

OzFoodNet

Enhancing Foodborne Disease Surveillance Across Australia

NSW FIRST QUARTER REPORT

January – March 2018



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ISSN: 2008-6145



Highlights Quarter 1, 2018

This report describes data for enteric conditions for quarter 1, 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 notable first quarter increase in 2018 was for rotavirus (111% increase compared to the five year average for the same period). Increases were also observed for listeriosis, hepatitis A, Shiga toxin-producing *E. Coli* (STEC) and typhoid. Moderate decreases were noted in cryptosporidiosis, hepatitis E, salmonellosis, giardiasis and haemolytic uraemic syndrome (HUS). The long term trends for the 13 notifiable enteric conditions in NSW are shown in Figures 1-3.

The increase in **rotavirus** activity in quarter 1, 2018 was noted particularly in the Sydney, South Eastern Sydney, South Western Sydney and Western Sydney local health districts (LHDs). The increase this quarter represents the tail end of the 2017 rotavirus season which was the largest since it became notifiable in 2007. An enhanced epidemiological review linking hospital, notification and genotyping data is in progress to describe the outbreak. Immunisation to prevent rotavirus infection or reduce the severity of infection is recommended and free for children, and in NSW is given at six weeks and four months of age. The vaccine is 70% effective for any rotavirus infection and 85-100% effective for severe rotavirus infection.

Fifteen **listeriosis** cases were reported in quarter 1, the highest of any quarter for this disease in the past 5 years (79% above average). The cases were distributed across seven LHDs. The median age of cases was 80 years and 47% were female. All cases were hospitalised and 5 deaths were reported. Six of these listeriosis cases were part of a multi-jurisdictional outbreak associated with consumption of rockmelon (see page 7). The remaining nine cases were found to be unrelated, following a detailed investigation that included the use of whole genome sequencing to examine relatedness between cases.

The 55% increase in **hepatitis A** notifications was due to two outbreaks of locally acquired infections. One outbreak

