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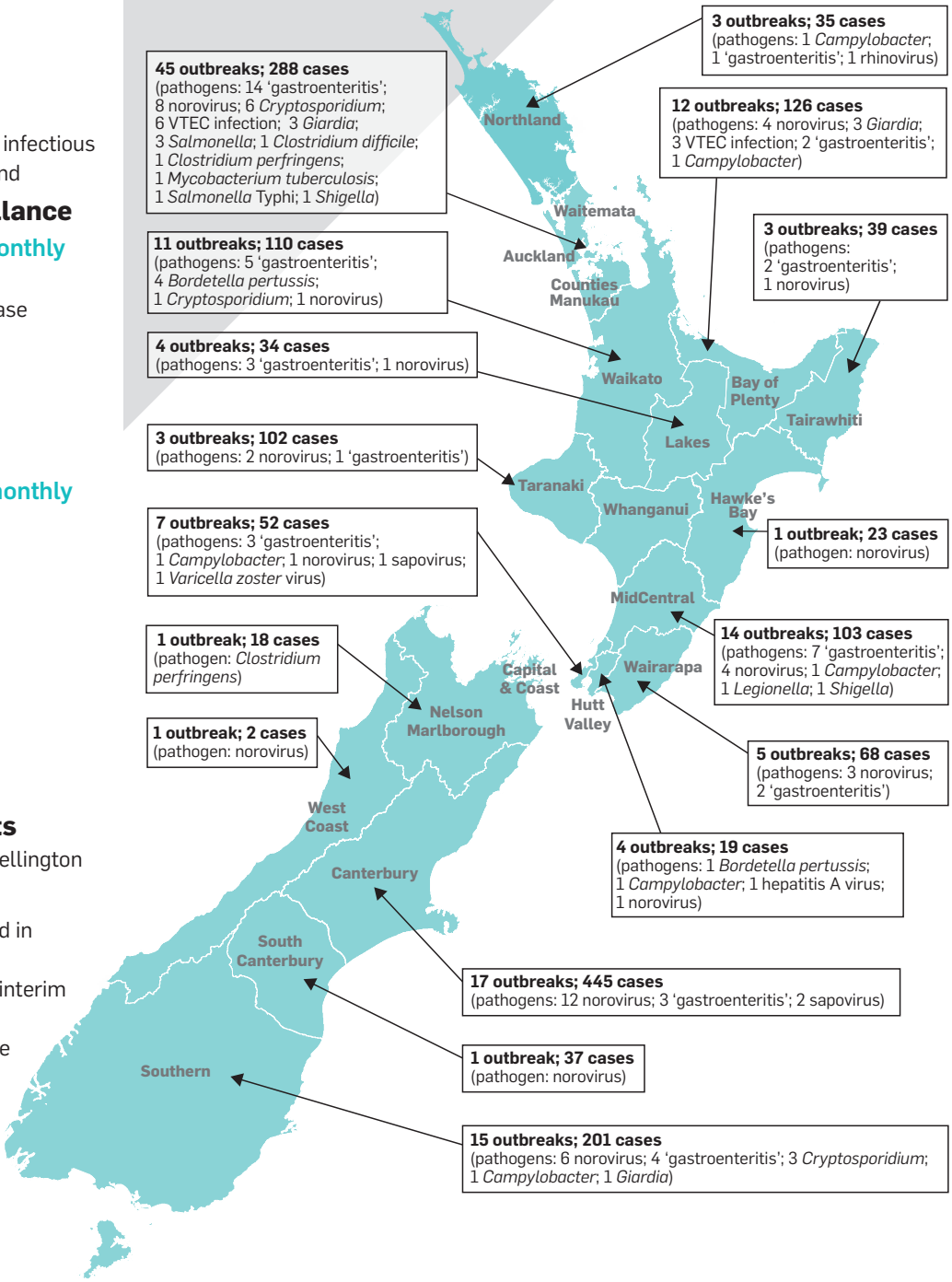
NEW ZEALAND

Public Health Surveillance Report

March 2016: Covering October to December 2015

CONTENTS AND HIGHLIGHTS



This quarter's outbreaks

Notification and outbreak data in this issue are drawn from the October to December quarter of 2015. 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 18 January 2016. 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

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1. EDITORIAL

Information systems initiatives for infectious disease surveillance in New Zealand

Emerging health information technologies offer the potential to make gathering data faster and more efficient, and to improve the quality of that data. This potential will see agencies link more efficiently to healthcare professionals so that decision makers can act more quickly and effectively.

The Institute of Environmental Science and Research (ESR) has a number of key initiatives to leverage such emerging information technologies so that surveillance systems become more effective and efficient, and to improve the information available for infectious diseases in New Zealand. ESR's pioneer initiative was EpiSurv, a national notifiable disease database (with a secure web interface) that has operated since 1997. The database gives public health authorities the ability to rapidly monitor the occurrence and spread of notifiable diseases.

