

OzFoodNet—Enhancing Foodborne Disease Surveillance Across Australia.

First Quarter Summary, January - March 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 1, 2016

Introduction

This report describes data for enteric conditions for quarter 1, 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, NSW OzFoodNet Outbreak Database and the NSW Gastroenteritis in Institutions 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.

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 (NSWFA) Consumer Complaints Line.

Summary

During the first quarter of 2016, there was a notable increase in **shigellosis** notifications (49%) compared to the previous 5 year average for the same time period. There were 76 shigellosis notifications; 74% of these notifications came from the South Eastern Sydney Local Health District (LHD), Sydney LHD and Western Sydney LHD (table 1). The median age of all shigellosis cases for quarter 1 was 33 years (compared to 36 years for past 5 years) and 70% were male (compared to 66% for past 5 years). Male to male sex was reported as a significant risk factor in most locally acquired cases.

Listeriosis notifications increased 43% in the first quarter of 2016 when compared to the previous 5 year average for the same time period. The number (n=12) of cases reported for quarter 1 is the highest of any quarter in the past 5 years. The 12 cases were distributed over 8 LHDs. The median age of cases was 82 years and 33% were female. All cases were hospitalised and 2 deaths were reported.

Giardiasis and **cryptosporidiosis** both showed marked increases in quarter 1 when compared to the 5 year

average for the same time period. There were 1143 cases of giardiasis reported (38% increase) and 400 cases of cryptosporidiosis (37% increase). The largest cryptosporidiosis increases were observed in the Central Coast, Mid North Coast and Northern NSW LHDs. The Mid North Coast and Northern NSW LHD's also noted the highest percentage increase in giardiasis (table 1). In the first quarter of 2016, there were a total of 71,486 laboratory tests conducted for giardia and cryptosporidium with 1.59% and 0.50% being positive respectively (compared to the average of 51,286 quarter 1 tests from 2012-2014 with positivity rates 1.62% and 0.63% respectively), indicating that much of the increase in notifications was due to increased testing.

Salmonellosis increased by 22% when compared to the previous 5 year average for quarter 1, with the largest increases being reported from Nepean Blue Mountains and South Eastern Sydney LHDs (59% and 62% increases respectively). A comprehensive description of *Salmonella* notifications can be found on page 7.

Hepatitis A notifications decreased by 38% (n=16) compared to the previous 5 year average, with the vast majority (92%) of the infections acquired outside of Australia.

Twenty-two **foodborne or suspected foodborne outbreaks** were identified affecting 525 people, of whom 45 were hospitalised (table 4). Nine outbreaks identified *Salmonella* as the causative agent, three were norovirus, two were scombroid fish poisoning, one *Shigella sonnei*, one *Listeria monocytogenes* and the remaining six were of unknown aetiology. Another five outbreaks affecting 34 people were investigated as potential foodborne outbreaks but there was not enough evidence to determine if they were foodborne or person-to-person spread of a viral gastroenteritis (table 5). In twelve of the outbreaks a suspected contaminated food source could be implicated. In the remaining ten outbreaks the food venue was identified but the food vehicle remains unknown. The outbreaks of known cause were *Salmonella* infection linked to consumption of lettuce leaves, mung bean sprouts, contaminated deli or bakery items (3), and Korean sushi; histamine fish poisoning linked to consumption of fresh tuna and tilapia fish; *Listeria* infection linked to consumption of deli ham; and norovirus infection linked to oysters (2) and rice paper rolls.

Figures 1-3. Number of notifications by year, quarter and disease from Jan. 2011 to Mar. 2016