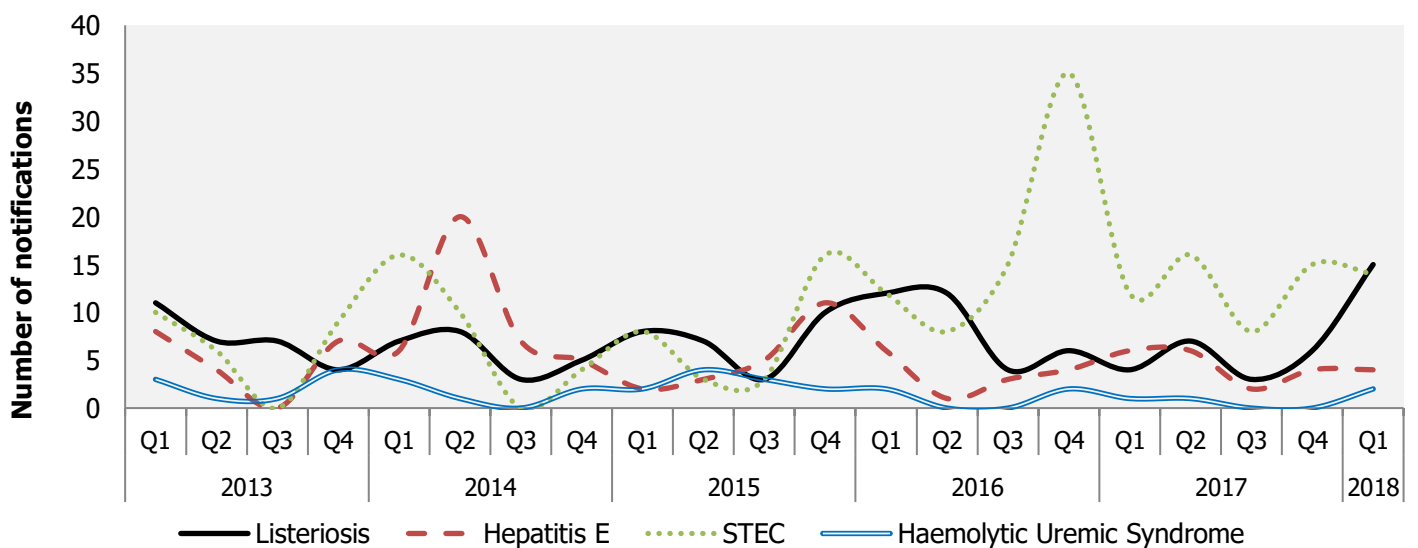
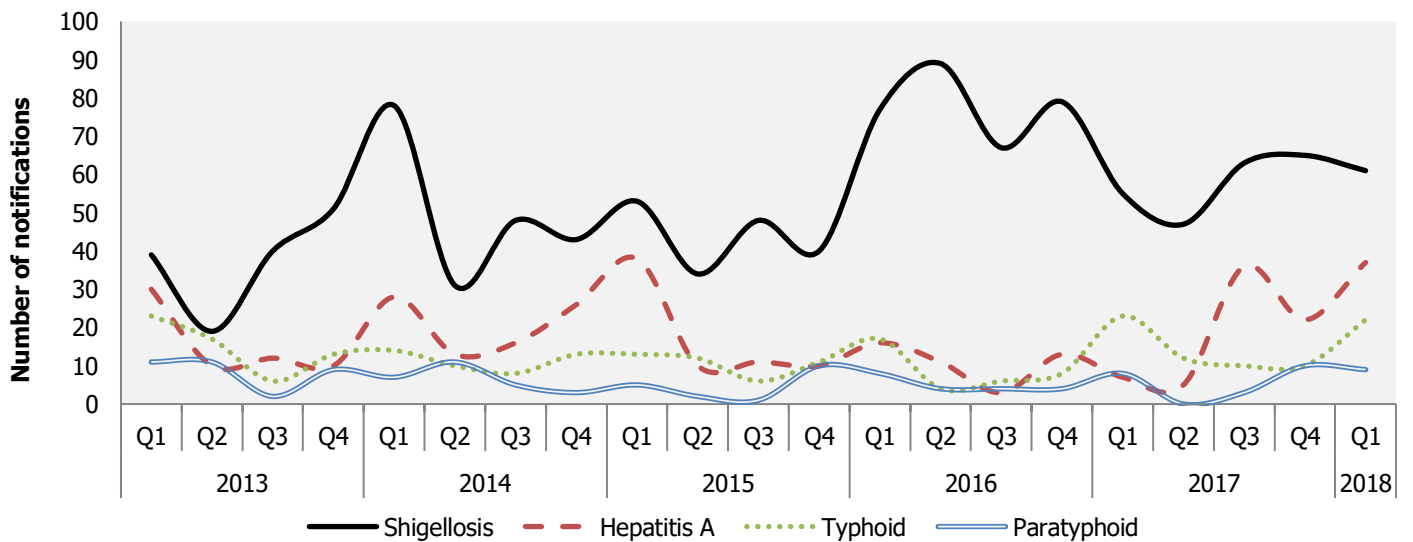
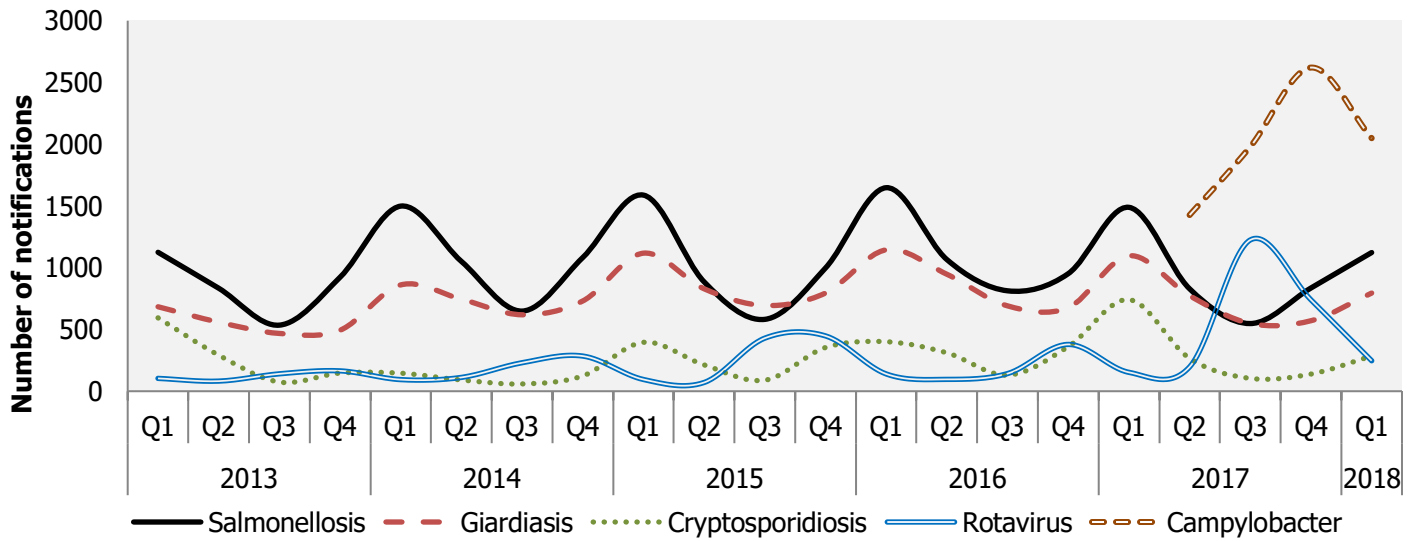
was linked to community and household transmission from an overseas traveller (7 cases). The other was part of a multi-state outbreak linked to the consumption of frozen imported pomegranate arils (6 cases), which led to the nation-wide [recall](#) of the product in April 2018 (which will be described in the Quarter 2 2018 report).