In 2008, new legislation required laboratories to report positive tests results for notifiable diseases directly to Medical Officers of Health. LabSurv was developed to automate the reporting of results from laboratories to public health authorities. It uses Health Level Seven (HL7), an international health messaging standard, for data exchange. LabSurv integrates laboratory data into EpiSurv automatically, allowing notifying laboratories to electronically transmit patient's test results to a Medical Officer of Health. A recent study[1] found that LabSurv is an effective tool for reporting notifiable diseases, as it provided early reporting of notifiable infectious diseases. Some 90% of laboratories in New Zealand now use LabSurv to electronically notify test results to public health authorities. In addition to providing near real-time data collection, these systems are implemented in a secure way to maintain security and confidentiality of notifiable disease cases. Together, EpiSurv and LabSurv provide a robust and secure information management platform to deliver integrated and timely information to those involved in preparing for, and responding to health protection issues.

Nationwide use of patient mangement systems (PMSs) by general practitioners (GPs) in New Zealand offers the opportunity to automate the process of acquiring data from general practices. This is potentially a quick, well-documented and reliable way to acquire data compared to fax, phone or mail. ESR has developed an electronic notification system for influenza-like illness (ILI). Called eILI, it replaces the manual method of collecting data for sentinel ILI surveillance in a secure manner. eILI allows GPs to electronically notify ILI cases using their PMS. Three general practices in the Capital & Coast District Health Board participated in a pilot study of the system over the 2015 influenza season. This study found that eILI helps clinicians report ILI cases conveniently, compared to the weekly manual reporting method. eILI is being rolled out to participating general practices nationally, for the 2016 sentinel ILI surveillance season.

Another strategic initiative is to modernise the way GPs notify cases of notifiable diseases to the Medical Officers of Health. GPs currently notify by phone, fax or mail. The aim is to focus on giving GPs an electronic notification system for notifiable diseases.[2] This system will let GPs use their PMS to electronically provide associated clinical and risk factor information for cases of notifiable disease. The initiative will potentially add new capabilities to the EpiSurv surveillance system by increasing the amount of useful data received from general practices in near real-time. Currently, planning is underway to develop and test the system in the near future. Clinicians, PMS vendors and public health agencies will need to collaborate to make this initiative a success.

REFERENCES

1 Adnan M, Peterkin D, McLaughlin A, Hill N 2015. HL7 Middleware Framework for Laboratory Notifications for Notifiable Diseases. In Volume 14: Driving Reform: Digital Health is Everyone's Business.1–7. DOI 10.3233/978-1-61499-558-6-1.

2 Jones N and Calder L 2012. eNotification: adapting eReferral for public health notifiable disease reporting in New Zealand. Healthcare Informatics Research. 18(3):225–30.

Reported by Mehnaz Adnan, Health Intelligence Team, Health Group, ESR.

2. NOTIFIABLE DISEASE SURVEILLANCE

The following is a summary of disease notifications for the October to December quarter of 2015 and cumulative notifications and rates calculated for a 12-month period (January to December 2015). 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 18 January 2016. 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:*** 126 notifications in the quarter (2014, 130); 459 notifications over the last 12 months (2014, 489), giving a rate of 10.2 cases per 100,000 population (2014, 10.8), not a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (164 cases). Cases were aged between 4 months and 94 years, with 6 cases aged <2 years.

Measles

- ***Notifications:*** 1 notification in the quarter (2014, 4); 10 notifications over the last 12 months (2014, 280), giving a rate of 0.2 cases per 100,000 population (2014, 6.2), a statistically significant decrease.
- ***Comments:*** The case was confirmed and had travelled to Australia during the incubation period of the disease.

Pertussis

- ***Notifications:*** 298 notifications in the quarter (2014, 259); 1196 notifications over the last 12 months (2014, 1099), giving a rate of 26.5 cases per 100,000 population (2014, 24.4), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (453 cases).

Enteric infections

Campylobacteriosis

- ***Notifications:*** 2117 notifications in the quarter (2014, 2351); 6229 notifications over the last 12 months (2014, 6782), giving a rate of 138.1 cases per 100,000 population (2014, 150.4), a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (1481 cases) and a statistically significant decrease from the same quarter last year (2351 cases).

Cronobacter species invasive disease

- ***Notifications:*** 1 notification in the quarter (2014, 0); 5 notifications over the last 12 months (2014, 0), giving a rate of 0.1 cases per 100,000 population, a statistically significant increase.

