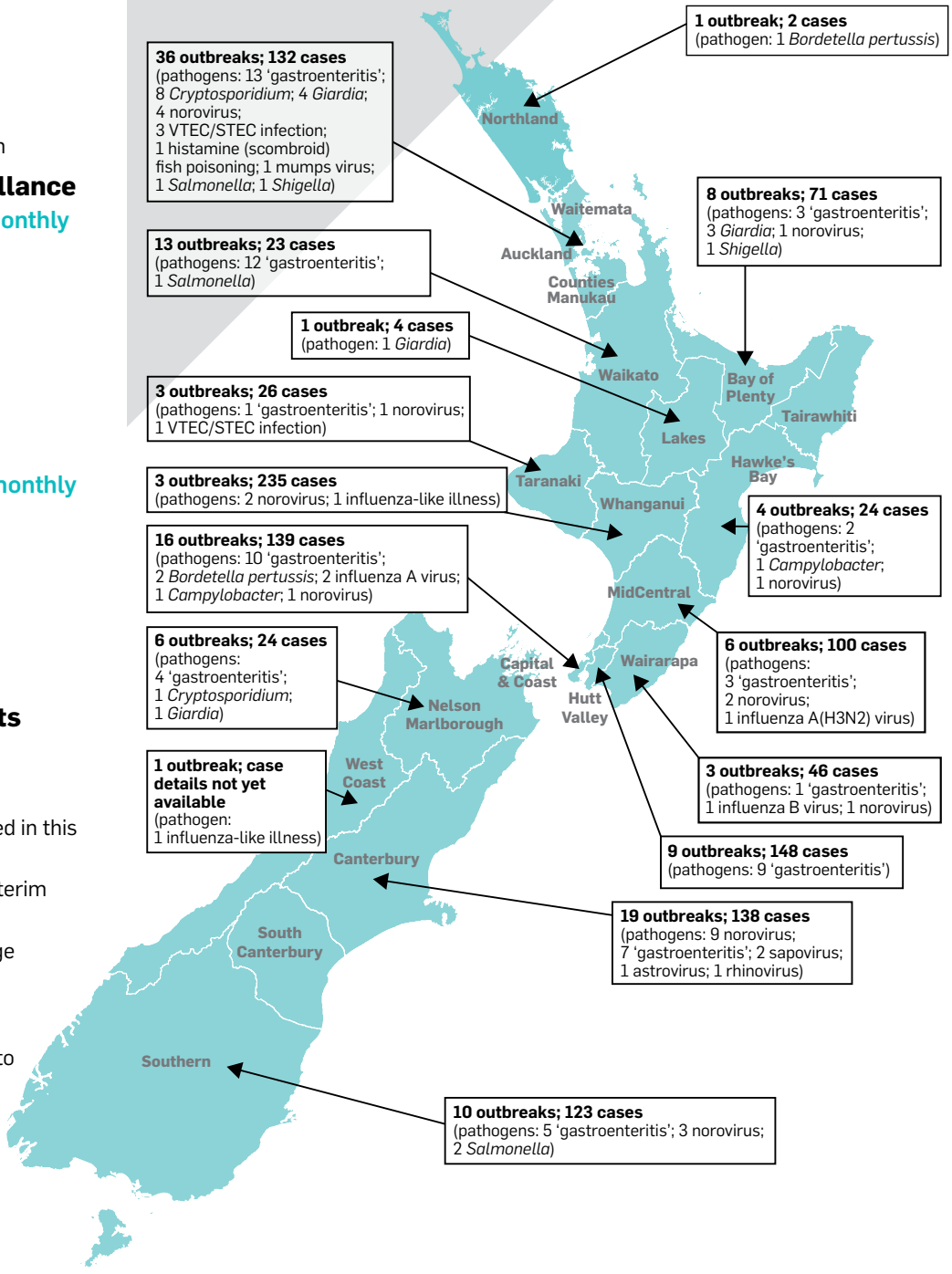
Volume 15 Issue 3

NEW ZEALAND

Public Health Surveillance Report

September 2017: Covering April to June 2017

CONTENTS AND HIGHLIGHTS



This quarter's outbreaks

Notification and outbreak data in this issue are drawn from the April to June quarter of 2017. The outbreak map on this page consists of all outbreak information, final and interim. The total number of outbreaks and cases by region and outbreaks by pathogen are reported, as notified up to 5 July 2017. Outbreaks reporting exposures in more than one geographic location are assigned to the district health board with the most cases. One outbreak involved more than one pathogen therefore individual pathogen outbreak numbers may not sum to group totals.

The latest reports from Sexually Transmitted Infections Surveillance, Antimicrobial Resistance, Virology and Enteric Reference Laboratories are available at www.surv.esr.cri.nz

ISSN 1176-2888 (Print) ISSN 1178-8313 (Online)

1. EDITORIAL

The laboratory testing conundrum

Most notifiable disease case definitions require laboratory evidence to fulfil the case criteria. Pathogenic microorganisms have historically been detected via culture, detection of specific serum antibodies or detection of specific toxins in cell culture.

