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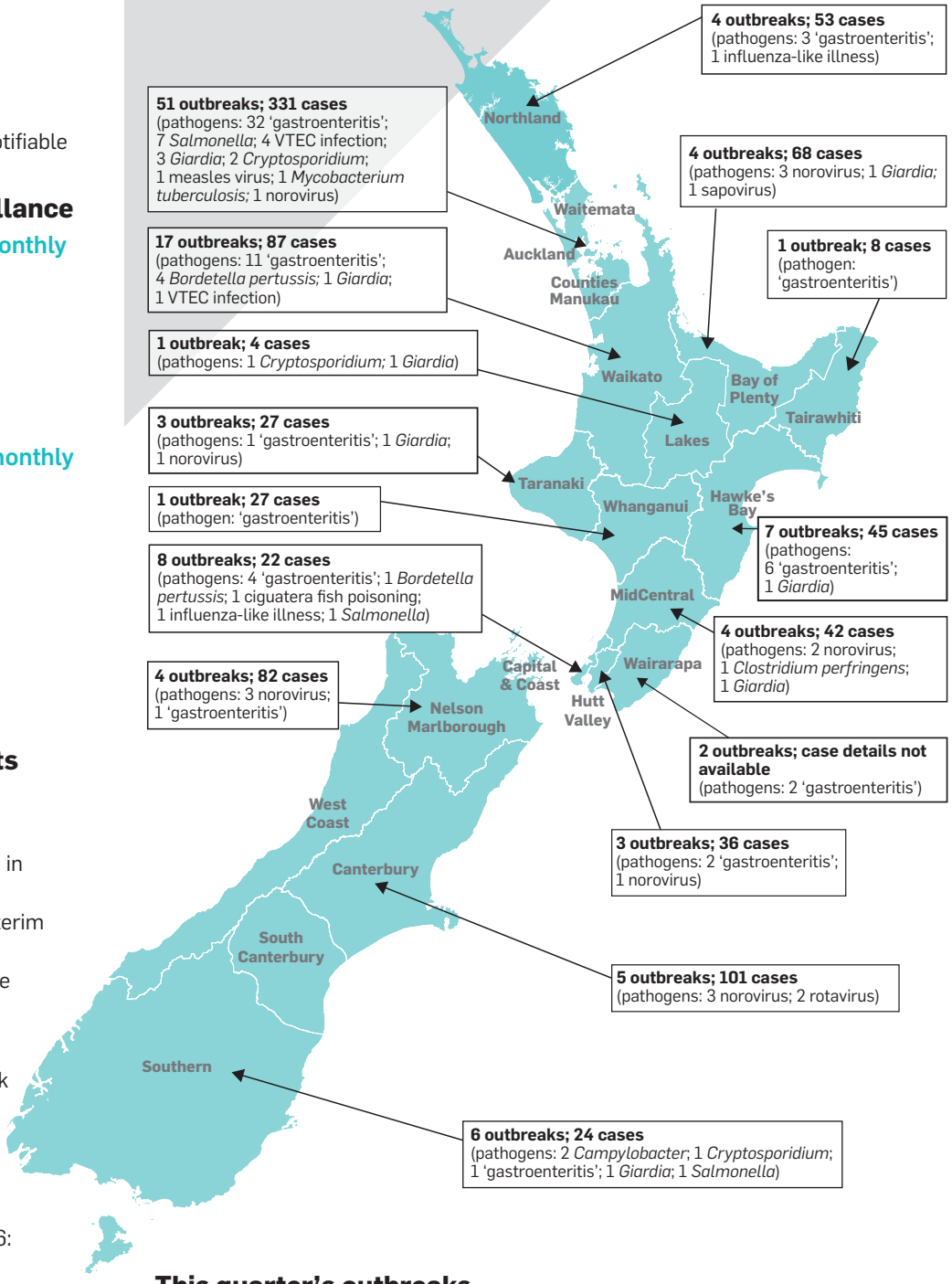
NEW ZEALAND

Public Health Surveillance Report

June 2016: Covering January to March 2016

CONTENTS AND HIGHLIGHTS



This quarter's outbreaks

Notification and outbreak data in this issue are drawn from the January to March quarter of 2016. 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 April 2016. Outbreaks reporting exposures in more than one geographic location are assigned to the district health board with the most cases. Two outbreaks 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

A summary of the key trends in notifiable diseases for 2015

A total of 14,306 notifiable disease cases were reported through EpiSurv, New Zealand's notifiable disease database in 2015, compared with 15,045 in 2014.

From 2014 to 2015, notifications of the following diseases decreased significantly: campylobacteriosis, dengue fever, acute gastroenteritis, giardiasis, hepatitis A, measles and rheumatic fever. However, notifications of cryptosporidiosis, legionellosis and VTEC infection increased significantly over this time period.

