decrease compared to the fourth quarterly average for the previous 5 years.
- There were 177 gastrointestinal outbreaks reported in the fourth quarter of 2007 - 8 suspected foodborne and 169 person-to-person outbreaks in institutions. This is higher than for the same quarter average for the previous 5 years due to a late, and prolonged, viral gastroenteritis season in 2007.

* Notifiable enteric diseases in NSW include cryptosporidiosis, giardiasis, haemolytic uraemic syndrome (HUS), salmonellosis, shigellosis, listeriosis and hepatitis A, typhoid and Shiga toxin-producing *Escherichia coli* (STEC)

Activity during the fourth quarter, 2007

Overview

The counts of each notifiable enteric disease for the fourth quarter of 2007 were compared with the average of the fourth quarter counts from 2002 to 2006. The results are presented in Table 1 below. Overall, there were 1,246 notifications in the fourth quarter 2007, a 33% increase in notifications compared with the average for the previous 5 years. This was largely due to the increase in cryptosporidiosis and giardiasis notifications.

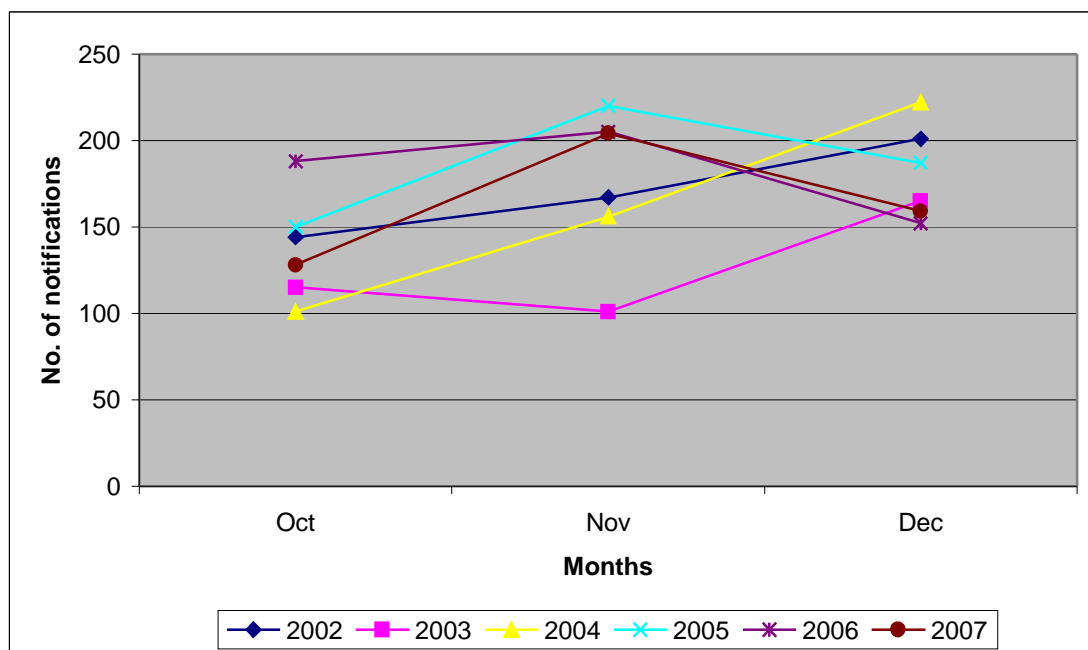
Table 1. Number of selected enteric diseases notified during the fourth quarter, 2007 compared with the fourth quarter average, 2002-2006.

Condition	No cases, fourth quarter 2007	Average no cases, fourth quarter 2002-2006	Change (%)
Cryptosporidiosis	276	107	157
Giardiasis	425	267	59
HUS	5	3	67
Hepatitis A	12	26	-54
Listeriosis	6	6	7
STEC Infection	16	3	400
Salmonellosis (including Paratyphoid)	491	495	-1
Shigellosis	13	22	-41
Typhoid	2	8	-76
TOTAL	1246	938	33

Salmonellosis

Salmonellosis was the most frequently reported enteric condition in NSW during the fourth quarter 2007. There were a total of 491 counts of disease, which represents a 1% decrease compared to the fourth quarter average 2002-2006. Figure 1 shows the fourth quarter comparison of salmonellosis notifications from 2002 to 2007.

Figure 2: NSW salmonellosis notifications for the fourth quarter from 2002 to 2007.



Age and sex distribution of people with salmonellosis in NSW

The highest number of notifications of *Salmonella* infection during the fourth quarter of 2007 was among people aged 0-4 years (n=138, 28%). The quarterly incidence rate in this age group was 32.4 per 100,000 population (Table 2).

The sex distribution was similar to previous years with males representing 51% of cases.

Table 2. Number and rates of salmonellosis notifications for fourth quarter 2007 compared with the 2002-2006 fourth quarter average, by age group.

Age group (in years)	NSW fourth quarter 2007			NSW average fourth quarter 2002-2006		
	No. cases	% of all salmonellosis	Quarterly rate (per 100,000)	No. cases	% of all salmonellosis	Quarterly rate (per 100,000)
0-4	138	28%	32.4	137	28%	31.8
5-10	41	8%	9.2	44	9%	9.1
10-19	50	10%	5.4	56	11%	6.0
20-39	120	24%	6.2	123	25%	6.3
40-59	78	16%	4.2	78	16%	4.2
60+	64	13%	5.1	56	11%	4.2
TOTAL	491			494		

Geographical distribution of salmonellosis cases by Area Health Service (AHS) for fourth quarter 2007

Salmonellosis notifications per Area Health Service are presented in Table 3. North Coast Area Health Service (Lismore office) reported the highest quarterly rate of salmonellosis at 18.6 per 100,000 population followed by Greater Western Area Health Service (Dubbo office) with a notification rate of 11.4 cases per 100,000 populations. Other area health services reported rates between 2.1 and 10.8 per 100,000 population.

Table 3. Number and rate of salmonellosis cases by Area Health Service for the fourth quarter 2007 compared with the average number and rate for the fourth quarter average, 2002-2006.

Area Health Service	Public Health Unit	No. cases	Quarterly rate per 100,000***	Average No. cases, 2002-2006	Average quarterly rate per 100,000***, 2002-2006 (min-max)
Greater Southern*	Albury office	24	9.0	20	7.5 (1.9-17.1)
	Goulburn office	22	10.8	10	5.2 (2.0-9.3)
Greater Western*	Dubbo office	12	11.4	6	5.9 (2.9-10.5)
	Bathurst office	10	5.8	9	5.3 (2.9-7.6)
	Broken Hill office	1	2.1	2	3.6 (2.1-6.2)
Hunter New England*	Newcastle office	46	8.1	42	7.5 (4.8-10.5)
	Tamworth office	19	10.6	15	8.6 (5.6-11.2)
North Coast*	Lismore office	52	18.6	44	16.1 (11.1-20.3)
	Port Macquarie office	13	4.6	15	5.2 (2.2-7.5)
Northern Sydney Central Coast**	Hornsby office	77	9.6	57	7.2 (6.4-8.7)
	Gosford office	18	5.7	16	5.1 (4.6-6.2)
South East Sydney Illawarra**	Wollongong office	13	3.5	18	4.8 (2.5-6.5)
	Randwick office	58	7.2	63	8.0 (5.7-10.0)
Sydney South West**	Camperdown office	26	5.1	36	7.1 (5.4-10.2)
	Liverpool office	38	4.6	56	6.8 (4.9-9.1)
Sydney West**	Parramatta office	49	6.4	57	7.8 (6.3-9.1)
	Penrith office	13	4.0	28	8.9 (6.6-12.7)

* Rural AHS

** Urban AHS

*** Based on 30 June 2005 population data (HOIST)

Top Ten Salmonella infections

In the fourth quarter of 2007, the most frequently notified *Salmonella* infection were *S. Typhimurium* PT 44 (n=34) followed by *S. Birkenhead* (n=31).

