

OzFoodNet

Enhancing Foodborne Disease Surveillance Across Australia

NSW SECOND QUARTER REPORT

April – June 2018



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Highlights Quarter 2, 2018

This report describes data for enteric conditions for quarter 2, 2018. The report is divided into four sections: enteric notifiable diseases highlights, *Salmonella* spotlight, 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 is accurate at the time of writing. However, infectious disease notification data are continuously updated and subject to change.

The most prominent increase in the second quarter of 2018 was for hepatitis A (135% increase compared to the five year average for the same period). Increases were also observed for rotavirus (up 60%) and STEC (up 63%). Moderate decreases were noted for cryptosporidiosis, giardiasis, hepatitis E and salmonellosis. Only one case of listeriosis was reported in NSW in the second quarter of 2018, compared to a five year quarterly average of 8.2 cases. In addition, there were no cases of haemolytic uraemic syndrome (HUS) reported. The long term trends for the 13 notifiable enteric conditions in NSW are shown in Figures 1-3.

The increase in **hepatitis A** activity in quarter 2, 2018 occurred among people who had not travelled outside of Australia, with 14 locally acquired cases reported compared to less than 3 on average for the same period. Infections attributed to overseas exposure were within usual levels. The increase in locally acquired infections was attributed to two outbreaks: a national foodborne outbreak linked to the consumption of imported frozen pomegranate arils (MJOI201802, see page 10), and an ongoing national outbreak spread by person-to-person transmission, predominantly among men who have sex with men (first described in Q3 2017 report). Five HAV cases with outbreak strain RIVM-H18-090 were reported. Two are thought to have acquired their infection while travelling in other affected states and territories, while the other three likely acquired their infection through casual sexual partners in NSW. Control measures in NSW implemented during the outbreak among MSM in 2017 remain in place, including availability of free HAV vaccine (dose 1) for MSM in NSW. No secondary cases from these infections were detected.

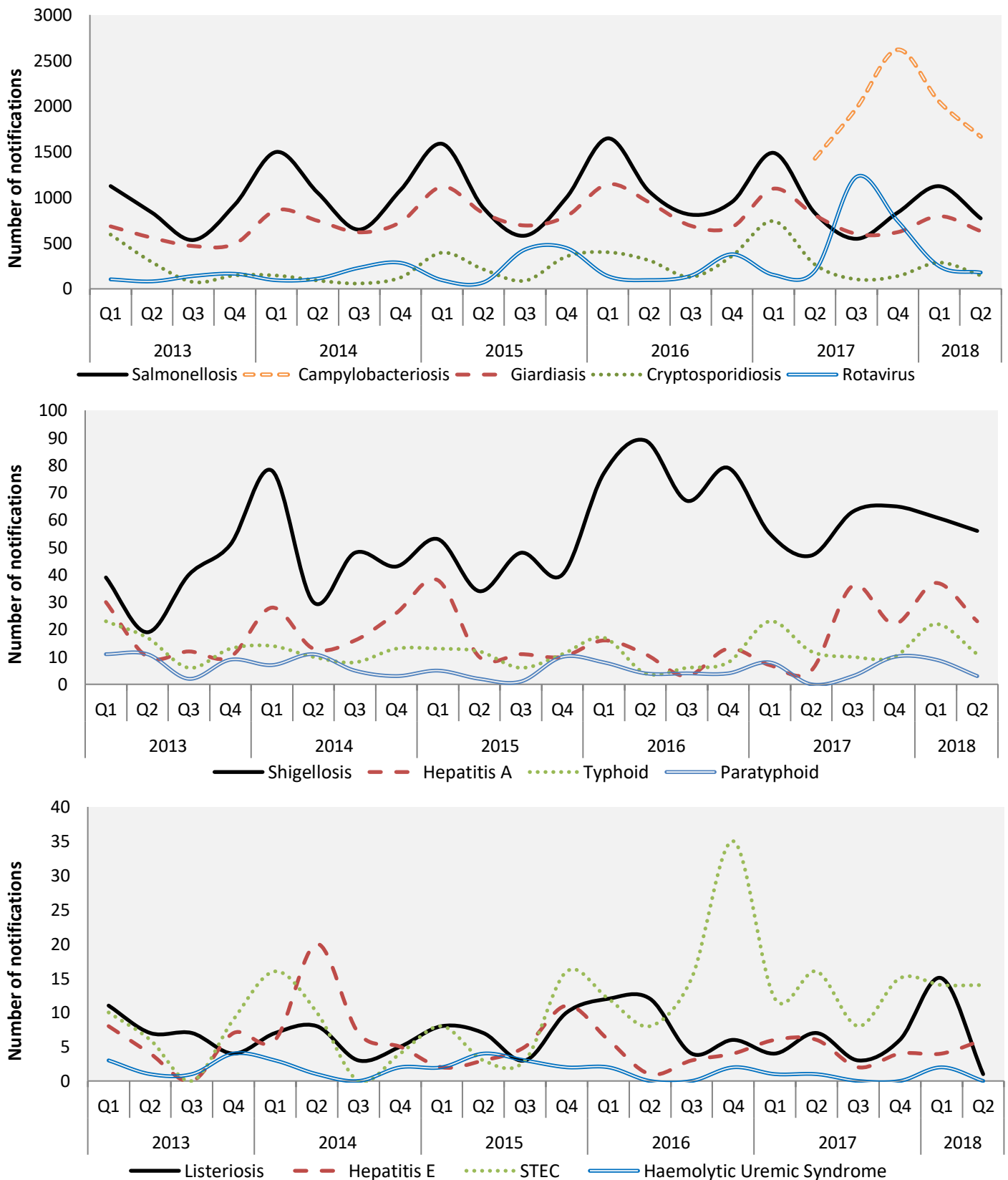
Locally-acquired ***Salmonella* Enteritidis** notifications increased in quarter 2, 2018 with 20 cases reported compared to a five year quarterly mean of 4.4 notifications (355% increase in locally acquired notifications), out of 51 total notifications in this period. An investigation commenced in conjunction with the NSW Food Authority into the source of the locally acquired infections, which was found in September 2018 to be linked to contaminated eggs that were subsequently recalled (a summary of the investigation will be described in the Q3 2018 report).