Enteric diseases

From 2014 to 2015, notifications for most enteric diseases decreased except for cryptosporidiosis and VTEC infection. There was a significant increase in notified cases of cryptosporidiosis in 2015 (696 cases, 15.1 per 100,000 population) compared with 2014 (584 cases, 12.9 per 100,000).

A significant increase in notified cases of VTEC infection occurred, with 330 cases in 2015 (7.2 per 100,000) compared with 187 cases in 2014 (4.1 per 100,000). This was the highest yearly total for VTEC infections. The increase may be due to a recent change in laboratory methods in the Auckland region, where all faecal specimens are now screened for VTEC using polymerase chain reaction.

There was a significant decrease in notified cases of campylobacteriosis in 2015 (6218 cases, 135.3 per 100,000) compared with 2014 (6782 cases, 150.4 per 100,000). Fewer outbreaks of campylobacteriosis were reported in 2015 (19 outbreaks, involving 88 cases), compared with 2014 (35 outbreaks, involving 241 cases). Despite a decrease in cases, campylobacteriosis still accounted for 44% of all notifications in 2015.

There was also a significant decrease in notified cases of giardiasis in 2015 (1510 cases, 32.9 per 100,000) compared with 2014 (1709 cases, 37.9 per 100,000).

Vaccine-preventable diseases

A decrease in notified cases of invasive pneumococcal disease, measles and mumps occurred from 2014 to 2015. In particular, notified cases of measles significantly decreased, with only 10 cases (0.2 per 100,000) notified during 2015, down from 280 cases (6.2 per 100,000) in 2014.

A slight increase in notified cases of pertussis was observed, with 1168 cases in 2015 (25.4 per 100,000) compared with 1099 cases in 2014 (24.4 per 100,000).

Exotic diseases

Notified cases of dengue fever showed a significant decrease, with 125 cases in 2015 (2.7 per 100,000) compared with 179 cases in 2014 (4.0 per 100,000).

There was also a significant decrease in notified cases of Zika virus infection in 2015 with 7 cases compared with 57 cases in 2014.

In 2015, 48 cases of chikungunya fever were notified, similar to 44 cases notified in 2014 (a rate of 1.0 per 100,000 for both years). The most commonly visited countries were Samoa and the Cook Islands.

Five cases of leprosy were notified in 2015 compared with four cases in 2014. All cases were overseas during the incubation period for the disease. The countries they lived in or visited were Kiribati (2 cases), Philippines (2 cases), Nepal and Thailand (1 case).

Outbreaks

In 2015, there was a decrease in the number of outbreaks and the number of associated cases (559 outbreaks, 8548 cases) compared with 2014 (863 outbreaks, 14,827 cases). Over the 10-year period between 2005 and 2014, however, there was an increasing trend in the number of outbreaks reported.

The pathogens most commonly implicated in outbreaks in 2015 were norovirus (196 outbreaks, 4893 cases), *Giardia* spp. (45 outbreaks, 207 cases) and *Cryptosporidium* spp. (21 outbreaks, 94 cases).

For a more detailed report see www.surv.esr.cri.nz/surveillance/annual_surveillance.php

Reported by the Health Intelligence Team, Health Group, ESR.

2. NOTIFIABLE DISEASE SURVEILLANCE

The following is a summary of disease notifications for the January to March quarter of 2016 and cumulative notifications and rates calculated for a 12-month period (April 2015 to March 2016). 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 April 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:*** 61 notifications in the quarter (2015, 62); 450 notifications over the last 12 months (2015, 481), giving a rate of 9.8 cases per 100,000 population (2015, 10.7), not a statistically significant decrease.

- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (125 cases). Cases were aged between 1 and 96 years, with 1 case aged <2 years.

Measles

- ***Notifications:*** 12 notifications in the quarter (2015, 2); 20 notifications over the last 12 months (2015, 171), giving a rate of 0.4 cases per 100,000 population (2015, 3.8), a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (1 case) and from the same quarter last year (2 cases). 4 cases were aged <15 months. 6 cases were confirmed and 6 notifications were still under investigation, some of these will be classified 'not a case'.

Mumps

- ***Notifications:*** 7 notifications in the quarter (2015, 1); 19 notifications over the last 12 months (2015, 13), giving a rate of 0.4 cases per 100,000 population (2015, 0.3), not a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the same quarter last year (1 case). No cases were aged <15 months. 1 case was confirmed and 6 notifications were still under investigation, some of these will be classified 'not a case'.

Pertussis

- ***Notifications:*** 292 notifications in the quarter (2015, 207); 1253 notifications over the last 12 months (2015, 960), giving a rate of 27.3 cases per 100,000 population (2015, 21.3), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the same quarter last year (207 cases).