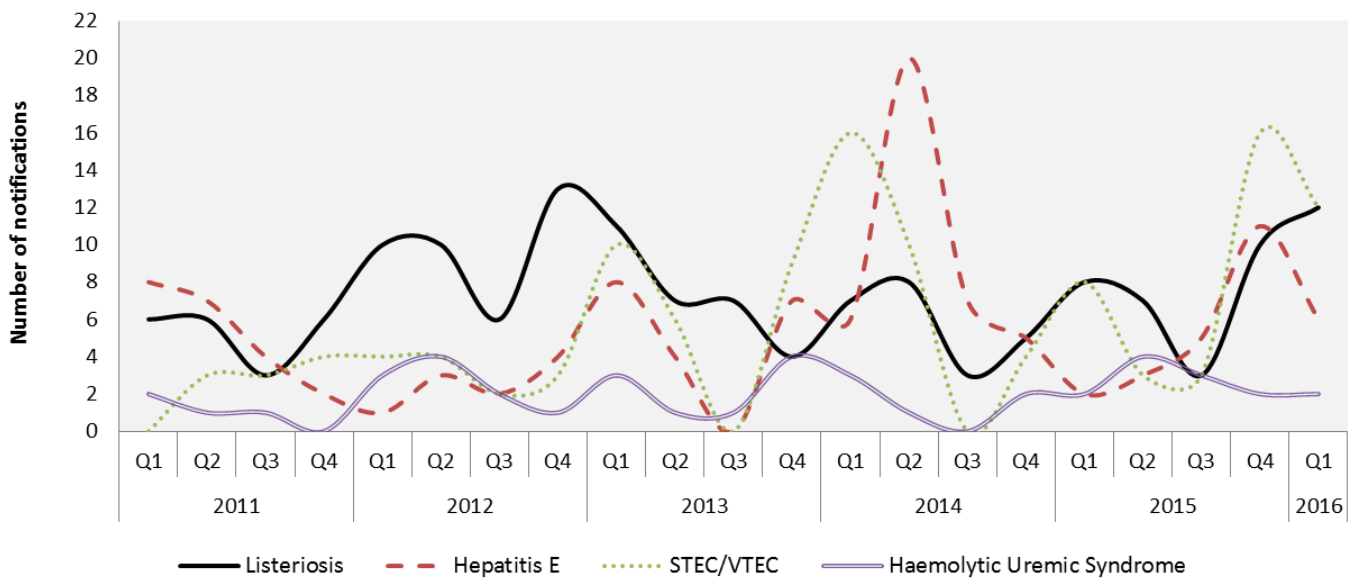
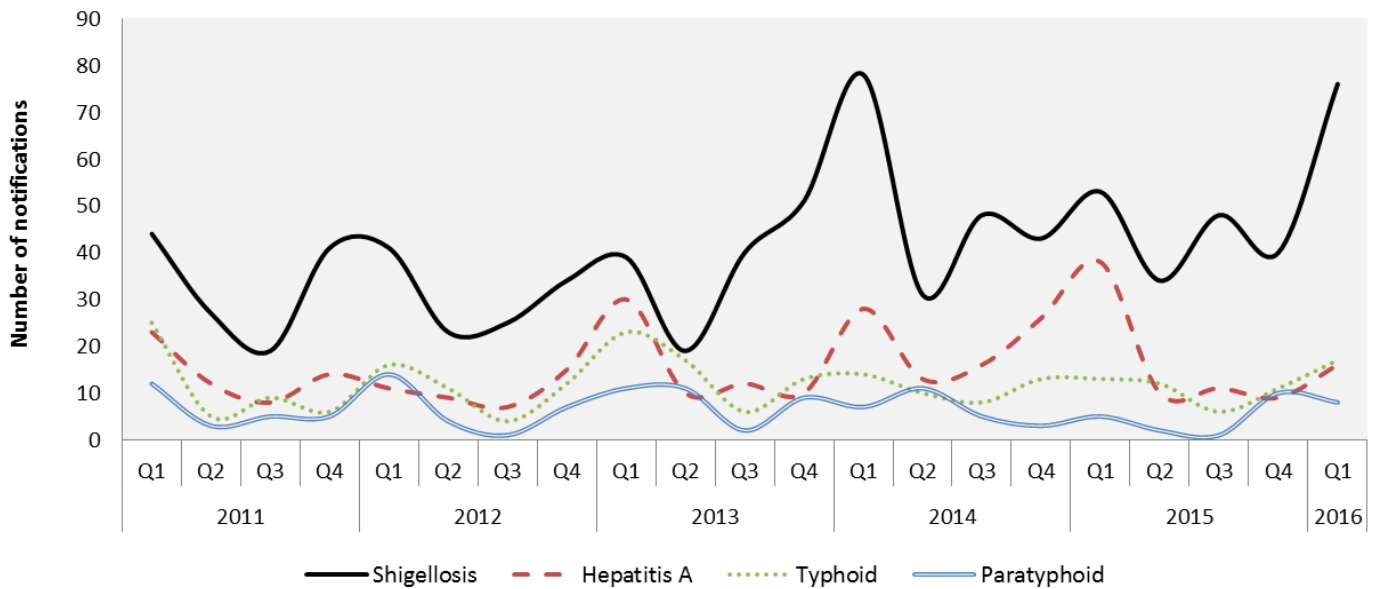
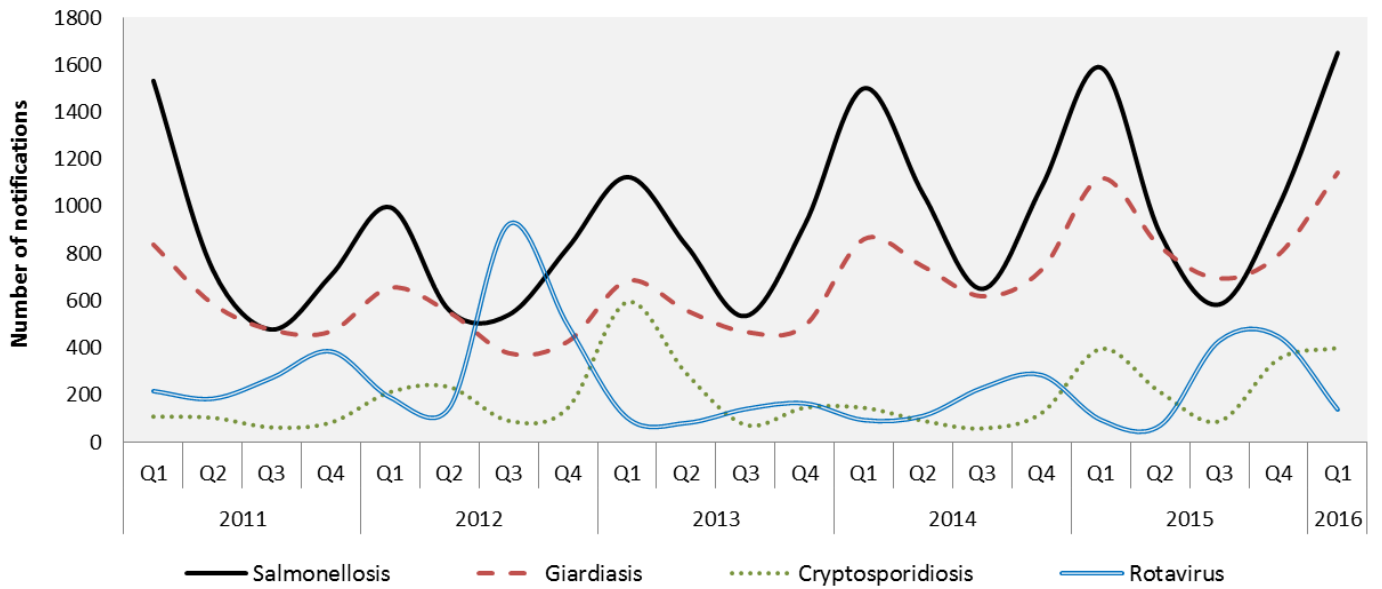