***Salmonella* Typhimurium** was the most common serotype reported in quarter 2, 2018 but compared to average levels continued to decline with 213 notifications, half the five year quarterly mean. Environmental serovars, particularly ***Salmonella* Wangata** increased in quarter 2, 2018 (n=35, 30% increase above the 5 year quarterly mean).

Fifteen **foodborne or suspected foodborne outbreaks** were reported affecting 191 people (Table 1), of whom 19 were hospitalised (Table 4). For two outbreaks, a causative agent was linked to a contaminated food source – hepatitis A linked to consumption of frozen pomegranate arils and scombroid poisoning linked to fresh tuna steaks. A single pathogen was identified in three separate outbreaks, but the food vehicles remain unknown (*Salmonella* Typhimurium in one outbreak, *Salmonella* Infantis in one outbreak, and *Campylobacter* in one outbreak). The remaining ten outbreaks were of unknown aetiology.

Highlights continued

Figures 1-3. Number of notifications by year, quarter and disease, Jan 2013 to June 2018¹



¹Campylobacteriosis became notifiable on 7 April 2017. Data is likely to be incomplete for this quarterly report due to the methods of notification from laboratories

Table 1. Notifiable enteric conditions, quarter 2 2018, by local health district

Notifiable Disease		CC	FW	HNE	IS	M	MNC	NBM	NNSW	NS	SES	SNSW	SWS	SYD	WNSW	WS	NSW
Botulism	Notified, Q2 2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5 y Q2 mean, 2013-2017	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	0.0	0.0
Campylobacteriosis*	Notified, Q2 2018	72	1	161	98	88	59	60	81	261	257	51	98	139	44	197	1667
	5 y Q2 mean, 2013-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptosporidiosis	Notified, Q2 2018	9	0	18	19	7	7	9	5	15	20	1	5	14	14	4	147
	5 y Q2 mean, 2013-2017	13.0	0.4	21.4	14.0	8.8	9.4	12.2	15.0	35.2	38.8	4.2	15.4	18.4	9.8	18.6	234.6
Giardiasis	Notified, Q2 2018	40	0	65	37	22	23	18	44	104	88	6	40	47	39	59	632
	5 y Q2 mean, 2013-2017	30.2	2.0	100.0	47.6	29.8	18.6	34.4	26.2	127.4	145.8	15.4	51.2	64.8	28.0	57.2	777.2
Hepatitis A	Notified, Q2 2018	0	0	3	2	1	0	1	0	1	6	0	1	5	2	1	23
	5 y Q2 mean, 2013-2017	0.2	0.0	0.4	0.0	0.0	0.0	0.0	0.4	0.8	1.8	0.0	1.2	0.8	0.4	3.8	9.8
Hepatitis E	Notified, Q2 2018	0	0	0	0	0	0	1	0	0	0	0	1	2	0	2	6
	5 y Q2 mean, 2013-2017	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	1.6	1.2	0.0	0.8	1.0	0.0	1.8	6.8
Listeriosis	Notified, Q2 2018	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
	5 y Q2 mean, 2013-2017	0.2	0.0	0.6	0.6	0.6	0.0	0.2	0.2	1.4	1.0	0.4	1.4	0.6	0.4	0.6	8.2
Rotavirus	Notified, Q2 2018	6	0	2	4	4	0	5	9	27	32	4	27	26	0	33	179
	5 y Q2 mean, 2013-2017	1.4	0.2	12.8	4.0	3.4	0.5	3.6	8.8	20.0	15.4	1.8	10.6	11.8	5.2	11.0	111.6
Salmonellosis	Notified, Q2 2018	41	4	70	31	20	36	25	69	120	91	12	74	61	26	92	772
	5 y Q2 mean, 2013-2017	35.4	4.6	105.6	40.4	30.2	35.0	43.4	66.4	145.2	114.8	26.4	92.0	70.2	25.8	97.4	933.0
Shigellosis	Notified, Q2 2018	2	0	2	2	2	1	3	2	9	12	2	1	11	1	6	56
	5 y Q2 mean, 2013-2017	2.2	0.0	2.4	1.0	0.4	0.8	1.0	1.4	5.4	12.2	0.2	3.2	9.8	0.2	3.6	43.8
STEC/VTEC	Notified, Q2 2018	0	0	2	0	1	0	0	0	0	1	3	1	0	3	3	14
	5 y Q2 mean, 2013-2017	0.4	0.0	2.2	0.2	1.2	0.2	0.0	0.2	0.0	1.0	0.2	0.2	0.0	1.2	1.6	8.6
HUS	Notified, Q2 2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5 y Q2 mean, 2013-2017	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.2	0.0	1.1
Typhoid	Notified, Q2 2018	0	0	0	0	0	0	0	0	2	4	0	0	1	0	4	11
	5 y Q2 mean, 2013-2017	0.2	0.0	0.2	0.2	0.0	0.0	0.2	0.2	1.8	1.0	0.4	1.8	1.0	0.0	4.0	11.0
Foodborne [†] Outbreaks	Notified, Q2 2018	1	0	2	1	0	0	2	0	1	3	0	0	4	0	0	14
	People affected	10	0	18	7	0	0	75	0	1	20	0	0	45	0	0	176
Salmonella Cluster	Notified, Q2 2018	2	0	1	1	0	0	1	0	3	4	1	0	4	0	4	9
	People affected	2	0	1	1	0	0	2	0	3	6	3	0	12	0	8	38

Legend: Blue shading refers to a 100% or greater increase in the number of notifications compared to the five year quarterly average. Notes: ¹ Campylobacteriosis became notifiable on 7 April 2017, 5 year quarterly average data not available (NA). Data is likely to be incomplete for this quarterly report due to the methods of notification from laboratories; ² Data on giardiasis notifications is likely to be incomplete for this quarterly report due to changes in the methods of notification from laboratories; ³ Foodborne or potentially foodborne outbreaks.