There were two changes to the 2007 top ten list when compared to the same quarter last year with *S. Typhimurium* PT 197 and *S. Stanley* featuring in the fourth quarter 2007 list. *S. Saintpaul* and *S. Montevideo* fell from the top-ten list (Table 4).

Table 4. Top ten Salmonella infections for fourth quarter, 2007.

Rank	<i>Salmonella</i> serovars	No. of notifications	Percent (%)
1	<i>S. Typhimurium</i> PT 44	34	6.9
2	<i>S. Birkenhead</i>	31	6.3
3	<i>S. Typhimurium</i> PT 135A	24	4.9
4	<i>S. Typhimurium</i> PT 9	23	4.7
5	<i>S. Infantis</i>	20	4.1
6	<i>S. Typhimurium</i> untyped	20	4.1
7	<i>S. Typhimurium</i> PT 170	20	4.1
8	<i>S. Typhimurium</i> PT 197	17	3.5
9	<i>S. Stanley</i>	12	2.4
10	<i>S. Waycross</i>	12	2.4

Salmonella of interest

The following *Salmonella* serovars are of interest because they are unusual, pose a unique public health risk or have prompted a public health response of note.

S. Enteritidis is not present in eggs in Australia, and as such is not usually a locally acquired infection. Unlike other *Salmonella* infections, *S. Enteritidis* moves transovarially allowing the infections to be transmitted through the contents of the egg. Of the 31 *Salmonella* Enteritidis notifications received during the fourth quarter of 2007, 16 (52%) were female. Overseas travel during their incubation period was reported by 21 (68%) cases. The most common countries of travel (and potential exposure) were in Asia including Indonesia (n=5), India (n=2), Philippines (n=1) and China (n=1) (Table 7). Travel history was not recorded for 9 cases. Most cases resided in South East Sydney Illawarra AHS (n=7, 23%), Sydney South West AHS (n=6, 19%) and Northern Sydney Central Coast AHS (n=5, 16%).

Table 5. Number of *S. Enteritidis* case notifications by country of likely exposure for fourth quarter, 2007.

Country of likely exposure	No of cases	Phage type
Asia	1	1
China	1	1
Crete or London	1	21
Eastern Europe	1	8
Fiji	1	26
Greece	1	14B
India	2	4, UK
Indonesia	5	1, 21, 1B, 4B, 6A,
Malaysia	1	Not able to be typed
Philippines	1	6A
Scandinavia or Russia	1	4
Singapore	2	4, RDNC
Thailand	1	6A
Thailand or Indonesia	1	1C
Unknown travel history	9	PT1 (n=2), PT1B (n=3), 6A (n=2), Not able to be typed,
No over seas travel	1	UK
Unspecified overseas travel	1	21C
		8
TOTAL	31	

Typhoid and Paratyphoid

There were 2 typhoid notifications received in NSW in the fourth quarter of 2007. Both cases reported overseas travel (India and Morocco) during their incubation period.

There were 5 *S. Paratyphi* A cases (not including Java) notified during the fourth quarter of 2007. Males (n=4) represented 80% of cases. Ages ranged from 20 to 62 years. All cases reported overseas travel: to India (n=3), Pakistan (n=1) and Bangladesh (n=1).

Giardiasis

Giardiasis was the third most frequently reported enteric disease in the fourth quarter of 2007 with 404 notifications received, a 51% increase compared to the fourth quarter average 2002-2006. The median age of cases was 41.8 years; mean age was 42.2 years. Ages ranged from 1 month to 92 years. Males represented 52.5% of the cases.

Shigellosis

There were 13 cases of shigellosis reported in NSW in the fourth quarter of 2007, which is a 41% reduction compared to the fourth quarter average 2002-2006. The species reported were *S. flexneri* (n=7), *S. sonnei* (n=4) and *S. dysenteriae* (n=1). The median age of cases was 46.3 years; mean age was 34.3 years. Ages ranged from 6 months to 67 years. Males represented 54% of cases.

STEC and HUS

There were 16 cases of STEC reported in NSW in the fourth quarter of 2007: serogroups: O157 (n=5), O111 (n=2), O26 (n=2) and O55 (n=1), and 6 cases were untypable. The median age of cases was 41.8 years; mean age was 39.6 years. Ages ranged from 9 months to 75 years. Males represented 63% of cases.

There were 5 cases of HUS reported in NSW in the fourth quarter of 2007. Cases' ages were 2, 4, 5, 41 and 72 years. The children were all male and adults all female. One of the children was also tested positive for STEC.

All cases were investigated and no common links were identified.

Listeriosis

There were 6 cases of listeriosis reported in the fourth quarter of 2007, which is similar to the fourth quarter average 2002-2006. The median age of cases was 68.4 years; mean age was 65.7 years. Ages ranged from 38 to 85 years. Equal numbers of male and female cases were reported. From case interviews, many high-risk foods were identified as possible sources of infection, however no definitive or common source was found for the cases. There was one maternofetal case. There were reported deaths.

Cryptosporidiosis

There were 271 cases of cryptosporidiosis reported in NSW in the fourth quarter of 2007, a 152% increase compared to the fourth quarter average 2002-2006. The median age of cases was 13.1 years; mean age was 19.2 years. Ages ranged from 3 months to 85 years. Males represented 57.8% of cases.

The age group with the highest number of notifications were 0-4 year age group (n=97, 36%) followed by 5-10 year age group (n=56, 21%).

Hepatitis A

There were 12 cases of hepatitis A infection reported in NSW in the fourth quarter of 2007, a 54% decrease compared to the fourth quarter average 2002-2006. The median age of cases was 39.3 years; mean age was 40.9 years. Ages ranged from 11 to 72 years. Equal numbers of male and female cases were reported.

Overseas travel during the incubation period was reported in 6 cases: to Fiji (n=1), India (n=1), Philippines (n=1), South Africa (n=1), and two cases reported overseas travel to unspecified destinations. Two cases reported no overseas travel. Travel history of the other 5 cases is unknown. Of the cases of no or unknown travel history, risk factors noted were consumption of food at a gathering, from a restaurant/takeaway and recreational drug use.

Enteric Outbreaks in NSW during the fourth quarter, 2007

In the fourth quarter of 2007, there were a total of 167 gastrointestinal outbreaks reported in final summary form to the Communicable Diseases Branch. There were 8 suspected foodborne outbreaks and 159 gastroenteritis outbreaks in institutions.

Foodborne and suspected foodborne outbreaks

There were 8 foodborne outbreaks notified in the fourth quarter of 2007 affecting 65 people, of which 17 were hospitalised (Table 6). No deaths were reported.

The largest outbreak affected 27 people; the identified organism was *S. Typhimurium* PT 44. This outbreak was laboratory identified using Multi-Loci Variable number of tandem repeats Analysis (MLVA) testing.

Table 6. Foodborne and suspected foodborne outbreaks in NSW during the fourth quarter, 2007.

