# OzFoodNet

Enhancing Foodborne Disease Surveillance Across Australia

# NSW THIRD QUARTER REPORT

# July – September 2018

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# Highlights Quarter 3, 2018

This report describes data for enteric conditions for quarter 3, 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 increase above average levels in Quarter 3, 2018 was for shigellosis (268% increase compared to the five year average for the same period). This increase can be attributed to a change in the national surveillance case definition that was implemented on 1 July 2018, which introduced a new 'probable' case definition for cases with a detection of *Shigella* on nucleic acid testing only (without isolation of *Shigella* species). Of the 196 shigellosis cases notified in quarter 3, 2018, 67% were probable cases. Sixty-four cases met the confirmed case definition, with *Shigella* isolated on culture, which is slightly above average (20% increase above the 5 year quarterly average).

Increases in cryptosporidiosis, paratyphoid, Shiga toxin-producing *E. Coli* (STEC) and typhoid were also observed in quarter 3, 2018 compared to the five year average for the same period. Moderate decreases were noted in salmonellosis, hepatitis E, listeriosis, and rotavirus. Long term trends are not available for campylobacteriosis, which become notifiable on 7 April 2017, however notifications received in this quarter (n=1814) are similar to the same quarter in the previous year (n=1978). The long term trends for 13 notifiable enteric conditions in NSW are shown in Figures 1-3.

The increase in **paratyphoid** activity in quarter 3, 2018 (166% above the quarterly average) can be attributed to overseas travel, with all eight cases notified during this period acquiring their infection outside of Australia. Four were acquired in India, two were acquired in Pakistan, one was acquired in Indonesia, and one was acquired during travel in South and Central America (various countries).

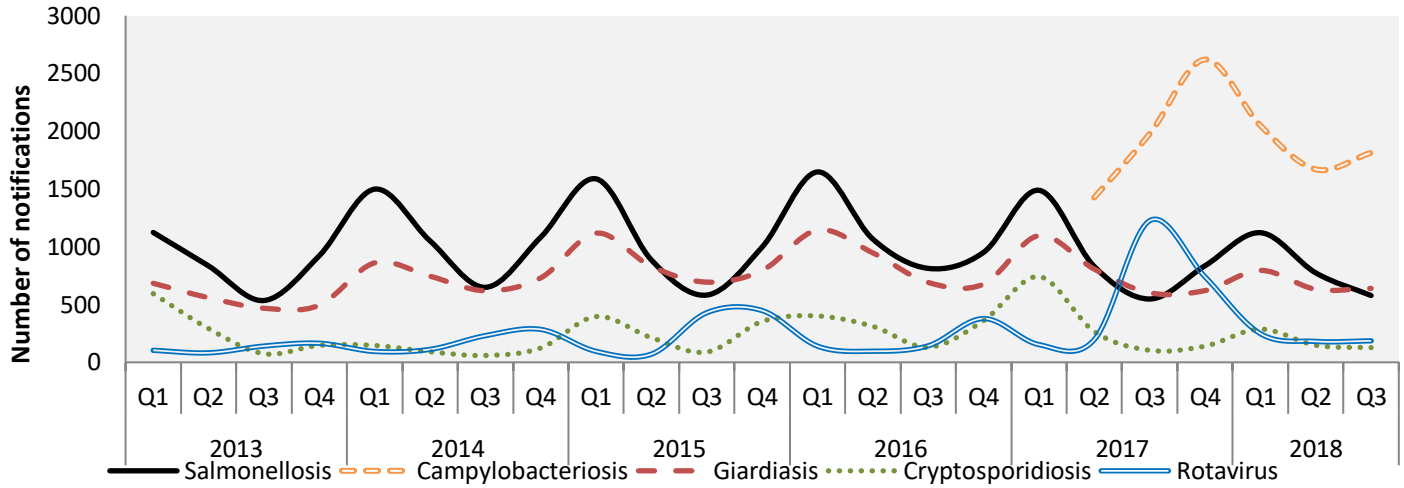
**Salmonellosis** notifications decreased slightly in quarter 3, 2018 (8%) compared to the five-year average for the same period. This was due primarily to the continued decline in *Salmonella* Typhimurium cases (n=116, down 46% compared to the 5 year quarterly average of 217 cases).

