

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

## **Second Quarter Summary, April – June 2016 NSW**

---

NSW OzFoodNet



NSW OzFoodNet team  
enteric@doh.health.nsw.gov.au  
Communicable Diseases Branch  
NSW Ministry of Health  
73 Miller Street North Sydney NSW 2060  
Locked Mail Bag 961 North Sydney NSW 2059  
Phone: 02 93919236/93919561  
Fax: general 93919848, secure 93919189

# Highlights Quarter 2, 2016

## Introduction

This report describes data for enteric conditions for quarter 2, 2016. The report is divided into three sections: enteric notifiable diseases, foodborne outbreaks and gastroenteritis outbreaks in institutions. Data in this report have been extracted from the NSW Notifiable Conditions Information Management System and NSW OzFoodNet Outbreak Database. Every endeavour has been made to ensure that the information provided in this document was accurate at the time of writing; however, infectious disease notification data are continuously updated and subject to change.

## Summary

During quarter 2, 2016 there was a notable increase in **shigellosis** cases, with the number of reported cases (88) being 228% higher than the same period for the past 5 years (26.8 cases). Numbers of overseas acquired cases were 128% above the 5-year average, but the most striking increase was in locally acquired cases, which were 317% above the 5-year average (table 2). In quarter 2, 82% of shigellosis cases were male, compared to 63% for the past 5 years. The increase in locally acquired infections was almost entirely due to infections related to male to male sexual exposures. The majority of cases (84%) were also a single serotype, *Shigella sonnei* biotype (BT) G. In response to this increase, Health Protection NSW, in conjunction with public health units and community partners, undertook an awareness and prevention campaign, and issued a clinician alert on treatment options.

Notifications of **listeriosis** remained high in quarter 2, with 12 reported cases (compared to an average of 7.6 cases for the same period from 2011–2015). The increase was distributed over six local health districts (LHDs), with 75% reported from Northern Sydney LHD, South Eastern Sydney LHD and South Western Sydney LHD. The median age of cases was 72 years and 58% were female. All cases were hospitalised and 2 deaths were reported. Genetic analysis indicated most cases were sporadic, however one cluster was identified

involving two cases. These two cases were linked to a multijurisdictional cluster investigation of listeriosis involving eight cases linked to supermarket deli products. Following NSW Food Authority interventions no further cluster cases have been reported. Full summary on page 5.

