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New Zealand Public Health Surveillance Report

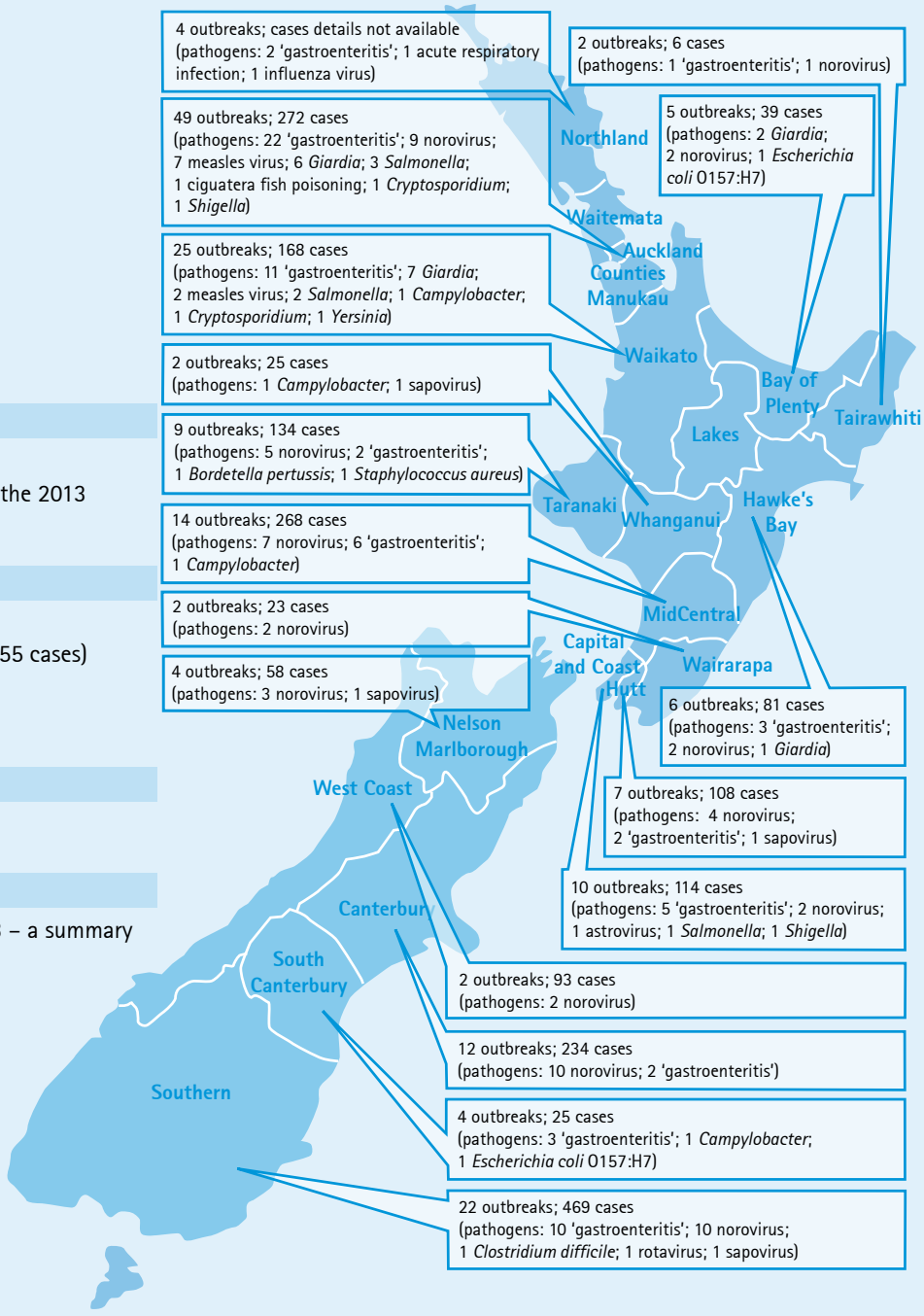
September 2014: Covering April to June 2014

Contents & Highlights

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

This Quarter's Outbreaks

Notification and outbreak data in this issue are drawn from the April to June quarter of 2014. 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 3 July 2014. Outbreaks reporting exposures in more than one geographic location are assigned to the district health board with the most cases. Three outbreaks involved more than one pathogen therefore individual pathogen outbreak numbers may not sum to group totals.



1. Editorial

The ESR Epidemiological Skills Development Programme – five years on

Strengthening New Zealand's public health workforce to identify, investigate and control outbreaks of infectious and aberrant diseases is the goal of ESR's Epidemiological Skills Development Programme, set up in 2008. Since then 29 courses with 324 participants have been run. Participants have included health protection officers, nurses, technical officers, data administrators, medical officers of health, analysts and defence personnel.