Enteric infections

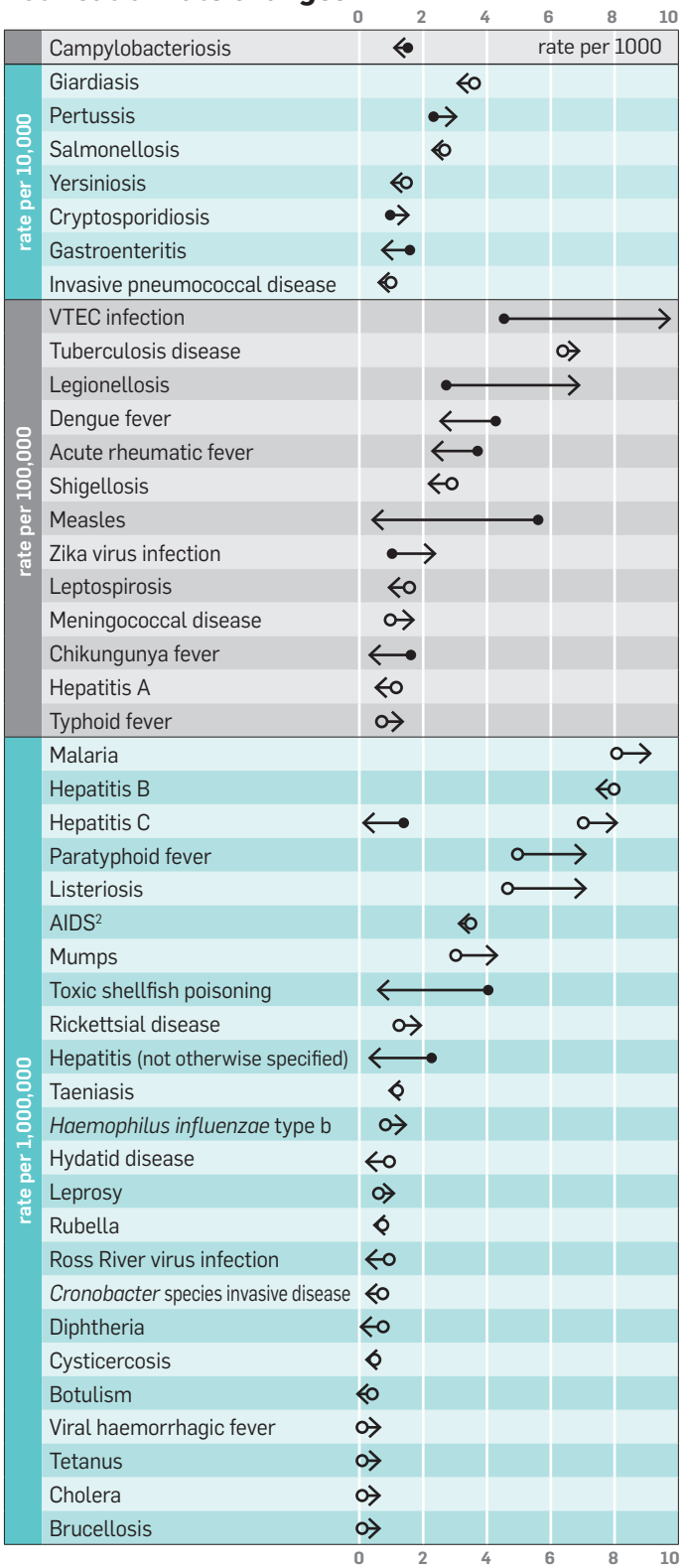
Campylobacteriosis

- ***Notifications:*** 1590 notifications in the quarter (2015, 1548); 6260 notifications over the last 12 months (2015, 6513), giving a rate of 136.2 cases per 100,000 population (2015, 144.4), a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (2114 cases).

Gastroenteritis (acute)

- ***Notifications:*** 131 notifications in the quarter (2015, 121); 514 notifications over the last 12 months (2015, 707), giving a rate of 11.2 cases per 100,000 population (2015, 15.7), a statistically significant decrease.
- ***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.

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 April 2015 to March 2016 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.

Salmonellosis

- ***Notifications:*** 346 notifications in the quarter (2015, 351); 1046 notifications over the last 12 months (2015, 1027), giving a rate of 22.8 cases per 100,000 population (2015, 22.8), not a statistically significant change.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (247 cases).

VTEC infection

- ***Notifications:*** 182 notifications in the quarter (2015, 81); 431 notifications over the last 12 months (2015, 216), giving a rate of 9.4 cases per 100,000 population (2015, 4.8), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (101 cases) and from the same quarter last year (81 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:*** 154 notifications in the quarter (2015, 132); 656 notifications over the last 12 months (2015, 690), giving a rate of 14.3 cases per 100,000 population (2015, 15.3), not a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (225 cases).

