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New Zealand Public Health Surveillance Report

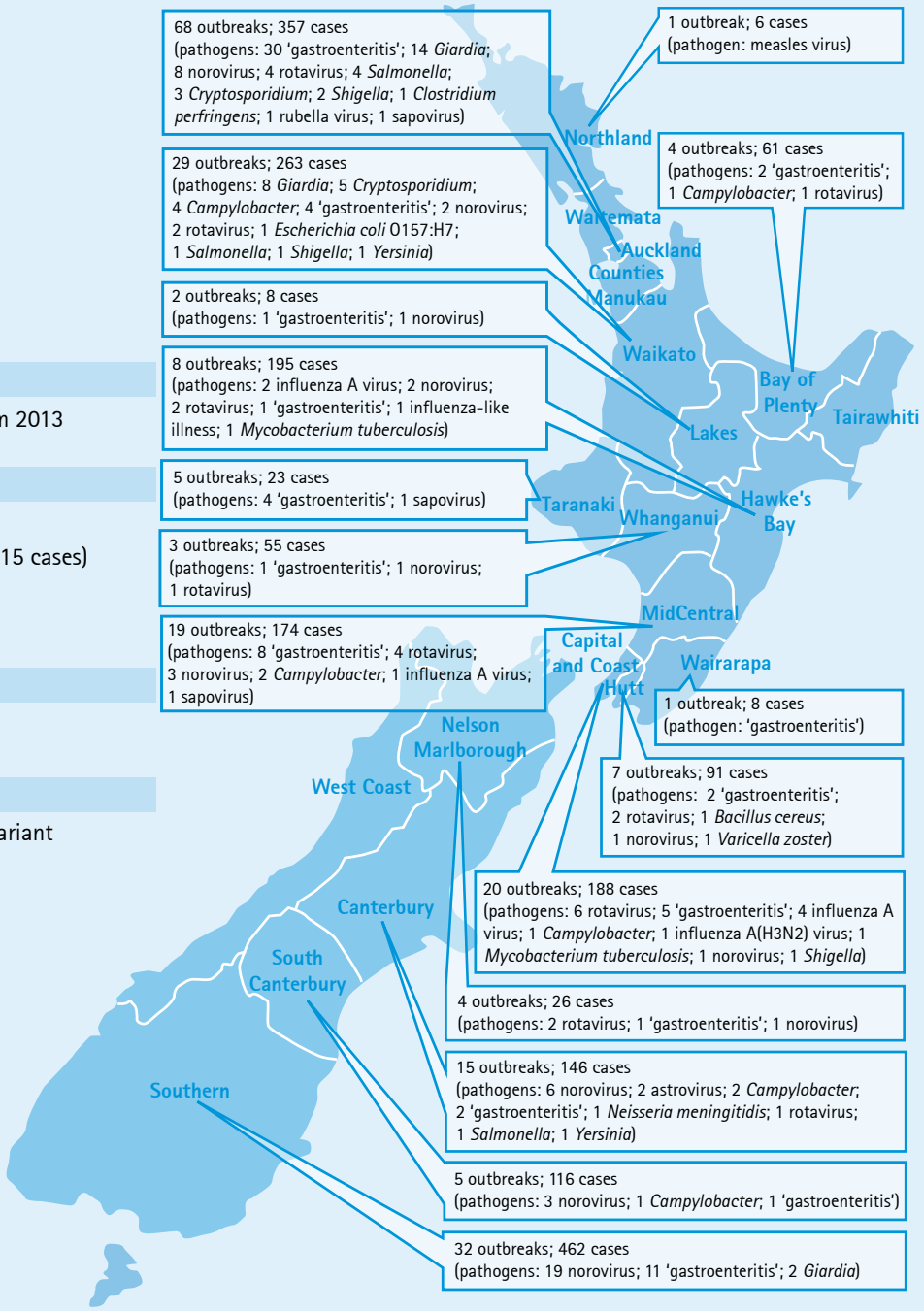
December 2014: Covering July to September 2014

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 July to September 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 October 2014. 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.



