OzFoodNet

Enhancing Foodborne Disease Surveillance Across Australia

NSW THIRD QUARTER REPORT

July – September 2020

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Highlights Quarter 3, 2020

This report describes data for enteric conditions for quarter 3, 2020. The report is divided into four sections: enteric notifiable diseases highlights, *Salmonella* spotlight, foodborne outbreaks and gastroenteritis outbreaks in institutions. Data sources and analytical methods are described at the end of the report. 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.

During the COVID-19 response in 2020 the control guidelines for public health unit management of some enteric conditions were temporarily amended. Therefore some information will not be available during this reporting period.

A total of 2893 enteric conditions were notified to NSW Public Health Units in the quarter 3, 2020. Notifications of many enteric diseases have decreased during this quarter compared to the 5-year quarterly mean for the same time period. The decrease is largely attributed to the effects of COVID-19 social distancing measures and hygiene measures (such as hand washing) on limiting the spread of other communicable diseases, as well as the reduction in international travel owing to Australian border closures.

The most notable increases above average levels in this quarter was for notifications of **shiga toxin-producing *E.*coli** (STEC) (14 cases, 56% above the 5 year mean for the third quarter). **Listeriosis** notifications were 25% higher than the 5 year quarterly mean for the same time period, with 4 cases compared to 3 on average.

There was a marked decrease in **salmonellosis** notifications compared to the five-year quarterly mean for the same time period (47% decrease). *Salmonella* Typhimurium cases (n=137) decreased by 9% compared to the 5 year quarterly mean of 151 cases. *Salmonella* Wangata was the second highest notified *Salmonella* serotype during this quarter (9%) followed by *S.* Senftenberg (5%), S. Saintpaul, *S.* Virchow and *S.* Muenchen (4% respectively).

The number of *S*. Enteritidis notifications fell sharply this quarter (4 cases) when compared with the five year mean for the same time of year (63 cases). All four cases were investigated and found to have acquired their infection in NSW.

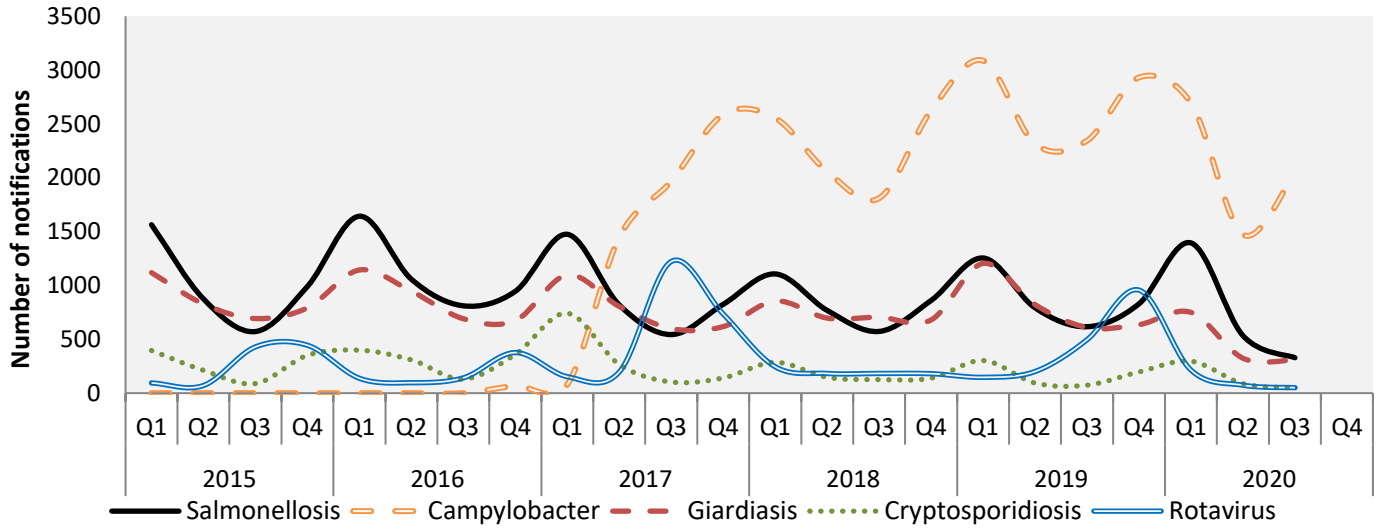
During the quarter, 72 cases of **shigellosis** (both confirmed and probable) were notified in NSW. This is a 37% decrease compared to the five year average for the same quarter (113.6 cases). The majority of shigellosis cases during this quarter acquired their infection within NSW (n=58, 79%), representing a 92% increase when compared to the five year mean for the same time period. Place of acquisition for 14 cases (9 probable cases, 5 confirmed cases) was not able to be identified (19%). No cases were identified as acquiring their infection overseas (Table 4).