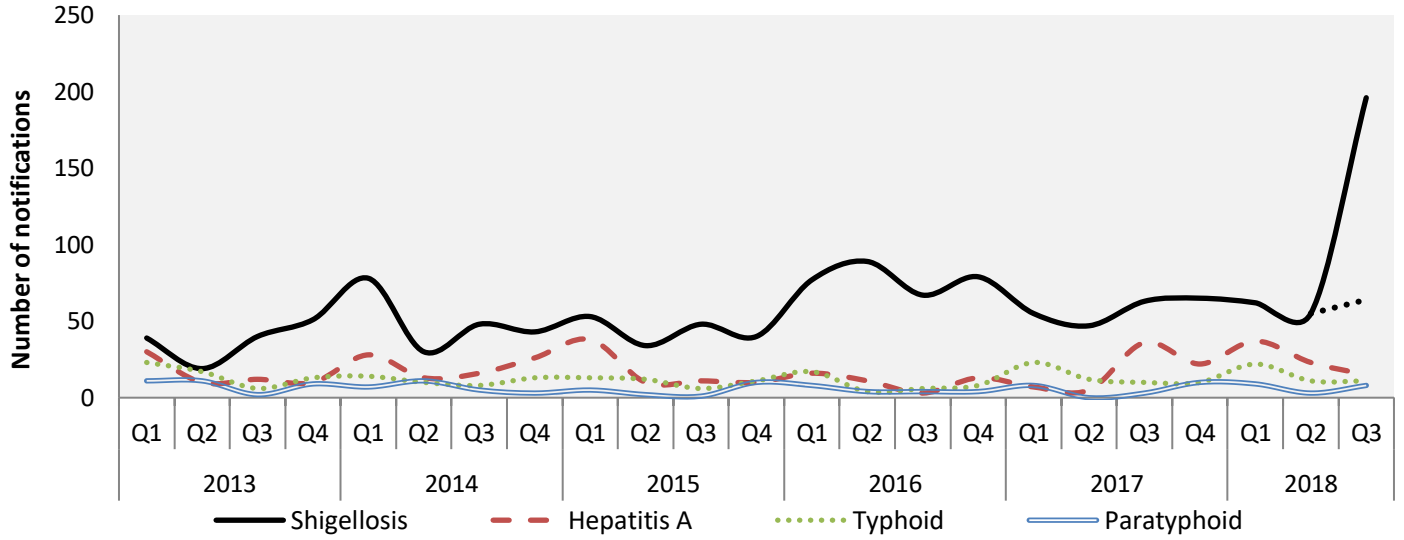
*Salmonella* Enteritidis was the second highest notified *Salmonella* serotype in quarter 3, 2018 (n=78). While overseas acquired cases increased (by 21% above the quarterly average), the greatest increase occurred among locally acquired cases (422% above average). This increase is attributed to an outbreak affecting 34 NSW residents since May 2018, which resulted in an egg recall (detailed on page 8).

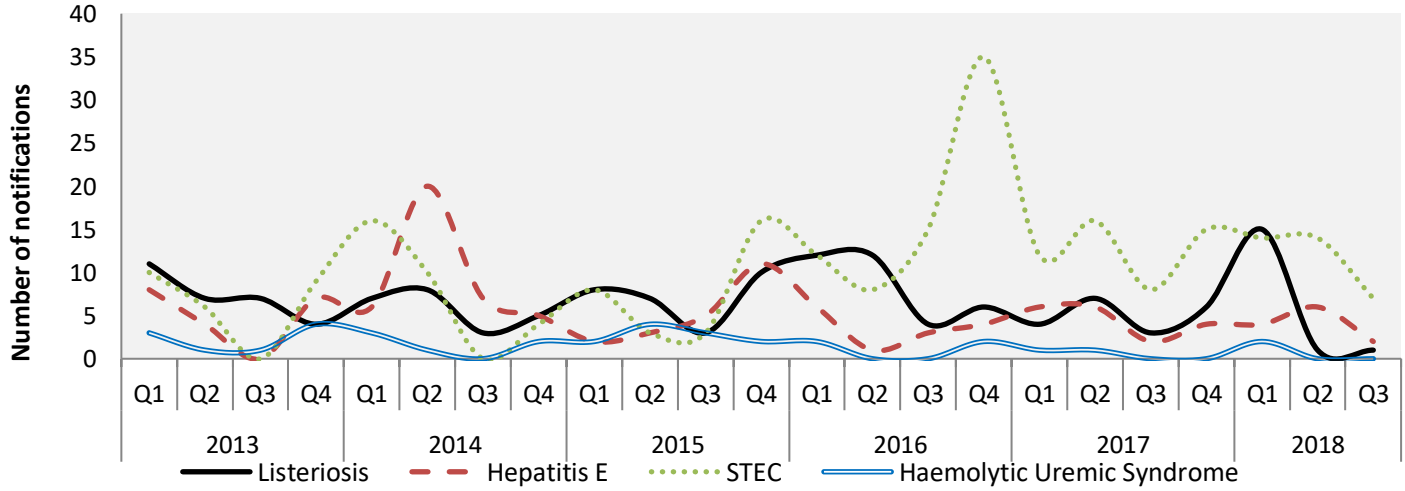
Twelve **foodborne or suspected foodborne outbreaks** were reported affecting 126 residents of NSW (Table 1), of whom five were hospitalised (Table 4). A causative agent was linked to a food source in two outbreaks: ingestion of raw eggs in one outbreak, and cross contamination of contaminated eggs on kitchen surfaces in another. *Salmonella* Typhimurium was identified as the pathogen for one outbreak caused by consumption of raw egg tiramisu; *Clostridium Perfringens* was identified as the pathogen for one outbreak in an aged care facility, but the food vehicle was unknown; and *Salmonella* Enteritidis was identified as the pathogen for one outbreak caused by cross contamination of raw ingredients on kitchen surfaces, which was linked to the wider outbreak of *Salmonella* Enteritidis in Sydney which led to a recall of Glendenning Farms eggs (see page 8). The remaining nine outbreaks were of unknown aetiology.