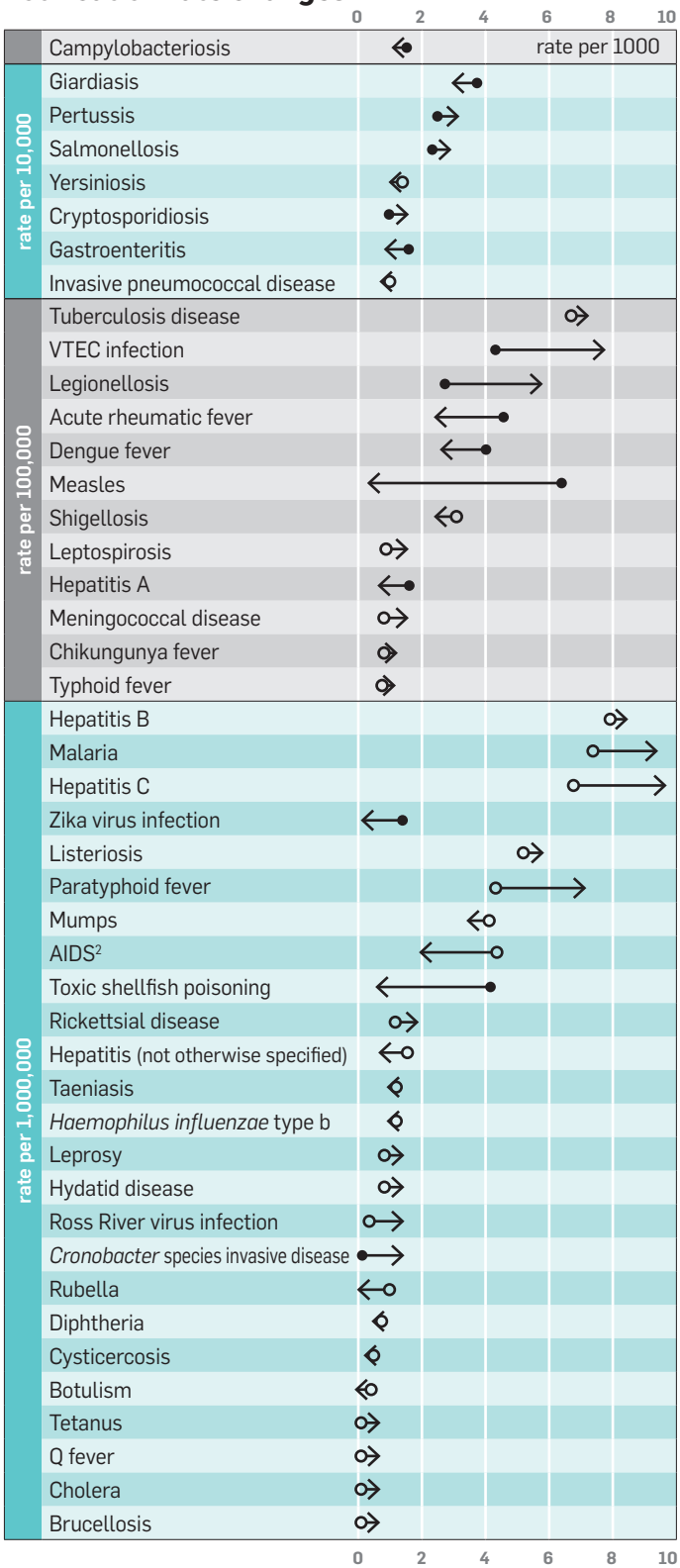
Gastroenteritis (acute)

- ***Notifications:*** 141 notifications in the quarter (2014, 222); 505 notifications over the last 12 months (2014, 756), giving a rate of 11.2 cases per 100,000 population (2014, 16.8), a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly decrease from the same quarter last year (222 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:*** 249 notifications in the quarter (2014, 233); 1057 notifications over the last 12 months (2014, 956), giving a rate of 23.4 cases per 100,000 population (2014, 21.2), a statistically significant increase.

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 January to December 2015 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.

VTEC infection

- ***Notifications:*** 112 notifications in the quarter (2014, 39); 345 notifications over the last 12 months (2014, 187), giving a rate of 7.7 cases per 100,000 population (2014, 4.1), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the same quarter last year (39 cases). The increase may be due to a recent change in laboratory methods in the Auckland region, all faecal specimens are now screened for VTEC using PCR.

Yersiniosis

- ***Notifications:*** 230 notifications in the quarter (2014, 248); 639 notifications over the last 12 months (2014, 681), giving a rate of 14.2 cases per 100,000 population (2014, 15.1), not a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (177 cases).

Infectious respiratory diseases

Acute rheumatic fever

- ***Notifications:*** 24 notifications in the quarter (2014, 31); 113 notifications over the last 12 months (2014, 200), giving a rate of 2.5 cases per 100,000 population (2014, 4.4), a statistically significant decrease.
- ***Comments:*** Cases were distributed by age as follows: 1 (1–4 years), 6 (5–9 years), 9 (10–14 years), and 8 (≥15 years). 22 cases were an initial attack and 2 cases were a recurrent attack of acute rheumatic fever.
- ***Note:*** this information is based on report date and may not reflect the actual onset of acute rheumatic fever. This information should not be used to assess trends in the disease rates over time.