Table 2. Notifiable enteric conditions, quarter 2 2018, by overseas or local acquisition

Notifiable Disease	Place infection acquired	NSW, Q2 2018	5 yr Q2 mean 2013-2017	2018 % change
<i>Salmonella</i> Enteritidis	Locally acquired	21	4.4	377%
	Overseas acquired	30	28.2	6%
	Unknown	0	3.2	-100%
Hepatitis A	Locally acquired	14	2.6	438%
	Overseas acquired	8	7.2	11%
	Unknown	1	0	-
Hepatitis E	Locally acquired	1	3	-67%
	Overseas acquired	5	3.8	32%
	Unknown	0	0	-
Paratyphi	Locally acquired	0	0	0%
	Overseas acquired	0	0.4	-100%
	Unknown	0	0	0%
STEC/VTEC	Locally acquired	9	7.4	22%
	Overseas acquired	2	0.4	400%
	Unknown	3	0.8	275%
Shigellosis	Locally acquired	27	23.6	14%
	Overseas acquired	21	14.6	44%
	Unknown	8	5.6	43%
Typhoid	Locally acquired*	1	0.4	150%
	Overseas acquired	7	10.6	-34%
	Unknown	3	0	-

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

*Note: the locally acquired case of typhoid in this quarter was a known close contact of another confirmed case of typhoid. Both had travelled to separate endemic areas, but onset was outside the typical incubation period for typhoid. An investigation was conducted, including whole genome sequencing to determine relatedness of infections. The two cases were found to be highly related to each other. It is thought that one of these acquired the infection overseas, while the other acquired the infection from the contact while back in Australia. No other locally acquired cases were reported, and no other sequenced typhoid cases were found to be related.

Salmonella Spotlight

In quarter 2 of 2018, 22% of all enteric infections notified were salmonellosis. The number of salmonellosis notifications were 17% lower than the 5 year quarterly mean.

Of the 772 *Salmonella* notifications this quarter, 27% (n=213) were *S. Typhimurium*. Since 2011, there has been an overall decline in the number of *S. Typhimurium* notifications. This decline continued in Quarter 2, 2018 to 50% of the 5 year average for the same quarter (n=430 cases) (Figure 4). The majority (90%) of *S. Typhimurium* isolates were typed using MLVA. In quarter 2, the most common MLVA profile (3-16-10-17-523) made up 7% of all the *S. Typhimurium* typed (Table 3).

S. Enteritidis was the second most commonly notified serotype in quarter 2, 2018. Notifications of locally acquired *S. Enteritidis* increased in quarter 2, 2018 compared to the five year quarterly mean (355% increase). An investigation commenced in conjunction with the NSW Food Authority into the source of the locally acquired infections, which were found in September 2018 to be linked to contaminated eggs that were subsequently recalled (a summary of the investigation will be described in the Q3 2018 report).

S. Wangata was the third most common serotype in NSW in quarter 2, 2018 and is suspected to be associated with environmental exposures. This serotype, along with *S. Birkenhead*, increased sharply in 2017 (Figure 4). Other common serotypes are shown in Figure 5.

Table 3. Top 12 *Salmonella* Typhimurium MLVA patterns, quarter 2, 2018 (N=84)

MLVA	Notifications	% of <i>S. Tm</i> typed
3-16-10-17-523	13	7%
3-13-12-9-523	11	6%
3-14-10-8-523	10	5%
3-12-12-9-523	10	5%
3-12-13-9-523	8	4%
3-17-9-11-523	7	4%
3-16-10-11-523	7	4%
3-16-9-10-523	5	3%
4-12-0-0-463	4	2%
3-17-9-12-523	3	2%
3-11-14-9-523	3	2%
3-22-14-11-523	3	2%
Top 12 total	84	44%

Figure 4. Trends, by quarters, for key *Salmonella* serovars in NSW from 2013-2018