Infectious respiratory diseases

Acute rheumatic fever

- ***Notifications:*** 28 notifications in the quarter (2015, 25); 115 notifications over the last 12 months (2015, 172), giving a rate of 2.5 cases per 100,000 population (2015, 3.8), a statistically significant decrease.
- ***Comments:*** Cases were distributed by age as follows: 4 (5–9 years), 16 (10–14 years), and 8 (≥15 years). 24 cases were an initial attack and 4 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.

Environmental exposures & infections

Cryptosporidiosis

- ***Notifications:*** 134 notifications in the quarter (2015, 77); 753 notifications over the last 12 months (2015, 579), giving a rate of 16.4 cases per 100,000 population (2015, 12.8), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly decrease from the previous quarter (261 cases) and a statistically significant increase from the same quarter last year (77 cases).

Giardiasis

- ***Notifications:*** 496 notifications in the quarter (2015, 406); 1600 notifications over the last 12 months (2015, 1640), giving a rate of 34.8 cases per 100,000 population (2015, 36.4), not a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (371 cases) and from the same quarter last year (406 cases).

Legionellosis

- ***Notifications:*** 82 notifications in the quarter (2015, 32); 298 notifications over the last 12 months (2015, 130), giving a rate of 6.5 cases per 100,000 population (2015, 2.9), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (121 cases) and from the same quarter last year (32 cases). 6 notifications were still under investigation. 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 (2015, 1); 4 notifications over the last 12 months (2015, 18), a statistically significant decrease.

New, exotic & imported infections

Chikungunya fever

- ***Notifications:*** 3 notifications in the quarter (2015, 35); 16 notifications over the last 12 months (2015, 79), giving a rate of 0.3 cases per 100,000 population (2015, 1.8), a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly decrease from the same quarter last year (35 cases). All 3 cases were laboratory confirmed and had travelled to Fiji (one case had also travelled to the Solomon Islands) during the incubation period for the disease.

Dengue fever

- ***Notifications:*** 77 notifications in the quarter (2015, 73); 129 notifications over the last 12 months (2015, 185), giving a rate of 2.8 cases per 100,000 population (2015, 4.1), a statistically significant decrease.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (19 cases). 74 cases were laboratory confirmed. 2 notifications were still under investigation. Overseas travel information was known for 75 (97.4%) cases. The most commonly visited countries were Samoa (53 cases) and Indonesia (7 cases).

Hepatitis (not otherwise specified)

- ***Notifications:*** 1 notification in the quarter (2015, 3); 2 notifications over the last 12 months (2015, 10), a statistically significant decrease.

Shigellosis

- ***Notifications:*** 41 notifications in the quarter (2015, 44); 108 notifications over the last 12 months (2015, 133), giving a rate of 2.3 cases per 100,000 population (2015, 2.9), not a statistically significant decrease.

- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (22 cases). Overseas travel or prior travel information was known for 34 (82.9%) cases. Of these, 14 (41.2%) cases had not travelled overseas during the incubation period and had no travel history that could account for their infection.

Zika virus infection

- ***Notifications:*** 85 notifications in the quarter (2015, 1); 93 notifications over the last 12 months (2015, 43), giving a rate of 2.0 per 100,000 population (2015, 1.0), a statistically significant increase.
- ***Comments:*** there has been a statistically significant quarterly increase from the previous quarter (5 cases) and from the same quarter last year (1 case). 78 cases were laboratory confirmed. 3 notifications were still under investigation. Overseas travel information was recorded for all cases, of which 84 cases had travelled overseas during the incubation period for the disease. The most commonly visited countries were Tonga (59 cases) and Samoa (23 cases).

3. OTHER SURVEILLANCE REPORTS

No reports this quarter.

4. OUTBREAK SURVEILLANCE

The following is a summary of the outbreak trends for the January to March quarter 2016. Comparisons are made to the previous quarter (October to December 2015), and to the same quarter in the previous year (January to March 2015). Information in this section is based on data recorded in EpiSurv by public health service staff up to 5 April 2016. As the data may be updated over time, this information should be regarded as provisional.

General

- 121 outbreaks notified in this quarter (957 cases).
- 50 are final reports (554 cases); 71 are interim reports (403 cases) that have yet to be finalised and closed.

All data that follow relate to final reports only.

- 11.1 cases on average per outbreak, compared with 13.5 cases per outbreak in the previous quarter (13.8 cases per outbreak in the same quarter of last year).
- 5 hospitalisations: *Bordetella pertussis* (2), 'gastroenteritis' (2), and norovirus (1).
- 2 deaths: 'gastroenteritis' (1) and influenza-like illness (1).
- Two outbreaks involved more than one pathogen therefore individual pathogen outbreak numbers may not sum to group totals.