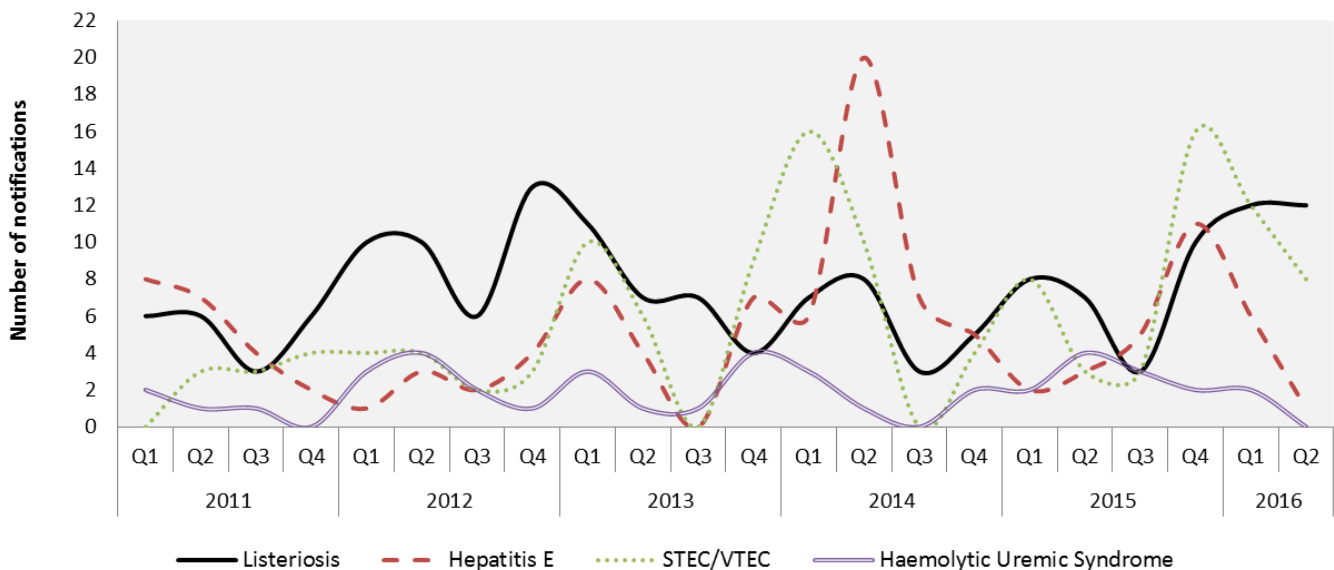
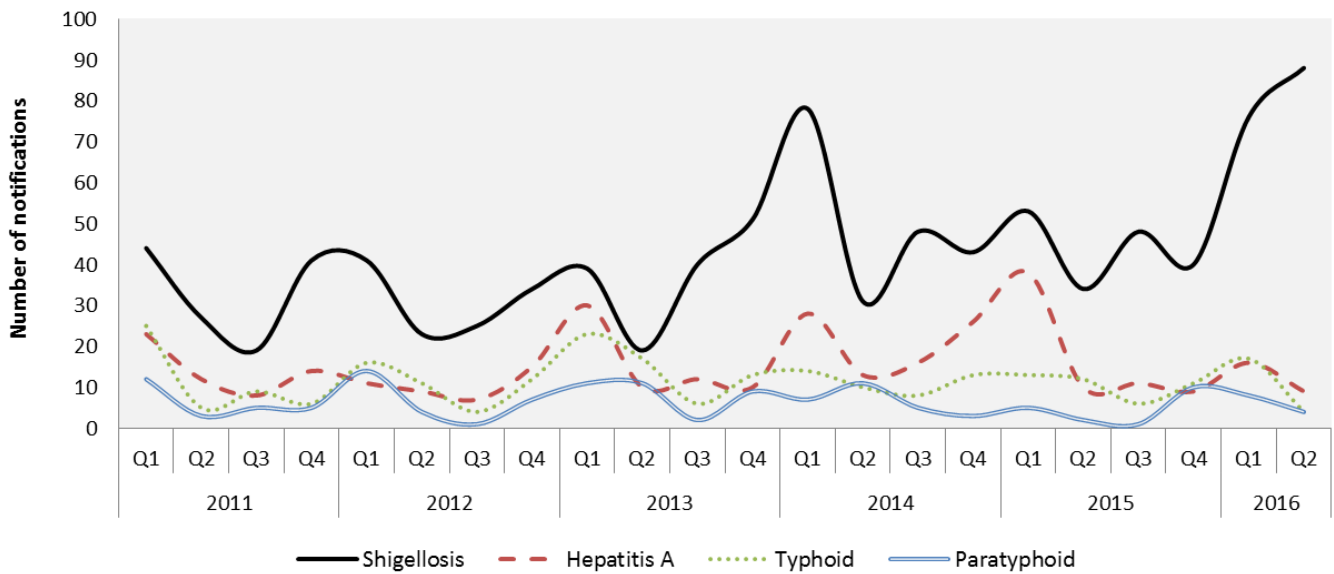
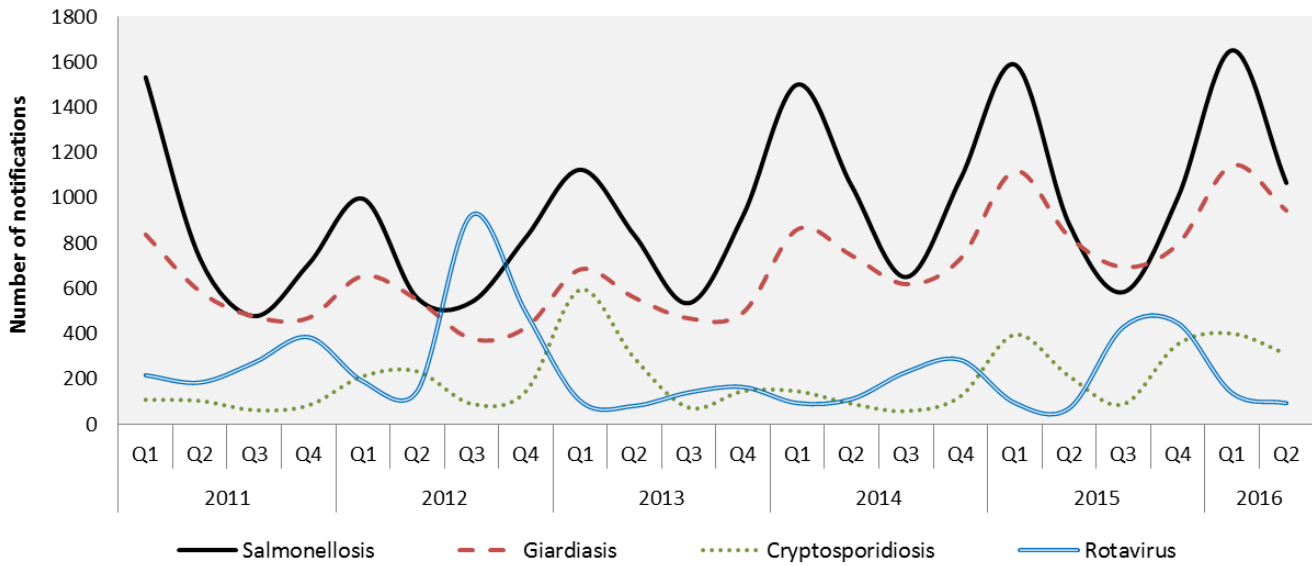
The number of **salmonellosis** cases in quarter 2 was the highest recorded since 2011 and was 31% higher than the 5-year average. The most significant second quarter increases were noted in the Central Coast LHD and Illawarra Shoalhaven LHD, with 84% and 82% increases respectively when compared to the 5-year average. Despite the overall increase, there was an 18% reduction in *Salmonella* Typhimurium infections in quarter 2, compared to the 5-year average for the same period (page 6).