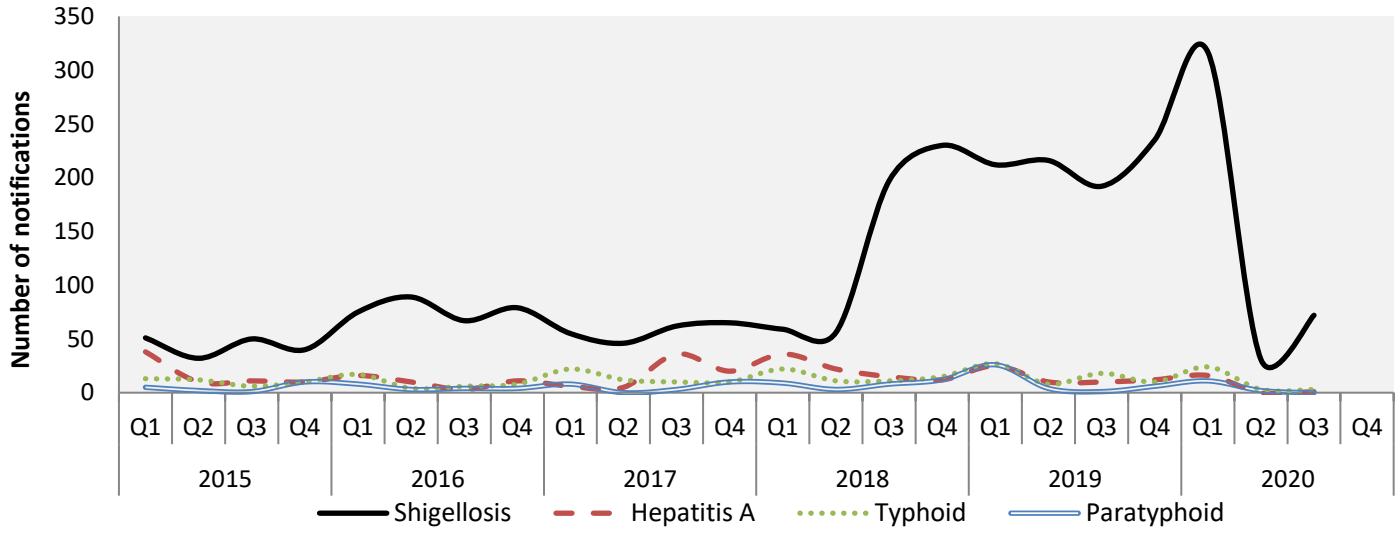
Long term trends are not available for campylobacteriosis, which became notifiable on 7 April 2017, however notifications received in this quarter (n=2058) were lower when compared to the same quarter in the previous year (n=2340, 12% decrease). No notifications of cholera, paratyhoid or botulism were received. The six year trends for 13 notifiable enteric conditions in NSW are shown in Figures 1-3.