Many laboratories are moving to culture independent diagnostic testing (CIDT) technology as this can speed up diagnosis and therefore treatment.

While CIDT may speed up the time to pathogen detection, the lack of an isolate for subsequent typing can negatively impact on public health surveillance or outbreak detection. In addition, it may be difficult to test for and thereby monitor antimicrobial resistance.

Implementing more sensitive CIDT detection methods could result in more cases being diagnosed (as noted for VTEC/STEC on Page 8). Consequent increases in case numbers (such as the 2015 VTEC/STEC infection notifications[1]) will need to be evaluated in this context.

CIDT may also negatively impact on case recognition if the assay detects a narrower range of species or subtypes of a species. One such example is a CIDT method that only detects *Yersinia enterocolitica* as opposed to *Y. enterocolitica* and *Y. pseudotuberculosis*. If such a method had been in widespread use in 2014 when we experienced a 220 case *Y. pseudotuberculosis* outbreak it would have impacted outbreak detection.

Since laboratory testing methods can impact significantly on both diagnosis and public health surveillance potential changes must be planned in consultation with stakeholders such as clinicians, public health professionals, epidemiologists and health planners.

Reference

1. Institute of Environmental Science and Research Ltd. 2016. Notifiable Diseases in New Zealand: Annual Report 2015, ESR, Porirua.

Reported by Jackie Wright, Coordinator Enteric Reference and *Leptospira* Reference Laboratories and Chris Hewison, Clinical Microbiologist, Health Group, ESR.

2. NOTIFIABLE DISEASE SURVEILLANCE

The following is a summary of disease notifications for the April to June quarter of 2017 and cumulative notifications and rates calculated for a 12-month period (July 2016 to June 2017). For comparative purposes notification numbers and rates are presented in brackets for the same periods in the previous year. A robust method of constructing 95% confidence intervals is used to determine 'statistically significant differences' throughout this report unless otherwise stated [see Newcombe RG and Altman DG 2000. Proportions and their differences. In: Statistics with Confidence. BMJ Books, Bristol.]. Information in this section is based on data recorded in EpiSurv by public health service staff up to 5 July 2017. As the data may be updated over time, this information should be regarded as provisional.

National surveillance data tables are available at www.surv.esr.cri.nz

Vaccine preventable disease

Invasive pneumococcal disease

- ***Notifications:*** 124 notifications in the quarter (2016, 121); 497 notifications over the last 12 months (2016, 466), giving a rate of 10.6 cases per 100,000 population (2016, 10.1), not a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (77 cases). Cases were aged between 2 days and 92 years, with 9 cases aged <2 years.

Measles

- ***Notifications:*** 8 notifications in the quarter (2016, 87); 28 notifications over the last 12 months (2016, 94), giving a rate of 0.6 cases per 100,000 population (2016, 2.0), a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly decrease from the same quarter last year (87 cases). 4 cases were confirmed and 4 cases were still under investigation and have since been made 'not a case'. No cases were aged <15 months.

Mumps

- ***Notifications:*** 132 notification in the quarter (2016, 1); 205 notifications over the last 12 months (2016, 12), giving a rate of 4.4 cases per 100,000 population (2016, 0.3), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (55 cases) and from the same quarter last year (1 case). 108 cases were confirmed and 18 cases were still under investigation. One case was aged <15 months. 3 outbreaks involving 49 cases were reported.

Pertussis

- ***Notifications:*** 340 notifications in the quarter (2016, 219); 1242 notifications over the last 12 months (2016, 1240), giving a rate of 26.5 cases per 100,000 population (2016, 27.0), not a statistically significant change.
- ***Comments:*** there has been a statistically significant quarterly increase from the same quarter last year (219 cases).

Enteric infections

Campylobacteriosis

- ***Notifications:*** 1169 notifications in the quarter (2016, 1089); 7541 notifications over the last 12 months (2016, 6273), giving a rate of 160.7 cases per 100,000 population (2016, 136.5), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (1597 cases).

Gastroenteritis (acute)

- ***Notifications:*** 84 notifications in the quarter (2016, 122); 440 notifications over the last 12 months (2016, 515), giving a rate of 9.4 cases per 100,000 population (2016, 11.2), a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly decrease from the same quarter last year (122 cases).
- ***Note:*** this is not a notifiable disease per se except in persons with a suspected common source or with a high risk occupation. The term 'gastroenteritis' provides a catch-all category for enteric diseases that are not notifiable unless they meet the criteria above and for syndromic reports that come through public health units, including direct reports from the public where the causative pathogen may never be known.