**Shiga-toxin producing *Escherichia coli* (STEC)** infections, **cryptosporidiosis** and **giardiasis** cases were all above the 5-year average for quarter 2 (54%, 66% and 44% increases respectively). Notifications of STEC have increased due to increased adoption by pathology laboratories of a routine stool screening test which includes STEC. Public health units investigated cryptosporidium notifications, however no large single source outbreaks were identified to explain the increase.

**Hepatitis E** and **hepatitis A** virus infections, **typhoid fever** and **paratyphoid fever** cases were all reported at lower levels when compared to the 5-year average for quarter 2.

Fifteen **foodborne or suspected foodborne outbreaks** were notified in quarter 2 affecting at least 146 people (table 5 and 6, page 8). Two outbreaks were caused by ingestion of Spanish mackerel containing high concentrations of ciguatera toxin. One outbreak was linked to consumption of cherry strudel likely contaminated with *Shigella sonnei*. In three outbreaks, *Salmonella* or *Campylobacter* was isolated however, a specific food vehicle was not identified. Ill food handlers may have contributed to the spread of infections in two outbreaks. In the remaining outbreaks, transmission via food was suspected but a specific pathogen or food vehicle was not found, or there was insufficient evidence to assign a cause.

**Figures 1-3.** Number of notifications by quarter and disease, NSW, 1 Jan 2011 to 30 Jun 2016.



**Table 1:** Notifiable enteric conditions by Local Health District (LHD), NSW, quarter 2, 2016.

Notifiable Disease		CC	FW	HNE	IS	M	MNC	NBM	NNSW	NS	SES	SNSW	SWS	Syd	WNSW	WS	NSW	
Botulism	Notified, Q2 2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5 y Q2 mean, 2011-2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2
Cryptosporidiosis	Notified, Q2 2016	27	0	23	16	12	19	2	25	40	57	3	29	30	8	20	311	
	5 y Q2 mean, 2011-2015	8.6	0.6	21.2	9.4	4.2	5.2	10.2	9.4	32	30.6	4.4	9.6	15.8	8.2	17.4	186.8	
Giardiasis	Notified, Q2 2016	44	0	116	62	35	26	47	28	147	169	24	82	77	25	61	944	
	5 y Q2 mean, 2011-2015	23	0.8	79.2	43.2	21.4	16	33.4	14.4	115.2	116.4	12.4	41	58.6	27.8	51	654	
Hepatitis A	Notified, Q2 2016	0	0	0	0	0	0	0	0	0	2	0	3	1	0	3	9	
	5 y Q2 mean, 2011-2015	0.2	0	0	0	0	0	0	0.2	1	2.6	0	0.8	0.6	0.4	4.4	10.8	
Hepatitis E	Notified, Q2 2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
	5 y Q2 mean, 2011-2015	0	0	0	0	0	0	0	0	1.6	1.4	0	0.8	0.8	0	2	7.4	
Listeriosis	Notified, Q2 2016	1	0	0	0	0	0	0	0	3	3	0	3	1	0	0	12	
	5 y Q2 mean, 2011-2015	0	0	0.6	1	0	0	0.4	0.2	0.6	1.4	0.4	0.8	0.4	0	1	7.6	
Rotavirus	Notified, Q2 2016	0	0	12	1	3	2	3	6	12	16	1	13	11	4	10	94	
	5 y Q2 mean, 2011-2015	2.6	0	20.6	4.4	3.8	1.8	5.4	9.2	20.2	16	2	6.6	7.2	6.6	13	119.4	
Salmonellosis	Notified, Q2 2016	50	1	99	56	39	39	56	61	172	115	29	120	78	36	115	1066	
	5 y Q2 mean, 2011-2015	27.2	6.2	99.6	30.8	33	26.2	33.2	55.6	122.2	103	23.2	83.6	62.4	21.8	83	812	
Shigellosis	Notified, Q2 2016	7	0	6	0	1	2	3	0	12	26	0	4	21	0	6	88	
	5 y Q2 mean, 2011-2015	0.4	0	1.2	1.2	0.4	0.4	0.6	1.8	3.2	6.8	0	3.2	4.6	0.8	2.2	26.8	
STEC/VTEC	Notified, Q2 2016	1	0	1	0	2	0	0	0	0	1	0	0	0	2	1	8	
	5 y Q2 mean, 2011-2015	0	0	2	0.25	0	0	0	0.5	0	1	0.25	0.25	0	0.75	0	5.75	
HUS	Notified, Q2 2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5 y Q2 mean, 2011-2015	0	0	0.2	0.2	0	0	0	0	0.6	0.4	0.2	0	0	0	0	2.2	
Typhoid	Notified, Q2 2016	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	4	
	5 y Q2 mean, 2011-2015	0	0	0.6	0	0	0	0.2	0.2	1.6	1.4	0.2	2	0.8	0	3.4	11	
Foodborne* Outbreaks	Notified, Q2 2016	0	0	3	2	0	0	0	1	0	5	0	1	1	0	2	15	
	People affected	0	0	12	8	0	0	0	26	0	23	0	16	26	0	30	146	
Salmonella Cluster	Notified, Q2 2016	1	0	1	0	0	0	1	0	3	1	0	3	2	0	4	4†	
	People affected	2	0	1	0	0	0	4	0	11	3	0	9	4	0	10	44	