Salmonellosis notifications decreased almost a quarter (24%) compared to the five-year average for the same period. This was due primarily to the continued decline in *Salmonella* Typhimurium cases (n=289, down 60% compared to the 5 year quarterly average of 723 cases). However, *Salmonella* Wangata, the second most notified serotype this period increased by 93% above the 5 year quarterly average (n=101). *Salmonella* Birkenhead notifications were also high (n=67, 47% increase above the 5 year quarterly average), reflecting a general increase among infections from *Salmonella* serotypes that are thought to be acquired from environmental exposures.

Thirteen **foodborne or suspected foodborne outbreaks** were reported affecting 126 residents of NSW (Table 1), of whom twenty-eight were hospitalised (Table 4). A causative agent was linked to a food source in five outbreaks – scombroid poisoning linked to fresh tuna in two outbreaks and to tinned tuna in one outbreak, ciguatera fish poisoning linked to mackerel in one outbreak, and listeriosis linked to rockmelon in an outbreak that affected four Australian states. *Salmonella* Typhimurium was identified as the pathogen for one outbreak but the food vehicle was unknown. The remaining seven outbreaks were of unknown aetiology.

Highlights continued

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



¹Campylobacteriosis became notifiable on 7 April 2017.

Table 1. Notifiable enteric conditions, quarter 1 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, Q1 2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5 yr Q1 mean, 2012-2016	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3
Campylobacteriosis ¹	Notified, Q1 2018	78	2	233	101	89	67	103	91	316	313	57	136	159	68	227	2040
	5 yr Q1 mean, 2012-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Cryptosporidiosis	Notified, Q1 2018	11	0	34	17	10	9	9	14	24	31	5	21	31	46	23	285
	5 yr Q1 mean, 2012-2016	14.6	0.2	57.4	20.8	13.0	9.0	23.6	30.6	79.4	60.8	7.6	37.6	37.2	19.4	44.6	455.8
Giardiasis ¹	Notified, Q1 2018	38	1	120	38	33	27	26	60	132	105	7	55	54	35	64	795
	5 yr Q1 mean, 2012-2016	41.4	1.2	127.8	59.2	28.2	22.0	42.0	28.6	173.0	167.2	19.6	60.2	94.6	37.2	78.8	981.0
Hepatitis A	Notified, Q1 2018	1	2	0	1	2	0	0	1	2	7	0	9	4	0	8	37
	5 yr Q1 mean, 2012-2016	0.4	0.0	0.0	0.6	0.0	0.0	0.8	1.0	3.0	3.2	0.0	4.6	2.2	0.8	7.2	23.8
Hepatitis E	Notified, Q1 2018	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	4
	5 yr Q1 mean, 2012-2016	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	1.2	1.0	0.0	0.0	0.6	0.0	1.6	4.8
Listeriosis	Notified, Q1 2018	0	0	0	2	0	0	1	1	5	2	3	0	1	0	0	15
	5 yr Q1 mean, 2012-2016	0.0	0.0	0.8	0.6	0.0	0.0	0.0	0.4	1.4	1.8	0.4	1.4	1.0	0.0	0.6	8.4
Rotavirus	Notified, Q1 2018	6	0	8	1	5	0	9	15	37	47	0	44	35	2	38	247
	5 yr Q1 mean, 2012-2016	1.0	0.6	12.4	2.8	4.4	1.2	6.6	9.0	18.6	20.0	1.0	11.0	8.4	4.2	16.0	117.2
Salmonellosis	Notified, Q1 2018	59	3	147	43	44	67	41	93	140	132	23	108	83	32	107	1123
	5 yr Q1 mean, 2012-2016	72.6	7.8	150.2	74.6	53.8	56.6	56.4	108.0	203.8	204.4	32.8	142.2	120.2	37.6	148.4	1469.8
Shigellosis	Notified, Q1 2018	1	1	2	1	1	1	2	2	6	14	3	3	16	1	7	61
	5 yr Q1 mean, 2012-2016	2.8	0.0	1.6	0.8	1.0	0.2	1.8	3.0	5.4	20.0	0.4	2.6	13.4	0.6	6.8	60.4
STEC	Notified, Q1 2018	0	0	1	0	2	0	1	0	0	0	3	0	0	1	6	14
	5 yr Q1 mean, 2012-2016	0.2	0.0	2.4	1.2	1.2	0.0	0.4	0.6	0.2	1.4	1.2	0.8	1.0	0.2	0.6	11.6
HUS	Notified, Q1 2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
	5 yr Q1 mean, 2012-2016	0.0	0.0	0.8	0.4	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.4	0.2	0.0	0.0	2.2
Typhoid	Notified, Q1 2018	0	0	1	0	0	0	2	1	3	2	0	0	2	0	11	22
	5 yr Q1 mean, 2012-2016	0.2	0.0	0.4	0.0	0.0	0.2	0.6	0.0	1.6	1.8	0.2	2.6	1.8	0.0	8.6	18.0
Foodborne ³ Outbreaks	Notified, Q1 2018	1	0	2	1	0	1	1	0	2	3	0	4	0	0	0	13
	People affected	5	0	33	6	0	4	21	0	6	29	0	22	0	0	0	126
Salmonella Cluster	Notified, Q1 2018	1	0	2	1	0	1	0	0	0	2	1	1	1	0	2	4
	People affected	1	0	11	4	0	2	0	0	0	9	1	4	1	0	2	35

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 1 2018, by overseas or local acquisition

Notifiable Disease	Place infection acquired	NSW, Q1 2018	5 yr Q4 mean 2013-2017	2018 % change
<i>Salmonella</i> Enteritidis	Locally acquired	12	5	140%
	Overseas acquired	24	29.8	-19%
	Unknown	6	3.4	76%
Hepatitis A	Locally acquired	12	6.6	82%
	Overseas acquired	24	17	41%
	Unknown	1	0.2	400%
Hepatitis E	Locally acquired	0	0.6	-100%
	Overseas acquired	4	4.8	-17%
	Unknown	0	0.2	-100%
Paratyphoid	Locally acquired	0	0	0%
	Overseas acquired	8	7.8	3%
	Unknown ¹	1	0	100%
STEC	Locally acquired	11	6.6	67%
	Overseas acquired	0	0.8	-100%
	Unknown	3	4.2	-29%
Shigellosis	Locally acquired	30	29.6	1%
	Overseas acquired	24	21.2	13%
	Unknown	7	9.6	-27%
Typhoid	Locally acquired	0	1	-100%
	Overseas acquired	22	17	29%
	Unknown	0	0	0%

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

¹ One paratyphoid case categorised as 'unknown' acquired their infection either during overseas travel or via a contact who had returned from overseas travel while in NSW.

Salmonella Spotlight

In quarter 1 of 2018, 43% of all enteric infections notified were salmonellosis. The number of salmonellosis notifications was 24% lower in this quarter, compared to the 5 year quarterly average.