Meningococcal disease

- ***Notifications:*** 16 notifications in the quarter (2014, 8); 65 notifications over the last 12 months (2014, 45) giving a rate of 1.4 per 100,000 population (2014, 1.0), not a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (31 cases). Cases were distributed by age as follows: 2 (<1 year), 7 (1–4 years), 1 (5–9 years) and 6 (≥15 years). 12 cases were laboratory confirmed. The strain group was identified for 12 cases: group B (6 cases, including 2 group B:P1.7-2,4), and group C (2 cases), group Y (2 cases), and group W135 (2 cases). Strain type B:P1.7-2,4 was previously known as the 'NZ epidemic strain'.

Environmental exposures & infections

Cryptosporidiosis

- ***Notifications:*** 261 notifications in the quarter (2014, 238); 696 notifications over the last 12 months (2014, 584), giving a rate of 15.4 cases per 100,000 population (2014, 12.9), a statistically significant increase.

Giardiasis

- ***Notifications:*** 372 notifications in the quarter (2014, 345); 1512 notifications over the last 12 months (2014, 1709), giving a rate of 33.5 cases per 100,000 population (2014, 37.9), a statistically significant decrease.

Legionellosis

- ***Notifications:*** 133 notifications in the quarter (2014, 50); 258 notifications over the last 12 months (2014, 123), giving a rate of 5.7 cases per 100,000 population (2014, 2.7), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (35 cases) and from the same quarter last year (50 cases). 33 notifications remain under investigation, a proportion of these will fail to meet the case definition and be classified 'not a case'. The increase in notifications may be partly due to the LegiNZ study, which began in May 2015. The one year study is based in 20 hospitals, representing 17 DHBs. During the study all lower respiratory samples from hospitalised patients with suspected pneumonia will be tested for *Legionella* spp. by PCR. An increase in case detection in these regions is expected.

Toxic shellfish poisoning

- ***Notifications:*** 2 notifications in the quarter (2014, 14); 3 notifications over the last 12 months (2014, 18), a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly decrease from the same quarter last year (14 cases).

New, exotic & imported infections

Chikungunya fever

- ***Notifications:*** 1 notification in the quarter (2014, 30); 46 notifications over the last 12 months (2014, 44), giving a rate of 1.0 cases per 100,000 population (2014, 1.0), not a statistically significant change.
- ***Comments:*** there has been a statistically significant quarterly decrease from the same quarter last year (30 cases). The case was laboratory confirmed and had travelled to the Cook Islands during the incubation period of the disease.

Dengue fever

- ***Notifications:*** 20 notifications in the quarter (2014, 31); 127 notifications over the last 12 months (2014, 178), giving a rate of 2.8 cases per 100,000 population (2014, 3.9), a statistically significant decrease.
- ***Comments:*** 19 cases were laboratory confirmed. Overseas travel information was recorded for 19 cases. The most commonly visited countries were Samoa (9 cases), India (4 cases) and Malaysia (3 cases).

Hepatitis A

- ***Notifications:*** 16 notifications in the quarter (2014, 19); 48 notifications over the last 12 months (2014, 74), giving a rate of 1.1 cases per 100,000 population (2014, 1.6), a statistically significant decrease.
- ***Comments:*** Cases were aged between 1 and 47 years, with 3 cases aged <16 years. Overseas travel information was recorded for all cases. Of these, 8 (50.0%) case had not travelled overseas during the incubation period of the disease.

Typhoid fever

- ***Notifications:*** 22 notifications in the quarter (2014, 8); 47 notifications over the last 12 months (2014, 42), giving a rate of 1.0 cases per 100,000 population (2014, 0.9), not a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (7 cases) and the same quarter last year (8 cases). Overseas travel information was recorded for 19 cases. Of these, 5 (26.3%) had not travelled overseas during the incubation period.

Zika virus infection

- ***Notifications:*** 3 notifications in the quarter (2014, 0); 7 notifications over the last 12 months (2014, 57), giving a rate of 0.2 per 100,000 population (2014, 1.3), a statistically significant decrease.
- ***Comments:*** All cases were laboratory confirmed and had travelled overseas during the incubation period of the disease. Countries visited were American Samoa, Samoa and Thailand (1 case each).

Blood- & tissue-borne infections

Hepatitis C

- ***Notifications:*** 14 notifications in the quarter (2014, 0); 39 notifications over the last 12 months (2014, 29), giving a rate of 0.9 cases per 100,000 population (2014, 0.6), not a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the same quarter last year (no cases). Cases were aged between 18 and 65 years.

3. OTHER SURVEILLANCE REPORTS

A case of foodborne botulism in Wellington

In December 2014, Regional Public Health was notified about a suspected case of botulism.

A New Zealander, living and working in Japan, was in New Zealand when they experienced the sudden onset of diplopia, blurred vision and vomiting. Once admitted to hospital, their symptoms evolved rapidly to include dysphagia, bulbar weakness followed later by muscle weakness, bilateral descending paralysis and respiratory arrest.