# Highlights continued

**Figures 1-3.** Number of notifications by year, quarter and disease, Jan 2013 to Sep 2018[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 given by the black dotted line.

**Table 1.** Notifiable enteric conditions, quarter 3 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, Q3 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 5 yr Q3 mean, 2013-2017 | 0.0 | 0.0 | 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 | 0.2 |
| Campylobacteriosis[1,2] | Notified, Q3 2018 | 73 | 2 | 206 | 92 | 87 | 55 | 71 | 78 | 302 | 289 | 56 | 119 | 139 | 70 | 175 | 1814 |
| | 5 yr Q3 mean, 2013-2017 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Cholera | Notified, Q3 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 5 yr Q3 mean, 2013-2017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cryptosporidiosis | Notified, Q3 2018 | 10 | 0 | 19 | 7 | 3 | 5 | 5 | 8 | 21 | 21 | 1 | 5 | 6 | 6 | 10 | 127 |
| | 5 yr Q3 mean, 2013-2017 | 2.6 | 0.0 | 11.0 | 7.0 | 4.6 | 2.8 | 2.4 | 5.4 | 15.0 | 13.0 | 2.0 | 4.6 | 7.8 | 4.2 | 8.8 | 91.2 |
| Giardiasis[2] | Notified, Q3 2018 | 30 | 3 | 69 | 39 | 24 | 15 | 24 | 38 | 100 | 94 | 10 | 62 | 58 | 28 | 46 | 640 |
| | 5 yr Q3 mean, 2013-2017 | 24.8 | 1.2 | 78.0 | 36.6 | 23.4 | 14.4 | 27.2 | 25.8 | 97.2 | 111.0 | 9.0 | 31.8 | 56.8 | 27.0 | 50.4 | 614.8 |
| Hepatitis A | Notified, Q3 2018 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 6 | 0 | 3 | 15 |
| | 5 yr Q3 mean, 2013-2017 | 0.8 | 0.0 | 1.8 | 0.6 | 0.0 | 0.2 | 1.0 | 0.4 | 1.2 | 3.0 | 0.4 | 1.4 | 2.6 | 0.0 | 2.2 | 15.6 |
| Hepatitis E | Notified, Q3 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| | 5 yr Q3 mean, 2013-2017 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | 0.0 | 1.0 | 0.6 | 0.0 | 1.0 | 3.4 |
| Listeriosis | Notified, Q3 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| | 5 yr Q3 mean, 2013-2017 | 0.6 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 0.2 | 0.2 | 1.0 | 0.4 | 0.0 | 0.8 | 4.0 |
| Paratyphoid | Notified, Q3 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 3 | 0 | 2 | 8 |
| | 5 yr Q3 mean, 2013-2017 | 0 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 0 | 0.4 | 0.6 | 0 | 0.6 | 0.2 | 0 | 0.8 | 3.0 |
| Rotavirus | Notified, Q3 2018 | 2 | 1 | 14 | 6 | 3 | 1 | 10 | 9 | 30 | 23 | 1 | 31 | 28 | 1 | 26 | 186 |
| | 5 yr Q3 mean, 2013-2017 | 15.0 | 2.2 | 35.2 | 9.0 | 9.4 | 2.4 | 17.2 | 26.8 | 61.6 | 80.8 | 4.4 | 51.8 | 31.6 | 21.2 | 65.4 | 434.2 |
| Salmonellosis | Notified, Q3 2018 | 21 | 5 | 70 | 15 | 22 | 11 | 33 | 32 | 101 | 74 | 18 | 64 | 34 | 12 | 66 | 578 |
| | 5 yr Q3 mean, 2013-2017 | 21.2 | 1.8 | 67.8 | 30.8 | 21.0 | 20.4 | 26.2 | 35.2 | 96.6 | 84.4 | 14.0 | 70.2 | 54.4 | 15.8 | 65.6 | 625.4 |
| Shigellosis[3] | Notified, Q3 2018 | 5 | 0 | 12 | 7 | 1 | 2 | 5 | 13 | 23 | 46 | 6 | 19 | 39 | 1 | 17 | 196 |
| | 5 yr Q3 mean, 2013-2017 | 3.0 | 0.0 | 1.8 | 1.4 | 0.0 | 0.6 | 1.4 | 1.0 | 8.4 | 14.2 | 0.6 | 3.6 | 13.0 | 0.4 | 3.8 | 53.2 |
| STEC | Notified, Q3 2018 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 7 |
| | 5 y Q3 mean, 2013-2017 | 0.0 | 0.4 | 0.2 | 0.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 1.0 | 0.2 | 0.0 | 0.4 | 1.6 | 5.2 |
| HUS | Notified, Q3 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 5 yr Q3 mean, 2013-2017 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 | 0.0 | 0.8 |
| Typhoid | Notified, Q3 2018 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 2 | 0 | 2 | 2 | 0 | 0 | 11 |
| | 5 yr Q3 mean, 2013-2017 | 0.0 | 0.0 | 0.2 | 0.4 | 0.2 | 0.2 | 0.0 | 0.0 | 0.2 | 1.4 | 0.0 | 0.6 | 1.6 | 0.2 | 2.2 | 7.2 |
| Foodborne[4] Outbreaks | Notified, Q3 2018 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 4 | 0 | 1 | 3 | 0 | 1 | 12 |
| | People affected | 0 | 0 | 10 | 0 | 0 | 0 | 23 | 0 | 7 | 68 | 0 | 17 | 6 | 0 | 8 | 139 |
| Salmonella Cluster | Notified, Q3 2018 | 2 | 0 | 5 | 1 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 3 | 1 | 0 | 4 | 5 |
| | People affected | 6 | 0 | 11 | 2 | 4 | 2 | 2 | 1 | 10 | 2 | 1 | 5 | 5 | 0 | 8 | 59 |