Salmonellosis

- ***Notifications:*** 273 notifications in the quarter (2016, 254); 1082 notifications over the last 12 months (2016, 1064), giving a rate of 23.1 cases per 100,000 population (2016, 23.2), not a statistically significant change.
- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (319 cases).

VTEC/STEC infection

- ***Notifications:*** 160 notifications in the quarter (2016, 102); 473 notifications over the last 12 months (2016, 455), giving a rate of 10.1 cases per 100,000 population (2016, 10.0), not a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the same quarter last year (102 cases).

Yersiniosis

- ***Notifications:*** 190 notifications in the quarter (2016, 199); 919 notifications over the last 12 months (2016, 748), giving a rate of 19.6 cases per 100,000 population (2016, 16.3), a statistically significant increase.

Environmental exposures & infections

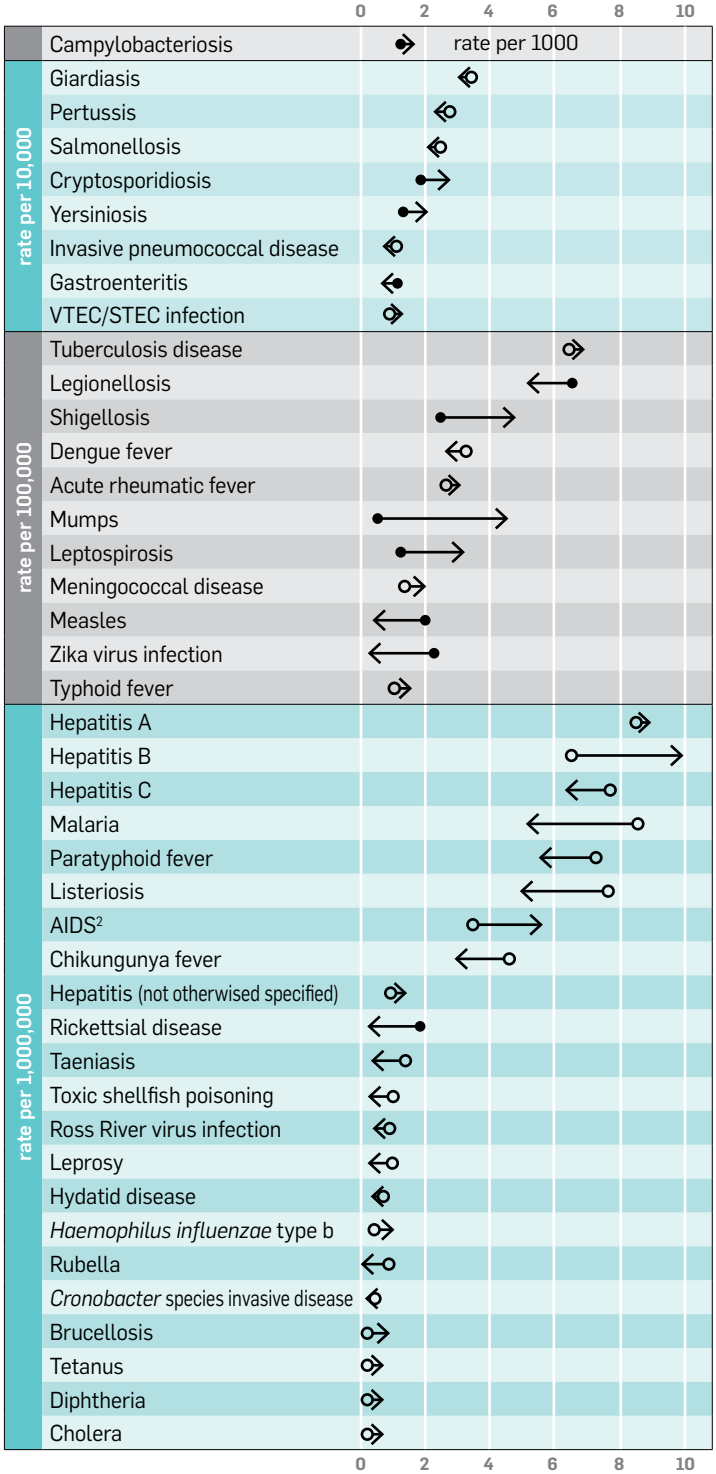
Cryptosporidiosis

- ***Notifications:*** 221 notifications in the quarter (2016, 190); 1100 notifications over the last 12 months (2016, 862), giving a rate of 23.4 cases per 100,000 population (2016, 18.8), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (141 cases).

Legionellosis

- ***Notifications:*** 55 notifications in the quarter (2016, 56); 248 notifications over the last 12 months (2016, 295), giving a rate of 5.3 cases per 100,000 population (2016, 6.4), a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (86 cases). 27 notifications were still under investigation.