Blue shading refers to a 100% or greater increase in the number of notifications compared to the five year average count. \*Foodborne or potentially foodborne outbreaks

Abbreviations: Central Coast LHD (CC), Far West NSW LHD (FW), Western NSW LHD (WNSW), Hunter New England

LHD (HNE, Illawarra Shoalhaven LHD (IS), South Western Sydney LHD (SWS), Mid North Coast LHD (MNC), Northern NSW LHD (NNSW), Murrumbidgee LHD (M), Southern NSW (SNSW), Nepean Blue Mountains LHD (NBM), Northern Sydney LHD (NS), South Eastern Sydney LHD (SES), Sydney LHD (Syd), Western Sydney LHD (WS).

**Table 2:** Notifiable enteric conditions by overseas or local acquisition, NSW, quarter 2, 2016

Notifiable Disease	Place infection acquired	NSW, Q2 2016	5 yr Q2 mean 2011-2015	2016 % change
Hepatitis A	Locally acquired	0	3.4	-100%
	Overseas acquired	7	7.2	-3%
	Unknown	2	0.2	900%
Hepatitis E	Locally acquired	0	2.8	-100%
	Overseas acquired	1	4.2	-76%
	Unknown	0	0.4	-100%
<i>Salmonella</i> Enteritidis	Locally acquired	7	1.2	483%
	Overseas acquired	33	25.4	30%
	Unknown	8	5.4	48%
Paratyphoid	Locally acquired	0	0.17	-100%
	Overseas acquired	1	6	-83%
	Unknown	3	0	-
Shigellosis	Locally acquired	45	10.8	317%
	Overseas acquired	25	10.6	136%
	Unknown	18	5.4	233%
STEC	Locally acquired	8	3.4	135%
	Overseas acquired	0	0.2	-100%
	Unknown	0	1.6	-100%
Typhoid	Locally acquired	0	0.4	-100%
	Overseas acquired	4	10.2	-61%
	Unknown	0	0.4	-100%

Blue shading refers to a 100% or greater increase in the number of notifications compared to the five year average count

## Notable Foodborne Outbreaks

### Multijurisdictional outbreak of listeriosis

A cluster of listeriosis was detected when epidemiological, environmental and laboratory investigations linked multiple cases in NSW residents and interstate to one another, and to supermarket deli products. Whole genome sequencing (WGS) subsequently confirmed the cases were highly-related; prompting a multijurisdictional outbreak investigation (MJOI).

Overall, between February and June 2016 a total of eight cases from four jurisdictions, including three NSW residents, were linked to the outbreak by molecular typing (binary type 83, MLVA 04-20-19-04-03-11-10-04-00 or similar) and/or WGS.

Traceback investigations completed by the NSW Food Authority isolated *Listeria monocytogenes* sharing a similar genetic profile from food samples and environmental swabs from three supermarket delis, as well as from a ham production facility in NSW that distributed their products to various supermarkets implicated by cases. The production facility was closed for unrelated reasons prior to this outbreak being detected. The three NSW cases had consumed cold meats, cheeses and/or salads from various deli counters within the four weeks prior to onset.

Based on epidemiological, environmental and laboratory investigations, it was concluded that the outbreak was likely caused by consumption of contaminated deli products – arising from a common ham supplier, with subsequent cross-contamination of other deli products at the point of retail. Over the course of the investigation the NSW Food Authority worked with the affected supermarkets and the ham supplier to implement cleaning and equipment replacement to prevent further cases and minimise risks of recurrence.

### *Salmonella* Typhimurium 5-17-15-10-490

A cluster of *S. Typhimurium* with the MLVA profile 5-17-15-10-490 (17 cases) was identified across three LHDs. An investigation was initiated and 14 cases were interviewed. A common seafood restaurant was

identified by 12 (86%) cases. An additional four probable cases with clinically compatible symptoms were identified.

Illness onset occurred following a long incubation period (mean 5 days, range 2-12 days). Exposure occurred from 15 Jan 2016 to 24 Apr 2016, and a variety of seafood dishes were consumed by cases.