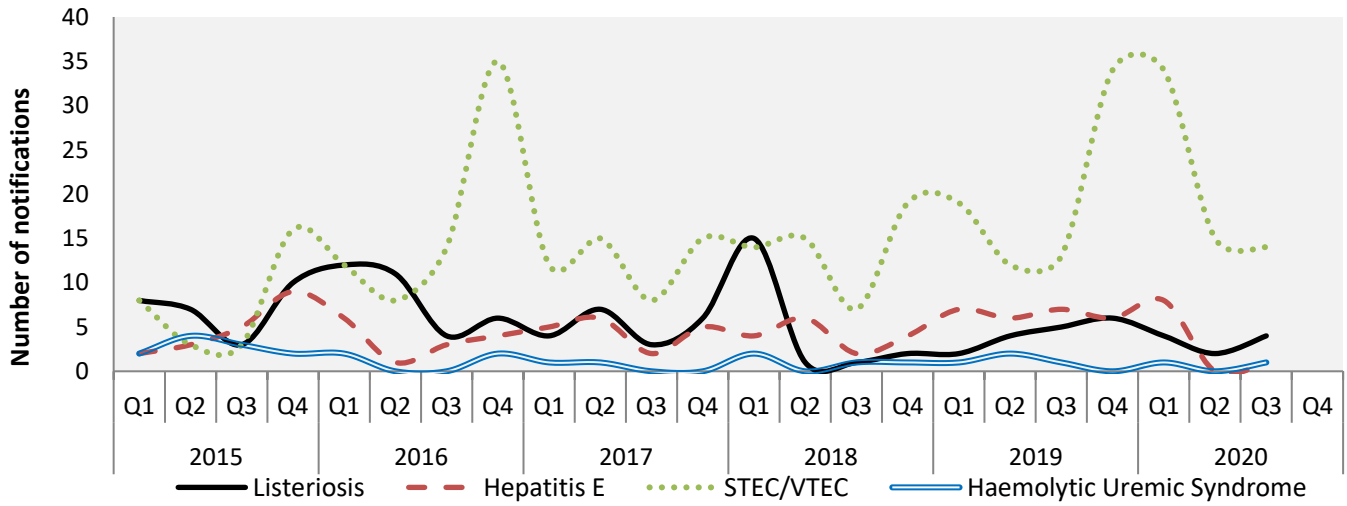
Ten **foodborne or suspected foodborne outbreaks** were reported affecting 69 residents of NSW, of whom 6 were hospitalised (Table 4). A causative agent was linked to a food source in three outbreaks: scombroid poisoning linked to consumption of tuna steaks, *Salmonella* Typhimurium linked to a burger and Campylobacter linked to Indian food. Seven other outbreaks were linked to specific meals but the pathogen was not determined.

Highlights continued

Figures 1-3. Number of notifications by year, quarter and disease, Jan 2015 to Sep 2020[1,2]







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

[2] The shigellosis case definition changed on 1 July 2018 to include probable cases (PCR positive only). The trend number of confirmed cases only, which is more comparable to previous counts of shigellosis prior to the case definition change, is provided by the black dotted line.