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); [2] Data is likely to be incomplete for this quarterly report due to changes in the methods of notification from laboratories; [3] Case definition changed on 1 July 2018 to include 'probable' cases; [4] Foodborne or potentially foodborne outbreaks.

**Table 2.** Notifiable enteric conditions, quarter 3 2018, by overseas or local acquisition

| Notifiable Disease | Place infection acquired | NSW, Q3 2018 | 5 yr Q3 mean 2013-2017 | 2018 % change |
|---|---|---|---|---|
| *Salmonella* Enteritidis | Locally acquired | 24 | 4.6 | 422% |
| | Overseas acquired | 51 | 42 | 21% |
| | Unknown | 3 | 3 | 0% |
| Hepatitis A[1] | Locally acquired | 3 | 6 | -50% |
| | Overseas acquired | 10 | 9.4 | 6% |
| | Unknown | 2 | 0.2 | 900% |
| Hepatitis E | Locally acquired | 0 | 1.8 | -100% |
| | Overseas acquired | 0 | 1.4 | -100% |
| | Unknown | 2 | 0.9 | 133% |
| Paratyphoid | Locally acquired | 0 | 0 | 0% |
| | Overseas acquired | 8 | 3 | 167% |
| | Unknown | 0 | 0 | 0% |
| STEC | Locally acquired | 5 | 4 | 25% |
| | Overseas acquired | 1 | 0.2 | 400% |
| | Unknown | 1 | 1 | 0% |
| Shigellosis[2] | Locally acquired | 36 | 21.8 | 65% |
| | Overseas acquired | 66 | 23.2 | 184% |
| | Unknown | 94 | 8.2 | 1046% |
| Typhoid | Locally acquired | 0 | 0.2 | -100% |
| | Overseas acquired | 10 | 6.8 | 47% |
| | Unknown | 0 | 0.2 | -100% |

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

[1] Two hepatitis A cases have unknown acquisition. One was a late notification from an interstate Health department which was subsequently lost to follow-up; the case is not known to have travelled outside of Australia, but this is not confirmed. The second case had travel to an endemic country as a risk factor, but instead may have acquired the infection from a co-traveller (with a confirmed infection with hepatitis A) after returning from travel.

[2] 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.

# Salmonella Spotlight

In quarter 3 2018, 16% of notified enteric infections were salmonellosis. The number of salmonellosis notifications was 7.6% lower in this quarter compared to the 5 year quarterly average. Of the 578 *Salmonella* notifications, 20% were *S.* Typhimurium (116 cases). This is a 46% reduction in *S.* Typhimurium notifications compared to the five year average for this quarter (217 cases). Since 2011, there has been an overall decline in the number of *S.* Typhimurium notifications (Figure 4). This can in part be attributed to the NSW Food Safety Strategy 2015-2021, which aims to reduce *Salmonella* notifications by 30% through improved food safety practices, verification programs, and training across the retail sector.

*S.* Enteritidis notifications accounted for 13% of all *Salmonella* notifications in quarter 3, 2018. An increase above the quarterly average occurred among both overseas acquired cases (21% above the quarterly average) and locally acquired cases (422% above the quarterly average). An outbreak of locally acquired *S.* Enteritidis was investigated during this period leading to an egg recall, described on page 8.

*S.* Virchow, ser 4,5,12:I and Paratyphi B bv Java were the highest notified serovars following *S.* Typhimurium and *S.* Enteritidis in quarter 3, 2018. Sixty percent of Paratyphi B bv Java notifications were acquired outside of Australia. Ser 4,5,12:I is a monophasic variant of *S.* Typhimurium, which has been recognised as an cause of infection worldwide in recent years.