National surveillance data 12-monthly notification rate changes[1]



Notifications per 1000 or 10,000 or 100,000 or 1,000,000 population.
Rate change symbol key:
- Rate increase from the previous 12-month period
- Rate decrease from the previous 12-month period
- ● Statistically significant rate change
- ○ Statistically non-significant rate change

[1] Rates are calculated for the 12-month period July 2016 to June 2017 and compared to previous 12-month rates.
[2] Data provided by the AIDS Epidemiology Group, University of Otago. Note: changes in the 12-month notification rate should be interpreted with caution as this often reflects late notifications.

Leptospirosis

- ***Notifications:*** 58 notifications in the quarter (2016, 21); 143 notifications over the last 12 months (2016, 59), giving a rate of 3.0 cases per 100,000 population (2016, 1.3), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (33 cases) and from the same quarter last year (21 cases). There were 49 male cases and 9 female cases. 22 cases were recorded as engaged in occupations identified as high risk for exposure. The most commonly recorded occupation for these cases was farmer/farm worker (16 cases). 16 notifications were still under investigation.

Rickettsial disease

- ***Notifications:*** no notifications in the quarter (2016, 2); 2 notifications over the last 12 months (2016, 9), a statistically significant decrease.

New, exotic & imported infections

Chikungunya fever

- ***Notifications:*** 1 notification in the quarter (2016, 12); 15 notifications over the last 12 months (2016, 19), giving a rate of 0.3 cases per 100,000 population (2016, 0.4), not a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly decrease from the same quarter last year (12 cases). The case was laboratory confirmed and had travelled to Indonesia during the incubation period of the disease.

Hepatitis A

- ***Notifications:*** 3 notifications in the quarter (2016, 9); 40 notifications over the last 12 months (2016, 39), giving a rate of 0.9 cases per 100,000 population (2016, 0.8), not a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (19 cases). Cases were aged between 15 and 61 years, with 1 case aged <16 years. All 3 cases had travelled overseas during the incubation period of the disease.

Shigellosis

- ***Notifications:*** 58 notifications in the quarter (2016, 33); 213 notifications over the last 12 months (2016, 118), giving a rate of 4.5 per 100,000 population (2016, 2.6), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the same quarter last year (33 cases). Overseas travel or prior travel information was known for 54 (93.1%) cases. Of these, 24 (44.4%) cases had not travelled overseas during the incubation period and had no travel history that could account for their infection.

Typhoid fever

- ***Notifications:*** 25 notifications in the quarter (2016, 11); 59 notifications over the last 12 months (2016, 53), giving a rate of 1.3 per 100,000 population (2016, 1.2), not a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the same quarter last year (11 cases). Overseas travel or prior travel information was known for 23 (92.0%) cases. Of these, 14 (60.1%) cases had not travelled overseas during the incubation period and had no travel history that could account for their infection.

Zika virus infection

- ***Notifications:*** 8 notifications in the quarter (2016, 12); 15 notifications over the last 12 months (2016, 102), giving a rate of 0.3 per 100,000 population (2016, 2.2), a statistically significant decrease.
- ***Comments:*** all cases were laboratory confirmed and had travelled overseas during the incubation period of the disease. Countries visited were Fiji (7 cases) and Thailand, Cambodia and Viet Nam (1 case).

3. OTHER SURVEILLANCE REPORTS

No reports this quarter.

4. OUTBREAK SURVEILLANCE

The following is a summary of the outbreak trends for the April to June 2017. Comparisons are made to the previous quarter (January to March 2017), and to the same quarter in the previous year (April to June 2016). Information in this section is based on data recorded in EpiSurv by public health service staff up to 5 July 2017. As the data may be updated over time, this information should be regarded as provisional.

General

- 139 outbreaks notified in this quarter (1235 cases).
- 69 are final reports (762 cases); 70 are interim reports (473 cases) that have yet to be finalised and closed.

All data that follow relate to final reports only.

- 11.0 cases on average per outbreak, compared with 11.6 cases per outbreak in the previous quarter (15.4 cases per outbreak in the same quarter of last year).
- 9 hospitalisations: 'gastroenteritis' (2), histamine (scombroid) fish poisoning (2), norovirus (2), *Cryptosporidium* (1), *Giardia* (1), and VTEC/STEC infection (1).
- No deaths.

Pathogens

- 30 'gastroenteritis' outbreaks (362 cases).
- 12 norovirus outbreaks (273 cases).

- 8 *Giardia* outbreaks (24 cases).
- 6 *Cryptosporidium* outbreaks (15 cases).
- 3 *Salmonella* outbreaks (8 cases).
- 2 *Campylobacter* outbreaks (9 cases).
- 2 *Shigella* outbreaks (8 cases).
- 1 *Bordetella pertussis* outbreak (2 cases).
- 1 histamine (scombroid) fish poisoning outbreak (5 cases).
- 1 influenza A(H3N2) virus outbreak (16 cases).
- 1 influenza B virus outbreak (8 cases).
- 1 sapovirus outbreak (30 cases).
- 1 VTEC/STEC infection outbreak (2 cases).