Table 1. Notifiable enteric conditions, quarter 3 2020, by local health district

Notifiable Disease		CC	FW	HNE	IS	M	MNC	NBM	NNSW	NS	SES	SNSW	SWS	Syd	WNSW	WS	NSW[1]
Botulism	Notified, Q3 2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5 y Q3 mean, 2015-2019	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[1,2]	Notified, Q3 2020	83	3	171	124	142	55	112	72	306	258	90	126	121	120	275	2058
	5 y Q3 mean, 2015-2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptosporidiosis	Notified, Q3 2020	1	0	5	3	2	4	1	10	5	3	2	8	0	2	4	50
	5 y Q3 mean, 2015-2019	4.0	0.0	11.4	6.4	5.0	3.8	2.8	5.6	19.4	16.0	1.6	5.0	8.8	5.2	9.6	104.6
Giardiasis	Notified, Q3 2020	12	0	32	22	5	10	22	23	48	23	5	39	27	13	29	310
	5 y Q3 mean, 2015-2019	30.8	1.4	75.6	42.2	27.6	16.0	28.4	36.6	100.6	110.6	8.2	43.4	60.6	24.4	53.4	659.8
Hepatitis A	Notified, Q3 2020	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	5 y Q3 mean, 2015-2019	0.4	0.0	1.4	0.4	0.0	0.2	0.6	0.0	1.6	2.8	0.0	1.8	3.2	0.0	2.6	15.0
Hepatitis E	Notified, Q3 2020	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	5 y Q3 mean, 2015-2019	0.0	0.0	0.0	0.4	0.2	0.0	0.2	0.0	0.0	0.2	0.0	0.4	0.6	0.0	1.0	3.0
Listeriosis	Notified, Q3 2020	0	0	0	1	0	0	0	0	0	1	0	1	1	0	0	4
	5 y Q3 mean, 2015-2019	0.6	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.4	0.0	0.2	1.0	0.4	0.0	0.2	3.2
Paratyphoid	Notified, Q3 2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5 y Q3 mean, 2015-2019	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	1.0	0.0	0.4	0.6	0.0	1.0	3.4
Rotavirus	Notified, Q3 2020	5	0	7	1	4	0	2	2	6	6	1	9	4	0	3	51
	5 y Q3 mean, 2015-2019	16.4	2.2	36.6	12.6	9.4	2.6	23.2	27.2	73.4	86.8	4.8	64.2	44.0	0.0	73.6	494.8
Salmonellosis	Notified, Q3 2020	5	1	40	22	15	12	14	19	33	44	6	41	14	0	53	328
	5 y Q3 mean, 2015-2019	20.6	2.4	69.4	27.4	25.6	18.4	28.2	32.4	92.8	81.6	14.4	74.4	50.6	0.0	67.8	623.4
Shigellosis[3]	Notified, Q3 2020	0	0	0	0	1	0	3	4	10	25	1	5	16	0	6	72
	5 y Q3 mean, 2015-2019	4.4	0.0	6.8	4.0	1.4	1.0	2.6	5.6	18.0	26.0	2.2	9.6	21.0	0.0	10.2	113.6
STEC	Notified, Q3 2020	0	0	3	0	4	1	1	0	0	1	0	1	0	0	2	14
	5 y Q3 mean, 2015-2019	0.2	0.4	0.2	0.0	1.6	0.0	0.2	0.0	0.0	0.8	1.6	0.6	0.0	0.0	2.2	9.0
HUS	Notified, Q3 2020	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	5 y Q3 mean, 2015-2019	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.2	0.0	0.0	0.0	1.0
Typhoid	Notified, Q3 2020	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	3
	5 y Q3 mean, 2015-2019	0.0	0.0	0.8	0.4	0.4	0.2	0.2	0.2	0.8	1.8	0.2	1.6	1.2	0.0	2.2	10.2
Foodborne[4] Outbreaks	Notified, Q3 2020	0	0	0	1	0	1	0	0	2	1	0	2	1	0	2	10
	People affected	0	0	0	3	0	15	0	0	28	10	0	5	2	0	6	69

Legend: Blue shading refers to a 100% or greater increase in the number of notifications compared to the five year quarterly average. Notes: [1] Total NSW numbers may differ to the sum of cases by LHD due to some cases not being attributed to an LHD and/or single outbreaks with cases across multiple LHDs; [2] Campylobacteriosis became notifiable on 7 April 2017, 5 year quarterly average data not available (NA); [3] Data is likely to be incomplete for this quarterly report due to changes in the methods of notification from laboratories; [4] Case definition changed on 1 July 2018 to include 'probable' cases; [5] Foodborne or potentially foodborne outbreaks.

Table 2. Notifiable enteric conditions, quarter 3 2020, by overseas or local acquisition

Notifiable Disease	Place infection acquired	NSW, Q3 2020	5 yr Q3 mean 2015-2019	2020 % change
Salmonella Enteritidis	Locally acquired	4	10.6	-62%
	Overseas acquired	0	49.4	-100%
	Unknown	0	3.0	-100%
Hepatitis A	Locally acquired	1	7.2	-86%
	Overseas acquired	0	7.4	-100%
	Unknown	0	0.4	-100%
Hepatitis E	Locally acquired	1	1.8	-44%
	Overseas acquired	0	1.8	-100%
	Unknown	0	0.2	-100%
Paratyphi	Locally acquired	0	0.0	0%
	Overseas acquired	0	3.4	-100%
	Unknown	0	0.0	0%
STEC/VTEC	Locally acquired	11	7.0	57%
	Overseas acquired	0	0.6	-100%
	Unknown	3	1.4	114%
Shigellosis[a]	Locally acquired	58	30.2	92%
	Overseas acquired	0	54.0	-100%
	Unknown	14	29.4	-52%
Typhoid	Locally acquired	1	0.6	67%
	Overseas acquired	2	9.6	-79%
	Unknown	0	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.