ID	Onset	Setting	Organism	No. ill	Hospitalised	Epidemiological investigation	Food vehicle
SSW0011	7-Oct-07	Take-away	Unknown	4	0	Point source cohort	Chicken kebab suspected
SW0010	24-Oct-07	Work afternoon tea	Unknown	7	0	No formal study	Watermelon suspected
SSW0014	28-Oct-07	Bakery	<i>Salmonella</i> Typhimurium PT 44	27	10	Case series	Cheese or cream cake suspected
NC0002	11-Nov-07	Take-away	<i>Campylobacter jejuni</i>	2	1	No formal study	Meat kebab
NC0001	18-Nov-07	Private residence	Unknown	3	0	No formal study	Person-to-person suspected
SW0011	25-Nov-07	Private residence	<i>Salmonella</i> Typhimurium PT 9	11	4	No formal study	Raw egg suspected
SSW0013	28-Nov-07	Restaurant	Unknown	3	0	No formal study	Unknown
SW0013	30-Nov-07	Private residence	<i>Salmonella</i> Typhimurium PT 29	8	2	No formal study	Unknown

Fourth quarter outbreaks of note

SSW0014

This outbreak was identified using the MLVA typing method. There were 27 cases notified with *S. Typhimurium* PT 44 (MLVA 3-10-8-9-523) over a 15 day period who lived in close geographically proximity. From interviews, it was identified that many of the cases consumed cheesecake or cream cake prepared at a common bakery. All cases interviewed (n=18) experienced diarrhoea and 83% reported nausea, fever and abdominal pain; 39% of cases reported vomiting. The NSW Food Authority investigated the premises and collected food and environmental samples, all were negative for *Salmonella*. The eggs used at the bakery may have been sourced from Victoria. Raw eggs were used in the cheesecake that was not cooked. Cross-contamination of other foods is suspected.

SW0011

This outbreak affected 11 of 13 people who ate chocolate mousse containing raw eggs at a private party. This outbreak was identified by a pathology laboratory that isolated *S. Typhimurium* PT 9 (MLVA 3-10-14-11-496) in cases' stool specimens. The NSW Food Authority was notified and attempted to trace back the source of the eggs used. No environmental or food specimens were available for testing.

Institutional gastrointestinal outbreaks

There were 169 gastrointestinal outbreaks in institutional settings in the fourth quarter 2007, causing illness in 3015 people. The average number of people affected per outbreak was 17, ranging from 2 to 72 cases. Norovirus (n=51, 30%) and rotavirus (n=7, 4%) were the most common pathogens identified as the cause of the outbreak. No pathogen was identified for 108 (64%) of the outbreaks reported. The number of outbreaks reported (and the number of people affected) in the fourth quarter 2007 is higher than for the same quarter from 2000-2006 due to the late, and prolonged, viral gastroenteritis season in 2007. The 'NSW Gastro Pack' was distributed to each facility and disease control advice provided by public health staff.

Table 7. Institutional gastrointestinal outbreaks during the fourth quarter, 2004-2007.

Setting	2004		2005		2006		2007	
	No. outbreaks	No. affected	No. outbreaks	No. affected	No. outbreaks	No. affected	No. outbreaks	No. affected
Aged care facility	13	340	14	272	39	1096	105	2282
Camp	0	0	0	0	3	37	0	0
Child care centre	4	56	8	142	12	172	31	346
Hospital	1	14	10	187	19	236	30	342
School	1	11	0	0	0	0	2	20
Other	1	14	1	6	1	17	1	25
TOTAL	20	435	33	607	74	1558	169	3015

Section 2: NSW 2007 OzFoodNet Annual Report

2007 Summary

Section 2 of this report summarises the findings of enteric disease surveillance and outbreak investigation activities conducted in NSW during 2007. The following key points are described in section 2:

- In 2007, there were 5,281 notifications of enteric disease in NSW which is a 30% increase compared with the average annual disease count for the previous five years. This was largely due to an increase in notifications of salmonellosis (n=2,551) of 24% and giardiasis (n=1,982) of 60%.
- Salmonellosis was the most frequently reported enteric condition in 2007. There was 2,550 cases notified in the year, an increase of 24% compared with the annual average for the previous five years. This increase is due to one large outbreak in March 2007 that affected 319 people.
- Giardiasis was the second most frequently reported enteric condition in 2007. There was 1,982 cases notified in the year, an increase of 60% compared with the annual average for the previous five years.
- There was a sharp increase in the number of Shiga Toxin-producing *Escherichia coli* (STEC) infections reported in 2007 with 22 cases being reported, a 182% increase compared with the annual average for the previous five years. All cases were investigated and no epidemiological links were identified.
- In 2007, there was 48 suspected foodborne outbreaks and 503 gastroenteritis in institutions reported affecting 11,257 people. This is a 14% increase in the number of reported outbreaks compared with 2006. This increase is thought to be a result of a variation in the strain of norovirus circulating in 2007 to which the population had less immunity.
- There were four major foodborne outbreaks investigated in 2007 including a large point-source outbreak affecting 319 people who ate Vietnamese-style pork or chicken rolls from a bakery.

Activity during 2007

Overview

The counts of each notifiable enteric disease* for 2007 were compared with the average annual count, 2002 to 2006, results are presented in Table 8. Overall, there were 5,281 enteric disease notifications in 2007, a 30% increase in notifications compared with the average for the previous 5 years. This was largely due to an increase in giardiasis (n=1,982) of 60% and salmonellosis (n=2,550) of 24% compared to the average disease count for the previous five years.

Table 8: Number of selected enteric diseases during 2007 compared with the average number of cases, 2002-2006.

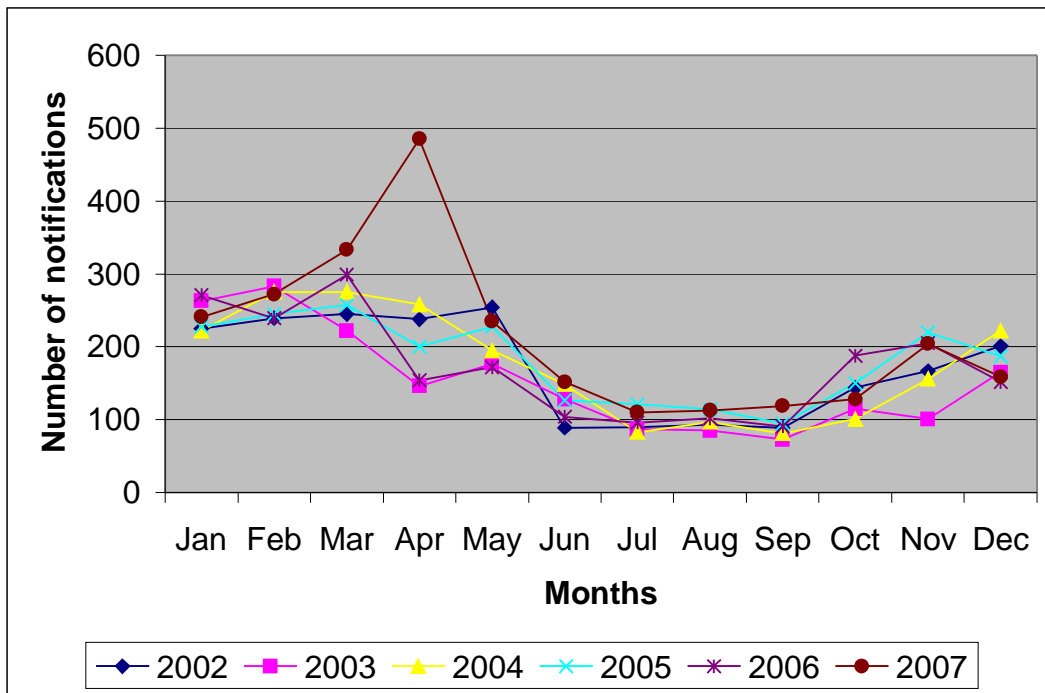
Condition	No. cases, 2007	Average No. cases, 2002-2006	Change (%)
Cryptosporidiosis	523	497	5
Giardiasis	1982	1241	60
HUS	12	8	43
Hepatitis A	64	119	-46
Listeriosis	24	24	0
STEC Infection	22	8	182
Salmonellosis (including Paratyphoid)	2550	2056	24
Shigellosis	69	89	-23
Typhoid	35	27	28
TOTAL	5281	4069	30

Salmonellosis

Salmonellosis was the most frequently reported enteric condition in NSW during 2007. There was a total of 2,550 counts of disease, which is a 24% increase compared to the average annual count, 2002 to 2006. This increase is largely due to one point-source outbreak of *S. Typhimurium* PT 9 in Sydney South West AHS in the first quarter of 2007 that affected 319 cases. Figure 2 shows the monthly comparison of salmonellosis notifications from 2002-2007.