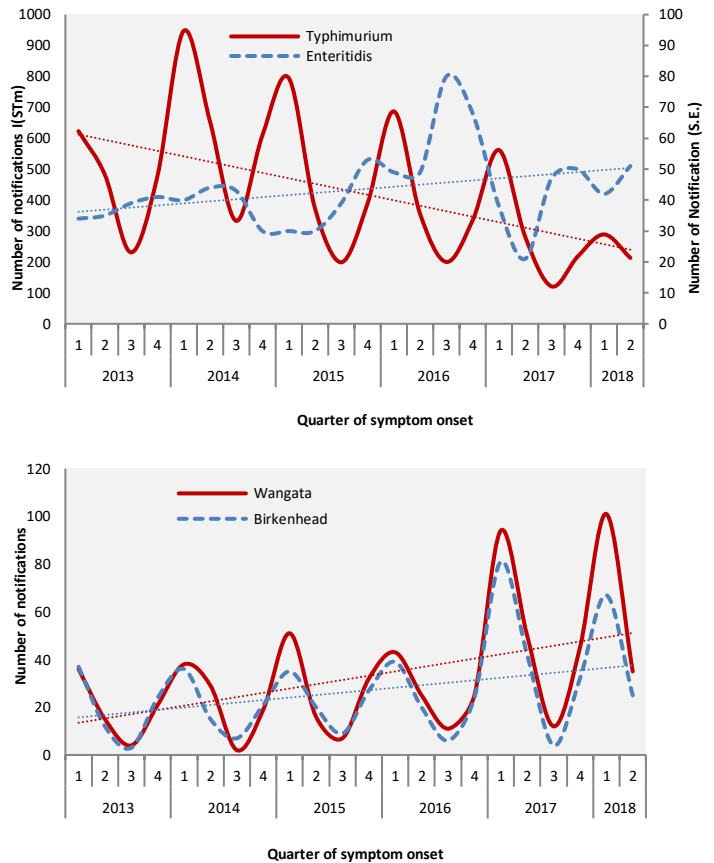
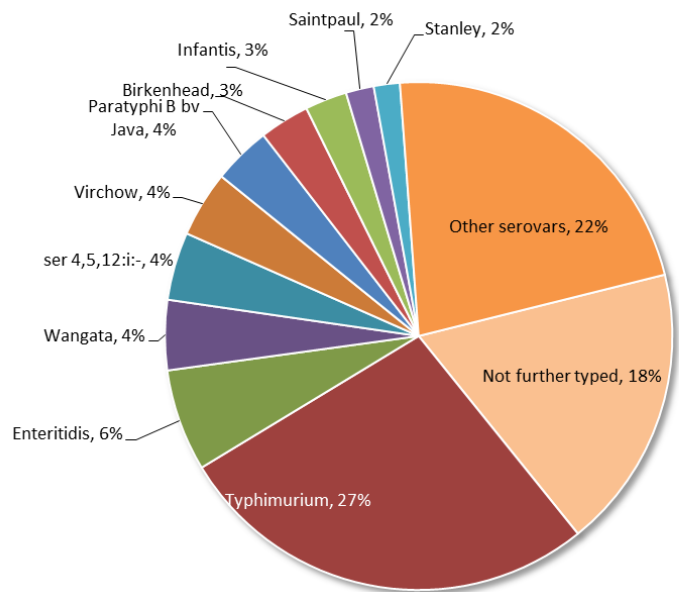


Figure 5. Proportion of *Salmonella* serovars, quarter 2, 2018 (N=785)



Foodborne and suspected foodborne outbreaks

NSW Health investigates all potential foodborne disease outbreaks. 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. The most notable outbreaks are described on pages 8-9.

Table 4. Foodborne and potentially foodborne disease outbreaks investigated in NSW, quarter 2 2018