Of 1,123 *Salmonella* notifications, 26% were *S. Typhimurium* (289 cases). This was a 60% reduction in *S. Typhimurium* notifications compared to the 5 year average for quarter 1 (723 cases). Since 2011, there has been an overall decline in the number of *S. Typhimurium* notifications (Figure 4).

S. Wangata and *S. Birkenhead* were the second and third most common serotypes in NSW; both are suspected to be associated with environmental exposures, follow very similar seasonal trends and increased in 2017 (Figure 4). In the first quarter of 2018, there were 101 *S. Wangata* and 67 *S. Birkenhead* infections representing a 93% and 47% increase above the 5 year average respectively. The number of *S. Wangata* notifications particularly had a sharp increase in Quarter 1, 2018 (Figure 4). Other common serotypes are shown in Figure 5.

NSW Health is working with researchers at Sydney University and the Australian National University, including using whole genome sequencing, to better understand the sources of *S. Wangata* infection.

The majority (89%) of *S. Typhimurium* isolates were typed using MLVA. In quarter 1, the most common MLVA profile (3-12-13-9-523) made up 7% of all the *S. Typhimurium* typed (Table 3).

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

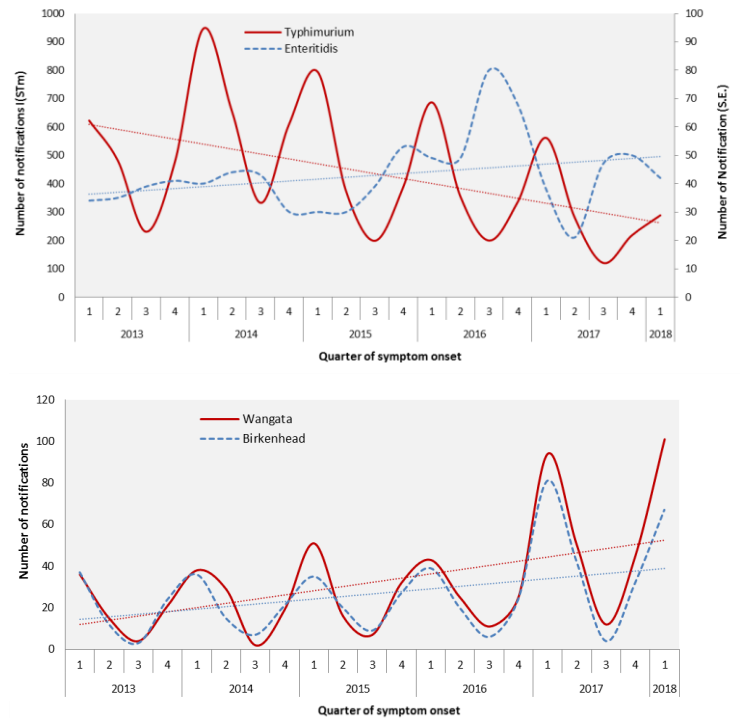
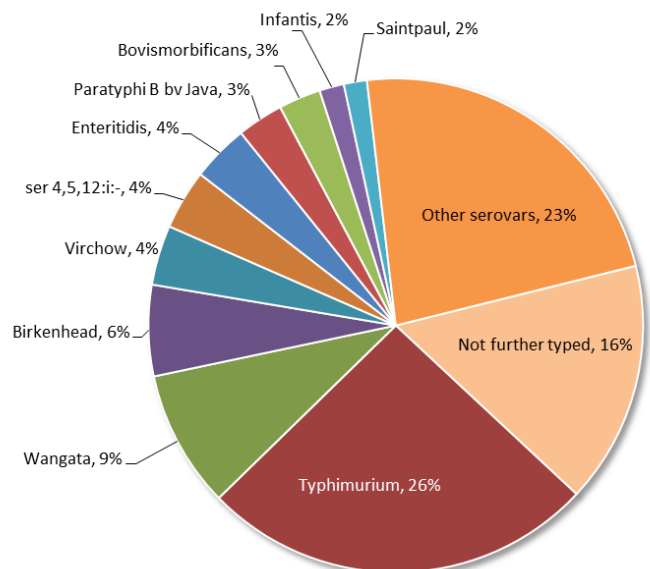