[a] The Shigellosis case definition changed on 1 July 2018 to include probable cases (PCR positive only). As per the NSW Shigellosis Control Guidelines for Public Health Units, place of infection is only investigated for probable shigellosis cases if (a) they meet criteria for "considered to be at greater risk of ongoing transmission", or (b) they subsequently become a confirmed case.

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 10-11.

Table 4. Foodborne and potentially foodborne disease outbreaks investigated in NSW, quarter 3, 2020

PHU ID	Month[1]	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence*	Responsible vehicles	Contributing factors
SWS67257	July	Takeaway	Unknown	2	0	0	D	Slow-cooked beef burrito	Other source of contamination
SWS202001	July	Private residence	Scombroid	3	0	1	D	Tuna steak	Toxic substance or part of tissue
MNC67831	August	Take-away	Unknown	15	0	0	D	Unknown	Cross contamination from raw ingredients
WS202005	August	Restaurant	*Salmonella* Typhimurium WGS cluster 19-0014	3	3	3	D	Portuguese chicken burger	Other source of contamination
SYD202002	September	Restaurant	Unknown	2	0	0	D	Either seafood and vegetable tempura or Sashimi (unknown fish type)	Ingestion of contaminated raw products
NS68079	September	Restaurant	Unknown	20	0	1	D	Unknown	Storage in contaminated environment, inadequate cleaning of equipment
NS202003	September	Takeaway	Unknown	8	0	0	D	Sushi	Food handler contamination
IS68141	September	Restaurant	*Campylobacter jejuni*	3	1	1	D, A	Indian food – unspecified vegetarian dish	Cross contamination from raw ingredients
WS68260	September	Takeaway	Unknown	3	0	0	D	Beef burrito and beef nachos	Ingestion of contaminated raw products
SES68299	September	Takeaway	Unknown	10	0	0	D	BBQ chicken	Cross contamination from raw ingredients

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

Notable Foodborne Outbreaks

Key points

- Temperature control is important to prevent harmful bacteria from growing in food. Food businesses should minimise the time that food spends in the 'temperature danger zone' (5-60 degrees Celsius) to keep food safe.
- Proper cleaning and sanitising of kitchen, utensils and food preparation areas help to lower the risk of illness by minimising the spread of foodborne disease-causing pathogens.
- Food handlers with gastro symptoms should not handle or serve food until 48 hours after symptoms have resolved.

Gastro illness linked to a food truck (MNC67831)

A foodborne illness cluster linked to a food truck on the NSW mid-north coast was investigated by the local public health unit in August. The outbreak involved fifteen cases of gastroenteritis, with reported symptoms including fever, diarrhoea, abdominal pain, cramps, chills and headaches. The median incubation period was 12 hours, with symptom onset ranging 10-28 hours. None of the cases presented to a medical practitioner or had a specimen collected. Cases reported eating a range of different menu items including a lamb snack box, a chicken snack box; lamb with chips and sauce, beef shish kebab wraps, and a falafel wrap.

The food truck had visited several towns over four consecutive nights, however reports of illness were only notified in relation to one specific night that the truck had stopped in that area.

The NSW Food Authority was notified and followed-up with the owner. A site inspection was conducted, and swabs were collected for analysis; of which, all returned a negative result for *Salmonella*. One sample of a leftover kebab, found at one of the case's houses, was also tested and had nothing detected. On inspection, authority personnel found the truck to be in an excellent condition with an adequate freezer, refrigerator, and sanitiser.

The business was also found to use sauces and meats from reputable suppliers. Department of Primary Industries (DPI) personnel also established that for the majority of time, food was also cooked fresh and not stored in a bain-marie. They also confirmed that approximately 1100 meals were served on the night that cases had consumed food from the truck. No obvious cause for the cluster of illness was identified.

Gastro illness associated with a Malaysian restaurant (NS68079)

In September, an outbreak involving twenty cases of gastroenteritis from three separate dining groups was investigated by the local public health unit. All cases had consumed food from a Malaysian restaurant in metropolitan Sydney, on two consecutive nights of service.