Modes of Transmission

Note that reporting allows for multiple modes of transmission to be selected. In some instances no modes of transmission are selected for outbreaks notified to ESR.

- 53 person-to-person, from (non-sexual) contact with an infected person (including droplets): 24 'gastroenteritis' (338 cases), 12 norovirus (273 cases), 6 *Cryptosporidium* (15 cases), 5 *Giardia* (14 cases), 1 *B. pertussis* (2 cases), 1 influenza A(H3N2) virus (16 cases), 1 influenza B virus (8 cases), 1 *Salmonella* (2 cases), 1 sapovirus (30 cases), and 1 VTEC/STEC infection (2 cases).
- 8 environmental, from contact with an environmental source (eg, swimming): 3 *Giardia* (10 cases), 2 'gastroenteritis' (50 cases), 1 influenza A(H3N2) virus (16 cases), 1 norovirus (22 cases), and 1 *Salmonella* (2 cases).
- 7 foodborne, from consumption of contaminated food or drink (excluding water): 3 'gastroenteritis' (9 cases), 2 *Campylobacter* (9 cases), 1 histamine (scombroid) fish poisoning (5 cases), and 1 *Shigella* (6 cases).
- 2 waterborne, from consumption of contaminated drinking water: 1 *Cryptosporidium* (2 cases) and 1 *Salmonella* (2 cases).
- 1 zoonotic: VTEC/STEC infection (2 cases).
- 6 mode of transmission unknown: 3 'gastroenteritis' (15 cases), 2 *Salmonella* (6 cases), and 1 *Shigella* (2 cases).

Circumstances of Exposure

Common 'settings' where the exposures occurred are identified below.

- 19 long term care facility: 10 norovirus (234 cases), 7 'gastroenteritis' (114 cases), 1 influenza A(H3N2) virus (16 cases), and 1 sapovirus (30 cases).
- 18 private home: 7 *Giardia* (22 cases), 6 *Cryptosporidium* (15 cases), 2 *Salmonella* (6 cases), 1 *B. pertussis* (2 cases), 1 *Campylobacter* (6 cases), and 1 VTEC/STEC infection (2 cases).
- 16 childcare centre: 14 'gastroenteritis' (183 cases), 1 *Giardia* (2 cases), and 1 norovirus (28 cases).
- 2 restaurants/café/bakery: 2 'gastroenteritis" (5 cases).
- 3 hospital acute care: 1 'gastroenteritis' (7 cases), 1 influenza B virus (8 cases), and 1 norovirus (11 cases).
- 2 fast food restaurant: 2 'gastroenteritis' (6 cases).
- 2 other institution: 2 'gastroenteritis' (10 cases).
- 1 camp: 'gastroenteritis' (30 cases).
- 1 farm: *Salmonella* (2 cases).
- 1 hostel/boarding house: histamine (scombroid) fish poisoning (5 cases).
- 1 hotel/motel: *Shigella* (6 cases).
- 1 other food outlet: *Campylobacter* (3 cases).
- 1 other setting: 'gastroenteritis' (7 cases).
- 1 petting zoo: VTEC/STEC infection (2 cases).
- 1 workplace: *Salmonella* (2 cases).
- 2 outbreaks had two or more exposure settings recorded.
- 1 outbreak had no exposure settings recorded.

Common 'settings' where food was prepared in foodborne outbreaks are identified below.

- 1 caterers: histamine (scombroid) fish poisoning (5 cases).
- 1 fast food restaurant: 'gastroenteritis' (3 cases).
- 1 other food outlet: *Campylobacter* (3 cases).
- 1 restaurant/café/bakery: 'gastroenteritis' (3 cases).
- 3 outbreaks had no preparation settings recorded.

5. OUTBREAK CASE REPORTS

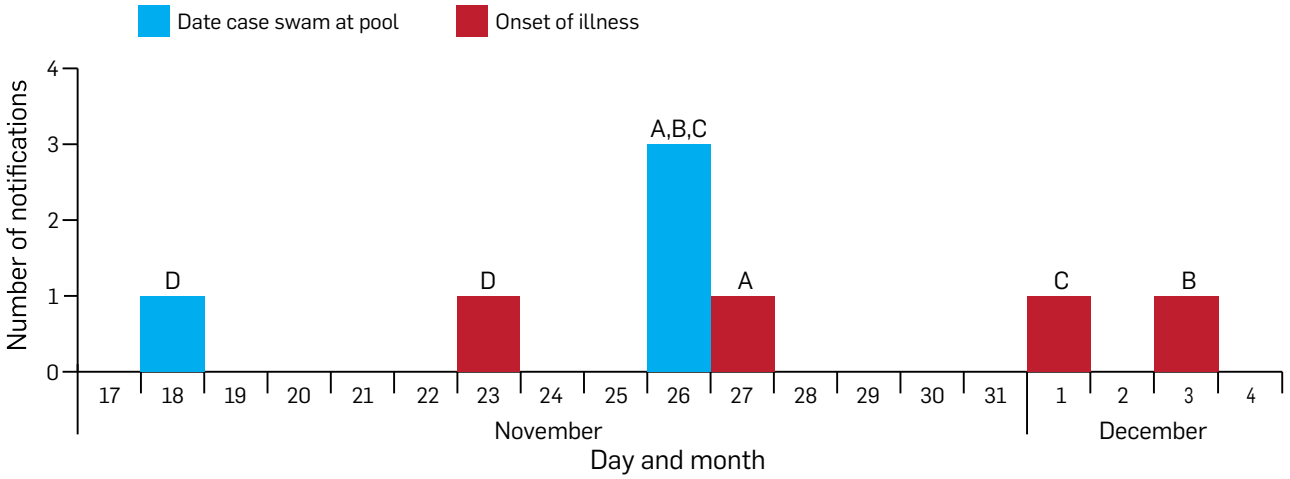
Cryptosporidium outbreak linked to a swim school in Canterbury