Botulism was the probable diagnosis after ruling out other causes. Electromyography studies showed effects consistent with botulinum toxin. There was nil growth from blood, stool and gastric washings cultures and polymerase chain reaction tests for *Clostridium botulinum* toxin genes were negative. Serum toxin testing was not available in New Zealand. The case was treated with botulinum antitoxin and needed intensive care and on-going rehabilitation.

Botulism is a rare and potentially fatal disease caused by toxins produced by *C. botulinum*. *C. botulinum* produces spores which can be found in the environment, including in soil, rivers and seawater. Foodborne botulism occurs when the bacteria grow and produce toxins in food products that have low oxygen content with certain combinations of storage temperature and preservative parameters.[1] How foods are produced, packaged and stored is more critical than the type of food, although low pH and dry conditions will inhibit growth.

Regional Public Health staff needed to act quickly to identify possible sources, including contaminated foods, any foods the case may have brought from Japan, the use of cosmetic or therapeutic botulinum injections, or intravenous drug use.

The investigation faced challenges. The case was on a ventilator in the intensive care unit. Health Protection Officers interviewed the case's Japanese friend with an interpreter and New Zealand family. The case had arrived in New Zealand two days before falling ill. A food history and activity timeline showed the mostly likely source was a commercially manufactured rice dish eaten at a family member's home. The case was the only person who ate the rice and the timeline matched the onset of symptoms (usually 12–36 hours after exposure). Before the case's health deteriorated they told hospital staff the rice dish had tasted bitter, like blue cheese. No other risk factors were identified.

One factor complicating the investigation was the description of the dry rice product stored in the pantry. This profile is not consistent with a food that allows *C. botulinum* to grow. Further enquiries revealed that the chilled, pre-cooked 'heat and eat' risotto (in a plastic pouch) was bought at a local supermarket in July 2014. No left-over rice was available for laboratory testing and the packaging had been discarded.

The supermarket confirmed it had stocked one brand of chilled risotto, and a sample of the product showed a shelf life of about 100 days and was labelled with a 'Best Before' rather than a 'Use By' date. The instructions to "keep refrigerated 2–4°C" were on the back of the pack in small font. The suspect rice was significantly past the recommended storage date and had been inappropriately stored at ambient temperature. *C. botulinum* is an anaerobic organism, so a wet food sealed in limited oxygen and stored unrefrigerated for about six months was the most likely source.

This is only the third case of foodborne botulism reported in New Zealand; the previous cases being in 1984.[2] Similar cases exist overseas. In 2008, two people in France developed severe botulism and needed ventilation after eating pre-cooked, chilled chicken enchiladas kept at room temperature for two weeks. The product was recalled and authorities asked the manufacturer to improve the packaging, make the storage instructions more visible, and issued a reminder to follow storage conditions.[3] And in two outbreaks in California in 1994, vacuum-packed clam chowder and black bean dip were kept at room temperature for one month and three weeks respectively.[4]

This investigation raises issues about chilled 'ready to eat' foods. Consumers must keep to the recommended shelf life and storage conditions of food products. Some ready-made products are shelf stable; some require refrigeration. Manufacturers must make shelf life and storage information prominent and readable, and remember that someone other

than the purchaser may store and eat the product.

For list of references see www.surv.esr.cri.nz/surveillance/NZPHSR.php

Reported by Nicola Esson, Health Protection Officer, Marie Gibson, Health Protection Officer, and Annette Nesdale, Medical Officer of Health, Regional Public Health, Wellington.

4. OUTBREAK SURVEILLANCE

The following is a summary of the outbreak trends for the October to December quarter 2015. Comparisons are made to the previous quarter (July to September 2015), and to the same quarter in the previous year (October to December 2014). Information in this section is based on data recorded in EpiSurv by public health service staff up to 18 January 2016. As the data may be updated over time, this information should be regarded as provisional.

General

- 147 outbreaks notified in this quarter (1702 cases).
- 108 are final reports (1344 cases); 39 are interim reports (358 cases) that have yet to be finalised and closed.

All data that follow relate to final reports only.

- 12.4 cases on average per outbreak, compared with 18.8 cases per outbreak in the previous quarter (16.0 cases per outbreak in the same quarter of last year).
- 15 hospitalisations: norovirus (5), *Clostridium difficile* (3), *Campylobacter* (2), 'gastroenteritis' (2), *Salmonella* Typhi (2), and VTEC infection (1).
- 3 deaths: rhinovirus (2) and norovirus (1).
- One outbreak involved more than one pathogen therefore individual pathogen outbreak numbers may not sum to group totals.