The NSW Food Authority inspected the restaurant on 16 May 2016. There was no evidence of raw egg products being used and no pathogens were identified from the food samples collected from the restaurant kitchen. The restaurant is situated in a rural setting next to a pond with wild and caged birds, laying chickens and home grown herbs. Environmental samples were positive for *S. Typhimurium* with MLVA profiles 5-17-15-10-490 and 5-17-14-10-490 indicating potential cross-contamination in food preparation from the external environment. Advice was given on reducing the risk of cross-contamination in the kitchen.

### Shigellosis – point source cluster

In June 2016, three cases of gastrointestinal illness linked to a café were investigated by the South Eastern Sydney LHD. All cases consumed cherry strudel on 10 June 2016. The average incubation period was 2.5 days and all cases reported diarrhoea, abdominal cramps and chills. One case was culture positive and two cases were PCR positive for *Shigella* spp. An investigation at the café identified a chef who had recently experienced a gastrointestinal infection after returning from an overseas trip, but reported that their symptoms ceased 10 days before cases dined at the cafe. There were no obvious hygiene defects noted by the NSW Food Authority at the time of inspection.

### Two clusters of Ciguatera Fish Poisoning

Early April 2016, Hunter New England LHD was notified of three suspected ciguatera poisonings linked to the consumption of Spanish mackerel. The 40 Kg Spanish mackerel was caught off the coast of Crowdy Head (near Taree). All cases consumed the fish at the same time and all reported onset of illness three hours later. Symptoms included reverse

temperature sensation, tingling/numbness in hands and feet, chest tightness, diarrhoea and nausea. Portions of the Spanish mackerel (frozen) were collected by the NSW Food Authority and tested positive for Pacific ciguatoxin 1B (P-CTX-1B), with a concentration of 0.926 µg/Kg. The US Food and Drug Administration (FDA) have published suggested guidance that levels should not exceed 0.01 µg/Kg for Pacific CTX.

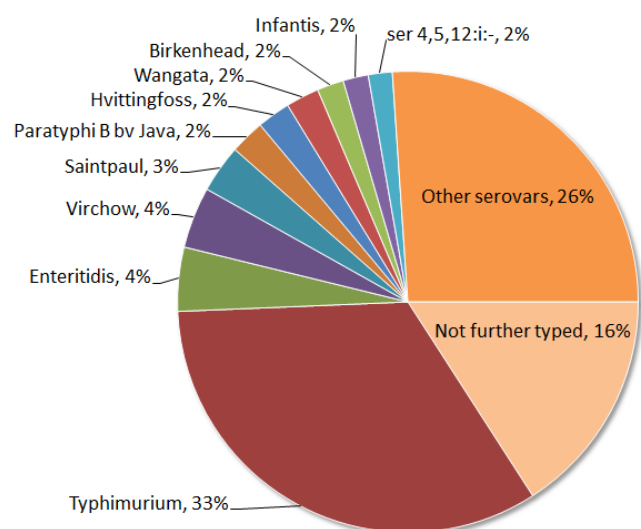
Later in April 2016, Hunter New England LHD was notified of suspected ciguatera poisoning in a 35 year-old female. The case consumed part of a 20 Kg Spanish mackerel caught off the coast of Crescent

Head (≈100km north of Crowdy Head). Symptoms included reverse temperature sensation, numbness/tingling around mouth and hands, diarrhoea, aching teeth (no chest tightness or cardiac problems were noted). The Spanish mackerel was shared between several individuals. Three other cases were subsequently identified. Two samples were provided to the NSW Food Authority for testing. P-CTX-1B was detected in both samples at concentrations of 0.108 µg/Kg and 0.366 µg/Kg, respectively. NSW Food Authority issued [advice to fishers on mid north NSW coast](#).

### Salmonella spotlight

In quarter 2 of 2016, there were 1,066 notifications of salmonellosis representing a 31% increase above the 5-year average, and 42% of all enteric notifications during this period. The top 10 *Salmonella* serovars detected are shown in figure 4. Of the 1,066 notifications, 33% (358 cases) were *S. Typhimurium*, which is an 18% reduction from the 5-year average of 437 cases. Sixteen percent (170 cases) were detected by nucleic acid testing only.

**Figure 4.** *Salmonella* notifications by serovar, NSW, quarter 2, 2016 (N=1,066)



The most common *S. Typhimurium* MLVA profile was 3-12-11-14-523 (table 3). This profile accounted for 8% of all characterised isolates. In contrast, the most

common MLVA profile in quarter 1 accounted for 26% of all characterised *S. Typhimurium* isolates.