In December 2016 a general practitioner notified Community and Public Heath (CPH) of a case (Case A) of cryptosporidiosis associated with a swim school. The case had swum on the 26 November 2016 and became unwell the following day.

This was thought to be the only case associated with that pool, however the situation was monitored and a review of recent notifications was also undertaken. The review identified, another two cases (Case B and Case C) of cryptosporidiosis linked to the same swim school. At the end of January a further case (Case D) whose onset of illness was prior to that of Case A was notified (Figure 1). The *Cryptosporidium* species was identified in all four cases: *Cryptosporidium hominis* (3 cases) and *C. parvum* (1 case).

On 18 January 2017 two Christchurch City Council environmental health officers and a health protection officer visited the swim school. The privately owned swim school is a facility that offers swimming programmes for children aged from 5 months to 10 years. There are four terms each year and classes involve parents accompanying their children in the pool for every swimming lesson. The pool operator was unavailable but a discussion was held with the

FIGURE 1. Exposure and onset dates of four cases of cryptosporidiosis associated with a swim school in Canterbury, 2016



manager regarding the remedial actions required to be taken. The last day of swimming lessons had been 19 December 2016, after which the pool was emptied and the filter cleaned. The pool was due to re-open on 23 January 2017 for a booking but the new term was due to start on 30 January. The site visit noted a lack of record keeping for faecal accidents and there was no health advisory signage or other appropriate notices displayed. A number of records and documents were requested from the manager including standard operating procedures so they could be assessed against the pool water quality standard NZS 5826:2010.

A copy of the standard operating procedures was provided on 25 January 2017. The filtration system used was a sand filter. The sand was replaced before each year, ahead of opening. The filter was backwashed twice a week after lessons finished and the pool was refilled with fresh water. Once a week the pool was backwashed several times and refilled for 4–6 hours with fresh water. After every school term the pool was completely emptied and refilled with fresh water. Before refilling, all surfaces were cleaned with a wet and dry vacuum.

After consultation with the laboratory manager at Micro Aqua Tech (a company contracted by the Ministry of Health to advise public health units on swimming pools) the pool operator was advised to update their procedures. The recommendations included the super-chlorination of the swimming pool or wash down with bleach solution if their plant was unable to withstand the high levels of chlorine. The operator was also recommended to use a coagulant in conjunction with filtration to enhance the effectiveness of oocyst removal.

Cryptosporidium has emerged as the most frequently recognised cause of recreational water-associated outbreaks.[1,2] This is because the oocyst stage can resist disinfection, including chlorination and can survive for a prolonged period in the environment. In addition, some filtration systems (eg, sand filters) are unable to remove oocysts because of their small size (4–5 microns).

Contamination of a pool is possible if anyone swims who has had a diarrhoeal illness in the previous two weeks.[3,4] Maintaining a safe pool not only requires a correct filtration system and cleaning programme but also education of swimmers, including on exclusion criteria and an awareness of the need to promptly report faecal accidents to allow an appropriate and timely response.

References

1. Hlavsa M, RobertsV, Kahler A, et al. 2015. Outbreaks of illness associated with recreational water—United States, 2011–2012. Morbidity and Mortality Weekly Report. 64(24):668–72.
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4. PHLS Advisory Committee on Gastrointestinal Infections 2004. Preventing person-to-person spread following gastrointestinal infections: guidelines for public health physicians and environmental health officers. Commun. Dis. Public Health. 7(4):362–84.

Reported by Jimmy Wong, Health Protection Officer, Peter Mitchell, Medical Officer, Community and Public Health (Canterbury).