The programme was developed based on lessons learned from similar local and overseas programmes,[1-5] advice from disease investigation experts and consultation with public health units and has been progressively implemented over five years.

Three levels of short courses are offered, designed to complement on the job experience and other training. They have a strong emphasis on applied learning and are tailored to the systems and tools used in New Zealand. The courses are free for participants and funded through a contract with the Ministry of Health. They have usually been fully, and sometimes over, subscribed.

A growing network of teachers has been sourced from ESR, the Ministry for Primary Industries and public health units, as well as local epidemiologists and faculty from the Field Epidemiology Training Programme in Australia. All presenters and facilitators are trained in both active and applied learning methods (particularly the use of case studies) used in the programme. The courses also include peer teaching, student presentations and other structured activities that allow participants to learn from each other.

The programme is developing a pool of facilitators who have graduated from previous courses. These graduate facilitators are chosen for their experience, skills and interest, and their ability to teach and support others to learn. New facilitators are paired with experienced facilitators for several courses; gradually taking on more responsibility for course delivery.

All courses (except the outbreak investigations refresher) are assessed – longer courses have a pre and post test, and the week-long investigation course has a post-course project. Testing has shown that participants significantly increase their knowledge of outbreak investigation methods and gain confidence to carry out or support investigations.

New courses are piloted, and ongoing evaluation is used to review and improve content and delivery. Evaluation feedback has highlighted strengths of the courses such as the active learning model and opportunities for networking, as well as the particular sessions and resources which have proved most and least useful. The overall satisfaction rating for courses in the last year ranged from 4.2 to 4.7 out of 5.

Challenges to the programme include the cost of course delivery, the difficulty of releasing staff for training in short-staffed organisations and helping graduates maintain their skills, given the infrequent nature of large outbreak investigations.

Despite these challenges over 300 participants have completed courses and a network of teacher/facilitators has been developed. Most importantly there is a pool of outbreak investigators whose epidemiological knowledge and skill, at least in the short term has increased.

References

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5. Stehr-Green J and Gathany N 2005. Training in outbreak investigation through use of an online discussion group. Journal of Environmental Health 68(4):9–13.

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

For more information see www.esr.cri.nz/competencies/HumanBiosecurity/Pages/Training.aspx

Reported by Christine Roseveare and Toby Regan, Epidemiological Skills Development Programme Co-ordinators, Health Programme, ESR.

2. Notifiable Disease Surveillance

The following is a summary of disease notifications for the April to June quarter of 2014 and cumulative notifications and rates calculated for a 12-month period (July 2013 to June 2014). 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.]. Data contained within this report are based on information recorded in EpiSurv by public health service staff up to 3 July 2014. As this information may be updated over time, these data should be regarded as provisional.

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

VACCINE PREVENTABLE DISEASE

Invasive Pneumococcal Disease

- *Notifications:* 129 notifications in the quarter (2013, 105); 503 notifications over the last 12 months (2013, 487), giving a rate of 11.3 cases per 100,000 population (2013, 11.0), not a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (77 cases). Cases were aged between 1 month and 93 years, with 11 cases aged less than 2 years.

Measles

- *Notifications:* 130 notifications in the quarter (2013, 0); 248 notifications over the last 12 months (2013, 1), giving a rate of 5.5 cases per 100,000 population, a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (no cases). 64 cases were laboratory confirmed.

Mumps

- *Notifications:* 2 notifications in the quarter (2013, 8); 15 notifications over the last 12 months (2013, 31), giving a rate of 0.3 cases per 100,000 population (2013, 0.7), a statistically significant decrease.
- *Comments:* One case was laboratory confirmed.

Pertussis

- *Notifications:* 269 notifications in the quarter (2013, 756); 2062 notifications over the last 12 months (2013, 5396), giving a rate of 46.1 cases per 100,000 population (2013, 121.7), a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (363 cases) and from the same quarter last year (756 cases).

ENTERIC INFECTIONS

Campylobacteriosis

- *Notifications:* 1185 notifications in the quarter (2013, 1093); 7111 notifications over the last 12 months (2013, 6214), giving a rate of 159.0 cases per 100,000 population (2013, 140.2), a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (1816 cases).