**Table 3.** Top ten *Salmonella* Typhimurium MLVAs, NSW, quarter 2, 2016

MLVA	Notifications	% of STm typed
3-12-11-14-523	30	8%
3-10-14-11-496	16	4%
3-26-13-8-523	15	4%
3-12-12-14-523	11	3%
5-17-15-10-490	10	3%
3-12-9-10-523	8	2%
3-9-7-12-523	8	2%
4-15-11-0-490	8	2%
3-24-13-10-523	7	2%
3-12-12-9-523	6	2%
<b>Top ten total</b>	<b>119</b>	<b>31%</b>

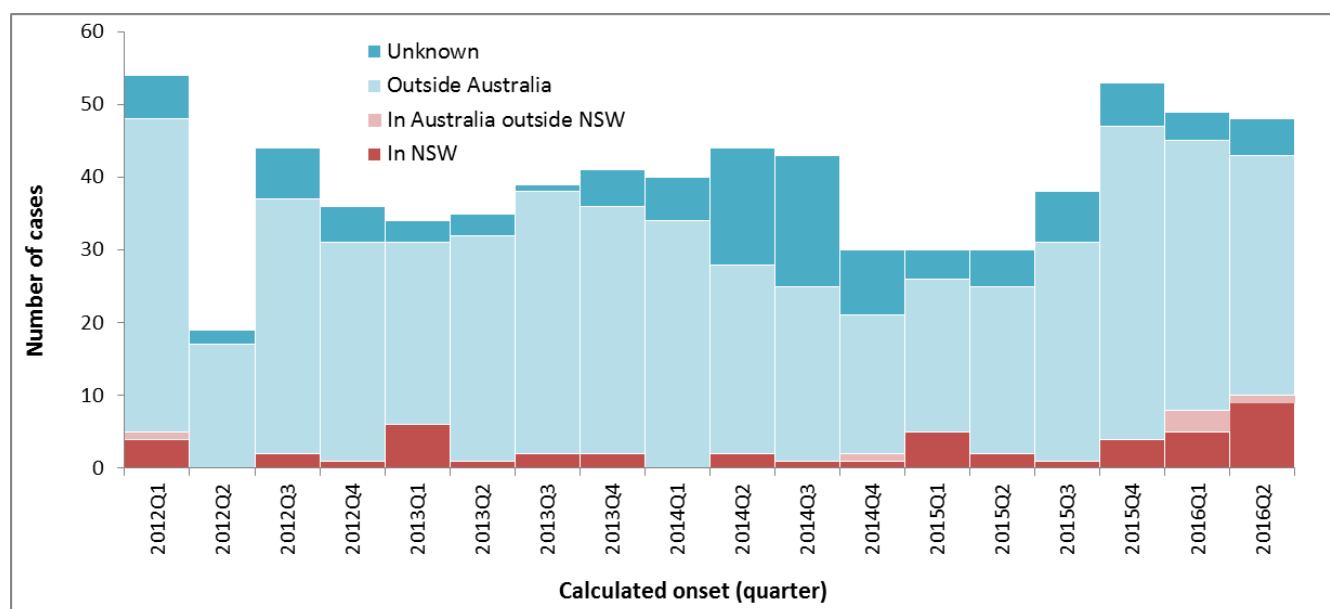
*Salmonella* Enteritidis was the second most common serovar, with 48 cases reported in quarter 2. While the majority of *S. Enteritidis* notifications in NSW continue to be acquired during overseas travel, an increase in locally acquired infections was observed (figure 6). The number of locally acquired cases in the first two quarters of 2016 (14 cases) has already exceeded the locally acquired total seen in the past four years (table 4), however there were no apparent epidemiological links between cases.

In many areas overseas, *S. Enteritidis* is the most common *Salmonella* serovar. In contrast to other non-typhoidal *Salmonella spp.*, *S. Enteritidis* may infect the ovaries of hens and contaminate the internal contents of eggs before the shells are formed. Infected eggs appear normal and intact, and the bacterium is unaffected by standard industry cleaning and inspection measures that act against external faecal contamination of egg shells. This contributes a risk for

human infections if contaminated eggs are eaten raw or undercooked. Strict control programs in Australia have thus far prevented *S. Enteritidis* from establishing itself in commercial poultry flocks.

NSW Health is working with the NSW Food Authority and the Department of Primary Industries to investigate potential sources of *S. Enteritidis*. The use of whole genome sequencing is also being explored to assist in the identification of clusters.

**Figure 5.** *Salmonella* Enteritidis notifications by quarter and place of acquisition, NSW, 1 Jan 2012 to 30 Jun 2016.



**Table 4.** *Salmonella* Enteritidis by year and place of acquisition, NSW, 1 Jan 2012 to 30 Jun 2016.

Place acquired	2012		2013		2014		2015		2016*	
	n	%	n	%	n	%	n	%	n	%
In Australia outside NSW	1	1%	0	0%	1	1%	0	0%	4	4%
In NSW	7	5%	11	7%	4	3%	12	8%	14	14%
Outside Australia	125	82%	124	84%	105	66%	120	78%	70	72%
Unknown	20	13%	12	8%	49	31%	22	14%	9	9%
<b>Total</b>	<b>153</b>	<b>100%</b>	<b>147</b>	<b>100%</b>	<b>159</b>	<b>100%</b>	<b>154</b>	<b>100%</b>	<b>97</b>	<b>100%</b>