Table 3. Top 12 *Salmonella* Typhimurium MLVA patterns, quarter 1, 2018 (N=100)

MLVA	Notifications	% of <i>S. Tm</i> typed
3-12-13-9-523	22	9%
3-12-12-9-523	11	4%
3-12-14-11-496	10	4%
3-16-10-17-523	10	4%
3-14-10-8-523	9	3%
3-12-14-9-523	8	3%
3-17-9-11-523	6	2%
3-9-7-14-523	6	2%
3-9-9-13-523	5	2%
4-16-13-0-517	5	2%
3-15-11-10-523	4	2%
3-16-10-11-523	4	2%
Top 12 total	100	39%

Figure 5. Proportion of *Salmonella* serovars, quarter 1, 2018 (N=1,123)



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. A summary of the most notable outbreaks is described on pages 8-9.

Table 4. Foodborne and potentially foodborne disease outbreaks investigated in NSW, quarter 1 2018

PHU ID	Month ¹	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence	Responsible vehicles	Contributing factors
CC58319	Feb	take-away	Unknown	5	0	2	D	unknown	Unknown
HUN0518	Jan	restaurant	Unknown	31	0	0	D	Unknown	Unknown
HUN0520	Mar	private residence	Scombroid	2	0	0	D	Tuna steaks	Unknown
IS20180	Feb	private residence	Scombroid	6	0	3	D	Yellow fin tuna	Unknown
LIV58136	Jan	restaurant	Unknown	7	0	0	D	Unknown	Unknown
LIV58283	Feb	commercial caterer	Unknown	10	0	0	D	Unknown	Unknown
LIV58315	Feb	restaurant	Unknown	4	0	0	D	Lebanese pizza	Unknown
MNC201801	Mar	private residence	Ciguatera Fish Poisoning	4	0	0	D	Mackerel	Unknown
NBM201801	Jan	community	<i>Salmonella</i> Typhimurium MLVA 3-9-7-14-523	21	21	0	D	Unknown	Unknown
NS58585	Feb	restaurant	Unknown	3	0	0	D	Unknown	Unknown
SES201801	Mar	take-away	Scombroid	2	0	2	D	Canned tuna	Unknown
SES58671	Mar	restaurant	Unknown	25	0	0	D	Unknown	Unknown
MJOI201801 ²	Jan	community	<i>Listeria monocytogenes</i>	6	6	6	M	Rockmelon	Unknown

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

² Outbreak MJOI201801 affected 22 people nationally, of which six were residents of NSW (see page 8).

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

- Whole genome sequencing can help determine whether cases are related in the absence of an identified source of illness.
- People vulnerable to listeriosis are recommended to avoid rockmelon, along with other foods likely to be contaminated with *Listeria* bacteria.
- Scombroid poisoning occurs following consumption of fish with high histamine levels due to improper processing or storage. Public health and food safety authorities should be notified to investigate the source and remove the implicated product from distribution.

Salmonella Typhimurium 3-9-7-14-523 cluster

Between 12 December 2017 and 11 January 2018, 20 cases of *Salmonella* Typhimurium MLVA 3-9-7-14-523 from one local health district were identified as a geospatial cluster. Fifteen of the 20 were adult females aged between 20-69 years, and five were males aged between 7-33 years. The Public Health Unit investigation found that three of the earliest cases reported eating at a single café within a six day period. Two cases consumed French toast and one consumed a chicken sandwich with mayonnaise. The NSW Food Authority investigated the café but only minor food handling and hygiene issues were detected.

Whole genome sequencing subsequently revealed that these cases all fell into one genetically-related cluster (0-7 SNPs apart; median 1 SNP difference). Thorough interviews were conducted with 19 of the 20 cases to identify any other common links but no further links to the original café or other source or suspect food could be identified. It was hypothesised that a contaminated ingredient or product used by the café was also for sale elsewhere in the area and that this contaminated product led to the cluster, rather than the café being the source of all illnesses. No new cases were identified and there is thought to be no ongoing risk to the public.