Gastroenteritis (acute)

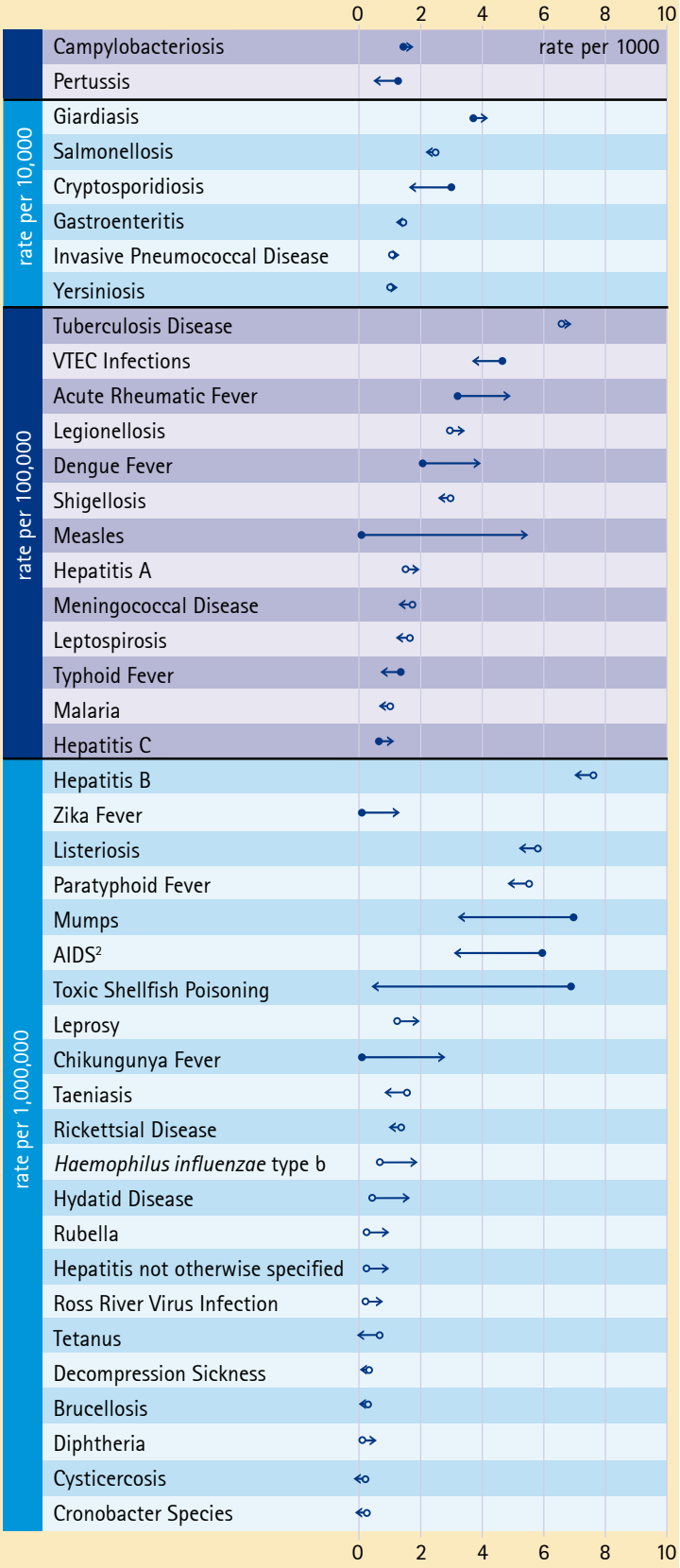
- *Notifications:* 127 notifications in the quarter (2013, 100); 617 notifications over the last 12 months (2013, 662), giving a rate of 13.8 cases per 100,000 population (2013, 14.9), not a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (171 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.

Listeriosis

- *Notifications:* 8 notifications in the quarter (2013, 1); 24 notifications over the last 12 months (2013, 26), giving a rate of 0.5 cases per 100,000 population (2013, 0.6), not a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (1 case). No perinatal cases were reported.

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 2013 to June 2014 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:* 219 notifications in the quarter (2013, 251); 1039 notifications over the last 12 months (2013, 1122), giving a rate of 23.2 cases per 100,000 population (2013, 25.3), not a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (280 cases).

VTEC Infections

- *Notifications:* 61 notifications in the quarter (2013, 89); 173 notifications over the last 12 months (2013, 216), giving a rate of 3.9 cases per 100,000 population (2013, 4.9), a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly decrease from the same quarter last year (89 cases).

Yersiniosis

- *Notifications:* 81 notifications in the quarter (2013, 86); 491 notifications over the last 12 months (2013, 466), giving a rate of 11.0 cases per 100,000 population (2013, 10.5), not a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (123 cases).

INFECTIOUS RESPIRATORY DISEASES

Acute Rheumatic Fever

- *Notifications:* 48 notifications in the quarter (2013, 46); 220 notifications over the last 12 months (2013, 145), giving a rate of 4.9 cases per 100,000 population (2013, 3.3), a statistically significant increase.
- *Comments:* Cases were distributed by age as follows: 5 (5–9 years), 21 (10–14 years), and 22 (15 years and over). 43 cases were an initial attack of acute rheumatic fever and 5 cases were recurrent attacks.