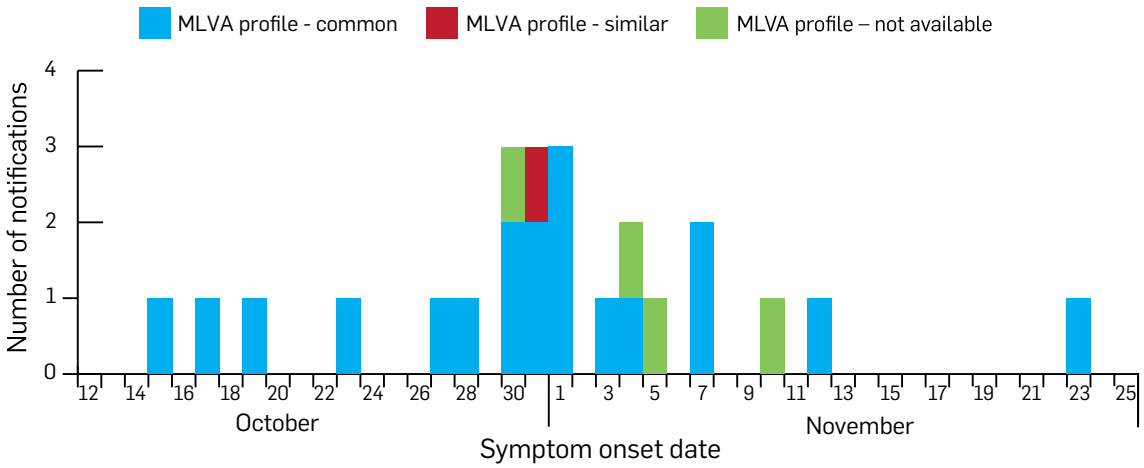
An outbreak of yersiniosis in Tauranga during October and November 2016

Toi Te Ora – Public Health Service (Toi Te Ora) experienced an increase in notifications of *Yersinia enterocolitica* biotype 2 during November 2016. By mid-November 13 cases had been notified. On average 6–7 cases of yersiniosis are reported to Toi Te Ora each month.

Nationally, there had been an increase in *Yersinia enterocolitica* biotype 2 notifications since October 2015. No confirmed source had been identified but possible sources included a dispersed food ingredient.

Toi Te Ora was alerted on 17 November 2016 to an association between two cases who had consumed sushi from a Tauranga premises and another case who was a sushi food handler at the same premises, by which time there had been 20 confirmed cases reported. Health Protection Officers began re-interviewing yersiniosis cases, initially focusing on those

FIGURE 2. Epidemic curve for the outbreak cases by symptom onset date and MLVA profile, October–November 2016



identified as *Yersinia enterocolitica* biotype 2. An early outbreak case definition was 'any case of yersiniosis that reported eating sushi from a commercial premises from mid-October to mid-November 2016'.

Cases were prompted to check their bank statements or internet banking records for purchases of takeaway/restaurant meals. Upon re-interview the majority reported consuming sushi from the initially implicated premises during late October and early November 2016. Chicken or salmon were the predominant types of sushi reported. Other dishes reported included a cooked chicken and rice dish. Other ingredients reported were avocado, cucumber and mayonnaise. Additional premises were implicated in a small number of cases, including a second premises owned by the operator of the initial premises, an outlet (petrol station) supplied by the initially implicated premises, and a separate commercial premises.

The Ministry for Primary Industries (MPI) and Tauranga City Council (TCC) were notified on 18 November 2016, both visited the initially implicated premises on 21 November. Significant issues relating to hand washing facilities and procedures, as well as food safety issues were identified.

Toi Te Ora and TCC made a joint decision to require faecal clearance specimens from 18 staff across the two premises owned by the same operator. TCC returned on 22 November 2016 and recommended the operator close both premises voluntarily. The recommendation was also supported by the Medical Officer of Health. Both premises remained closed for 4 days while clearance specimens were processed (17 of 18 the food handlers provided faecal specimens, all were negative) and corrective actions were completed. Food handlers were interviewed to determine whether any had symptoms of gastroenteritis. No additional symptomatic food handlers were identified.

Multiple locus variable-number tandem repeat analysis (MLVA) done by ESR later showed a common outbreak profile among cases who had eaten from the implicated premises. Therefore the outbreak definition was expanded to include common or similar outbreak MLVA profiles. In total, 24 cases (21 confirmed and 3 probable) were linked to the outbreak. Of these, 20 cases were MLVA typed (19 had a common MLVA profile and 1 had a similar MLVA profile). Figure 2 shows the epidemic curve for the 24 outbreak cases by symptom onset date and MLVA profile.

Twelve cases outside Bay of Plenty DHB also had the same MLVA profile as the outbreak. One of these cases had been interviewed with an in depth questionnaire, and had eaten sushi from an unknown source. It is not known whether the other cases had eaten sushi.

A confirmed source for this outbreak was not identified. Probable sources included an infected food handler(s), contaminated ingredients at the implicated premises and/or a dispersed food ingredient. No specific source was identified by MPI or TCC at the implicated premises but handwashing and process failures were identified. Similar failures had also been identified by TCC during an inspection in June 2016.