\*Quarters 1 and 2 only



**Table 5:** Foodborne and suspected foodborne outbreaks, NSW, quarter 2, 2016

PHU ID	Month <sup>#</sup>	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence**	Responsible vehicles	Contributing factors
SES49817	Apr	Restaurant	<i>Campylobacter spp.</i>	5	1	0	D	Unknown	Unknown
WS49837	Apr	Restaurant	Unknown	7	0	0	D	Unknown	Unknown
HUN0502	Apr	Private Residence	Ciguatera toxin	4	0	0	M	Spanish Mackerel	n/a
SES49948	Apr	Restaurant	Unknown	2	0	0	D	Unknown	Unknown
SES201604	Apr	Private Residence	Ciguatera toxin	5	0	2	D	Spanish Mackerel	n/a
SWS201604	May	Restaurant	<i>Salmonella</i> Typhimurium 5-17-15-10-490	16	12	0	M	Unknown	Cross contamination
IS50331	May	Restaurant	Unknown	5	0	0	D	Unknown	Unknown
SES50408	May	Take Away	Unknown	13	0	0	D	Unknown	Unknown
SYD50761	Jun	Restaurant	Norovirus	26	1	0	D	Unknown	Food handler contamination
SES50920	Jun	Restaurant	<i>Shigella sonnei</i>	3	2	0	D	Cherry Strudel	Food handler contamination
HUN0501	Apr	Child Care Centre	<i>Salmonella</i> Bovismorbificans	3	3	1	D	Unknown	Unknown
HUN0500	Apr	Take Away	Unknown	5	0	0	D	Unknown	Unknown

**Table 6:** Outbreaks investigated as suspected foodborne outbreaks without enough evidence to assign a cause, NSW, quarter 2, 2016

PHU ID	Month <sup>#</sup>	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence**	Responsible vehicles	Contributing factors
IS49818	Apr	Restaurant	Unknown	3	0	0	D	Unknown	Unknown
NNSW201601	Jun	Restaurant	Unknown	26	0	0	D	Unknown	Unknown
WS50596	Jun	Restaurant	Unknown	23	0	0	D	Unknown	Unknown

<sup>#</sup> Month of outbreak is the month of onset of first case or month of notification/investigation of the outbreak. \* This was a national outbreak with cases in other State and Territories, only the NSW cases are reported here. \*\* Evidence key: **A** - Analytical epidemiological association between illness and 1 or more foods. **BT** - Binary type. **D** - Descriptive evidence implicating the suspected vehicle or suggesting foodborne transmission. **M** - Microbiological confirmation of agent in the suspected vehicle and cases. **MLVA** - Multi-locus variable number tandem repeat analysis. **PFGE** - Pulsed-field gel electrophoresis. **PT** - Phage type. **ST** - Serotype.

Note: In NSW, gastroenteritis and foodborne outbreaks are identified via a range of mechanisms, including reports from the public, general practitioners, institutions such as residential care facilities and child care centres, emergency departments, analysis of surveillance data, and reports to the NSW Food Authority's Consumer Complaints Line.

## Gastroenteritis Outbreaks in Institutions

From 1 April 2016 to 30 June 2016, 155 outbreaks of gastrointestinal illness in institutions were reported, affecting at least 2,479 people. This represents an 8% increase compared to the average number of outbreaks reported over the same period in the past 5 years (143 outbreaks), and a 2% increase in the average number of people affected (2,419 cases).

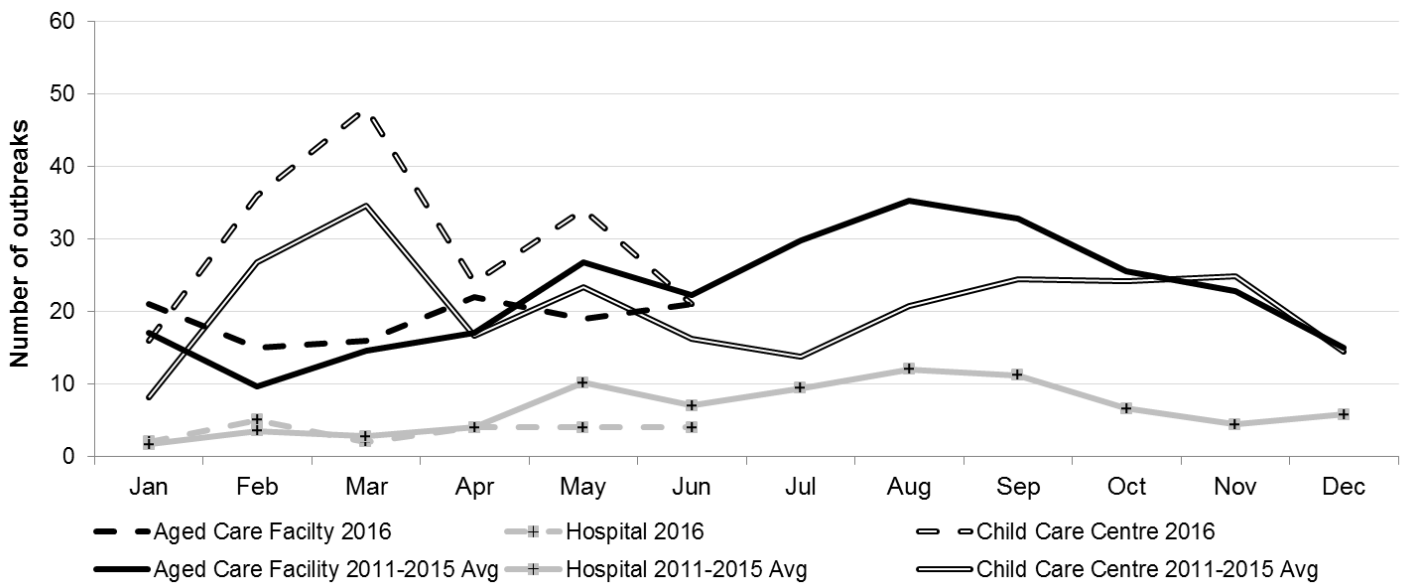
Of the 155 outbreaks, 79 (51%) occurred in child care centres, 62 (40%) in aged care facilities, 12 (8%) in hospitals and 2 (1%) in schools. The number of child care centre outbreaks during quarter 2 was 41% higher than the 5-year average (figure 6).