Meningococcal Disease

- *Notifications:* 15 notifications in the quarter (2013, 14); 61 notifications over the last 12 months (2013, 81) giving a rate of 1.4 per 100,000 population (2013, 1.8), not a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (5 cases). Cases were distributed by age as follows: 5 (<1 year), 5 (1–4 years), and 5 (15 years and over). 14 cases were laboratory confirmed. Of these, the strain group was identified for 13 cases: group B (10 cases, including 5 group B:P1.7-2,4), group C (1 case group C:P1.5-1,10-8), group Y (1 case) and 29E (1 case). Strain type B:P1.7-2,4 was previously known as the 'NZ epidemic strain'.

ENVIRONMENTAL EXPOSURES & INFECTIONS

Cryptosporidiosis

- *Notifications:* 70 notifications in the quarter (2013, 329); 785 notifications over the last 12 months (2013, 1351), giving a rate of 17.6 cases per 100,000 population (2013, 30.5), a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly decrease from the same quarter last year (329 cases).

Giardiasis

- *Notifications:* 466 notifications in the quarter (2013, 463); 1777 notifications over the last 12 months (2013, 1654), giving a rate of 39.7 cases per 100,000 population (2013, 37.3), a statistically significant increase.

Toxic Shellfish Poisoning

- *Notifications:* 1 notification in the quarter (2013, 0); 2 notifications over the last 12 months (2013, 31), a statistically significant decrease.

NEW, EXOTIC & IMPORTED INFECTIONS

Chikungunya Fever

- *Notifications:* 11 notifications in the quarter (2013, 0); 12 notifications over the last 12 months (2013, 0), giving a rate of 0.3 cases per 100,000 population, a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (no cases) and from the same quarter last year (no cases). 5 cases were laboratory confirmed. All cases had travelled to Tonga during the incubation period of the disease.

Dengue Fever

- *Notifications:* 49 notifications in the quarter (2013, 23); 176 notifications over the last 12 months (2013, 90), giving a rate of 3.9 cases per 100,000 population (2013, 2.0), a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (23 cases). 45 cases were laboratory confirmed. 48 cases had travelled or resided overseas during the incubation period of the disease, the travel history for the remaining case was unknown. The most commonly visited countries were Fiji (17 cases), Tonga and Indonesia (7 cases each).

Hepatitis A

- *Notifications:* 4 notifications in the quarter (2013, 29); 88 notifications over the last 12 months (2013, 64), giving a rate of 2.0 cases per 100,000 population (2013, 1.4), not a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (38 cases) and from the same quarter last year (29 cases). Cases were aged between 13 and 71 years, with 1 cases aged less than 16 years. Overseas travel information was recorded for all cases. Of these, 3 (75.0%) cases had not travelled overseas during the incubation period of the disease.

Typhoid Fever

- *Notifications:* 5 notifications in the quarter (2013, 8); 37 notifications over the last 12 months (2013, 60), giving a rate of 0.8 cases per 100,000 population (2013, 1.4), a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (18 cases). Overseas travel information was recorded for 4 cases. All had travelled overseas during the incubation period.

Zika Fever

- *Notifications:* 42 notifications in the quarter.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (14 cases). 27 cases were laboratory confirmed. 41 cases had travelled or resided overseas during the incubation period of the disease, the travel history for the remaining case was unknown. Places travelled to were Cook Islands (39 cases), Tonga and Vanuatu (1 case each).

BLOOD- AND TISSUE-BORNE INFECTIONS

Hepatitis C

- *Notifications:* 15 notifications in the quarter (2013, 5); 45 notifications over the last 12 months (2013, 28), giving a rate of 1.0 cases per 100,000 population (2013, 0.6), a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (5 cases). Cases were aged between 19 and 49 years.

3. Other Surveillance Reports

Arbovirus outbreaks in the Pacific region

Three arboviruses have been circulating in the Pacific region since late 2013; dengue virus resurged, while Zika and chikungunya viruses emerged throughout the region. More than 60,000 people have been affected. Dengue, Zika and chikungunya viruses are all transmitted by *Aedes* mosquitos – day-biting mosquitos that are widespread in the Pacific.

There is currently an outbreak of dengue fever in the Pacific. It is primarily associated with the re-emergence of the DEN-3 serotype in the Solomon Islands, French Polynesia and Fiji, where it had not previously been established. Fiji has been particularly affected, with over 25,000 cases and 15 deaths, but dengue is also circulating in Tonga, Tuvalu, Nauru and Vanuatu.