Reported symptoms included nausea, vomiting, bloody diarrhoea, abdominal cramps, and myalgia. The incubation period ranged from 6-12 hours. Foods reported to be consumed by cases were varied and included a crispy chicken dish, eggplant, spinach, boiled rice, coconut rice, a beef rendang dish, mi goreng and char kway teow.

One case presented to hospital and required a four-day admission. They had a stool sample collected however this was negative for all pathogens tested. None of the other cases presented to a medical practitioner or had a sample collected.

The NSW Food Authority inspected the restaurant and collected environmental swabs and food samples, however all returned negative results. Despite this, significant issues regarding cleanliness and hygiene were identified during the inspection, and the NSW Food Authority issued a prohibition order to the restaurant. The restaurant was able to reopen once the issues were rectified.

Gastro illness linked to a sushi venue (NS202003)

A foodborne illness outbreak linked to a sushi venue in metropolitan Sydney was investigated by the local public health unit in September, following three separate food complaints submitted to the NSW Food Authority in relation to the venue. A total of seven people from three dining groups were reportedly unwell following consumption of food from the venue. Of these, six cases purchased and consumed food from the venue on the same day, all within a five-hour window. One case, however, consumed food from the venue two days after the other cases.

Reported symptoms included abdominal cramps, vomiting, and diarrhoea, and symptom onset ranged from 26 to 36

hours. None of the cases presented to a medical practitioner or had samples collected. Foods reportedly consumed by the cases included a teriyaki chicken bowl, and chicken katsu sushi.

A site inspection to the venue was conducted by the NSW Food Authority. As part of the investigation, all staff at the venue were interviewed. On interview, one of the chefs revealed that they had felt unwell and vomited on the day that the majority of complainants had purchased food from the venue. Despite the self-disclosed illness, the staff member had continued to prepare and serve sushi on that day. The venue was fined in relation to the incident.

Salmonella Typhimurium associated with a chicken burger (WS202005)

Three cases of gastrointestinal illness occurred following consumption of a Portuguese chicken burger from a takeaway venue in Western Sydney. The three cases were from the same dining group but lived across two households and shared no other common exposures.

All cases reported diarrhoea and presented to the Emergency Department, with none requiring admission. Each case had a stool sample collected, which had *Salmonella* Typhimurium isolated. Sequencing on these specimens genomically linked them together and identified them as *S.* Typhimurium cluster WGS type STM-19-0014.

The NSW Food Authority conducted a site inspection of the venue and collected environmental swabs and samples. *Salmonella* was not detected in any of these samples. The burger's ingredients, which included tomato, iceberg lettuce, 'special sauce', chicken breast, Portuguese chilli and cheese, were also investigated and traced back to source where possible. The 'special sauce' contained commercially-produced whole egg mayonnaise, cottonseed oil, BBQ sauce, American mustard, chilli flakes, and sweet Hungarian paprika. There were no raw eggs used in the special sauce.

The inspection revealed that the venue had no sanitiser available on site which may have contributed to the spread of bacteria. The business was issued with penalty notice for failing to comply with the Food Standards Code.

Institutional gastrointestinal outbreaks

From 1 July to 30 September 2020, a total of 57 outbreaks of suspected viral gastrointestinal illness in institutions were reported in NSW affecting at least 686 people (Table 4). This represents a decrease of 80% compared to the average number of outbreaks reported during the same quarter from 2015 to 2019 (n=275), and a decrease of 85% compared to the mean number of people affected as a result of the gastroenteritis outbreaks during the same quarter from 2015 to 2019 (n=4414).

Of the 57 outbreaks, 31 (54%) occurred in child care centres, 20 (35%) in aged care facilities, 3 (5%) in hospitals and 3 (5%) in other facilities (Table 4). The number of outbreaks during quarter 3 was less than the five year quarterly average for all institution types; there was an 80% decrease for childcare centre outbreaks, a 78% decrease for aged care facility outbreaks, and an 84% decrease for hospital outbreaks (Figure 4).

Overall, 5% of staff members and 10% of non-staff became sick during gastroenteritis outbreaks in quarter 3 (Table 5). The highest attack rate for gastrointestinal disease for staff was in child care centres (12%) and for non-staff was in aged care facilities (14%). Outbreaks lasted eight days on average (Table 5).