Overall 18% of staff members and 17% of non-staff became sick during these outbreaks (table 7). The highest attack rates for staff were observed in schools (overall 51% of reported illness), whereas the highest attack rates for non-staff were observed in hospital (overall 27% of patients reported illness). On average, outbreaks lasted 9 days.

One or more stool samples were collected in 65 (42%) outbreaks. Norovirus was identified from 35 (54%) of these outbreaks. The results of the other samples were negative or not reported (table 8).

Public health units monitor gastroenteritis outbreaks in institutions and provide advice on control measure.

**Figure 6:** Number of reported outbreaks of gastrointestinal illness in institutions, NSW, quarter 2, 2016 and average of the previous 5 years by month and facility type.



**Table 7:** Characteristics of outbreaks of gastrointestinal illness in institutions, NSW, quarter 2, 2016.

Setting	No. of Outbreaks	Staff Affected: n (attack rate)	Non-staff affected: n (attack rate)	Average duration of outbreak: days	Outbreaks with stool collected: n (%)	Outbreaks with pathogen detected: n (pathogens found)
Aged care facility	62	266 (7%)	840 (18%)	7	48 (77%)	27 (norovirus)
Child care centre	79	303 (27%)	842 (16%)	11	5 (6%)	0
Hospital	12	39 (5%)	104 (27%)	6	11 (92%)	8 (norovirus)
School	2	12 (51%)	73 (26%)	17	1 (50%)	0
Total	155	620 (18%)	1,859 (17%)	9	65 (42%)	35

**Table 8:** Outbreaks of gastroenteritis in institutions by Local Health District (LHD)\*, NSW, quarter 2, 2016.

Setting	Q2 2016	FW	HNE	IS	M	NBM	NS	SES	SNSW	SWS	Syd	WNSW	WS	NSW
Aged care facility	No. of outbreaks	1	15	3	3	2	7	12	4	3	4	3	5	62
	Staff affected	2	61	18	34	15	29	28	35	4	5	8	27	266
	Non-staff affectedd	6	177	53	39	29	113	203	46	23	54	17	80	840
Child care centre	No. of outbreaks	0	14	7	2	12	8	5	3	4	7	0	17	79
	Staff affected	0	36	31	2	41	125	7	9	7	13	0	32	303
	Non-staff affectedd	0	126	100	9	157	56	68	34	32	86	0	174	842
Hospital	No. of outbreaks	0	1	3	1	0	0	2	0	1	2	1	1	12
	Staff affected	0	8	5	0	0	0	20	0	0	2	0	4	39
	Non-staff affectedd	0	12	32	5	0	0	27	0	5	9	3	11	104
School	No. of outbreaks	0	0	0	0	0	1	1	0	0	0	0	0	2
	Staff affected	0	0	0	0	0	4	8	0	0	0	0	0	12
	Non-staff affectedd	0	0	0	0	0	23	50	0	0	0	0	0	73

\*CC, FW & MNC did not report any outbreaks of gastroenteritis in institutions in this period

Abbreviations: Central Coast LHD (CC), Far West NSW LHD (FW), Western NSW LHD (WNSW), Hunter New England LHD (HNE), Illawarra Shoalhaven LHD (IS), South Western Sydney LHD (SWS), Mid North Coast LHD (MNC), Northern NSW LHD (NNSW), Murrumbidgee LHD (M), Southern NSW (SNSW), Nepean Blue Mountains LHD (NBM), Northern Sydney LHD (NS), South Eastern Sydney LHD (SES), Sydney LHD (Syd), Western Sydney LHD (WS).