Chikungunya is an alphavirus that was first identified in Tanzania in 1952. It causes a dengue-like illness with fever, headaches, arthralgia and a rash. Large outbreaks of chikungunya fever have been seen across Africa, South Asia and Southeast Asia but the virus recently emerged in the Caribbean and Pacific regions. Since early 2014, more than 10,000 cases have been identified in Tonga, and outbreaks are currently occurring in Papua New Guinea, French Polynesia and Yap, an island in the Federated States of Micronesia.

Zika is a mosquito-borne flavivirus that is closely related to the dengue virus. It is named after the forest in Uganda where it was first identified in 1947. It spread across Africa and into Southeast Asia over subsequent decades but outbreaks were rarely reported. Zika virus usually causes a febrile illness similar to mild dengue and chikungunya fevers. Clinical signs include fever, headache, myalgia and often non-purulent conjunctivitis and arthralgia, often followed by a convalescent maculopapular rash. Typically it is a mild, self-limiting illness that lasts 4–7 days. Conjunctivitis and arthralgia seem to be more common with Zika fever than dengue fever, but thrombocytopenia appears to be less severe. Until recently, no severe complications of the infection had been identified, but cases of Guillain-Barré syndrome and other neurological complications may be associated with the recent outbreaks described below. Confirmed sexual transmission has been described on a single occasion.

In 2007 an outbreak of Zika fever affecting up to 70% of the population of Yap signalled an expansion of Zika virus. In October 2013 Zika virus was identified in French Polynesia and since then large outbreaks have affected more than 30,000 people. The virus has caused outbreaks in New Caledonia and from February to June 2014, more than 900 cases of Zika fever were identified on the Cook Islands. These outbreaks are now waning.

Arboviral infections are notifiable diseases in New Zealand. Between January and June 2014, 76 confirmed and 5 probable cases of dengue fever, 28 confirmed and 24 probable cases of Zika fever and 1 confirmed and 9 probable cases of chikungunya fever have been notified in cases that have reported overseas travel to the Pacific region during the incubation periods for the diseases. Patients with fever and myalgia and/or arthralgia, with or without a generalised rash who have returned from the Pacific Islands within the past week should have laboratory tests for these viruses performed. Health professionals should be aware of the possibility of locally acquired arboviral infections in the future particularly in the northern regions of New Zealand where the vectors have the potential to become established.

All three viruses have a short incubation period (usually 2–4 days and generally less than one week). Viraemia usually lasts for less than five days and clears with the resolution of the fever. The virus can be detected in a patient's blood during the first five days of symptoms but after this time antibody detection is preferred. Blood samples for testing can be sent to a local laboratory and will be forwarded to ESR. A full travel history for the patient must be provided, including details of the dates when a country was visited and when symptoms began. Importantly, other causes of fever and rash (including measles) should also be considered.

Reported by Michelle Balm, Clinical Microbiologist and Infectious Diseases Physician, Capital & Coast District Health Board.

Sexually transmitted infections – key findings from the 2013 surveillance report

Sexually transmitted infections (STIs) are not notifiable in New Zealand, with the exception of AIDS. STI surveillance is based on the voluntary provision of data by sexual health clinics (SHCs), family planning clinics (FPCs) and laboratories.

Clinic surveillance data includes STIs that are diagnosed clinically without laboratory confirmation (eg, genital warts). The number of cases reported through clinics underestimates the true burden of STIs because many cases are diagnosed by other healthcare providers, especially general practitioners.

Laboratory surveillance for chlamydia now covers all 20 district health boards (DHBs), and 19 DHBs provide data for gonorrhoea surveillance. Improvements to STI data collection and analysis

methods since January 2013 have enabled repeat tests to be excluded and analysis of test positivity and testing rates for these infections by age group and sex.

Chlamydia

Chlamydia was the most commonly reported STI in 2013, in both laboratory and clinic settings. A national chlamydia rate (based on all DHBs) of 633 per 100,000 population was calculated from laboratory surveillance data. This was a decrease from the estimated national rate (based on 15 DHBs) of 744 cases per 100,000 population in 2012. The estimated national rate (based on all DHBs where data was available) was stable between 2009 and 2011. The highest incidence rates were reported from Tairawhiti, Lakes and Hawke's Bay DHBs.

Sixty-eight percent of cases reported through laboratory surveillance in 2013 were aged 15–24 years and this age group also had the highest testing rate. There was more than twice the number of female than male laboratory-diagnosed cases in 2013. The age groups with most cases were 15–19 years for females, and 20–24 years for males, in both laboratory and clinic settings. Since 2009 there has been a steady decline in the incidence rate for females in the 15–19 years age group.