Table 1: Notifiable enteric conditions for quarter 1, 2016 by local health district

Notifiable Disease		CC	FW	HNE	IS	M	MNC	NBM	NNSW	NS	SES	SNSW	SWS	Syd	WNSW	WS	NSW
Botulism	Notified, Q1 2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5y Q1 mean 2011-2015	0.0	0.3	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	0.3
Cryptosporidiosis	Notified, Q1 2016	29	0	44	23	11	11	9	43	73	57	5	24	21	14	36	400
	5y Q1 mean 2011-2015	9	0.4	42	12.4	7.8	5.2	14.6	14	56.4	44.2	4	14.4	29	12	26.2	291.6
Giardiasis	Notified, Q1 2016	47	1	145	58	38	35	43	41	199	197	15	77	121	36	90	1143
	5y Q1 mean 2011-2015	33.2	2.4	108	49.2	20.4	14	40.8	15	152	148.6	19.4	46.8	75.6	36	69.6	831.2
Hepatitis A	Notified, Q1 2016	0	0	0	0	0	0	0	0	4	2	0	2	3	0	5	16
	5y Q1 mean 2011-2015	0.4	0	0	0.8	0.4	0	0.4	1	2.4	3.6	0	4.8	2.6	0.6	9	26
Hepatitis E	Notified, Q1 2016	0	0	0	0	0	0	1	0	1	1	0	0	0	0	3	6
	5y Q1 mean 2011-2015	0	0	0	0	0	0	0	0	1	1	0	0.4	0.4	0	2.2	5
Listeriosis	Notified, Q1 2016	0	0	1	2	0	0	0	1	2	1	0	2	2	0	1	12
	5y Q1 mean 2011-2015	0	0	0.8	0.4	0	0.2	0.4	0.2	1.8	1.6	0.2	1.8	0.6	0	0.4	8.4
Rotavirus	Notified, Q1 2016	2	0	17	1	1	1	17	8	24	17	1	13	9	7	17	135
	5y Q1 mean 2011-2015	1.8	0.6	20.4	2.6	4.8	1.2	8.2	10.6	25	19.6	0.8	8.8	15.2	5.4	15	140
Salmonellosis	Notified, Q1 2016	53	5	143	74	61	66	73	101	236	291	38	160	133	35	174	1643
	5y Q1 mean 2011-2015	60.6	7.2	142.6	61.6	48.8	59.4	46	83.2	184.4	180	26.8	155.4	119.8	38.4	133.2	1348
Shigellosis	Notified, Q1 2016	7	0	2	2	1	0	1	1	5	26	0	1	16	0	14	76
	5y Q1 mean 2011-2015	1.2	0	0.6	0.6	0.8	0.6	1.6	2.6	6.4	16.8	0.8	2.2	12.4	0.8	3.6	51
STEC/VTEC	Notified, Q1 2016	1	0	3	0	2	0	0	0	0	1	3	0	0	0	1	12
	5y Q1 mean 2011-2015	0	0	2.75	1.25	0	0	0.5	0.75	0.25	1.5	0.25	1	1	0.25	0	9.5
HUS	Notified, Q1 2016	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
	5y Q1 mean 2011-2015	0	0	0.4	0.2	0	0	0.4	0.2	0.2	0.2	0.2	0.6	0.2	0	0	2.6
Typhoid	Notified, Q1 2016	1	0	0	0	0	0	2	0	0	0	0	4	3	0	7	17
	5y Q1 mean 2011-2015	0	0	0.6	0	0	0.2	0.4	0.4	2	2.6	0.2	2.2	2.2	0	7.4	18.2
Foodborne* Outbreaks	Notified, Q1 2016	0	0	4	1	0	0	0	0	6	4	0	3	4	0	2	26†
	People affected	0	0	22	11	0	0	0	0	50	230	0	29	35	0	55	516
Salmonella Cluster	Notified, Q1 2016	2	0	4	4	1	0	5	1	2	4	1	5	3	2	3	11†
	People affected	2	0	20	26	1	0	12	4	14	7	3	15	17	3	14	138