One or more stool samples were collected in 19 (51%) of the outbreaks. Norovirus was identified in 6 (11%) of these outbreaks and rotavirus was identified in one (2%) of these outbreaks. The results of the other samples were negative, or not reported (Table 5).

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

Figure 4. Number of reported outbreaks of gastrointestinal illness in institutions, quarter 3 2020 compared to the 5 year quarterly average, by month and facility type

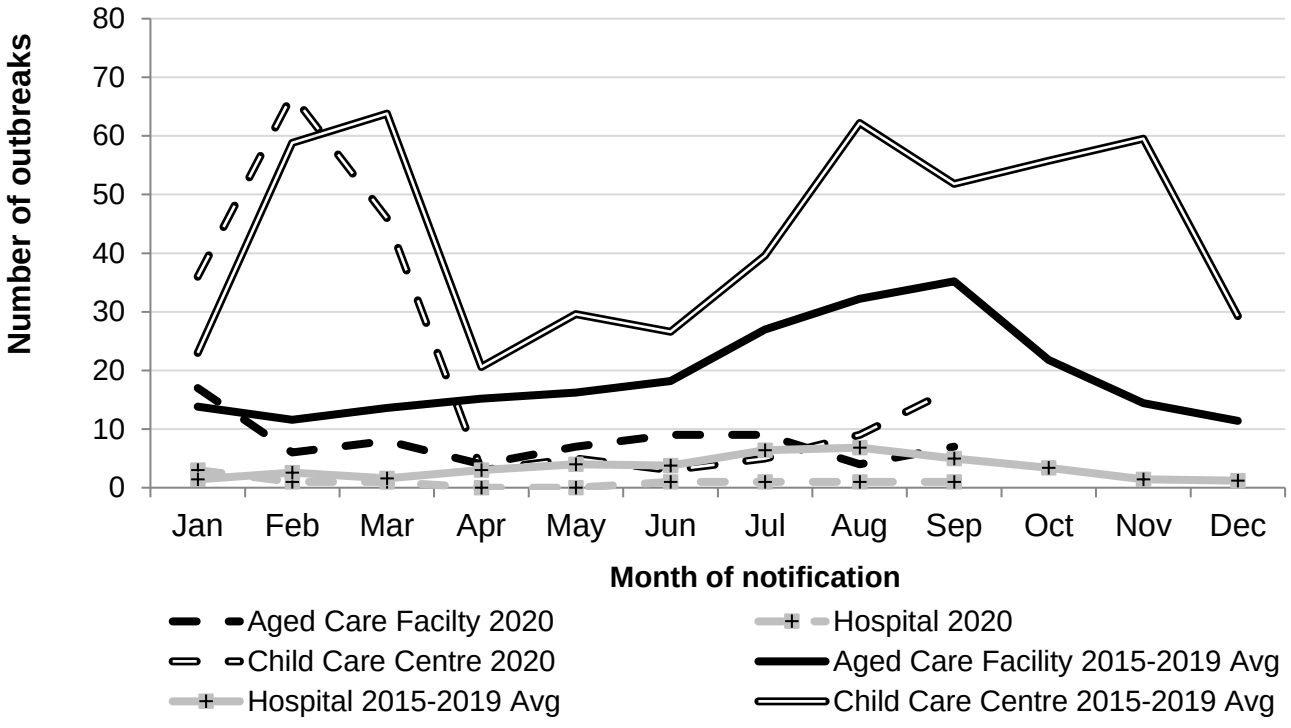


Table 4. Outbreaks of gastroenteritis in institutions reported in NSW, quarter 3 2020, by local health district[2]