There were 84 laboratory-confirmed cases of chlamydia in infants aged less than one year in 2013.

Gonorrhoea

In 2013, the estimated national gonorrhoea rate (based on 19 DHBs) of 78 per 100,000 population was calculated from laboratory surveillance data. The rate decreased from 2012 but was higher than the estimated rates from 2009 to 2011. Of the 19 DHBs meeting the laboratory selection criteria for analysis in 2013, Tairawhiti reported the highest gonorrhoea rate, over five times the estimated national rate.

The national rate for males was higher than for females (82 and 72 per 100,000 population respectively). Over 50% of cases reported by laboratories were aged 15–24 years and this age group also had the highest testing rate. Two cases of gonorrhoea in infants were reported in 2013.

Between 2009 and 2013 the number of anorectal gonorrhoeal infections diagnosed in men at SHCs more than doubled, the number of pharyngeal gonorrhoeal infections in the same group more than tripled and there was a decrease of 8.5% in the number of clinic visits by men.

The introduction of testing for gonorrhoea using nucleic acid amplification tests in 2011 may have had an impact on gonorrhoea case numbers, causing an increase in incidence. *Neisseria gonorrhoeae* isolates with decreased susceptibility to ceftriaxone were identified in the Auckland region and in Waikato DHB in 2013.

Syphilis

Eighty cases of syphilis were reported by SHCs in both 2012 and 2013. Three cases were reported by FPCs. The SHC cases were predominantly male (91.3%) and occurred most commonly in the 40 years and over age group. Sixty percent of the cases were from the European ethnic group, 20.5% from the Other ethnic group, 11.0% from the Pacific Peoples ethnic group and 8.2% from the Māori ethnic group. Syphilis cases were predominantly reported from clinics in the Auckland region and in Canterbury DHB.

Other STIs

From 2012 to 2013, SHCs reported a 3.0% increase in cases of genital herpes and a 16.8% decrease in cases of genital warts. The five-year trend from 2009 to 2013 showed a decrease in the number of cases of genital herpes and genital warts by 2.2% and 43.7% respectively. A marked decrease in the number of genital warts cases was seen in females aged 15–19 years during this time. This follows the introduction of HPV vaccine onto the routine immunisation schedule for girls aged 12 years and over from late 2008.

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

Reported by Ali Borman and Jill Sherwood, Health Intelligence Team, Health Programme, ESR.

4. Outbreak Surveillance

The following information is a summary of the outbreak trends for New Zealand from data collected in the last quarter (April to June 2014). Comparisons are made to the previous quarter (January to March 2014), and to the same quarter in the previous year (April to June 2013). Note that the outbreak data in this section are notified to ESR by the Public Health Services.

General

- 179 outbreaks notified in this quarter (2117 cases).
- 116 are final reports (1562 cases); 63 are interim reports (555 cases) that have yet to be finalised and closed.

All data that follow relate to final reports only.

- 13.5 cases on average per outbreak, compared with 17.6 cases per outbreak in the previous quarter (9.8 cases per outbreak in the same quarter of last year).
- 44 hospitalisations: norovirus (25 cases), measles virus (11 cases), *Escherichia coli* O157:H7/*Campylobacter* (2 cases), 'gastroenteritis' (2 cases), *Giardia* (1 case), rotavirus (1 case), *Salmonella* (1 case), and sapovirus (1 case).
- 3 deaths: norovirus (2 cases) and 'gastroenteritis' (1 case).
- Two outbreaks involved more than one pathogen therefore individual pathogen outbreak numbers may not sum to group totals.

Pathogens

- 45 norovirus outbreaks (925 cases).
- 33 'gastroenteritis' outbreaks (376 cases).
- 14 *Giardia* outbreaks (56 cases).
- 6 measles virus outbreaks (21 cases).
- 4 *Salmonella* outbreaks (49 cases).
- 4 sapovirus outbreaks (80 cases).
- 3 *Campylobacter* outbreaks (14 cases).
- 2 *Shigella* outbreaks (29 cases).

- 1 astrovirus outbreak (7 cases).
- 1 *Bordetella pertussis* outbreak (5 cases).
- 1 *Cryptosporidium* outbreak (2 cases).
- 1 *E. coli* 057:H7 outbreak (5 cases).
- 1 rotavirus outbreak (14 cases).
- 1 *Staphylococcus aureus* outbreak (4 cases).
- 1 *Yersinia* 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.