Legend: 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
 † NSW total includes a multi LHD outbreak. Local Health District (LHD) 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 for quarter 1, 2016 by local health district

Notifiable Disease	Place infection acquired	NSW, Q1 2016	5 yr Q1 mean 2011-2015	2016 % change
Hepatitis A	Locally acquired	1	7	-86%
	Overseas acquired	15	18.6	-19%
	Unknown	0	0.4	-
Hepatitis E	Locally acquired	1	0.2	400%
	Overseas acquired	4	4.6	-13%
	Unknown	1	0.2	400%
Salmonella Enteritidis	Locally acquired	7	3.8	84%
	Overseas acquired	37	30	23%
	Unknown	5	4.8	4%
Paratyphoid	Locally acquired	0	0	-
	Overseas acquired	7	9.8	-29%
	Unknown	1	0	-
Shigellosis	Locally acquired	35	24	46%
	Overseas acquired	26	17.2	51%
	Unknown	15	9.8	53%
STEC/VTEC	Locally acquired	7	4	75%
	Overseas acquired	1	0.2	400%
	Unknown	4	3.4	18%
Typhoid	Locally acquired	2	0.4	400%
	Overseas acquired	15	17.8	-16%
	Unknown	0	0	-

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

Notable Foodborne Outbreaks

Salmonella Anatum

During quarter 1, there were 24 *Salmonella* Anatum cases notified in NSW, compared to 3 notifications on average for the previous five years (for quarter 1). Concurrent increases were also observed in other jurisdictions with a multi-jurisdictional outbreak investigation commencing on 8 February 2016.

Interstate, two different types of bagged lettuce had tested positive for *S. Anatum*. On 4 February, 2016, trade and consumer level recalls were issued. WGS of the food and human isolates confirmed the pre-packaged mixed salad, as the source of the outbreak.

In NSW, 23 cases were linked through whole genome sequencing (WGS) to the multi-state outbreak. 70% of NSW cases indicated eating bagged lettuce of any kind.

Although this multi-state outbreak didn't involve many NSW cases, it is notable in that it was the first multijurisdictional foodborne disease outbreak in Australia to use WGS to support the investigation. WGS played an important role in defining confirmed cases and implicating pre-packaged salad mix as the source of the outbreak. Given a relatively high baseline for *S. Anatum* in Australia (3 year historical mean of 72 cases per year), WGS was helpful in differentiating outbreak cases from background cases.

Salmonella Saintpaul

In January 2016, an increase in *Salmonella* Saintpaul infections was identified through routine surveillance. Sixty two cases of *S. Saintpaul* with a specimen collection date between 1 December 2015 and 12 January 2016 were notified in NSW. Historically (2010-2015), NSW received on average 2 notifications of *S. Saintpaul* per week. Health Protection NSW (HPNSW) in conjunction with public health units (PHUs) and the NSW Food Authority (NSWFA) commenced an investigation on 13 January 2016.

During this time period, increases were also identified in two other Australian jurisdictions with a multi-

jurisdictional outbreak investigation (MJOI) commencing on 11 February 2016. Investigators conducted extensive hypothesis generating interviews later followed by a case control study. Due to the moderate background levels of *S. Saintpaul*, WGS was incorporated to facilitate the identification of outbreak associated cases.

In NSW, 99 cases and 17 probable cases were linked to the outbreak with specimen collection dates between December 2015 and April 2016 (noting that some cases were notified in quarter 4 2015 and quarter 2 2016 but are included here for completeness).

Initial descriptive analysis pointed towards a produce item as the food vehicle of interest. Following a surge of cases in another jurisdiction towards the end of March 2016, mung bean sprouts were identified as a likely source. Subsequently testing of mung-bean sprouts identified *S. Saintpaul* (later matched by WGS). Health advisories and product recalls occurred in jurisdictions where the implicated product was distributed.