* Notifiable enteric diseases in NSW include cryptosporidiosis, giardiasis, haemolytic uraemic syndrome (HUS), salmonellosis, shigellosis, listeriosis and hepatitis A, typhoid and Shiga toxin-producing *Escherichia coli* (STEC)

Figure 2. Salmonellosis notifications by month of notification, 2002-2007.



Age and sex distribution of people with salmonellosis in NSW in 2007

In 2007, the highest number of notifications of salmonellosis infection was among people aged 20-39 years (n=658, 26%) followed by those aged 0-4 years (n=617, 24%). The highest notification rate during 2007 was among 0-4 year olds with 143.1 cases per 100,000 population reported. Table 10 provides the count and rate of salmonellosis notification in 2007 and compares this with the average annual count and rate for 2002 - 2006 by age group.

Table 10: Number and rate of salmonellosis notification for 2007 compared with the 2002-2006 average, by age group.

Age group (in years)	2007			Average 2002-2006		
	No cases	% of all salmonellosis cases	Yearly rate (per 100,000)	No cases	% of all salmonellosis cases	Yearly rate (per 100,000)
0-4	617	24	143.1	579	28	134.9
10-19	308	12	33.7	244	12	26.9
20-39	658	26	34.2	503	24	25.8
40-59	444	17	24.1	306	15	16.4
5-9	186	7	42.1	190	9	40.8
60+	337	13	27.3	233	11	19.0
TOTAL	2550		37.6	2055		30.3

When compared to previous years, the median age of people with a notifiable *Salmonella* infection rose slightly, from 23.5 years in 2006 to 26 years in 2007.

The sex distribution of cases was similar to previous years with males representing 51% of cases.

Seasonal trends in salmonellosis notifications

In 2007, salmonellosis notifications followed the typical seasonal patterns with an increase in the warmer months (Figure 2, above).

Of note, in March 2007 there was a large outbreak of *S. Typhimurium* PT 9 that affected 319 people. This outbreak is discussed in more detail later in this report.

Geographic distribution of salmonellosis cases by AHS in 2007

Salmonellosis presentations by area health service are presented in Table 11. North Coast Area Health Service (Lismore office) reported the highest annual rate in NSW, 77.3 cases per 100,000 population, followed by Northern Sydney Central Coast Area Health Service (Gosford office) with a notification rate of 46.7 cases per 100,000 population. Other PHUs reported notification rates between 13.3 and 45.9 cases per 100,000 population.

Table 11: Count and rate of salmonellosis notifications for 2007 compared with the 2002-2006 average, by Area Health Service.

Area Health Service	Public Health Unit	No. cases, 2007	2007 rate per 100,000***	Average No. cases, 2002-2006	Average yearly rate per 100,000***, 2002-2006
Greater Southern*	Albury office	83	31.3	71	27.1 (21.7-38.8)
	Goulburn office	58	28.2	45	22.6 (19.0-26.8)
Greater Western*	Dubbo office	28	27.2	32	31.2 (23.3-40.8)
	Bathurst office	48	28.0	38	22.4 (14.6-28.6)
	Broken Hill office	6	13.3	11	24.3 (13.1-38.7)
Hunter New England*	Newcastle office	185	32.1	163	28.8 (24.8-34.6)
	Tamworth office	77	43.2	70	39.1 (30.1-56.1)
North Coast*	Lismore office	216	77.3	197	72.0 (55.6-87.3)
	Port Macquarie office	81	28.7	66	24.0 (16.9-32.9)
Northern Sydney Central Coast**	Hornsby office	345	43.1	239	30.1 (29.1-31.1)
	Gosford office	142	46.7	68	22.4 (18.1-28.5)
South East Sydney Illawarra**	Wollongong office	88	23.8	71	19.5 (15.0-26.3)
	Randwick office	300	37.3	256	32.3 (31.1-35.0)
Sydney South West**	Camperdown office	238	45.9	156	31.0 (27.5-34.7)
	Liverpool office	245	30.1	234	28.9 (26.9-32.0)
Sydney West**	Parramatta office	301	39.8	226	30.9 (26.6-39.8)
	Penrith office	109	34.6	107	33.7 (27.3-38.8)

* Rural AHS

** Urban AHS

*** Based on 30 June 2005 population data (HOIST)

Ten most frequently notified *Salmonella* infections

In 2007, the most frequently notified *Salmonella* infection was *S. Typhimurium* PT 9 with 364 notifications reported, an increase of 470% compared to the previous year (n=77). This increase is due to a large point-source outbreak in Sydney South West AHS, reported in the first quarter of 2007. This phage type accounted for 14.3% of all *Salmonella* notifications in NSW in 2007 (Table 12). The second most frequent *Salmonella* infection notified was *S. Typhimurium* PT135a (n=166, 6.5%).

Outbreak investigations of *S. Typhimurium* PT 9 (n=3), *S. Typhimurium* PT 12, *S. Typhimurium* PT 44 and *S. Typhimurium* PT U302 were conducted during 2007.

There were 3 changes to the 10 most frequent *Salmonella* serovar reported in 2007 compared with 2006. *S. Typhimurium* U302, *S. Montevideo*, *S. Typhimurium* RDNC,

featuring in the 2007 list. *S. Saintpaul*, *S. Typhimurium* PT 12, *S. Stanley* fell from the top-ten list (Table 12).

Table 12: Top ten *Salmonella* serovars, 2007.

Rank	<i>Salmonella</i> serovar	No. of notifications	Percent (%)
1	<i>S. Typhimurium</i> - PT 9	364	14.3
2	<i>S. Typhimurium</i> - PT 135a	168	6.6
3	<i>S. Typhimurium</i> - PT 170	136	5.3
4	<i>S. Birkenhead</i>	109	4.3
5	<i>S. Typhimurium</i> - PT 44	91	3.6
6	<i>S. Typhimurium</i> - U302	75	2.9
7	<i>S. Montevideo</i>	74	2.9
8	<i>S. Typhimurium</i> - RDNC	67	2.6
9	<i>S. Infantis</i>	62	2.4
10	<i>S. Typhimurium</i> - PT 135	62	2.4

***Salmonella* Enteritidis**

In 2007, there were 100 notifications of *S. Enteritidis* infections of varying phage types (Table 13), which is a 45% increase compared to 2006 (n=69). Seventy (70%) of cases reported overseas travel during the incubation period, 6 (6%) reported no overseas travel during the incubation period. The median age of cases was 32.1 years; mean age was 34.7 years. Ages ranged from 1 to 94.1 years. Forty (75%) of cases reported overseas travel prior to illness, 2 (4%) cases were locally acquired, and 11 (21%) had an unknown travel history (Table 13).

Table 13: *S. Enteritidis* notifications in NSW by phage type, 2007.