Pathogens

- 39 norovirus outbreaks (907 cases).
- 25 'gastroenteritis' outbreaks (229 cases).
- 10 *Cryptosporidium* outbreaks (43 cases).
- 8 VTEC infection outbreaks (23 cases).
- 5 *Giardia* outbreaks (11 cases).
- 4 *Bordetella pertussis* outbreaks (10 cases).
- 4 *Campylobacter* outbreaks (12 cases).
- 3 sapovirus outbreaks (26 cases).
- 2 *Clostridium perfringens* outbreaks (21 cases).
- 2 *Salmonella* outbreaks (5 cases).
- 2 *Shigella* outbreaks (7 cases).
- 1 *Clostridium difficile* outbreak (3 cases).
- 1 rhinovirus outbreak (23 cases).
- 1 *Salmonella* Typhi outbreak (2 cases).
- 1 *Varicella zoster* virus outbreak (22 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.

- 87 person-to-person, from (non-sexual) contact with an infected person (including droplets): 38 norovirus (905 cases), 17 'gastroenteritis' (205 cases), 8 *Cryptosporidium* (29 cases), 8 VTEC infection (23 cases), 6 *Giardia* (14 cases), 4 *B. pertussis* (10 cases), 1 *Campylobacter* (2 cases), 1 *C. difficile* (3 cases), 1 rhinovirus (23 cases), 1 *Salmonella* (3 cases), 1 sapovirus (18 cases), 1 *Shigella* (2 cases), and 1 *V. zoster* virus (22 cases).
- 20 environmental, from contact with an environmental source (eg, swimming): 14 norovirus (371 cases), 3 'gastroenteritis' (37 cases), 1 *Cryptosporidium* (3 cases), 1 *Giardia* (2 cases), and 1 VTEC infection (2 cases).
- 14 foodborne, from consumption of contaminated food or drink (excluding water): 5 'gastroenteritis' (15 cases), 2 *Campylobacter* (6 cases), 2 *C. perfringens* (21 cases), 2 *Shigella* (7 cases), 1 *Cryptosporidium* (11 cases), 1 norovirus (2 cases), and 1 *Salmonella* (2 cases).
- 5 zoonotic, from contact with an infected animal: 3 *Cryptosporidium* (12 cases), 1 *Campylobacter* (2 cases), and 1 VTEC infection (2 cases).
- 4 waterborne, from consumption of contaminated drinking water: 1 *Campylobacter* (4 cases), 1 *Cryptosporidium* (3 cases), 1 *Giardia* (2 cases), and 1 VTEC infection (2 cases).
- 6 mode of transmission unknown: 3 'gastroenteritis' (9 cases), 2 sapovirus (8 cases), and 1 *S.* Typhi (2 cases).

Circumstances of exposure

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

- 36 long term care facility: 24 norovirus (676 cases), 11 'gastroenteritis' (124 cases), and 1 rhinovirus (23 cases).
- 29 home: 7 *Cryptosporidium* (27 cases), 6 VTEC infection (18 cases), 4 *B. pertussis* (10 cases), 4 *Giardia* (8 cases), 2 'gastroenteritis' (24 cases), 2 *Salmonella* (5 cases), 1 *Campylobacter* (2 cases), 1 *C. perfringens* (3 cases), 1 norovirus (8 cases), and 1 *S.* Typhi (2 cases).
- 9 childcare centre: 4 norovirus (67 cases), 2 'gastroenteritis' (18 cases), 1 *Cryptosporidium* (3 cases), 1 *Giardia* (3 cases), and 1 *V. zoster* virus (22 cases).
- 9 restaurant/café/bakery: 5 'gastroenteritis' (16 cases), 2 norovirus (26 cases), 1 sapovirus (8 cases), and 1 *Shigella* (5 cases).
- 6 hospital (acute care): 4 norovirus (55 cases), 1 *C. difficile* (3 cases), and 1 'gastroenteritis' (20 cases).
- 2 takeaways: 1 'gastroenteritis' (2 cases) and 1 norovirus (5 cases).
- 2 other food outlet: 1 *Campylobacter* (3 cases) and 1 *Cryptosporidium* (11 cases).
- 1 camp: *Campylobacter* (4 cases).
- 1 community gathering: *C. perfringens* (18 cases).
- 1 hostel/boarding school: norovirus (16 cases).
- 1 other institution: sapovirus (18 cases).
- 1 prison: norovirus (22 cases).
- 1 school: *B. pertussis* (4 cases).
- 1 temporary or mobile food service: 'gastroenteritis' (2 cases).
- 3 other setting: 1 'gastroenteritis' (20 cases), 1 norovirus (2 cases), and 1 VTEC infection (2 cases).
- 3 outbreaks had two or more exposure settings recorded.
- 8 outbreaks had no exposure settings recorded.

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

- 4 private home: 1 *C. perfringens* (3 cases), 1 'gastroenteritis' (3 cases), 1 norovirus (2 cases), and 1 *Salmonella* (2 cases).
- 3 restaurant/café/bakery: 3 'gastroenteritis' (11 cases).
- 2 other food outlet: 1 *Campylobacter* (3 cases) and 1 *Cryptosporidium* (11 cases).
- 1 caterers: *C. perfringens* (18 cases).
- 1 takeaways: 'gastroenteritis' (2 cases).
- 1 temporary or mobile food service: 'gastroenteritis' (2 cases).
- 3 outbreaks had no preparation settings recorded.