Pathogens

- 15 'gastroenteritis' outbreaks (161 cases).
- 11 norovirus outbreaks (256 cases).
- 8 *Giardia* outbreaks (26 cases).
- 5 *Salmonella* outbreaks (13 cases).
- 4 *Bordetella pertussis* outbreaks (9 cases).
- 4 *Cryptosporidium* outbreaks (10 cases).
- 2 rotavirus outbreaks (62 cases).
- 1 *Clostridium perfringens* outbreak (2 cases).
- 1 influenza-like illness outbreak (19 cases).
- 1 sapovirus outbreak (26 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.

- 39 person-to-person, from (non-sexual) contact with an infected person (including droplets): 12 'gastroenteritis' (153 cases), 11 norovirus (256 cases), 5 *Giardia* (16 cases), 4 *B. pertussis* (9 cases), 3 *Salmonella* (8 cases), 2 rotavirus (62 cases), 1 *Cryptosporidium* (2 cases), 1 influenza-like illness (19 cases), and 1 sapovirus (26 cases).
- 8 foodborne, from consumption of contaminated food or drink (excluding water): 5 'gastroenteritis' (13 cases), 2 *Salmonella* (7 cases), and 1 *C. perfringens* (2 cases).
- 6 environmental, from contact with an environmental source (eg, swimming): 2 'gastroenteritis' (41 cases), 2 *Giardia* (9 cases), 1 *Cryptosporidium* (4 cases), 1 norovirus (35 cases), and 1 rotavirus (22 cases).
- 3 waterborne, from consumption of contaminated drinking water: 2 *Giardia* (6 cases) and 1 *Cryptosporidium* (2 cases).
- 3 mode of transmission unknown: 2 *Cryptosporidium* (4 cases) and 1 *Salmonella* (2 cases).

Circumstances of exposure

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

- 15 home: 4 *B. pertussis* (9 cases), 4 *Giardia* (14 cases), 2 *Cryptosporidium* (4 cases), 2 *Salmonella* (4 cases), 1 *C. perfringens* (2 cases), 1 'gastroenteritis' (4 cases), and 1 norovirus (2 cases).
- 14 long term care facility: 7 norovirus (185 cases), 5 'gastroenteritis' (65 cases), 1 influenza-like illness (19 cases), 1 sapovirus (26 cases), and 1 rotavirus (22 cases).
- 6 childcare centre: 4 'gastroenteritis' (74 cases) and 2 norovirus (58 cases).
- 4 restaurant/café/bakery: 3 'gastroenteritis' (7 cases) and 1 *Salmonella* (4 cases).
- 3 other institutions: 1 'gastroenteritis' (9 cases), 1 norovirus (11 cases), and 1 rotavirus (40 cases).
- 1 camp: *Giardia* (3 cases).
- 1 school: 1 *Cryptosporidium* (4 cases) and 1 *Giardia* (4 cases).
- 1 supermarket/delicatessen: *Salmonella* (3 cases).
- 1 takeaways: 'gastroenteritis' (2 cases).
- 2 other setting: 1 *Cryptosporidium* (4 cases), 1 *Giardia* (4 cases), and 1 *Salmonella* (2 cases).
- 1 outbreak had two or more exposure settings recorded.
- 3 outbreaks had no exposure settings recorded.

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

- 4 restaurant/café/bakery: 3 'gastroenteritis' (7 cases) and 1 *Salmonella* (4 cases).
- 1 private home: 'gastroenteritis' (4 cases).
- 1 supermarket/delicatessen: *Salmonella* (3 cases).
- 1 takeaways: 'gastroenteritis' (2 cases).
- 1 outbreak had no preparation settings recorded.

5. OUTBREAK CASE REPORTS

Heart-stopping meal—an outbreak of ciguatera food poisoning

On 8 January 2016, four adults were admitted to Wellington Hospital after developing nausea, vomiting, diarrhoea, fever, hypotension (low blood pressure), bradycardia (low heart rate) and paraesthesia (unusual sensations) around mouth and extremities. Their symptoms developed shortly after eating cooked moray eel. Three people went to the Emergency Department. The fourth person was contacted and advised to go to the hospital, given the clinical features of the other three. All four were admitted to hospital. They were monitored for cardiovascular instability, and treated with atropine and intravenous hydration. All were discharged within four days of admission.

The hospital notified Regional Public Health (RPH) of the four cases on 8 January 2016. The provisional diagnosis was probable ciguatera food poisoning (CFP). When contacting RPH, the notifying medical practitioner at the hospital was unsure that CFP was a notifiable disease. In response to the notification, Health Protection Officers (HPOs) from RPH visited the hospital to interview the cases. The HPOs wanted to ensure that no eel remained and, if possible, to get food samples to confirm the diagnosis. Prior to discharge, each case received information about CFP and its recovery process, and advice on how to prevent being exposed to CFP in the future.

The four cases were aged between 41 and 67, and two were male and two were female. All were of Samoan ethnicity. Three were family members; the other was a neighbour. They all ate cooked moray eel steaks at about 4 pm on 7 January. Their symptoms started a few hours afterwards. One of them had purchased the eel at the market in Samoa and brought it back to New Zealand on 4 January 2016.