Country of likely exposure	No. of notifications	Phage types
Indonesia	14	1 (2), 1B, 21, 21 Var 1, 4 (2), 4B, 6A (4), Untypable, Spp.
Thailand	8	14B, 1B (2), 6A, RDNC (4)
Singapore	5	1B, 4, 6A (2), RDNC
Australia	5	1, 14, 21C, 5A Var, Spp.
Europe	4	1B, 4, 8 (2)
Asia	3	1C, 6A, 1
China	3	1, 1 Var 2 (2),
Fiji	3	26 (3),
India	3	1B, 4, Spp.
United Kingdom	3	6A, 21,
Unspecified Overseas	3	6A, 1B, 1
Hong Kong	2	1 Var 2, Spp.
Malaysia	2	21C, Untypable
Philippines	2	1B, 6A,
Taiwan	2	1, 29,
African Country	1	1,
Germany	1	Spp.
Greece	1	14B,
Italy	1	33,
New Caledonia Or Fiji	1	26,
Nigeria	1	8
Pakistan	1	1B
Solomon Islands	1	Untypable
Sri Lanka	1	21C,
Unknown Travel History	29	1B (5), 6A, 33, 1 (3), 1 Var, 21, 21C, 26, 4 (2), 4B (3), 6, 6A (2), 6B, RDNC (2), Untypable, Spp. (2)

Typhoid and paratyphoid

In 2007, there were 35 cases of typhoid reported, which is an increase of 28% compared to the average count for the previous five years. The median age of typhoid cases was 18.6 years; mean age was 21.6 years. Ages ranged from 1 to 68 years. Males (n=23) represented 66% of cases. Thirty-three cases (94%) had a recorded history of overseas travel prior to illness; it is likely that cases acquired typhoid in India (n=14), Bangladesh (n=7), Pakistan (n=3), Samoa (n=3), African nation (n=1), El Salvador (n=1), Thailand (n=1), Morocco (n=1), the United Arab Emirates (n=1) and an unspecified overseas country (n=1). One case reported no overseas travel during the incubation period and travel history for one case is unknown.

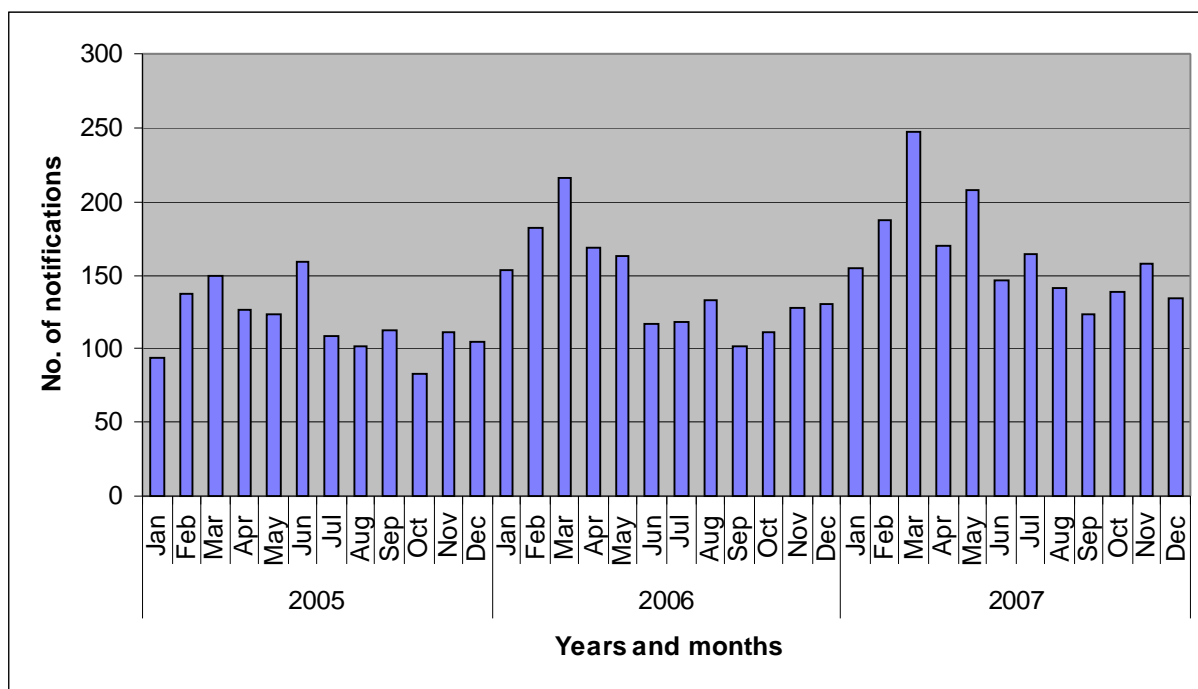
In 2007, there were 22 cases of paratyphoid fever (*S. Paratyphi A* = 20, *S. Paratyphi B*=2) notified compared to 30 cases (*S. Paratyphi A*=22, *S. Paratyphi B*=7) in 2006. The median and mean age of paratyphoid fever cases was 23.1 years. Ages ranged from 1 month to 64.1 years. Males (n=14) represented 64% of cases.

Twenty (91%) of the *S. Paratyphi A* and *S. Paratyphi B* cases reported overseas travel: to India (n=8), Indonesia (n=4), Pakistan (n=3), Bangladesh (n=2), Malaysia (n=1), Nepal (n=1) and Thailand (n=1). Travel history for 1 case is unknown. One case reported no overseas travel during the incubation period.

Giardiasis

Giardiasis was the second most frequently reported enteric disease in NSW in 2007 with 1,982 notifications received, which is a 60% increase compared to the annual average 2002 to 2006. The median age of cases was 37.1 years; mean age was 37.8 years. Ages ranged from 1 month to 96.3 years. There were equal numbers of male and female cases reported. Risk factors noted included overseas travel, swimming, contact with rural areas and farm animals. 76.5% of cases were residents of urban AHSs.

Figure 4: Number of giardiasis notifications by month, 2005 to 2007.



Shigellosis

In 2007, 69 notifications of shigellosis were reported in NSW, which is a 5.5% decrease compared to 2006 (n=72) and a 23% decrease compared to the previous five year average. The most common *Shigella* species reported was *Shigella sonnei* (including biotype A, F and G) (n=36; 51%) followed by *Shigella flexneri* (n=26; 38%) (Table 14). The median age of shigellosis cases in NSW in 2007 was 37.6 years, mean was 37.2 years. Ages ranged from 6 months to 77.3 years. Males (n=38) represented 55% of cases

Table 14: Shigellosis notifications in NSW, 2006 and 2007, by species and sex.

<i>Shigella</i> species	Notifications - 2007			Notifications - 2006		
	Male	Female	Total	Male	Female	Total
<i>Shigella</i> spp	0	4	4	2	0	2
<i>Shigella boydii</i>	0	1	1	3	0	3
<i>Shigella dysenteriae</i> 2	1	1	2	0	0	0
<i>Shigella flexneri</i>	19	7	26	24	9	33
<i>Shigella sonnei</i>	7	4	11	8	7	15
<i>Shigella sonnei</i> biotype A	1	2	3	2	5	7
<i>Shigella sonnei</i> biotype F		1	1	0	0	0
<i>Shigella sonnei</i> biotype G	10	11	21	5	7	12
TOTAL	38	31	69	44	28	72