5. OUTBREAK CASE REPORTS

Verotoxin-producing *Escherichia coli* outbreak at an early childhood education centre

Verotoxin-producing *Escherichia coli* (VTEC) are a heterogeneous group of bacteria,[1] in which the most commonly identified pathogen is the *E. coli* O157:H7 serotype.[2,3] VTEC infection can be asymptomatic, but a high percentage of people infected suffer serious, life-threatening complications.[1,4–6] Between 3% and 12% of cases of VTEC infection in children are complicated by Haemolytic Uraemic Syndrome (HUS);[1,4,7] typified by renal failure, thrombocytopenia and haemolytic anaemia.[5] HUS has a mortality rate of between 3% and 5%.[8]

VTEC infection is associated with raw or undercooked meat, raw milk, untreated water and farming activities. Person-to-person transmission can occur via faecal-oral spread,[4,7] and early childhood education centres (ECEs) are high-risk environments for disease amplification.[6]

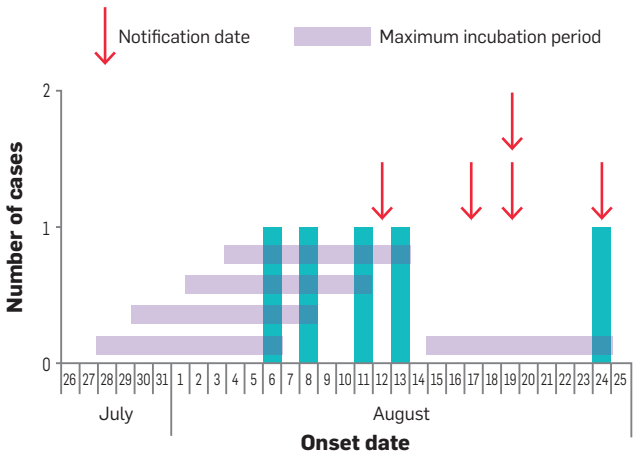
Two confirmed cases of VTEC gastroenteritis in Ashburton children were notified to Community and Public Health within one week in August 2015. Rapid investigation revealed that the only commonality was that both children attended the same preschool. The mother and sister of the first child were also unwell with enteric symptoms, and were later confirmed as cases three and four (Figure 1).

A total of 159 people (children, staff members, high-risk contacts and official visitors) were screened (faecal screening for VTEC). All had attended or visited the preschool between the start of the incubation period of the index case's illness and the start of the outbreak investigation. No confirmed cases or asymptomatic carriers were permitted to return to the preschool until they had provided two confirmed negative faecal specimens (collected more than 48 hours apart).

The second case had four high-risk contacts (all food handlers). These contacts returned to work once cleared of carrying VTEC.

Unfortunately, one child (fifth case) developed VTEC gastroenteritis after the start of the investigation. Their parent reported the child had continued to bathe with siblings who were carriers.

FIGURE 1. VTEC cases by onset and notification dates: early childhood education centre outbreak August 2015



In total five cases and four asymptomatic carriers were identified during this outbreak. ESR's Enteric Reference Laboratory performed pulsed-field gel electrophoresis typing on the isolates from the cases and carriers and all had a common profile.

Four of the five confirmed cases, and all four asymptomatic carriers, were children under 5 years. The only adult affected was a parent of one of those children. Cases and carriers were limited to four family groups, all with children at the ECE. This outbreak had no cases of HUS or any other complication.

The final cleared specimen result was received on 12 October 2015 (from the second carrier), seven weeks after being identified as an asymptomatic carrier.

This outbreak highlights the importance of vigilant public health surveillance. Without quickly recognising the link between cases, and responding rapidly, we would likely have seen many more cases. For example, a VTEC outbreak in a childcare centre in Germany, transmitted person-to-person, resulted in 39 cases of VTEC, three cases of HUS and one death.[9]

Screening all children, staff and visitors to the preschool took considerable time and resources. Yet the effort meant that Community and Public Health detected four asymptomatic carriers who did not return to the preschool until cleared of carrying VTEC.

During the investigation, Community and Public Health stressed to families and staff the importance of hand hygiene. The potential risk from asymptomatic carriers (a real risk in this episode) also needs to be communicated at the outset.

In New Zealand, VTEC outbreaks are relatively rare. However, multiple large outbreaks have occurred overseas. In 2011 a large non-O157 VTEC outbreak in Germany was linked to contaminated sprouts.[10] Of the 3469 cases identified, 50 people died.[10] Outbreaks of this size remind us what impact VTEC (through contaminated food or water sources) can have on people's health.

For list of references see www.surv.esr.cri.nz/surveillance/NZPHSR.php

Reported by Julianna Lees, Public Health Medicine Registrar and Alistair Humphrey, Medical Officer of Health, Community and Public Health, Canterbury.