Multi-state outbreak of *Listeria Monocytogenes* MLST 240 associated with rockmelon

Twenty-two people were infected with the same strain of *Listeria monocytogenes* MLST 240, in four Australian

states: New South Wales (6), Victoria (8), Queensland (7) and Tasmania (1). Onset of symptoms occurred between 17 January and 10 April 2018. All patients were hospitalised, and seven deaths and one miscarriage were reported. The average age of patients was 70 years old, with a range from 0 (born pre-term) to 94 years.

Rockmelons produced by a NSW grower were identified as the source of the outbreak, and a recall of the products from this farm commenced on 27 February 2018. The outbreak strain of *Listeria monocytogenes* was detected on rockmelons from this producer collected from retail and wholesale marketplaces, and on the farm. The New South Wales Food Authority worked closely with the producer to identify the cause of the outbreak. Farm processes were in line with industry standards. It is likely that extreme weather events including localised flooding and dust storms combined to result in conditions of increased listeriosis contamination, which existing sanitation processes at the facility reduced but did not eliminate entirely. Significant changes were implemented on the farm prior to the farm going back into production, including a test and hold protocol. Food safety and agricultural authorities are continuing to work with growers in the melon industry to implement improved control measures and awareness of external threats to food safety, such as adverse environmental conditions.

Rockmelon is considered a high-risk food for listeriosis. People vulnerable to listeriosis infection should not eat rockmelon, pre-cut fruit, soft cheeses or other foods likely to be contaminated with the *Listeria* bacteria. For further information, see the [listeriosis factsheet](#).

Scombroid associated with tuna steaks

Two outbreaks of scombroid poisoning associated with tuna steaks were reported this quarter. The first occurred on 1 March 2018 when six people from three unrelated groups consumed tuna steak purchased from one fish market on 27 February 2018. Symptoms began immediately after with redness to face and torso (5), tachycardia (3), tingling to tongue (3), dry tongue (1), and vomiting (1). Four cases presented to hospital and recovered following treatment with antihistamines. The tuna was a 51kg yellow fin tuna that had been purchased by the fish market that weekend. The NSW Food

Authority inspected the market, and found temperature was well-maintained. The outbreak is likely to have been caused by temperature abuse immediately after catch, rather than at retail.

The second outbreak occurred on 8 March 2018 when two linked cases presented to an emergency department 30 minutes after consuming tuna steaks. Both cases were discharged home well on the same night. The tuna steaks

were purchased approximately two weeks prior to consumption and frozen at home. NSWFA contacted the vendor where the tuna steaks were purchased and confirmed no remaining stock was available for sale based on the purchase date. Due to the time between purchase and consumption it was not possible to determine where the temperature break down occurred in tuna storage.

Institutional gastrointestinal outbreaks

From 1 January to 31 March 2018, a total of 193 outbreaks of suspected viral gastrointestinal illness in institutions were reported in NSW affecting at least 2,506 people (Table 6). This represents an increase of 42% compared to the average number of outbreaks reported during the same quarter from 2013 to 2017 (n=136), and an increase of 43% compared to the mean number of people affected as a result of the gastroenteritis outbreaks (n=1,748).

Of the 193 outbreaks, 152 (79%) occurred in child care centres, 35 (18%) in aged care facilities, three (1.5%) in hospitals and three (1.5%) in other facilities (Table 6). The number of child care centre outbreaks during quarter 1 was 79% higher than the five year quarterly average, but numbers of outbreaks in other facilities were within average levels (Figure 8).

Overall, 15% of staff members and 13% of non-staff became sick during gastroenteritis outbreaks (attack rate) (Table 6). The highest attack rate for gastrointestinal disease for staff was in child care centres (17%) and for non-staff was in patients on hospital wards (55%). Outbreaks lasted ten days on average; shortest in hospitals (six days) and longest in child care centres (10 days) (Table 6).