**Figure 5.** Proportion of *Salmonella* serovars, quarter 3, 2018 (N=579)

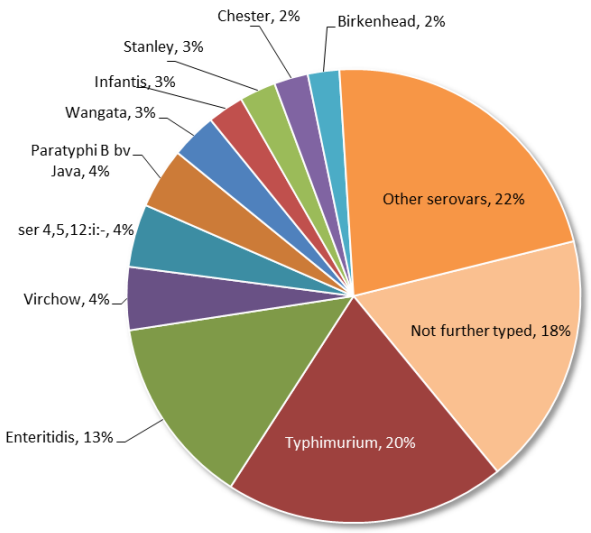
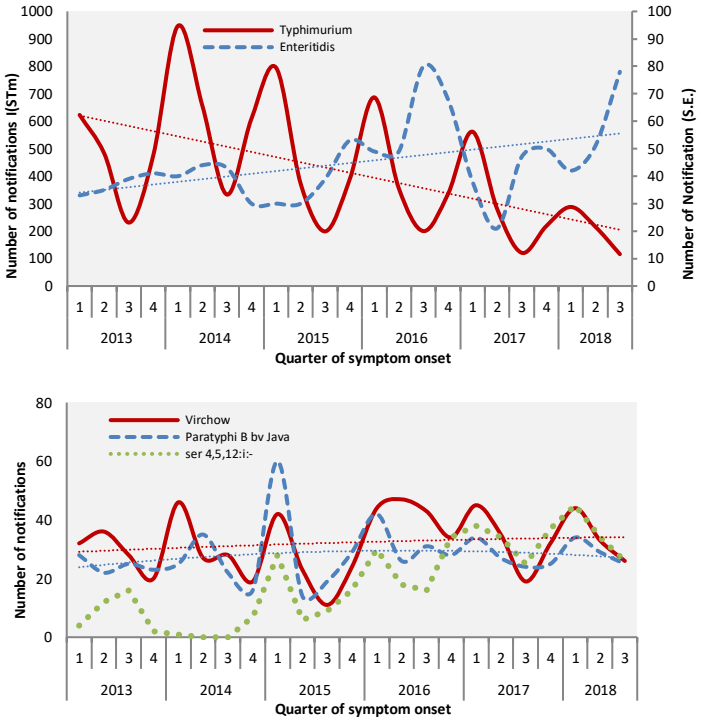



**Figure 4.** Trends, by quarters, for key *Salmonella* serovars in NSW from 2013-2018




The majority (94%) of *S.* Typhimurium isolates were typed using MLVA. In quarter 3, the most common MLVA profile (3-16-10-17-523) made up 14% of all the *S.* Typhimurium typed (Table 3).

**Table 3.** Top 12 *Salmonella* Typhimurium MLVA patterns, quarter 3, 2018 (N=116)

| MLVA | Notifications | % of *S.* Tm typed |
|---|---|---|
| 3-16-10-17-523 | 15 | 14% |
| 3-13-12-9-523 | 5 | 5% |
| 3-14-10-8-523 | 4 | 4% |
| 3-9-9-12-523 | 4 | 4% |
| 4-11-13-0-517 | 4 | 4% |
| 6-15-14-11-490 | 4 | 4% |
| 3-21-13-11-523 | 3 | 3% |
| 3-22-14-10-523 | 3 | 3% |
| 3-10-10-12-523 | 2 | 2% |
| 3-12-10-10-523 | 2 | 2% |
| 3-12-12-9-523 | 2 | 2% |
| 3-15-10-8-523 | 2 | 2% |
| **Top 12 total** | **50** | **46%** |