6. LABORATORY SURVEILLANCE

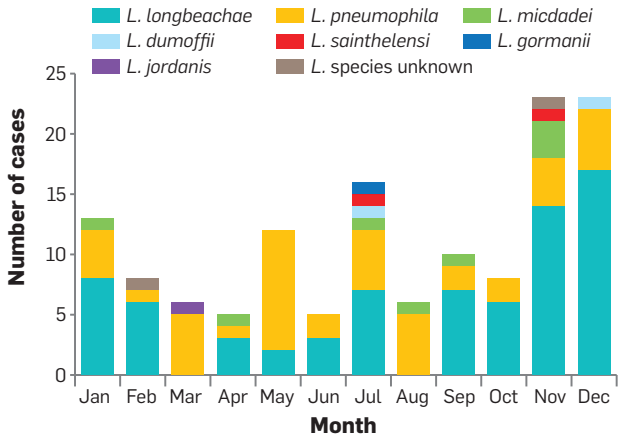
Laboratory-based legionellosis surveillance, 2014

Laboratory-based testing and surveillance in New Zealand identified 135 legionellosis cases (3.0 per 100,000 population) during 2014, of which 91 cases fitted the confirmed case definition. This compares with 151 cases (3.4 per 100,000) in 2013 (110 confirmed), and continues the small decrease in case numbers seen each year since the 178 high in 2010. That decrease is more likely due to under-diagnosis of the disease rather than a decrease in disease incidence.

Legionellosis incidence rates were calculated for each district health board (DHB) area with five or more diagnosed cases. The rates ranged from a low of 1.6 per 100,000 population in the Southern DHB to a high of 18.4 per 100,000 population for the West Coast DHB. The much higher rate of legionellosis in the West Coast DHB area compared to other areas is partly due to the small population and partly due to the three *Legionella pneumophila* sg 12 cases linked to an outbreak. No source was identified for this outbreak.

Nationally, the most common causative agent identified was *L. longbeachae* with 73 (54.1%) cases, followed by *L. pneumophila* with 46 (34.1%) cases (Figure 2). The predominant *L. pneumophila* strain remains serogroup 1, causing 23 cases. *L. dumoffii, L. gormanii, L. jordanis, L. micdadei* and *L. sainthelensi* caused the remaining 16 (11.9%) legionellosis cases (Figure 2).

FIGURE 2. Number of legionellosis cases by *Legionella* causative agent and month, 2014



Source tracing linked 65 legionellosis cases with exposure to compost, potting mix or other gardening activity, with 25 (38.5%) having a proven link (with the isolation of the causative agent from the environmental material used by the case), and 40 having a suspected link after reporting being exposed to composted material, but either no sampling was done or testing failed to isolate the causative agent. Two further cases were related to a contaminated spa pool, and another case to the water supply in a rural tank. Source tracing also identified two nosocomial cases at separate hospitals, and another to foreign travel. For the remaining 64 cases no clear exposure source was identified.

Cases of *L. longbeachae* infection generally show a seasonal pattern, with an increase in early spring, elevated levels over summer, and lower levels from late autumn (Figure 2). This pattern is associated with gardening activities, which occur most often in spring and summer. The 'unseasonal' seven cases of *L. longbeachae* notified in July 2014 cannot be explained, and the cases were spread across six different DHB areas. *L. pneumophila* infections appear to be more evenly spread throughout the year, and the cluster of 10 cases seen in May 2014 cannot be explained. The regional spread for that cluster was Auckland area (5 cases), Canterbury (4 cases) and Taranaki (1 case). No exposure source was identified for any of these cases.

In 2014, laboratory testing confirmed *Legionella* culture isolates from 24 cases. A further 67 cases were confirmed after either a positive *Legionella* urinary antigen test (14 cases), a four-fold or greater rise in antibody titres (21 cases), or antibody titres greater than 512 on more than one occasion (32 cases). A further 44 cases only met the probable case definition after either a nucleic acid amplification test (NAAT)-positive test (30 cases), or a single serological positive test (9 cases), or a combination of both (5 cases). Culture isolation is still considered the gold standard test for the diagnosis of legionellosis, although molecular testing is gaining popularity due to its greater sensitivity and specificity compared to serology alone.

Of the 135 laboratory-proven cases in 2014, 66 were initially detected on the basis of a positive NAAT result. Further laboratory testing (usually by culture and/or serology) confirmed 31 of these cases. This left 35 cases as probable cases under the current case definition. Laboratories are encouraged to culture lower respiratory tract samples for *Legionella* bacteria from patients suspected of having legionellosis, and to partner this with acute and convalescent serology. The aim is to increase the identification of strains not identified by molecular testing.

ESR acknowledges the contribution of Canterbury Health Laboratories and Middlemore Hospital Laboratory for the molecular identification of NAAT-positive cases, and the public health services for providing source tracing samples.

For supplementary material see www.surv.esr.cri.nz/surveillance/NZPHSR.php

Reported by David Harte, *Legionella* 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