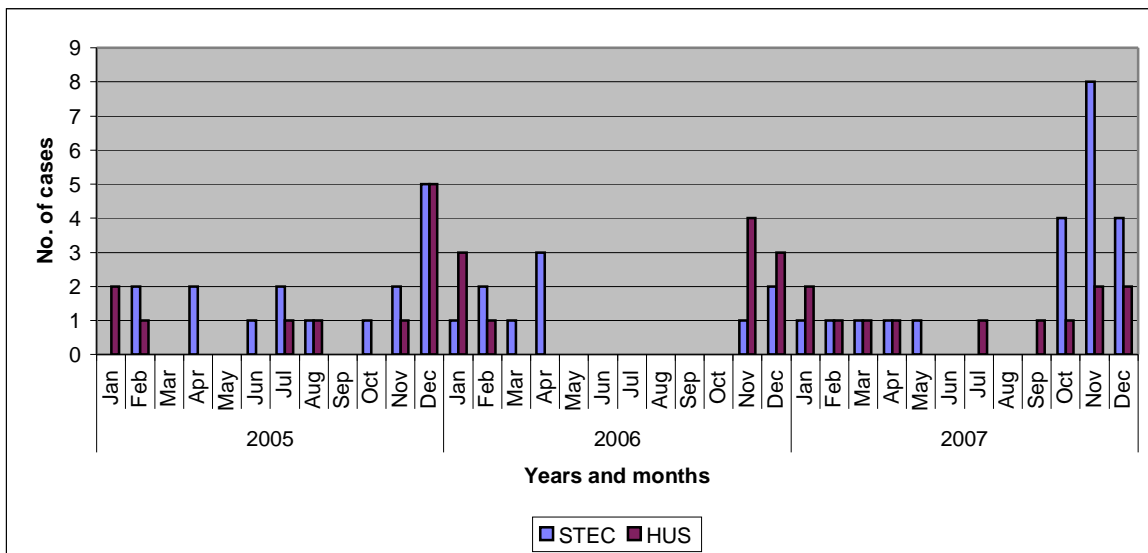
STEC and HUS

In 2007 there were 22 cases of STEC notified in NSW, a increase of 9 cases compared with 2006 and a 182% increase compared to the average annual count for the previous five years. The median age of STEC cases was 44.5 years; the mean age was 43.1 years. Ages ranged from 9 months to 80.2 years. Males (n=12) represented 55% of cases. Serotype information was available for 11 of the cases. Serotypes reported were O157 (n=5), O26 (n=2), O111 (n=2) and O55 (n=2).

The increase in STEC cases in the fourth quarter 2007 was investigated however no epidemiological links were identified.

In 2007 there were 12 cases of HUS reported. The median age of cases was 23 years, mean was 28.4 years. Ages ranged from 9 months to 77 years. Females (n=7) represented 58% of cases.

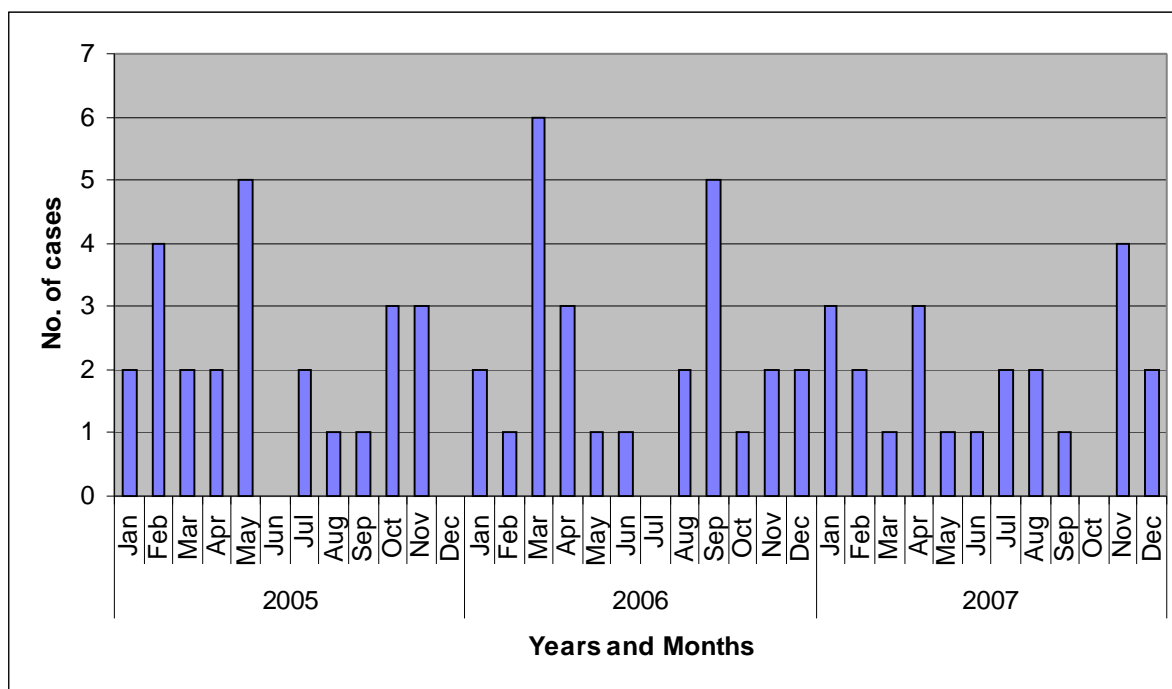
Figure 5: NSW STEC and HUS notification by month, 2005-2007.



Listeriosis

In 2007, there were 24 listeriosis cases reported, which is similar to previous years. The median age of cases was 74.4 years; mean age was 69 years. Ages ranged from 0 (new born baby) to 92.8 years. There was an even number of male and female cases. Isolate that were analysed using Pulse-Field Gel Electrophoresis (PFGE) (n=9) were all distinct indicating no link between the cases. There was two deaths reported, both were male. One maternofetal case was reported.

Figure 6: Listeria notifications in NSW by month 2005 – 2007.



Cryptosporidiosis

There were 523 cases of cryptosporidiosis reported in NSW in 2007, a 5% increase compared to the annual average 2002-2006. The median age of cases was 20.2 years and mean was 23.9 years. Ages ranged from 1 month to 85.6 years. Males (n=291) represented 55.6% of cases.

During November, when an increase in notifications was identified, public health advice was disseminated through the media.

Hepatitis A

There were 64 cases of hepatitis A infections reported in NSW in 2007, a 46% decrease compared to the annual average 2002-2006. The median age of cases was 28.4 years; the mean age was 31.9 years. Ages ranged from 1.1 to 88 years. Males (n=36) represented 56% of cases.

Overseas travel during the incubation period was reported in 41 cases (64%), to India (n=6), Indonesia (n=5), Lebanon (n=3), Pakistan (n=3), Fiji (n=3), South Korea (n=2), Peru (n=2), Philippines (n=2), Bangladesh (n=1), Malaysia (n=1), Saudi Arabia (n=1), Somalia (n=1), South Africa (n=1), Spain (n=1), Tanzania (n=1), United Arab Emirates (n=1), Uzbekistan (n=1), Tonga (n=1), Samoa (n=1), Vietnam (n=1), Palestine (n=1), the West Bank (n=1), and an unspecified overseas destination (n=1). Travel history for 17 cases (27%) is unknown. Six cases (9%) reported no overseas travel: 3 of these cases were household contacts of a hepatitis A case, 2 noted that they had eaten raw shell fish, and 1 reported recreational drug use.

Enteric Outbreaks in NSW during 2007

In 2007, there were a total of 545 gastrointestinal outbreaks reported in final summary form to the Communicable Diseases Branch. There was 49 suspected foodborne outbreaks and 496 gastrointestinal outbreaks in institutions.

Foodborne and suspected foodborne outbreaks

In 2007, 48 foodborne or probable foodborne disease outbreaks were reported in final summary form in New South Wales, affecting 763 people, including 179 (22.5%) who were hospitalised. No deaths were reported as a result of foodborne illness. Agents responsible were reported for 14 (29%) of these outbreaks. The most frequently identified agent was *S. Typhimurium* (n=7, 15%).

Food vehicles implicated included chicken dishes, fish, hamburger meat, desserts containing raw egg, fresh juices, and raw vegetables.

Table 15: Foodborne disease outbreaks reported in NSW, 2007.