Mung bean sprout consumption was reported by less than 30% of cases, with initial interviews in NSW reporting consumption frequencies of less than 20%. This highlights the challenge of so-called 'stealth' foods; foods that are poorly recalled during interviews. A similar situation occurred in Europe with the *E. coli* O104:H4 outbreak that ultimately implicated raw fenugreek sprouts as the food vehicle. During exploratory interviews, only 25% of German cases reported sprout consumption resulting in it being excluded from further analytic studies.

Suspected Norovirus associated with oyster consumption

In January 2016, the NSWFA responded to 12 separate complaints, affecting more than 70 people who consumed oysters prior to developing gastrointestinal symptoms. All of these reports were independent of each other and the only commonality between all groups was consumption of oysters from one of the three harvest zones in NSW. The suspected disease agent was norovirus with those affected experiencing

vomiting and diarrhoea after consuming oysters. PHUs attempted to confirm the aetiology through the collection of stool specimens, however as all cases had recovered no suitable specimens were available.

One wholesale oyster sample from one of the implicated harvest sites was positive for norovirus GI. Multiple environmental samples were collected from the harvest sites and two were positive for norovirus GI. In response to the trace level of norovirus GI, the NSWFA implemented a precautionary 21 day quarantine at the two implicated harvest sites.

Consumption of oysters is a well-established risk factor for norovirus and other infections. Oysters are filter feeders that can accumulate contaminants (such as norovirus) from water. This makes them susceptible as carriers of disease in areas where sewage has been spilt or leaked, or where inadvertent waste has been dumped. Norovirus appears to be able to persist in oyster tissue for weeks and cannot be effectively removed during commercial depuration. Evidence is emerging to suggest that oysters are not only transmission vectors of human norovirus in the environment, but are also an important reservoir.

Salmonella Bareilly

During quarter 1, 2016 there were 40 *Salmonella* Bareilly notifications, compared to an average of 4 notifications for the same period in the previous five years. Fifteen were located within Northern Sydney Local Health District boundaries. An investigation was initiated on 19 January 2016, by the Northern Sydney PHU in conjunction with HPNSW and the NSWFA.

Of the 40 notifications 33 were interviewed using the standard *Salmonella* questionnaire. Fifteen identified consuming Korean sushi linked to Outlet A. A further five cases were linked to Korean supermarkets that sold sushi but could not confirm eating the sushi.

An environmental inspection was conducted at outlet A and at selected Korean supermarkets. Food handling practices were found to be unsatisfactory and *S. Bareilly* was detected in ready-to-eat foods sampled from Outlet A. A prohibition order was

issued. Inspections at supermarkets indicated storage advice was not being adhered to.

Salmonella Typhimurium Bakery Outbreak

On Sunday 24 January 2016, the South Eastern Sydney Local Health District (SESLHD) PHU was notified by a hospital emergency department of people presenting with gastrointestinal illness who had eaten food purchased at common bakery. An investigation was initiated by the PHU and the NSW FA.

The epidemiological investigation identified 203 people who had become ill after eating food purchased from this same bakery. Of the 203 cases, 91 were confirmed with *Salmonella* and of these, 83 were *Salmonella* Typhimurium, of which 81 had the same MLVA profile (3-26-13-8-523).

Illness onset dates ranged from 18 – 26 January, 2016, with foods purchased over a 7 day period from 17 – 24 January, 2016. Of the 91 confirmed cases, 58 (73%) presented to a hospital emergency department and 32 (35%) were admitted to hospital (mean length of stay was 5 days, range 1-19 days).

Foods commonly consumed included bread rolls (75%), mayonnaise (41%), mayo/margarine mix (40%) and salad fillings (lettuce (62%) tomato (49%), carrot (47%).

The environmental investigation concluded the food handling practices of the bakery were unsatisfactory and *S. Typhimurium* was detected in ready-to-eat foods sampled from the premises. A prohibition order was issued.

Salmonella spotlight.

In quarter 1 of 2016, almost half (47%) of all enteric infections notified were salmonellosis, with 1,643 notifications representing an increase of 22% compared quarter 1 for the previous 5 years. The numbers of notifications in quarter one is the highest recorded since *Salmonella* was made notifiable. Of the 1,643 *Salmonella* notifications, 42% were *S. Typhimurium*. The actual number of *S. Typhimurium* notifications for quarter 1 was 685, a 14% reduction from the 5 year average for quarter 1 (792 cases). Other common serotypes are shown in Figure 4. A multi-state outbreak resulted in a spike of *S. Saintpaul* (n=71, compared to 5 year average of 17 cases for quarter 1). Likewise, an outbreak of *S. Bareilly* resulted in this serovar featuring in the top 10 with a total of 40 cases (compared to a 5 year average of 6 cases for quarter 1).