Facility type	Q3 2020	HNE	IS	M	MNC	NBM	NNSW	NS	SES	SNSW	SWS	SYD	WNSW	WS	NSW
ACF	No. of outbreaks	2	1	3	1	1	2	1	3	1	1	0	1	3	20
	Staff affected	13	2	1	0	4	1	9	3	0	0	0	7	9	49
	Non-staff affected	40	12	10	3	14	18	21	26	2	3	0	15	37	201
CCC	No. of outbreaks	4	1	1	0	10	0	5	2	0	0	2	2	3	31
	Staff affected	12	8	10	0	27	0	8	1	0	0	2	10	14	92
	Non-staff affected	43	16	39	0	68	0	50	4	0	0	17	23	30	290
Hospital	No. of outbreaks	1	0	0	0	1	0	0	0	0	0	0	1	0	3
	Staff affected	5	0	0	0	3	0	0	0	0	0	0	1	0	9
	Non-staff affected	9	0	0	0	3	0	0	0	0	0	0	2	0	14
Other[1]	No. of outbreaks	0	0	0	0	1	0	0	0	0	0	1	0	1	3
	Staff affected	0	0	0	0	0	0	0	0	0	0	1	0	1	2
	Non-staff affected	0	0	0	0	3	0	0	0	0	0	21	0	5	29

[1] Other= school, group home, children's health services facility

[2] CC and FW did not report any outbreaks of gastroenteritis in institutions in this period

Table 5. Outbreaks of gastroenteritis in institutions reported in NSW, quarter 3 2020, 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	20	49: 3%	201: 14%	6	15: 75%	4: norovirus & 1: rotavirus
CCC	31	92: 12%	290: 9%	10	1: 3%	-
Hospital	3	9: 4%	14: 12%	5	3: 100%	2: norovirus
Other[1]	3	2: 3%	29: 5%	9	0	-
Total	57	152: 5%	534: 10%	8	19: 33%	6: norovirus & 1: rotavirus

[1] Other= school, group home, children's health services facility

METHODS

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

Notifiable enteric diseases in NSW

Under the Public Health Act 2010 (NSW), the following enteric diseases and conditions are notifiable in NSW: botulism, campylobacteriosis, cholera, cryptosporidiosis, giardiasis, hepatitis A, haemolytic uraemic syndrome (HUS), hepatitis E, listeriosis, paratyphoid, rotavirus, Shiga toxin producing *Escherichia coli* (STEC/VTEC) infections, shigellosis, salmonellosis, typhoid, institutional gastroenteritis in two or more people, and foodborne disease in two or more people. Individual cases of other enteric diseases such as norovirus infection are not notifiable in NSW.

NSW laboratories report cases of notifiable enteric diseases to public health units (PHUs). Outbreaks of foodborne or suspected foodborne illness and institutional gastroenteritis are reportable by doctors, hospitals, child care centres and aged care facilities. Notifiable disease data are routinely entered by public health unit staff into the NSW Notifiable Conditions Information Management System (NCIMS).

Data sources for this report

Data in this report has been extracted from the NSW Notifiable Conditions Information Management System, NSW OFN Outbreak Database and the NSW Gastroenteritis in Institutions Database, all held by Health Protection NSW.

Data for outbreaks of suspected point-source foodborne enteric diseases were collected from the NSW Food Authority Notification of Foodborne Illness Outbreak Form, the Public Health Unit Environmental Request Form and the OFN Outbreak Summary Form and entered into an MS Access database. Data for enteric disease outbreaks in institutions with suspected person-to-person transmission of a viral pathogen were entered directly into NCIMS by public health units.

Methods

Data for all notifiable enteric diseases and conditions was extracted from NCIMS using Secure Analytics for Population Health Research and Intelligence (SAPHaRI)[i] using the calculated date of onset of disease. This is a composite field of the true date of onset provided by the notifying doctor or obtained during case follow-up, the date of specimen collection for laboratory notified cases, the date of notification by the doctor or laboratory, or the date of receipt of notification, whichever is earliest.

The counts of each notifiable enteric disease for quarter 3 2020 were compared with the average annual count for the same quarter for the years 2015 to 2019 using SAS Enterprise Guide and MS Excel at Health Protection NSW.

Individual factors such as possible risk exposures are reported for cases where that information has been collected by the public health unit. "Unknown" place of acquisition usually indicates that the person was in more than one place during their exposure period, so that the place of acquisition cannot be definitively assigned. Possible risk factors are those reported by the case on questioning, and cannot be attributed as the source unless further investigation is undertaken.

[i] NSW Health Notifiable Conditions Information Management System (NCIMS), Communicable Diseases Branch and Centre for Epidemiology and Evidence, NSW Ministry of Health.

GLOSSARY

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