PHU ID	Month ¹	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence	Responsible vehicles	Contributing factors
MJOI201802	Mar	Community	Hepatitis A Genotype IB	15	15	12	AM	Frozen pomegranate arils	Unknown
CC59570	May	Restaurant	Unknown	10	0	0	D	Unknown	Unknown
HNE59240	April	Restaurant	Unknown	14	0	2	D	Unknown	Unknown
HNE59379	May	Restaurant	Unknown	4	0	0	D	Unknown	Unknown
IS201802	April	Restaurant	<i>Campylobacter</i>	7	1	0	D	Unknown	Unknown
NBM59073	April	Camp	Unknown	31	0	4	D	Unknown	Unknown
NBM59279	April	Commercial caterer	Unknown	44	0	0	D	Unknown, possible viral	Suspected person to food to person
NS59560	May	Private residence	Scombroid	1	0	0	D	Tuna steaks	Toxic substance
SES59593	May	Restaurant	Unknown	5	0	0	D	Unknown	Unknown
SES59722	June	Restaurant	Unknown	7	0	0	D	Unknown	Unknown
SES59775	June	Restaurant	Unknown	8	1	0	D	Unknown	Unknown
SYD201801	April	Child Care Centre	<i>Salmonella</i> Typhimurium MLVA 3-13-10-9-523	15	11	0	M	Unknown	Cross contamination
SYD201802	April	Restaurant	<i>Salmonella</i> Infantis	4	3	1	D	Unknown	Unknown
SYD59077	April	Community	Unknown	3	0	0	D	Unknown	Unknown
SYD59176	April	Commercial caterer	Unknown	23	1	0	D	Unknown, possible viral	Suspected person to food to person

¹ Month of outbreak is the month of onset of first case or month of notification/investigation of the outbreak.

Evidence category:

- A** Analytical epidemiological association between illness and 1 or more foods.
- D** Descriptive evidence implicating the suspected vehicle or suggesting foodborne transmission.
- M** Microbiological confirmation of agent in the suspected vehicle and cases.

Notable Foodborne Outbreaks

Key points

- Cross-contamination can occur when *Salmonella* contaminates ready-to-eat food, for example, via the hands of an infected food handler.
- Food handlers must tell their work supervisor if they have any symptoms of gastroenteritis (vomiting, diarrhoea, fever) while they are at work, or if they are diagnosed with a food-borne illness. Timely communication of this information can lead to action and prevent further cases.
- Outbreaks of hepatitis A in NSW have been traced to consumption of imported frozen fruit. Cooking these products prior to consumption eliminates the risk of infection with hepatitis A and other potential foodborne infections.

Salmonella Typhimurium in a Child Care Centre (SYD201801)

An outbreak of *Salmonella* affecting 13 children and two staff members at a single child care centre in inner Sydney was investigated by the local public health unit in April. The outbreak was reported to the public health unit in a timely manner by the affected child care centre after they were informed that a staff member who prepared food was diagnosed with *Salmonella*.

The cases occurred over an 8 day period, however there was a 4 day break in attendance at the centre during this time for the Easter public holidays. The most common reported symptoms included diarrhoea (15), fever (6), and vomiting (6), with symptoms occurring for an average duration of 4 days. Ten cases presented to a general practitioner, four cases to an emergency department, and one case did not seek medical attention. No cases were hospitalised. The first (index) case was the identified food handler.

Twelve of the 15 cases submitted a stool sample for testing, and 11 of these were found to be positive for *Salmonella* Typhimurium. The MLVA profile for these samples identified 10 cases with MLVA 3-13-12-9-523 and 1 case with MLVA 3-13-7-9-523.

The NSW Food Authority was informed and a site inspection was undertaken. The inspection did not find

any issues with food handling practices or maintenance of hygienic standards at the centre. No food samples were available for testing, however environmental swabs were collected. One environmental sample (a kitchen boot swab) was also found to be positive for *Salmonella* Typhimurium with MLVA 3-13-10-9-523. This result combined with the temporal distribution of cases suggests that the outbreak was likely caused by a combination of food handler infection and cross contamination in the kitchen. The business implemented additional cleaning and no further cases were detected.

Multi-state outbreak of hepatitis A associated with frozen pomegranate arils (MJOI201802)

Thirty people were infected with the same strain of hepatitis A genotype IB in seven Australian states and territories: New South Wales (15 cases), Victoria (6 cases), Western Australia (3 cases), Northern Territory (2 cases), South Australia (2 cases), Queensland (1 case) and Australian Capital Territory (1 case). Onsets ranged from 31 January 2018 to 18 June 2018. Cases included eighteen females and twelve males, age range 4 to 74 years (median 30.5 years), with 25 of the 30 cases (83%) hospitalised for their illness. One death in a non-NSW resident was reported, but the cause of death is yet to be determined. Three cases were secondary infections, epidemiologically linked to an earlier confirmed case and thought to have been acquired by sexual contact.