- 99 person-to-person, from (non-sexual) contact with an infected person (including droplets): 42 norovirus (905 cases), 25 'gastroenteritis' (344 cases), 13 *Giardia* (52 cases), 6 measles virus (21 cases), 4 sapovirus (80 cases), 2 *Salmonella* (5 cases), 1 astrovirus (7 cases), 1 *B. pertussis* (5 cases), 1 *Campylobacter* (3 cases), 1 *Cryptosporidium* (2 cases), 1 rotavirus (14 cases), 1 *Shigella* (7 cases), and 1 *Yersinia* (2 cases).
- 19 environmental, from contact with an environmental source (eg, swimming): 7 norovirus (132 cases), 6 'gastroenteritis' (41 cases), 4 *Giardia* (19 cases), 1 rotavirus (14 cases), and 1 *Salmonella* (22 cases).
- 17 foodborne, from consumption of contaminated food or drink (excluding water): 5 'gastroenteritis' (19 cases), 3 norovirus (23 cases), 3 *Salmonella* (27 cases), 3 *Campylobacter* (14 cases), 1 *E. coli* 0157:H7 (5 cases), 1 *S. aureus* (4 cases), 1 *Giardia* (3 cases), and 1 *Shigella* (7 cases).
- 8 waterborne, from consumption of contaminated drinking water: 5 *Giardia* (16 cases), 1 *Campylobacter* (3 cases), 1 *Cryptosporidium* (2 cases), and 1 *Salmonella* (3 cases).
- 4 zoonotic, from contact with an infected animal: 2 *Giardia* (5 cases), 1 *Campylobacter* (3 cases), and 1 *Salmonella* (3 cases).
- 2 'other' mode: 1 *Campylobacter* (3 cases) and 1 *Giardia* (2 cases).
- 7 mode of transmission unknown: 5 'gastroenteritis' (24 cases), 1 norovirus (2 cases), 1 *Salmonella* (22 cases), and 1 *Shigella* (22 cases).

Circumstances of Exposure

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

- 38 long term care facility: 19 norovirus (612 cases), 14 'gastroenteritis' (241 cases), 4 sapovirus (80 cases), and 1 astrovirus (7 cases).
- 21 home: 10 *Giardia* (36 cases), 6 measles virus (21 cases), 1 *B. pertussis* (5 cases), 1 *Campylobacter* (3 cases), 1 *Cryptosporidium* (2 cases), 1 *Salmonella* (3 cases), and 1 *Yersinia* (2 cases).
- 14 childcare centre: 8 'gastroenteritis' (77 cases), 3 norovirus (38 cases), 2 *Giardia* (18 cases), and 1 rotavirus (14 cases).
- 9 hospital (acute care): 7 norovirus (117 cases) and 2 'gastroenteritis' (21 cases).
- 9 restaurant/café/bakery: 5 norovirus (24 cases), 3 'gastroenteritis' (8 cases), and 1 *S. aureus* (4 cases).
- 5 other institution: 3 norovirus (67 cases), 1 'gastroenteritis' (10 cases), and 1 measles virus (5 cases).
- 3 farm: 2 *Giardia* (6 cases), 1 *Campylobacter* (5 cases), 1 *E. coli* 0157:H7 (5 cases).
- 3 supermarket/delicatessen: 1 *Campylobacter* (3 cases), 1 'gastroenteritis' (9 cases), and 1 norovirus (2 cases).
- 1 camp site: norovirus (5 cases).
- 1 caterer: norovirus (15 cases).
- 1 community, church, sports gathering: norovirus (4 cases).
- 1 hostel/boarding house: norovirus (16 cases).
- 1 hotel/motel: norovirus (12 cases).
- 1 other food outlet: *Campylobacter* (6 cases).
- 1 takeaways: norovirus (5 cases).
- 5 'other setting': 2 *Giardia* (8 cases), 1 'gastroenteritis' (6 cases), 1 norovirus (11 cases), 1 *Salmonella* (22 cases), and 1 *Shigella* (22 cases).
- 5 outbreaks had two or more exposure settings recorded.
- 7 outbreaks had no exposure settings recorded.

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

- 6 restaurant/café/bakery: 3 'gastroenteritis' (8 cases), 2 norovirus (8 cases), and 1 *S. aureus* (4 cases).
- 2 supermarket/delicatessen: 1 *Campylobacter* (3 cases) and 1 'gastroenteritis' (9 cases).
- 1 caterer: norovirus (15 cases).
- 1 other food outlet: *Campylobacter* (6 cases).
- 7 outbreaks had no preparation settings recorded.

5. Outbreak Case Reports

No reports this quarter.

6. Laboratory Surveillance

Laboratory-based legionellosis surveillance for 2013 – a summary

Laboratory-based testing and surveillance identified 151 legionellosis cases in New Zealand during 2013, of which 110 cases fitted the confirmed case definition. This compares with 152 laboratory-diagnosed cases in 2012, 160 cases in 2011 and 178 in 2010, giving an annual average of 160 cases per year for the last four years.