One or more stool samples were collected in 43 (22%) of the outbreaks. Norovirus was identified in 19 (44%) of these outbreaks. 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 1 2018 compared to the 5 year quarterly average, by month and facility type

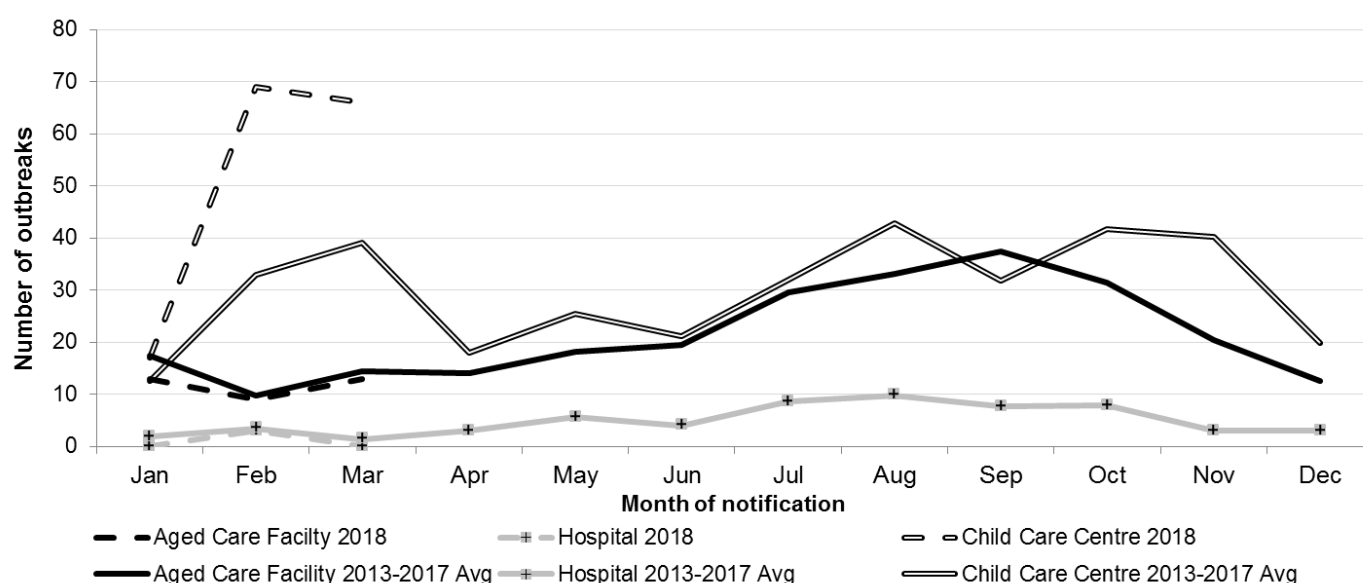


Table 5. Outbreaks of gastroenteritis in institutions reported in NSW, quarter 1 2018, by local health district²

Facility type	Q1 2018	FW	HNE	IS	M	MNC	NBM	NNSW	NS	SES	SNSW	SWS	Syd	WNSW	WS	NSW
ACF	No. of outbreaks	1	5	5	1	3	1	4	5	5	1	2	0	0	2	35
	Staff affected	0	36	14	6	5	0	11	7	4	0	0	0	0	7	90
	Non-staff affectede	12	82	49	3	37	10	15	45	32	5	26	0	0	23	339
CCC	No. of outbreaks	0	25	11	7	0	31	0	11	12	6	6	10	5	28	152
	Staff affected	0	65	52	13	0	78	0	43	22	13	18	19	24	87	434
	Non-staff affectede	0	223	135	83	0	306	0	147	88	74	49	59	90	247	1501
Hospital	No. of outbreaks	0	0	1	0	0	0	0	0	1	0	1	0	0	0	3
	Staff affected	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
	Non-staff affectede	0	0	6	0	0	0	0	0	14	0	2	0	0	0	22
Other	No. of outbreaks	0	0	0	2	0	1	0	0	0	0	0	0	0	0	3
	Staff affected	0	0	0	0	0	5	0	0	0	0	0	0	0	0	5
	Non-staff affecte	0	0	0	23	0	89	0	0	0	0	0	0	0	0	112

²CC did not report any outbreaks of gastroenteritis in institutions in this period

Table 6. Outbreaks of gastroenteritis in institutions reported in NSW, quarter 1 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	35	90: 4%	339: 15%	7	26: 74%	12: norovirus
CCC	152	434: 17%	1501: 12%	10	14: 7%	5: norovirus
Hospital	3	3: NA	22: 55%	6	2: 67%	1: norovirus
Other ¹	3	5: NA	112: 17%	10	1: 33%	1: norovirus
Total	193	532: 15%	1974: 13%	10	43: 22%	19: norovirus

¹ Other= Military facility, school

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