A significant finding from this outbreak investigation was that nearly all cases provided different, more extensive food histories for takeaway/restaurant meals when requested to check their bank statements or internet banking records upon re-interview. A notable aspect of the investigation was the collaboration between Toi Te Ora and MPI largely worked as set out in the Memorandum of Understanding, with the acknowledgement that Toi Te Ora may still need to liaise with the local authorities directly.

Some lessons learned included the need for timely and thorough collection of core case investigation details in order to identify outbreaks as soon as possible, and to develop outbreak definitions early and record these as they are modified. Another important consideration is the importance of understanding the rationale for requiring clinical specimens from food handlers that are not cases or contacts.

Reported by Grant King, Health Protection Officer, Toi Te Ora – Public Health Service.

6. LABORATORY SURVEILLANCE

Enteric Reference Laboratory, April–June 2017

Verocytotoxin- or shiga toxin-producing *Escherichia coli* (VTEC/STEC)

Following the introduction of diagnostic polymerase chain reaction (PCR) testing for verocytotoxin- or shiga toxin-producing *Escherichia coli* (VTEC/STEC) in a large laboratory in 2015 an immediate and sustained increase in VTEC/STEC detection was noted. This was not unexpected for three reasons:

1. The method will detect all serotypes of VTEC/STEC. Historically, detection methods have focused on VTEC/STEC serotype O157, which is relatively easy to isolate in the clinical laboratory using the selective medium cefixime tellurite sorbitol–MacConkey (CT-SMAC).
2. Culture independent detection testing (CIDT), such as enteric multiplex PCR is highly sensitive and can detect very low numbers of organisms both viable and non-viable. Thus we would expect enteric multiplex PCR to yield more detections than culture even if the culture method used targeted all VTEC/STEC serotypes as not all organisms will survive in the stool sample during transit.
3. Historically, not all faecal specimens were tested by diagnostic laboratories for VTEC/STEC and the decision to test was often based on patient age, symptoms or specimen appearance. Increasingly diagnostic laboratories are testing for the presence of VTEC/STEC in all faecal specimens from cases of acute gastroenteritis.

In order to perform epidemiological typing for surveillance purposes a pure culture is essential and in many cases ESR is receiving faeces in broth or mixed cultures. Isolation of VTEC/STEC in pure culture is problematic as, unlike other enteric pathogens, non-toxin producing *E. coli* comprise normal bowel flora and VTEC/STEC other than O157 have few cultural characteristics to allow ready differentiation.

A review of data from 2016 showed that the age of culture broth on receipt at ESR had a negative impact on ERL's ability to detect the VTEC/STEC organism from a primary PCR positive specimen. This is not unexpected – many types of bacteria are going to struggle to survive in a broth for days. During this time many bacteria will die as they have a finite food supply and are being exposed to increasing concentrations of their own waste products. For this reason we would also expect CIDT to yield more positive detections when the sample is fresh and undiluted and this may explain why it is not uncommon for ESR to fail to detect VTEC/STEC positivity in a sample previously reported as positive.

Yersinia

In the second quarter of 2017 (April–June), 179 *Yersinia* isolates were received by ESR. Of these, 2 were confirmed as *Yersinia pseudotuberculosis* and 177 were *Y. enterocolitica*, of which, 127 (71.8%) were confirmed as either *Y. enterocolitica* biotype 2 or 3. The previously dominant biotype 4 accounted for only 10.5% of cases.

ESR has reviewed its laboratory methodologies with the aim of providing more useful epidemiological information on referred *Yersinia* isolates. As a result routine sero-grouping will be introduced to supplement the biotype result. Whole genome sequencing may also be used in future to aid cluster investigations.

Shigella

Isolates from 56 shigellosis cases were confirmed and typed at ESR in this quarter. The predominant types identified were *Shigella flexneri* 6 Boyd 88 and *Shigella sonnei* biotype g (14 isolates each). Eight cases of *S. flexneri* 6 Boyd 88 had a history of recent travel to Samoa (5) or Fiji (3). *S. sonnei* biotype g has surpassed *S. sonnei* biotype a as the most common strain of *S. sonnei* confirmed in New Zealand. Eleven case of *S. sonnei* biotype g had a history of recent travel to India (3), Singapore (2), Australia, Malaysia, Mexico, Peru, Thailand and Timor Leste (1 case each).

Reported by Enteric Reference Laboratory, Health Group, ESR.

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CONTRIBUTIONS to this publication are invited in the form of concise reports on surveillance issues or outbreak investigations. Please send contributions and feedback to: Scientific Editor, New Zealand Public Health Surveillance Report, ESR, PO Box 50-348, Porirua, 5240, Wellington, New Zealand. Phone: (04) 914 0700; Fax (04) 914 0770; Email: survqueries@esr.cri.nz

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