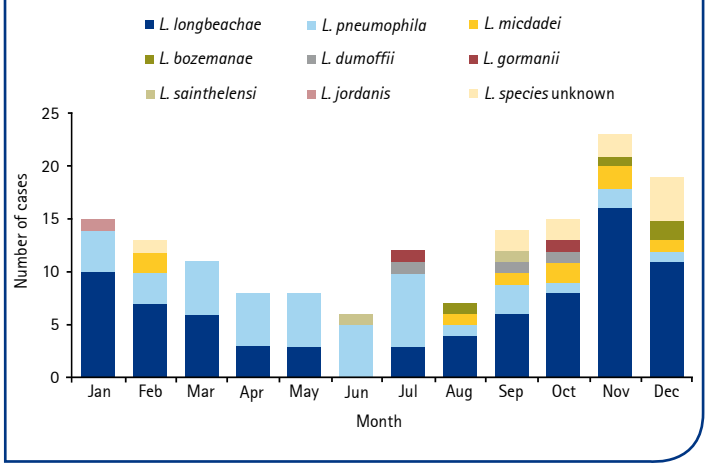
From 2002 to 2009, there was an average of 70 cases per year. Although no single cause for the sustained increase has been

identified, it is likely to be due in part to increased laboratory use of nucleic acid amplification testing (NAAT) rather than traditional antibody serology methods. The sustained increase since 2010 does, however, coincide with an increase in compost-related exposures.

Legionellosis incidence rates ranged from a low of 1.3 per 100,000 population in Waikato District Health Board (DHB) to a high of 10.8 per 100,000 population in Canterbury DHB. Significantly higher rates of legionellosis have been seen in Canterbury compared to other DHBs since 2010; with 55 cases (36.4% of all cases) identified in 2013, with 30 of these associated with compost or gardening exposure, and 25 resulting in *Legionella longbeachae* infection.

Nationally, the most common causative agent was *L. longbeachae*, comprising 77 (51.0%) cases, followed by *L. pneumophila*, comprising 42 (27.8%) cases (Figure 1). The predominant *L. pneumophila* strain remains serogroup 1, with 31 of the 42 cases caused by this strain. The remaining 32 legionellosis cases (21.2%) were caused by *L. bozemanae* sg 1, *L. dumoffii, L. gormanii, L. jordanis, L. micdadei* and *L. sainthelensi.*

Figure 1. Number of legionellosis cases by *Legionella* causative agent and month, 2013



Source tracing linked 66 (43.7%) legionellosis cases with exposure to compost, potting mix or other gardening activity during the incubation period. Case numbers of *L. longbeachae* infection show a seasonal pattern, with an increase in early spring, elevated levels over summer, then a fall to lower levels from late autumn. This pattern is associated with domestic gardening activities, which occur most frequently in the spring and summer months. Spring seasonal *L. longbeachae* clusters have been seen in the Canterbury DHB area for the last four years with 17 cases in 2013, 15 cases in 2012, 14 cases in 2011 and 11 cases in 2010.

Other possible exposure sources were identified for only 11 (26.2%) of the 42 *L. pneumophila* cases. These exposures included foreign travel (5 cases), spa pool exposure (3 cases), hospital infection (1 case), a contaminated rain water tank (1 case) and compost or gardening activity (1 case).

In 2013, 37 cases were laboratory-confirmed by culture, which is still considered to be the gold standard test for legionellosis diagnosis. A further 73 cases were laboratory-confirmed following a positive *Legionella* urinary antigen test (13 cases), a four-fold or greater rise in antibody titres (23 cases), antibody titres greater than 512 on more than one occasion (33 cases) or a NAAT-positive test on acute phase samples and a serologically positive test on convalescent samples (4 cases).

Of the 151 laboratory-proven cases in 2013, 79 were initially detected on the basis of a positive NAAT result. Following further laboratory tests (usually a combination of culture and/or serology) most were confirmed, however, laboratories are also encouraged to culture lower respiratory tract samples for Legionella bacteria from patients suspected of having legionellosis. As more laboratories adopt routine Legionella molecular testing for patients admitted to hospital with community-acquired pneumonia, it is expected that greater numbers of cases will be detected.

ESR acknowledges Canterbury Health Laboratories and Middlemore Hospital Laboratory for the molecular identification of NAAT-positive cases from Canterbury and Auckland.

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

Reported by David Harte, *Legionella* Reference Laboratory, Health Programme, ESR.

Mycology

Tables detailing the biannual summary of opportunistic mycoses and aerobic actinomycetes in New Zealand are available at 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.

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