Imported frozen pomegranate arils were identified as the source of the outbreak through case interviews and in an analytical study (OR 43.4, 95% CI 4.2 – 448.8, P=0.002). This product was stocked exclusively by one particular supermarket chain and distributed to all states and territories. Food Standards Australia and New Zealand (FSANZ) co-ordinated a national consumer level recall of the product on 7 April 2018. The investigation of the Australian food processor that repackaged the product found they were operating with all appropriate hygiene and food safety control processes, concluding that the local food processor had no process deficits to suggest it was the cause of the contamination, and that contamination most likely occurred before the product arrived in Australia. Hepatitis A genotype IB is endemic in Egypt where the product was grown.

In response to this outbreak the Australian Department of Agriculture and Water Resources commenced a 100 per cent inspection and testing of future consignments from the Egyptian manufacturer of the pomegranate arils linked to outbreak.

Institutional gastrointestinal outbreaks

From 1 April to 30 June 2018, a total of 167 outbreaks of suspected viral gastrointestinal illness in institutions were reported in NSW affecting at least 2,126 people (Table 6). This represents an increase of 28% compared to the average number of outbreaks reported during the same quarter from 2013 to 2017 (n=130), and an increase of 10% compared to the mean number of people affected as a result of the gastroenteritis outbreaks (n=1,932).

Of the 167 outbreaks, 106 (63%) occurred in child care centres, 51 (31%) in aged care facilities, six (4%) in hospitals and four (2%) in other facilities (Table 6). The number of child care centre outbreaks during quarter 2 was 42% higher than the five year quarterly average, but numbers of outbreaks in other facilities were within average levels (Figure 8).

Overall, 12% of staff members and 14% of non-staff became sick during gastroenteritis outbreaks (attack rate) in quarter 2 (Table 6). The highest attack rate for gastrointestinal disease for staff was in hospitals (30%) and for non-staff was in patients on hospital wards (28%). Outbreaks lasted eight days on average; shortest in other facilities (three days) and longest in child care centres (nine days) (Table 6).

One or more stool samples were collected in 58 (35%) of the outbreaks. Norovirus was identified in 28 (48%) of these outbreaks and rotavirus was identified in three (5%) of the outbreaks. The majority of the results of the other samples were negative, or not reported (Table 6).

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

Figure 8. Number of reported outbreaks of gastrointestinal illness in institutions, quarter 2 2018 compared to the 5 year quarterly average, by month and facility type