Area Health Service/ID number	Month of onset	Setting	Pathogen	No. ill	No. hospitalised	Evidence*	Epi. Study**	Responsible vehicle
SESILL0007	Jan-07	Restaurant	Unknown	9	0	D	CC	Chicken stir fry or beef mussaman
SSW0004	Jan-07	Restaurant	Unknown	3	0	D	D	Unknown
HUN0390	Jan-07	Institution	Unknown	7	0	D	D	Unknown
SESILL0013	Jan-07	Restaurant or camping	Norovirus	58	0		N	Unknown
SESILL0008	Feb-07	Commercial Caterer	<i>Bacillus cereus</i>	32	0	AM	CC	Boiled gefilte fish (fish balls)
HUN0389	Feb-07	Commercially Manufactured	Unknown	6	0	D	D	Flavoured drink
HUN0388	Feb-07	Take-Away	<i>Clostridium perfringens</i>	6	0	AM	D	Humus
NSW0013	Feb-07	Restaurant	Scombroid	2	2	D	N	Tuna steak
NSCC0002	Feb-07	Restaurant	Unknown	5	0	D	D	Unknown
SW0001	Feb-07	Private Residence	Scombroid	3	2	D	N	Tuna kebab steaks
SESILL0010	Feb-07	Restaurant	Unknown	3	0	D	D	Suspect butter chicken or boiled rice
NSW0014	Feb-07	Restaurant	<i>Salmonella Typhimurium</i> PT12	6	1	AM	D	Unknown
SW0002	Feb-07	Restaurant	Unknown	4	0	D	N	Suspected seafood platter

Area Health Service/ID number	Month of onset	Setting	Pathogen	No. ill	No. hospitalised	Evidence*	Epi. Study**	Responsible vehicle
SSW0004	Mar-07	Bakery	<i>Salmonella</i> Typhimurium PT9	319	136	AM	D	Pork/chicken and salad rolls (with raw egg mayonnaise)
SESILL0011	Mar-07	Restaurant	Unknown	5	0	D	CC	Banquet style meal
NSCC0003	Mar-07	Take-Away	<i>Salmonella</i> Typhimurium PT U302	71	10	AM	D	Humus and tabouli
SW0005	Apr-07	Take-Away	Unknown	5	0	D	N	Hot dogs
SESILL0015	Apr-07	Restaurant	Unknown	7	0	D	D	Fried rice suspected
HUN0392	Apr-07	Commercially Manufactured	Unknown	9	3	D	C	Suspect commercially prepared cake.
SW0006	May-07	Restaurant	<i>Salmonella</i> Typhimurium PT 9	12	4	AM	D	Fried ice cream
SESILL0014	May-07	Take-Away	Unknown	6	0	D	D	Fresh fruit juices suspected
SW0007	May-07	Restaurant	Unknown	14	0	D	N	Raw capsicum, onions, fresh herbs, chicken and/or beef
SSW0005	May-07	Restaurant	Unknown	6	0	D	N	Unknown
SSW0006	Jun-07	Take-Away	Unknown	2	0	D	N	Unknown
SSW0007	Jun-07	Take-Away	Unknown	2	0	D	N	Unknown
SESILL0016	Jun-07	Take-Away	Unknown	2	2	D	D	Grilled tuna
SESILL0017	Jun-07	Bakery	Unknown	15	0	D	N	Unknown
SESILL0018	Jul-07	Restaurant	Unknown	5	0	D	N	Unknown
SW0008	Jul-07	Restaurant	Unknown	5	0	D	N	Unknown
NSCC0004	Jul-07	Restaurant	Unknown	3	0	D	N	Unknown
SSW0010	Jul-07	Restaurant	Unknown	3	0	D	N	Unknown
NSCC0005	Jul-07	Restaurant	Unknown	6	0	D	N	Sandwich
SSW0008	Jul-07	Restaurant	Unknown	3	0	D	N	Unknown
HUN0394	Jul-07	Restaurant	<i>Salmonella</i> Singapore	5	1	D	D	Unknown
SSW0012	Aug-07	Take-Away	Unknown	4	0	D	N	Suspected beef or lamb kebab
GS0001	Aug-07	Aged Care	Unknown	9	0		D	Unknown
NSCC0006	Aug-07	Take-Away	Unknown	2	0	D	N	Fried rice or Singapore noodles
SSW0009	Sep-07	National Franchised Fast Food	Unknown	13	0	D	N	Unknown

Area Health Service/ID number	Month of onset	Setting	Pathogen	No. ill	No. hospitalised	Evidence*	Epi. Study**	Responsible vehicle
NSCC0007	Sep-07	Commercial Caterer	Unknown	15	1	D	C	Unknown
SW0009	Sep-07	Aged Care	Unknown	6	0	D	N	Unknown
SW0010	Oct-07	Private Residence	Unknown	7	0	D	N	Suspected watermelon
SSW0014	Oct-07	Bakery	<i>Salmonella</i> Typhimurium PT44	27	10	AM	D	Cheese or cream cake
SSW0011	Oct-07	Take-away	Unknown	4	0	D	N	Suspected chicken kebab
NC0002	Nov-07	Take-Away	<i>Campylobacter jejuni</i>	2	1	D	N	Meat kebab
NC0001	Nov-07	Private Residence	Unknown	3	0	D	N	Suspected person-to-person
SW0011	Nov-07	Private Residence	<i>Salmonella</i> Typhimurium PT9	11	4	M	N	Raw eggs
SSW0013	Nov-07	Restaurant	Unknown	3	0	D	N	Unknown
SW0013	Nov-07	Private Residence	<i>Salmonella</i> Typhimurium PT29	8	2	M	N	Unknown

*Evidence: D=Descriptive evidence implicating the suspected vehicle or suggesting foodborne transmission; A=Analytical association between illness and food; M=Microbiological confirmation in the suspected vehicle and cases; AM=Analytical and microbiological evidence.

**Epi Study: C=Cohort study; CC=Case control study; D=Descriptive case series; N=Individual patient data not collected

Summary of significant foodborne outbreaks during 2007

Norovirus in overseas students (SESILL0013)

Approximately 58/270 Japanese school students who were visiting Sydney in January were unwell with vomiting and diarrhoea, with a number of them remaining behind in Sydney as they were too unwell to fly home. Norovirus was detected in stools collected in both Australia and Japan. Onset times were closely clustered in time and food handler contamination was suspected, although no definitive evidence was found during inspection of two implicated premises.

Bakery outbreak - *S. Typhimurium* PT 9 (SSW0004)

More than 319 people became ill and 136 hospitalised, after eating Vietnamese-style pork or chicken rolls from a bakery between 23rd and 27th March. Raw egg mayonnaise, fresh vegetables and coriander were common ingredients to both products. A Prohibition Order was issued by the NSW Food Authority to initially cease the production and sale of rolls, and then all food, from the bakery. The PHU issued several media releases to advise the public of potential exposure. *S. Typhimurium* PT 9 was identified in more than 173 cases, and was subsequently isolated in multiple foods sampled from the premises, including raw egg mayonnaise, ham, cooked chicken, pate, roast pork and shell eggs, and from environmental swabs, indicating extensive cross contamination. A trace back of shell eggs and

chicken livers, and an environmental investigation of the egg farm was conducted, however the source of the STm 9 was not found. Food safety agencies are conducting a national survey of Vietnamese bakeries.

Kebab shop outbreak – S. Typhimurium U302 (NSCC0003)

In April, Central Coast Public Health Unit investigated an outbreak of 54 salmonellosis cases were identified as having an onset of illness between 29th March and 16th April. Of those, 44 cases reported having eaten food from a common takeaway outlet; 10 had not. 47% (21/44) attended an emergency department; 27% (12/44) were admitted to hospital (stay 1 – 6 days).