# 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 3 2018

| PHU ID | Month[1] | Setting | Agent responsible | No. ill | Lab confirmed | No. Hospitalised | Evidence | Responsible vehicles | Contributing factors |
|---|---|---|---|---|---|---|---|---|---|
| SYD201803 | July | Restaurant | Unknown | 2 | 0 | Unknown | D | Unknown | Unknown |
| WS59962 | July | Take-away | Unknown | 8 | 0 | Unknown | D | Unknown | Unknown |
| SYD60008 | July | Restaurant | Unknown | 2 | 0 | Unknown | D | Unknown | Unknown |
| NS60089 | July | Restaurant | Unknown | 7 | 0 | 0 | D | Unknown | Unknown |
| SES60107 | July | Restaurant | Unknown | 4 | 0 | 0 | D | Unknown | Unknown |
| SES60521 | August | Commercial caterer | Unknown | 19 | 0 | 1 | D | Unknown | Unknown |
| SYD201804 | August | Take-away | Unknown | 2 | 0 | 0 | D | Unknown | Unknown |
| HNE60547 | August | Restaurant | Unknown | 10 | 0 | Unknown | D | Unknown | Unknown |
| SWS201801 | September | Restaurant | *Salmonella* Typhimurium MLVA 3-16-10-17-523 | 17 | 7 | 2 | AD | Raw egg tiramisu | Ingestion of contaminated raw products |
| NBM201802 | September | Aged Care Facility | *Clostridium Perfringens* | 23 | 3 | 0 | D | Unknown | Cooked food storage at improper temperature |
| SES60705 | September | Restaurant | *Salmonella* Enteritidis | 30 | 7 | 1 | ADM | Unknown | Cross contamination from raw ingredients |
| SES60904 | September | Restaurant | Unknown | 15 | 0 | 1 | D | Unknown | Unknown |

[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**

- The first known *Salmonella* Enteritidis outbreak linked to eggs in the Australian market was detected in quarter 3 2018. Advanced laboratory techniques, including whole genome sequencing, confirmed that isolates from the affected egg farm were related to human illness. Biosecurity directions and control measures were rapidly implemented to contain the infection, and the affected eggs were recalled. Enhanced surveillance remains in place.
- Use of raw eggs in a tiramisu desert were identified as the source of an outbreak of *Salmonella* Typhimurium, which led to a prohibition order being issued against the premises. Food venues in NSW that make raw egg foods need to follow the NSW Food Safety Guidelines for the Preparation of Raw Egg Products or use alternatives to raw eggs in ready to eat foods.

## NSW *Salmonella* Enteritidis outbreak linked to local eggs

*Salmonella* Enteritidis is endemic in commercial poultry farms in most countries, but it is not thought to be endemic in Australia. Unlike other serovars of *Salmonella*, all *S*. Enteritidis cases are routinely interviewed in NSW using a nationally standardised questionnaire to determine source of illness. Most infections are acquired overseas, and cases without travel are further interviewed about food exposures.

A slight increase in *S*. Enteritidis cases was detected in June 2018. Case investigation determined that a higher number of cases than expected reported no history of travel, and that all cases either lived in or had travelled to the metropolitan Sydney region during their respective exposure periods. Results from whole genome sequencing (WGS) found that a portion of these infections were closely related.

A breakthrough in the investigation occurred when a birthday cake was strongly implicated as the likely cause of illness among a family of cases. An uneaten portion of the cake was found to be positive for *S*. Enteritidis and closely linked by WGS to the outbreak sequence. Trace back of the various ingredients in the cake identified the eggs used to make the cake were supplied by a local egg farm which supplied the metropolitan Sydney area.

The NSW Food Authority inspected the egg producer and the associated egg packing facility. Environmental samples obtained during inspections of the facilities were found to be positive for *S.* Enteritidis, and WGS confirmed the strain on the farm was related to the cluster of human cases. Biosecurity measures at the property were immediately implemented by the NSW Department of Primary Industry, and the Biosecurity response plan for the detection of *S.* Enteritidis in Australian eggs was activated. The NSW Food Authority issued a product recall on 8 September 2018 for all eggs produced at the facility, sold under the brand Glendenning Farms.

Four days later, on 12 September 2018, a second cluster of illness potentially linked to a Sydney cafe was identified through the NSW Salmonella SMS Project. This project sends all notified *Salmonella* cases with a mobile phone number an SMS requesting details of any food venues where they had eaten in the three days prior to illness onset. SMS responses from two cases indicated that two school groups from separate areas of regional NSW who visited Sydney in early September had fallen ill with *Salmonella*-like illness. Both school groups stayed at the same accommodation facility and ate food provided by the venue's associated café. 30 attendees across both school groups reported symptoms, and six cases across both school groups were later confirmed as *S*. Enteritidis. One additional case was *Salmonella* positive by PCR only. WGS confirmed the six infections were related to the outbreak. A cohort study was undertaken of one of the school groups and the highest attack rate implicated a chicken, lettuce and mayonnaise sandwich. The NSW Food Authority inspected the café and confirmed only a commercial mayonnaise was used on site. However it was established that the café had been using the brand of recalled eggs onsite when the students were in Sydney. One composite kitchen surface swab was found to be positive for *S*. Enteritidis, which was found to be related on WGS to the outbreak sequence. As a result, while the school group did not directly consume eggs at the café, this cluster of illness is attributable to cross contamination in the kitchen at the time of food preparation.

Between 18 May to 30 September 2018, a total of 36 cases of this outbreak strain of *S*. Enteritidis in NSW residents, and two notified cases from other jurisdictions in people who had travelled to Sydney, were linked to the outbreak by whole genome sequencing.

Active surveillance for new notifications of locally-acquired *S.* Enteritidis remains in place.