All four cases said that nobody else had eaten the eel and they had not given any away. However, one of the cases had taken some leftovers home. They had not eaten any further eel, and had thrown it into a rubbish bin. The HPOs managed to retrieve the discarded eel, and on 8 January they sent the sample to ESR for testing.

ESR contracted a company to test the eel. The eel initially tested negative for any ciguatoxins. ESR sent the results to RPH on 28 January. RPH questioned this result given the strong clinical evidence from the cases. So ESR requested the sample be re-tested. On 19 February, re-testing confirmed the presence of elevated levels of ciguatoxin (2.74 micrograms of ciguatoxin 1B (CTX-1B) per kilogram of eel flesh). The toxin isolated—CTX-1B—is the dominant ciguatera toxin in the Pacific region and the level in which toxicity could occur is 0.1 micrograms per kilogram of contaminated fish.[1] As such, it was estimated that eating about 36 grams of the eel could result in toxicity.

RPH was concerned at the disparity between the two test results. Both times the sample seemed to have been tested using the same methodology (LC-MS/MS) and looking for the same toxin. ESR advised that it had raised a quality incident with the company contracted to do the testing.

This was the second CFP-related outbreak managed by RPH in the past five years. The previous outbreak resulted in six confirmed cases associated with eating a large reef fish (Donu or coral trout) sold by a local retailer. Interestingly, the clinical manifestations of this earlier outbreak were mainly neurological rather than gastrointestinal.

These two outbreaks highlight two things. First, clinicians may not know that CFP is notifiable. Second, CFP may not always present with features of acute gastroenteritis. One possible way to improve diagnosis might be to change the case definition of acute gastroenteritis in the Communicable Disease Control Manual[2] to more clearly include CFP, when nausea, vomiting and diarrhoea are not the predominant symptoms. We have raised the need to consider these changes with the Ministry of Health.

REFERENCES:

1. Lehane L and Lewis R 2000. Ciguatera: recent advances but the risk remains. Int. J. of Food Microbiol. 61(2):91–125.
2. Ministry of Health 2012, Communicable Disease Control Manual 2012. Ministry of Health, Wellington.

Reported by Peter Murray, Public Health Registrar, Nicola Esson, Senior Health Protection Officer, Tina Hong, Health Protection Officer, Annette Nesdale, Medical Officer of Health, Regional Public Health.

An "outbreak" of Group A streptococcal pharyngitis?

Northland children have historically had high rates of Group A streptococcal (GAS) pharyngitis and its sequelae. The *Streptococcus pyogenes emm* gene encodes the cell surface M virulence protein, which is thought responsible for M serospecificity of *S. pyogenes*. Certain *emm* types associated with mucoid strains of GAS may be more likely to be associated with acute rheumatic fever.[1,2] Despite this, little is known about the patterns of *emm* types in GAS transmission in community settings. New Zealand has no national surveillance of GAS pharyngitis.

Tamariki Māori, Pacific and other children from socio-economically deprived areas are most at risk of rheumatic fever. They continue to face multiple barriers to accessing general practice in Northland, these include; access to same-day appointments, the need for a parent/care-giver to initiate access, institutional racism and geographical distance. As a response, since 2012 Northland District Health Board public health nurses have diagnosed and treated common conditions (including sore throats and skin infections) in schools.

This report describes an intervention after a public health nurse identified multiple cases of GAS pharyngitis in a Northland school. The school is decile 7 and has 21 students aged 5–13, 85% of whom are Māori. However it shares common characteristics with neighbouring decile 1–3 schools, with students predominantly living in lower socio-economic households. The students live in 16 different households, but several have extended family links and many are close socially. A chronology showing the number of students tested and the diagnostic results obtained is below (Table 1).

TABLE 1. Number of students with sore throat symptoms and test results in a Northland primary school, 28 July–14 August 2015

Date	Number of symptomatic students (sore throat)	Total number tested	Streptococcus test result	
			Group A	Group C
28/07/2015	1	1	1	0
31/07/2015	1	1	1	0
07/07/2015	2	2	2	0
10/08/2015	2	2	2	0
12/08/2015	2	2	2	0
13/08/2015	1	1	1	0
14/08/2015[1]	1	12	3	2
Total	**10**	**21**	**12**	**2**

[1] The date the remaining 12 students had swabs taken.

The first four children were from different households. They received daily oral amoxicillin for 10 days, as per national guidelines.[3] Symptomatic household members were offered throat swabs. Of 23 household members, 6 were symptomatic and 3 had GAS on culture. The second child who presented on 12 August also had fever and joint pains. Paediatric assessment ruled out acute rheumatic fever. Given the high number of cases, the last 12 students were swabbed: 7 were asymptomatic and GAS negative; 3 were asymptomatic and grew GAS; 2 had Group C streptococcal infection on culture, with one having a sore throat.