Cases reported eating either kebabs or crepes from a single takeaway shop. No common food items were identified. Of the 44 notifications that reported as having eaten at the retailer, all were positive for S. Typhimurium. Phage type results were as follows: U302 (n=30), PT type 35 (n=3) and PT type 29 (n=7) (note: S. Typhimurium PT U302 and 29 are very similar). Four phage type results were not available.

The NSW Food Authority conducted an initial environmental investigation on the 11th April; the business was closed for trading voluntarily by the retailer late on that day. Laboratory investigation of food samples showed that tabbouli and hummus were positive for S. Typhimurium PT type U302. No source of the outbreak was identified.

Cake shop outbreak – S. Typhimurium 44 (SSW0014)

This outbreak was identified by a pathology laboratory that found identical molecular typed S. Typhimurium (MLVA 3-10-8-9-523), later typed as S. Typhimurium PT44, in stool specimens collected from 27 cases over a 15 day period. Most of the cases lived in a similar geographical area. From interviews, it was identified that many of the cases consumed cheese or cream cake prepared at a common bakery. All cases interviewed (n=18) experienced diarrhoea and 83% reported nausea, fever and abdominal pain; 39% of cases reported vomiting. The NSW Food Authority investigated the premises and collected food and environmental samples, all were negative for *Salmonella*. The eggs used at the bakery may have been sourced from Victoria. Cross-contamination of food is suspected.

Summary information about other foodborne outbreak investigations conducted in 2007 can be found in the quarterly reports.

Institutional gastrointestinal outbreaks

In 2007, PHUs reported 503 gastroenteritis outbreaks in institutional settings likely to be due to person-to-person transmission of viral gastroenteritis. The outbreaks affected 10,494 people in total. Of these outbreaks, 290 (58%) occurred in aged care facilities, 101 (20%) in childcare centres, 92 (18%) in hospitals, 9 (2%) in a school and 11 (2%) in other settings (Table 16). Norovirus (n=144, 29%) and rotavirus (n=17, 3%) were the two most commonly identified pathogens. The causative agent was unknown for 310 (62%) of the outbreaks. In 13 (3%) outbreaks, more than one pathogen was isolated.

Table 16: Number of outbreak and number of cases by setting, 2004 – 2007.

Setting	2004		2005		2006		2007	
	No. outbreaks	No. cases	No. outbreaks	No. cases	No. outbreaks	No. cases	No. outbreaks	No. cases
Aged Care	283	9206	39	687	254	7536	290	6917
Hospital	82	2082	13	206	92	1693	92	1752
Childcare	43	586	34	459	80	1233	101	1315
School	8	131	0	0	1	7	9	213
Other	11	326	2	43	9	172	11	297
TOTAL	427	12331	88	1395	436	10641	503	10494

Activity in NSW during 2007

Improving Surveillance

- **Communication and reporting:** The Hunter New England, NSW and ACT OzFoodNet sites and the NSW Food Authority held weekly teleconferences to discuss notifications and suspected clusters and outbreaks and to communicate progress on recent investigations. NSW OFN sites produced fortnightly cluster and quarterly reports for OzFoodNet and for public health units. The Enteric diseases/OFN team in the CDB and staff in Public Health Units communicated regularly via meetings, phone and email regarding clusters and outbreaks of enteric diseases throughout the year.
- **Laboratory methods.** In 2007, a relatively new molecular microbiology method, Multi Locus Variable Number Tandem Repeat Analysis (MLVA) was increasingly used for *Salmonella* Typhimurium outbreak and cluster investigations. This laboratory method allows for the detection of strains within certain serovar or phage types.
- **Cluster reports.** NSW cluster reports are distributed to the public health network to provide feedback to PHU staff.
- **Sentinel surveillance during the Hunter floods.** OzFoodNet (HNE) implemented a pharmacy and GP sentinel surveillance system during the recovery from the floods that affected the Hunter region in June 2007. The system was designed to detect an increase in gastroenteritis in the community.

OzFoodNet studies

The Hunter New England OzFoodNet site was involved in the following OzFoodNet projects:

- *Listeria* case-control (national) study: Hunter New England OzFoodNet site is leading the study: Recruitment for the case control study was completed on the 31 December 2004. During the study, a total of 53 cases and 63 controls were recruited for New South Wales. In total, 130 cases, 97 controls and 6 case series have been recruited nationally to study. Data have been analysed and the first draft of the paper documenting the findings of study is complete.
- STEC (national) study: In 2007, 2 new NSW cases were recruited into the study.

Guidelines and policy

- In 2007 we reviewed the Notifiable Diseases Manual's guidelines on: foodborne illness outbreaks, Listeriosis, Hepatitis E, STEC, salmonellosis.

Education, capacity building, presentations and advocacy

- Jennie Musto lectured Master of Public Health and undergraduate medical students on foodborne disease epidemiology.
- Jennie Musto delivered a presentation, 'Outbreaks in Australia from Imported Foods, 2001-2006' to CDNA, March 2006.

Publications

- Elise T.-V. Tu, Thanh Nguyen, Phoebe Lee, Rowena A. Bull, **Jennie Musto**, Grant Hansman, Peter A. White, William D. Rawlinson, and Christopher J. McIver. Norovirus GII.4 Strains and Outbreaks, Australia. *Emerging Infectious Diseases*. Letter. Volume 13, Number 7–July 2007.
- Forssman, B., Mannes, T. Musto, J., et al *Vibrio cholerae* 01 El Tor cluster in Sydney linked to imported whitebait. *MJA*. 2007; 187(6): 345-7.

Communication

NSW OzFoodNet sites continued regular communication with a range of intra and inter-sectoral partners to share knowledge and build capacity to manage and control foodborne diseases in NSW, including:

- Weekly teleconferences with Hunter New England and ACT OFN sites and the NSW FA on surveillance and control of food borne illness were conducted.
- NSW Health and NSW Food Authority held monthly teleconferences and regular face-to-face meetings.
- Regular outbreak team teleconferences and meetings for every outbreak investigation.
- Monthly teleconferences with the Foodborne and other Enteric Disease Portfolio group (FEDs). This group includes PHU Directors and Public Health Nurses and Surveillance Officers, OFN and CDB staff, and NSW Food Authority staff.
- Consultation with public health staff at the NSW Health Public Health Nurses and Surveillance Officer meetings and the PHU Directors meetings.
- Monthly teleconferences with the national OzFoodNet network.
- Sally Munnoch attended a NSW Food Authority meeting on Melon Safety.
- NSW Health continues to liaise with the NSW Food Authority to develop policy to reduce the use of raw egg products in commercial settings.
- Face to face meetings with OFN national network in Newcastle, Canberra and Sydney.

Prevention Measures

- Following many outbreaks related to 'Vietnamese' style bakeries, food safety agencies are conducting a national survey of Vietnamese bakeries.

Staffing updates

- Barbara Telfer, OzFoodNet Epidemiologist, went on extended leave, Caron Bowen, Meeyin Lam and Adam Craig have relieved in the position.
- Roy Byun was employed as the NSW OzFoodNet Enteric Diseases Surveillance Officer from July 2007.

References

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2. New South Wales Department of Health. Notifiable Diseases Database System (NDD) (HOIST). Communicable Diseases Branch and Epidemiology and Research Branch.
3. Communicable Diseases Network of Australia. Australian national notifiable diseases list and case definitions. Australian Government Department of Health and Ageing. Available at http://www.health.gov.au/internet/wcms/publishing.nsf/Content/cda_surveil-nddss-dislist.htm Accessed May 13, 2007.
4. Australian Bureau of Statistics. Estimated resident populations based on 2001 Census counts and mid-series experimental population projections