When looking at long term trends by serotype, *S. Typhimurium* and *S. Enteritidis* have both been relatively stable since 2011 (figure 5). *S. Birkenhead* and *S. Wangata*, both suspected to be environmental serovars, have shown an overall rise over the past 5 years and have followed a remarkably similar seasonal pattern over this period (figure 5). *S. 4,5,12:i:-*, *S. paratyphi B bv Java* and *S. Infantis* also increased over the past 5 years. The only top 10 *Salmonella* serotype to show a decrease over the past 5 years was *S. Virchow*.

Figure 4. Proportion of *Salmonella* serovars, quarter 1, 2016 (N=1643)

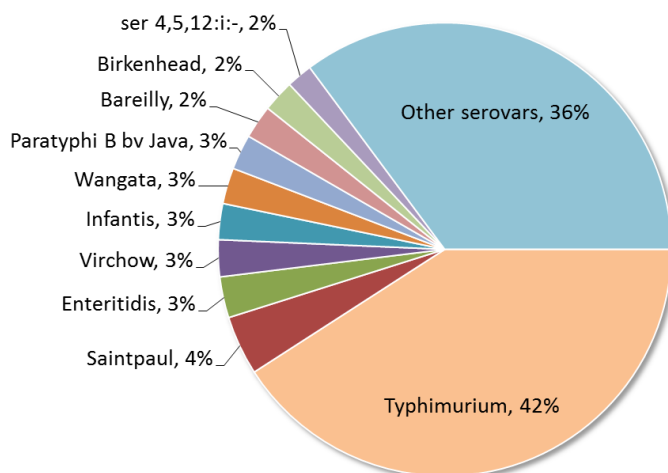
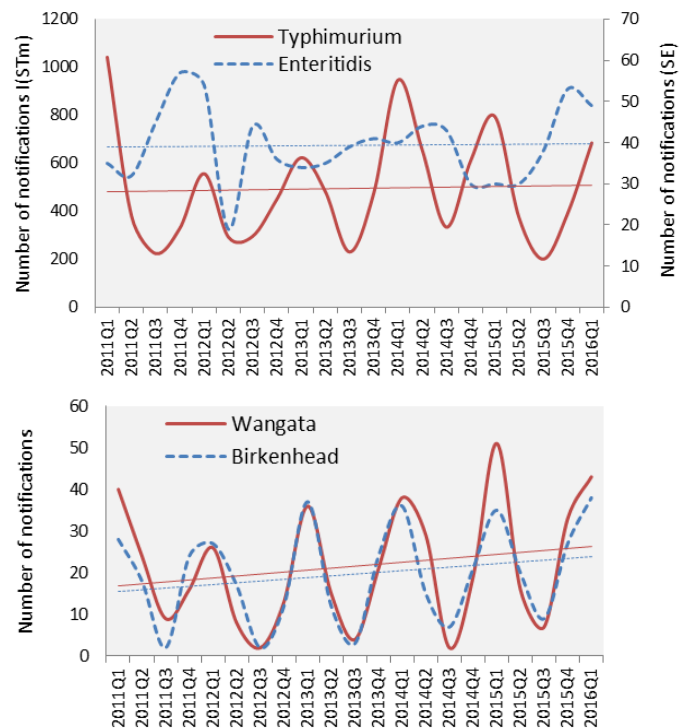


Figure 5. Trends, by quarters, for key *Salmonella* serovars in NSW from 2011-2016.



The majority (94%) of *S. Typhimurium* isolates were typed using MLVA. In quarter 1, just over a quarter of all *S. Typhimurium* were 3-26-13-8-523 (table 3), a profile that was responsible for two outbreaks. These two outbreaks accounted for almost half of the cases with this profile in quarter 1. This MLVA was first seen in NSW in 2014 (n=19). The profiles 3-9-12-11-496 and 3-26-19-8-523 are both new to NSW, being seen for the first time in quarter 4 of 2015.

Table 3. Top ten *Salmonella* Typhimurium MLVAs, quarter 1, 2016

MLVA	Notifications	% of STm total
3-26-13-8-523	181	26%
3-12-12-9-523	32	5%
3-10-15-11-496	25	4%
3-10-14-11-496	23	3%
3-9-12-11-496	23	3%
3-24-13-10-523	21	3%
3-9-7-12-523	15	2%
3-26-19-8-523	13	2%
3-17-9-11-523	13	2%
3-12-12-11-523	12	2%
Top ten total	358	52%