At the school, 57.1% (12/21) of the children were diagnosed with GAS pharyngitis within a 17-day period and a further two with Group C streptococcal pharyngitis; the majority (71.4%, 10/14) presented with sore throat symptoms. This compares to an average GAS rate of 8% from swabs taken through the rheumatic fever prevention programme in Northland schools.[4]

Emm typing was done to better understand whether this was a true cluster, with a possible new *emm* type in a school environment, or simply rapid, intense transmission in a close-knit, high-risk community. The 11 available isolates were referred to ESR for *emm* typing. These isolates showed significant heterogeneity, with *emm*82 (5), *emm*91 (3) and *emm*1, *emm*58 and *emm*65 (1 each) identified, indicating multiple co-circulating strains. In one household with five symptomatic GAS positive members and three isolates available for typing, three different *emm* types were identified.

In New Zealand *emm* typing is routinely carried out for isolates causing invasive disease.[5,6] A small laboratory study in Northland in 2013 found 36 *emm* types in 197 sore throat isolates from Northland children swabbed in the rheumatic fever prevention programme.[7] *Emm*1 predominated (23.9%), followed by *emm*11, *emm*12, *emm*41 and *emm*91.

In a 2013 an Auckland study of sore throat *emm* types, six *emm* types predominated (1, 89, 12, 28, 75 and 22), accounting for 59% of all isolates.[8] In comparison, a 2005–2006 New Zealand study of invasive isolates found *emm* types 1, 91, 81, 49, 89, 92 and 82 accounted for more than 50% of isolates analysed.[9] In a more recent national study examining invasive isolates from 2002–2012, 111 different *emm* types were detected; the five most common *emm* types were 1, 49, 81, 75 and 89, which together accounted for 26% of all isolates.[10] There was significant variation in the distribution of predominant *emm* types over time.

Our findings from the school show a significant heterogeneity of *emm* types in a small community in less than three weeks. The frequency of *emm* types also appears to differ from those in the 2013 Northland study although not all GAS isolates could be typed. This suggests that rapid temporal variation in *emm* types is occurring within Northland. This may influence the incidence of acute rheumatic fever and other post-streptococcal sequelae, and in future, GAS vaccine *emm* type coverage and efficacy.[11]

REFERENCES:

1. Esposito S, Bianchini S, Fasttiggi M, *et al.* 2015. Geoepidemiological hints about Streptococcus pyogenes strains in relationship with acute rheumatic fever. Autoimmun. Rev. 14(7):616–21.
2. Carapetis J, McDonald M, Wilson N 2005. Acute rheumatic fever. Lancet 366(9480):155–68.
3. Heart Foundation of New Zealand 2014. Group A Streptococcal Sore Throat Management Guideline. 2014 Update. Heart Foundation of New Zealand, Auckland.
4. Shetty A, Mills C, Eggleton K 2014. Primary care management of Group A streptococcal pharyngitis in Northland. J. Prim. Health Care (6)3:189–94.
5. Martin D, Voss L, Walker S, Lennon D 1994. Acute rheumatic fever in Auckland, New Zealand: spectrum of associated group A streptococci different from expected. Pediatr. Infect. Dis. J. 13(4):264–69.
6. Williamson D, Smeester P, Steer A, *et al.* 2015. M-protein analysis of Streptococcus pyogenes isolates associated with acute rheumatic fever in New Zealand. J. Clin. Microbiol. 53(11):3618–620.
7. Mhlanga N 2013. MSc thesis unpublished draft report.
8. Williamson D, Moreland N, Carter P, *et al.* 2014. Molecular epidemiology of group A streptococcus from pharyngeal isolates in Auckland, New Zealand, 2013. NZMJ 127(1388):55–60.
9. Sarfar A, Lennon D, Stewart J *et al.* 2011. Invasive Group A streptococcal infection and vaccine implications, Auckland, New Zealand. Emerg. Infect. Dis. 17(6):983–89.
10. Williamson D, Morgan J, Hope V, *et al.* 2015. Increasing incidence of invasive group A streptococcus disease in New Zealand, 2002–2012: A national population-based study. J. Infect. 70(2):127–34.
11. Steer A, Law I, Matatolu L, *et al.* 2009. Global emm type distribution of group A streptococci: a systematic review and implications for vaccine development. Lancet Infect. Dis. 9(10):611–16.

Reported by Clair Mills, Medical Officer of Health and Robin Hamman, Public Health Nurse, Northland District Health Board.

6. LABORATORY SURVEILLANCE

Norovirus surveillance 2015–2016: Emergence of a novel GII.17 virus

Norovirus, a genetically diverse group, is the leading cause of acute gastroenteritis worldwide. The virus is the most frequent agent reported in outbreaks in New Zealand, and a leading cause of foodborne illness.