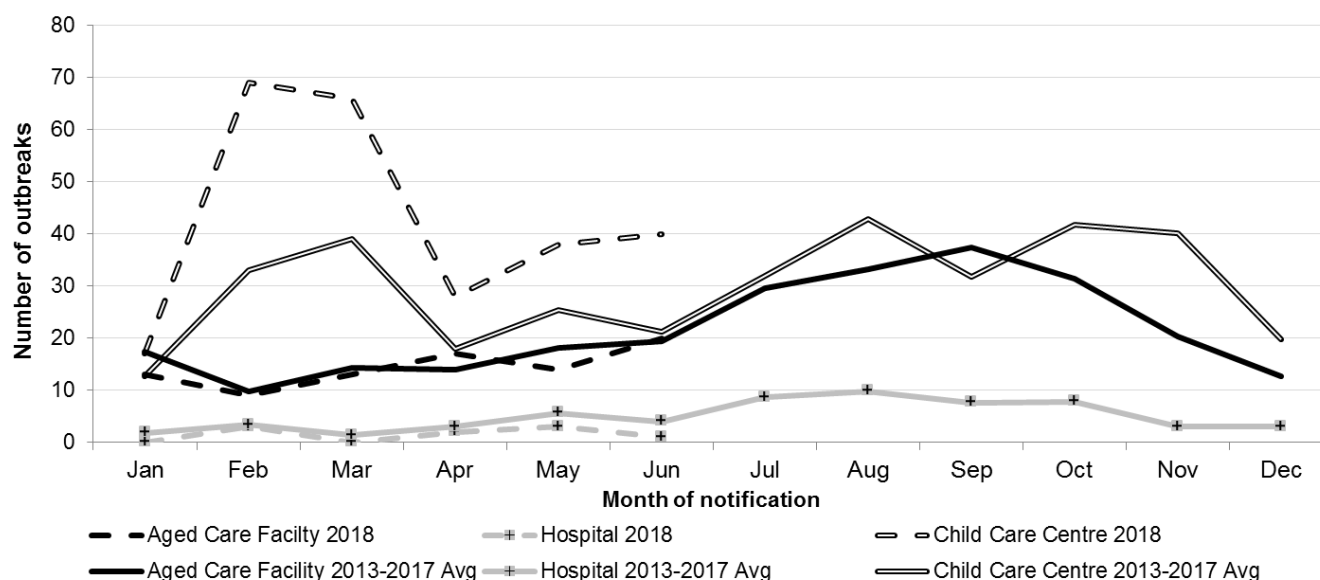


Table 5. Outbreaks of gastroenteritis in institutions reported in NSW, quarter 2 2018, by local health district²

Facility type	Q1 2018	HNE	IS	M	MNC	NBM	NS	SES	SNSW	SWS	SYD	WNSW	WS	NSW
ACF	No. of outbreaks	13	5	5	0	1	8	4	3	4	2	3	3	51
	Staff affected	74	32	8	0	7	14	2	34	7	5	12	2	197
	Non-staff affectede	157	88	37	0	11	109	20	80	23	17	30	13	585
CCC	No. of outbreaks	14	4	6	2	15	13	18	5	6	4	1	18	106
	Staff affected	35	16	14	0	31	27	47	6	13	10	1	35	235
	Non-staff affectede	114	41	50	10	146	120	224	59	33	44	8	169	1018
Hospital	No. of outbreaks	0	0	0	1	1	1	2	0	0	0	1	0	6
	Staff affected	0	0	0	4	0	2	5	0	0	0	8	0	19
	Non-staff affectede	0	0	0	0	5	7	5	0	0	0	6	0	23
Other ³	No. of outbreaks	0	0	0	0	1	1	2	0	0	0	0	0	4
	Staff affected	0	0	0	0	0	3	2	0	0	0	0	0	5
	Non-staff affectede	0	0	0	0	0	36	8	0	0	0	0	0	44

² CC, FW and NNSW did not report any outbreaks of gastroenteritis in institutions in this period

Table 6. Outbreaks of gastroenteritis in institutions reported in NSW, quarter 2 2018, by facility type

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	51	197: 6%	585: 17%	6	45: 88%	21: norovirus & 2: rotavirus
CCC	106	235: 14%	1018: 12%	9	13: 12%	3: norovirus & 1: rotavirus
Hospital	6	19: 30%	23: 28%	4	3: 50%	3: norovirus
Other ³	4	5: 9%	44: 11%	3	1: 25%	1: norovirus
Total	167	456: 12%	1670: 14%	8	62: 37%	28: norovirus & 3: rotavirus

³ Other= Military facility, school, camp, residential facility

GLOSSARY

ACF	Aged-care facility	NBM	Nepean Blue Mountains LHD
CC	Central Coast LHD	NNSW	Northern NSW LHD
CCC	Childcare centre	NS	Northern Sydney LHD
FW	Far West LHD	NSW	New South Wales
HNE	Hunter New England LHD	NSWFA	NSW Food Authority
HUS	haemolytic uraemic syndrome	Q	Quarter
ICPMR	Institute of Clinical Pathology and Medical Research	SES	South Eastern Sydney LHD
IS	Illawarra Shoalhaven LHD	SNP	single nucleotide polymorphisms
LHD	Local Health Districts	SNSW	Southern NSW LHD
M	Murrumbidgee LHD	STEC	Shiga toxin-producing <i>Escherichia Coli</i>
MLVA	Multi-locus variable number tandem repeat analysis	SWS	South Western Sydney LHD
MLST	Multi-locus sequence typing	SYD	Sydney LHD
MNC	Mid North Coast LHD	WNSW	Western NSW LHD
N	Number	WS	Western Sydney LHD
NA	Not available	Yr	Year