Table 4: Foodborne and Suspected foodborne outbreaks for quarter 1, 2016

PHU ID	Month [#]	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence	Responsible vehicles	Contributing factors
HUN0496	Feb	Restaurant	<i>Salmonella</i> Typhimurium MLVA 3-9-8-12-523	3	3	1	D	Unknown	Unknown
NSW201601*	Jan	Community	<i>Salmonella</i> Anatum	23	23	3	MA	Lettuce leaves	Contaminated raw product
NSW201602*	Jan-Mar	Community	<i>Salmonella</i> Saintpaul	99	99	7	MA	Mung bean sprouts	Contaminated raw product
SES201603	Feb	Restaurant	Unknown	22	0	0	D	Unknown	Unknown
LIV201601	Jan	Restaurant	Unknown	17	0	0	D	Unknown	Unknown
NS48603	Jan	Private residence	Scrombroid	3	0	1	D	Tilapia fish	Improper handling of fresh raw product
NS48617	Jan	Restaurant	Unknown	3	0	0	D	Unknown	Unknown
NS48659	Jan	Restaurant	Norovirus	4	0	0	D	Oysters	Contaminated raw product
NS48764	Jan	Take-away	<i>Salmonella</i> Bareilly	28	18		M	Korean sushi	Cross contamination
NS48899	Jan	Restaurant	Unknown	8	0	0	D	Unknown	Unknown
SES201601	Jan	Restaurant	Scrombroid	2	0	2	D	Tuna sashimi	Improper handling of fresh raw product
SES201602	Jan	Take-away	<i>Salmonella</i> Typhimurium MLVA 3-26-13-8-523	202	91	20	M	Numerous bakery items	Cross contamination
WS48839	Jan	Restaurant	Unknown	22	0	1	D	Unknown	Unknown
WS48874	Jan	Bakery	<i>Salmonella</i> Typhimurium MLVA 3-26-19-8-523	33	4	1	M	Cream and custard profiterole cake	Cross contamination
SYD48685	Jan	Private residence	Norovirus	7	0	0	M	Oysters	Contaminated raw product
SYD201601	Mar	Take-away	Norovirus	13	2	0	D	Rice paper rolls	Unknown
LIV201602	Jan	Aged Care	<i>Salmonella</i> Typhimurium MLVA 3-26-13-8-523	8	2	1	D	Unknown	Unknown
NSW201603*	Feb	Community	<i>Listeria Monocytogenes</i>	3	3	3	M	Ham	Contamination from environment
SYD201602	Feb	Restaurant	Unknown	3	0	0	D	Unknown	Unknown
HUN0499	Feb	Restaurant	<i>Shigella sonnei</i>	7	2	0	D	Multiple foods prepared by caterer	Food handler contamination
LIV201603	Mar	Aged Care	<i>Salmonella</i> Infantis	4	3	2	D	Unknown	Unknown

PHU ID	Month [#]	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence	Responsible vehicles	Contributing factors
ILL201601	Feb	Community	<i>Salmonella</i> Typhimurium 4-18-12-0-490	11	11	3	D	Contaminated deli items	Food handler contamination

Table 5: Outbreaks investigated as suspected foodborne outbreaks without enough evidence to assign a cause, quarter 1, 2016

PHU ID	Month [#]	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence	Responsible vehicles	Contributing factors
Outbreaks of gastrointestinal illness that appear viral without good evidence of food origin									
NS49546	Mar	Restaurant	Unknown	4	0	0	NA	Unknown	Unknown
HUN0495	Jan	Restaurant	Unknown	4	0	0	NA	Unknown	Unknown
HUN0497	Feb	Take-away	Unknown	10	0	0	NA	Unknown	Unknown
SES48681	Jan	Restaurant	Unknown	4	0	0	NA	Unknown	Unknown
SYD48990	Feb	Restaurant	Unknown	12	0	0	NA	Unknown	Unknown

Month of outbreak is the month of onset of first case or month of notification/investigation of the outbreak.

* These were national outbreaks with cases in other State and Territories, only the NSW cases are reported here, with some cases reported outside of the Q1 period.

Evidence category: **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.

Gastroenteritis Outbreaks in Institutions

From 1 January, 2016 to 31 March, 2016, a total of 161 outbreaks of suspected viral gastrointestinal illness in institutions were reported in NSW, affecting at least 2,331 people. This represents an increase of 38% compared to the five year mean number of outbreaks reported during the same quarter from 2011 to 2015 (n=117), and an increase of 49% compared to the mean number of people affected as a result of the outbreaks (n=1,566).

Of the 161 outbreaks of probable viral gastroenteritis in institutions reported in NSW, 100 (62%) occurred in child care centres, 49 (30%) in aged care facilities, 9 (6%) in hospitals and 3 (2%) in other facilities. The number of child care centre outbreaks during quarter one was 43% higher than the five year mean (figure 5).

Overall, 17% of staff members and 16% of non-staff became sick during gastroenteritis outbreaks (attack rate) in quarter 1. The highest attack rate for gastrointestinal disease for staff was in child care centre staff (21%) and for non-staff was in patients on hospital wards and aged care facilities (each 18%). On average outbreaks lasted 9 days; shortest in aged care facilities (5 days) and longest in child care centres (12 days) (table 5).

One or more stool samples were collected in 60 (37%) of the outbreaks. Norovirus was identified from 22 of these outbreaks, rotavirus was identified in two, and adenovirus in one. The results of the other samples were negative, or not reported (table 6).