An important function of global norovirus surveillance (including through the global network 'Noronet' www.noronet.nl) is to inform on currently circulating and emerging strains. The ESR Norovirus Reference Laboratory carries out laboratory surveillance of norovirus outbreaks for the New Zealand Ministry of Health. At least one representative sample from each outbreak is genotyped (after identification and initial typing into genogroups I and II (GI and GII)). Genotyping is carried out by sequencing at least two partial segments of the viral genome.

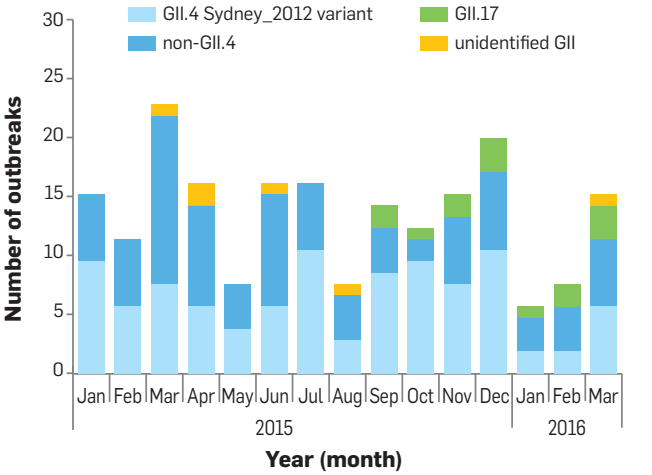
In the past two decades the norovirus genotype GII.4 has been predominant, with new pandemic variants or 'global strains' emerging every 2–4 years. The latest GII.4 variant, Sydney_2012, emerged in 2012 and rapidly displaced the circulating GII.4 variant. Emerging GII.4 viruses can lead to more reported outbreaks, particularly through person-to-person transmission in aged-care facilities and hospitals.

Laboratory-based surveillance confirmed 184 norovirus outbreaks in New Zealand in 2015, compared with 312 in 2014. The number of outbreaks reported per month remained relatively constant in 2015, with a mean of 15.2 (± 4.2) outbreaks a month. In 2015, most of the reported norovirus outbreaks occurred in long-term care facilities (58.2%, 107/184). Outbreaks were also associated with childcare centres (15.2%, 28/184), commercial food operators (9.2%, 17/184), acute-care hospitals (6.5%, 12/184), school/colleges (3.3%, 6/184), private homes (1.6%, 3/184) and university halls of residence (1.1%, 2/184). Other settings were reported in seven outbreaks, including one associated with recreational shellfish gathering. The setting was unknown in two outbreaks.

Norovirus GII was identified in 90.8% (167/184) of outbreaks, norovirus GI was identified in 7.1% (13/184) of outbreaks, and both norovirus GI and GII were detected in 2.2% (4/184) of outbreaks. While the majority (51.4%, 92/179) of the genotyped outbreaks were associated with the GII.4 Sydney_2012 variant, the percentage of GII.4 identified was lower than in 2014 (67.8%) and 2012 (73.9%) but higher than in 2013 (36.3%). Twelve other genotypes were identified (4 were GI types and 8 were non-GII.4 types).

In the northern hemisphere winter of 2014/15, a new non-GII.4 norovirus emerged as a major cause of gastroenteritis outbreaks in China and Japan. Viruses belonging to the novel GII.P17-GII.17 genotype (strain identified as GII.17 Kawasaki_2014) quickly replaced the GII.4 Sydney_2012 variant as the predominant norovirus circulating in Asia.[1–4] Novel GII.P17-GII.17 viruses have been detected sporadically in other countries during this period, including New Zealand.[5–7] GII.P17-GII.17 was first detected in New Zealand in 2014 (3 outbreaks; April, July and November) but was not identified again until September 2015. Between November 2015 and March 2016, GII.P17-GII.17 was identified in another 14 outbreaks (Figure 1). Of the 14 outbreaks, eight occurred in long-term care facilities. These eight outbreaks were associated with a total of 298 cases. Further characterisation of the GII.P17-GII.17 viruses in New Zealand and overseas is being determined.

FIGURE 1. Number of ESR laboratory-confirmed norovirus outbreaks in New Zealand by type, January 2015 to March 2016



While polymerase chain reaction methods are sensitive for the detection of GII.17 viruses, several point-of-care norovirus rapid immunochromatographic tests and enzyme immunoassays have shown less than optimal sensitivity.[8–10] So care is needed when interpreting diagnostic methodologies in outbreak settings where molecular assays are not used for screening.

It is as yet unclear if GII.P17-GII.17 will become the predominant circulating virus globally, or lead to an increase in reported norovirus outbreaks. However, the potential increase of norovirus activity by this novel virus should be considered a possibility.

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

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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