### *Salmonella* Typhimurium 3-16-10-17-523 outbreak linked to raw egg tiramisu

An outbreak affecting 17 out of at least 24 people who dined at an Italian restaurant in South Western Sydney was detected by the NSW Salmonella SMS Project. The local Public Health Unit investigation found that seven cases of *Salmonella* occurred among three groups of diners, all of whom attended the restaurant on the same day in September for a Fathers' Day lunch. Symptom onset occurred over a three day period, with the majority of cases reporting onset 24 hours after the meal. The most common reported symptoms were abdominal pain (16), diarrhoea (13), fever (12), vomiting (9), and headache (9).

The seven notified cases were positive for *Salmonella* Typhimurium, with MLVA profile 3-16-10-17-523. Two additional cases with this MLVA profile from within one of the family groups fell ill in the days after the initial group, but are thought to be secondary infections.

The Public Health Unit conducted a cohort study of the 24 diners, and consumption of tiramisu was found to have the highest attack rate (2.50) and the highest odds ratio (10.0). Of the ill people 83% reported eating the tiramisu.

The NSW Food Authority was informed and a site inspection was undertaken. The food and processing practices of the restaurant were found to be acceptable and no food samples or environmental swabs tested positive for *Salmonella*.

The inspection did however identify that raw eggs had been used to prepare a tiramisu desert served on the day, which was made on-site.

The NSW Food Authority served the business with a prohibition order preventing the preparation and service of raw egg food. No further cases in relation to the restaurant were reported.

Food venues that make raw egg dressings, desserts and sauces need to follow the NSW Food Authority's Food Safety Guidelines for the Preparation of Raw Egg Products or use alternatives to raw eggs in ready to eat foods. Alternatives include commercially produced dressings and sauces, or pasteurised egg products.

### Aged Care Facility *Clostridium perfringens* outbreak

An outbreak of gastroenteritis affecting at least 21 residents and 2 staff members of an aged care facility in regional NSW was identified in September. Symptoms occurred over a five day period, with the only reported symptom being diarrhoea. Six cases were reviewed by a general practitioner and had stool specimens collected for testing. Three of these cases tested positive for *Clostridium perfringens*.

At the time of the notification to the Public Health Unit, rapid advice and education was provided to facility management. This was effective in preventing further cases.

The majority of *Clostridium perfringens* outbreaks are associated with undercooked meats, often when large quantities of food prepared for a large group of people are left to sit out for long periods of time. The facility menu at the time of the outbreak was found to include roast pork, roast lamb, and chicken soup. Some food items were noted to be listed on the menu multiple days in a row.

The NSW Food Authority undertook a review of the venue's compliance history, processing, and hygiene. No significant issues were identified. No food samples were available for testing.

Despite not being able to identify a food source for the toxin, the outbreak was contained through early notification, education and careful application of the NSW Food Authority's Guidelines for Food Service to Vulnerable Persons.

# Institutional gastrointestinal outbreaks

From 1 July to 30 September 2018, a total of 226 outbreaks of suspected viral gastrointestinal illness in institutions were reported in NSW affecting at least 3528 people (Table 6). This represents a decrease of 9% compared to the average number of outbreaks reported during the same quarter from 2013 to 2017 (n=248), and a decrease of 15% compared to the mean number of people affected as a result of the gastroenteritis outbreaks during the same quarter from 2013 to 2017 (n=4150).

Of the 226 outbreaks, 124 (55%) occurred in child care centres, 74 (33%) in aged care facilities, 18 (8%) in hospitals and ten (4%) in other facilities (Table 6). The number of child care centre outbreaks during quarter 3 was 13% higher than the five year quarterly average, but numbers of outbreaks in other facilities were within average levels (Figure 8).

Overall, 13% of staff members and 18% of non-staff became sick during gastroenteritis outbreaks (attack rate) in quarter 3 (Table 6). The highest attack rate for gastrointestinal disease for staff was in hospitals (26%) and for non-staff was in patients on hospital wards (42%). Outbreaks lasted seven days on average (Table 6).

One or more stool samples were collected in 92 (41%) of the outbreaks. Norovirus was identified in 54 (58%) of these outbreaks and rotavirus was identified in four (4%). The majority of 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 3 2018 compared to the 5 year quarterly average, by month and facility type