Figure 6: Number of reported outbreaks of gastrointestinal illness in institutions; quarter 1, 2016 and average of the previous 5 years by month and facility type

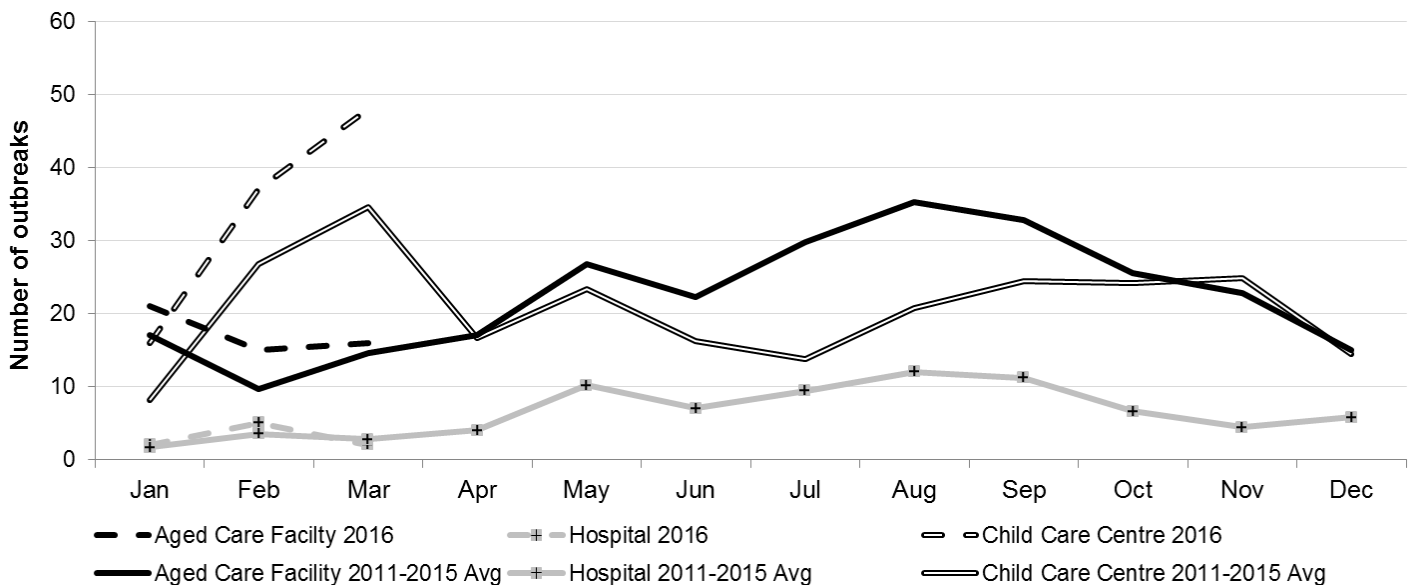


Table 5: Characteristics of outbreaks of gastrointestinal illness in institutions reported to NSW in quarter 1, 2016

Setting	No of Outbreaks (n)	Staff Affected (n: attack rate)	Non-staff affected (n: attack rate)	Average duration of outbreak (days)	Outbreaks with stool collected (n: %)	Outbreaks with pathogen found (n: pathogen found)
ACF	49	153: 8%	626: 18%	5	34: 69%	17:norovirus & 2:rotavirus
CCC	100	305: 21%	1087: 15%	12	19: 19%	3: norovirus
Hospital	9	56: 14%	57: 18%	6	6: 67%	2: norovirus
Other	3	6: 20%	41: 12%	7	1: 33%	1: adenovirus
Total	161	520: 17%	1,811: 16%	9	60: 37%	25

(ACF= aged care facility, CCC= child care centre, Other= disability care facility, military facility, camp)

Table 6: Outbreaks of gastroenteritis in institutions reported to NSW for quarter 1, 2016 by Local Health District*

Facility type	Q1 2016	HNE	IS	M	NBM	NS	SES	SNSW	SWS	Syd	WNSW	WS	NSW
ACF	No. of outbreaks	6	3	5	6	8	5	0	6	5	2	3	49
	Staff affected	17	16	14	40	7	17	0	14	5	19	4	153
	Non-staff affectedd	40	32	67	73	106	79	0	98	58	26	47	626
CCC	No. of outbreaks	14	9	3	15	5	10	1	9	11	3	20	100
	Staff affected	30	26	9	68	11	24	2	19	40	6	70	305
	Non-staff affectedd	120	131	48	130	28	88	23	103	143	19	254	1087
Hospital	No. of outbreaks	0	1	0	3	0	0	1	0	2	1	1	9
	Staff affected	0	2	0	39	0	0	0	0	12	3	0	56
	Non-staff affectedd	0	4	0	18	0	0	5	0	20	6	4	57
Other	No. of outbreaks	0	0	1	0	0	1	0	1	0	0	0	3
	Staff affected	0	0	0	0	0	3	0	3	0	0	0	6
	Non-staff affectedd	0	0	11	0	0	3	0	27	0	0	0	41

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

Local Health District (LHD) 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).