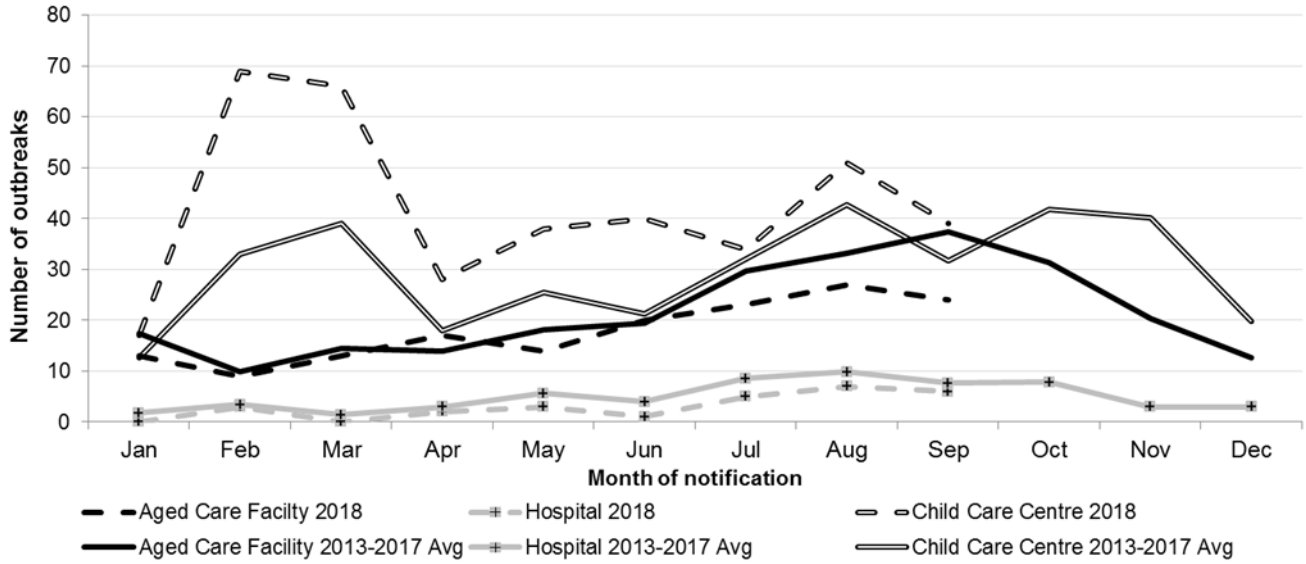


**Table 5.** Outbreaks of gastroenteritis in institutions reported in NSW, quarter 3 2018, by local health district[2]

| Facility type | Q3 2018 | FW | HNE | IS | M | NBM | NNSW | NS | SES | SNSW | SWS | SYD | WNSW | WS | NSW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACF | No. of outbreaks | 1 | 14 | 3 | 4 | 1 | 2 | 9 | 10 | 7 | 12 | 2 | 2 | 7 | 74 |
| | Staff affected | 5 | 84 | 28 | 22 | 2 | 22 | 21 | 31 | 51 | 48 | 9 | 5 | 27 | 355 |
| | Non-staff affected | 16 | 173 | 66 | 42 | 21 | 59 | 114 | 163 | 124 | 197 | 57 | 26 | 106 | 1164 |
| CCC | No. of outbreaks | 0 | 22 | 7 | 6 | 17 | 0 | 17 | 10 | 2 | 7 | 14 | 0 | 22 | 124 |
| | Staff affected | 0 | 48 | 41 | 11 | 50 | 0 | 40 | 22 | 7 | 15 | 17 | 0 | 47 | 298 |
| | Non-staff affected | 0 | 194 | 91 | 28 | 129 | 0 | 147 | 118 | 29 | 41 | 106 | 0 | 178 | 1061 |
| Hospital | No. of outbreaks | 0 | 1 | 1 | 1 | 2 | 0 | 5 | 2 | 1 | 2 | 3 | 0 | 0 | 18 |
| | Staff affected | 0 | 4 | 1 | 13 | 20 | 0 | 33 | 12 | 6 | 13 | 14 | 0 | 0 | 116 |
| | Non-staff affected | 0 | 18 | 4 | 37 | 14 | 0 | 34 | 10 | 7 | 17 | 50 | 0 | 0 | 191 |
| Other[1] | No. of outbreaks | 0 | 0 | 1 | 1 | 0 | 0 | 3 | 2 | 0 | 2 | 1 | 0 | 0 | 10 |
| | Staff affected | 0 | 0 | 3 | 0 | 0 | 0 | 7 | 4 | 0 | 0 | 2 | 0 | 0 | 16 |
| | Non-staff affected | 0 | 0 | 19 | 16 | 0 | 0 | 268 | 15 | 0 | 6 | 3 | 0 | 0 | 327 |

[1] Other= Military facility, school, camp, residential facility, daytime health service

[2]CC & MNC did not report any outbreaks of gastroenteritis in institutions in this period

**Table 6.** Outbreaks of gastroenteritis in institutions reported in NSW, quarter 3 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 | 74 | 355: 7% | 1164: 24% | 7 | 61: 82% | 35: norovirus & 2: rotavirus |
| CCC | 124 | 298: 14% | 1061: 11% | 7 | 12: 10% | 7: norovirus & 1: rotavirus |
| Hospital | 18 | 116: 26% | 191: 42% | 6 | 14: 78% | 9: norovirus & 1: rotavirus |
| Other[1] | 10 | 16: 14% | 327: 25% | 6 | 5: 50% | 3: norovirus |
| Total | 226 | 785: 13% | 2743: 18% | 7 | 92: 41% | 54: norovirus & 4: rotavirus |

[1] Other= Military facility, school, camp, residential facility, daytime health service

# 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 |