1. Editorial

The 2014 Ebola outbreak and its significance to New Zealand

The current Ebola virus disease (EVD) outbreak in West Africa has accounted for 13,703 cases and 4920 deaths as of 29 October.[1] This is the largest outbreak of EVD ever recorded since the first detection of the virus in 1976. It began in Guinea in December 2013 and widespread, intense and persistent transmission is now occurring in Liberia, Guinea and Sierra Leone. Cases have been reported in Nigeria, Senegal, Spain, Mali and the United States of America (including some limited local transmission), but Nigeria and Senegal have now been declared free of EVD. A number of countries have conducted medical evacuations from West Africa, mostly for deployed healthcare workers. The World Health Organization (WHO) has declared this outbreak a Public Health Emergency of International Concern, which is only the third time in history this has occurred (also for the influenza pandemic in 2009, and polio resurgence in 2014). The WHO has warned that if the epidemic is not contained, it could result in the collapse of affected states and inter-generational hardship for African nations.

Public health efforts have historically been successful in containing outbreaks of EVD. Contact tracing and isolation are the mainstay of such efforts, but early and effective diagnostic testing, careful transport of patients or deceased, and scaling up of treatment facilities have all been identified as areas that could mitigate the current outbreak.

There are no specific therapies or vaccines presently available for EVD. The naïve case fatality rate has been estimated at 50%, but this is variable between countries. The actual case fatality rate is likely to be much higher, estimated at ~70%, accounted for by a lag in reporting between the onset of symptoms and the eventual outcome for the patient >8 days later.[2] It is thought that effective medical care could significantly reduce the case fatality rate,[3] particularly fundamental acute medical care such as hydration and intravenous fluid resuscitation.[4] The use of transfusion of blood from convalescent patients has been explored by the WHO, although studies in infected monkeys have shown that neutralising antibodies have minimal therapeutic effect.[5] There are several experimental drugs (ZMapp, Brincidofovir, TKM-Ebola, BCX4430, Favipiravir, AVI-7537, JK-05, BCX4430) and vaccines (ChAd-Ebola, rVSV-ZEBOV) that are currently in safety trials. Some may be planned to be deployed to affected countries in a fast-track initiative by WHO, where the potential benefits are thought to outweigh the safety concerns or limited evidence for efficacy.[6,7]

The risk of Ebola virus importation into countries such as New Zealand is estimated to be extremely low. A study of air travel from affected West African nations shows that approximately 2–3 EVD-infected travellers will board an international flight each month, but that their destinations are usually low income or lower-middle income countries.[8] EVD is not transmissible during the incubation period and an asymptomatic person is unlikely to be able to transmit the virus.[9] The greatest risk in developed countries is thought to be for healthcare workers attending to a patient with EVD who has a recently arrived from a high risk country. Once symptomatic, large numbers of virus particles are shed in bodily fluids, particularly vomitus and diarrhoea. The Centers for Disease Control and Prevention (CDC) has specific prescriptions for personal protective equipment (PPE) for those providing care to a patient with EVD. Particular attention must be paid when removing PPE.

Whilst the probability of arrival or sustained transmission of Ebola virus in New Zealand remains extremely low at present, the potential for locally sustained transmission must not be discounted given a recent example in the United States of America where healthcare workers contracted Ebola virus when providing care to a returning symptomatic traveller. Current information on EVD preparedness plans in New Zealand are available from the Ministry of Health website (http://www.health.govt.nz/our-work/diseases-and-conditions/ebola-updates). On-going preparedness of healthcare workers and authorities must be maintained, as well as an awareness of any revisions made to best-practice procedures (as recommended by WHO, CDC or other relevant agencies). For example, more invasive medical interventions employed by hospitals in the developed world, such as intubation or renal replacement therapy are likely to present different biosafety risks to those faced in field clinics in West Africa.

It will become apparent in the beginning of 2015 if the total number of cases in Africa achieves the projected highs from disease modelling studies, or if concerted control measures will have an effect and limit the spread, and hopefully avert a catastrophe.

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

Reported by Richard Hall and Debbie Williamson, Health Programme, ESR.

2. Notifiable Disease Surveillance

The following is a summary of disease notifications for the July to September quarter of 2014 and cumulative notifications and rates calculated for a 12-month period (October 2013 to September 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 section are based on information recorded in EpiSurv by public health service staff up to 3 October 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

Haemophilus influenzae type b

- *Notifications:* 5 notifications in the quarter (2013, 0); 9 notifications over the last 12 months (2013, 1), giving a rate of 0.2 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). Cases were aged between 8 months and 90 years, with one case aged less than 5 years.

Invasive pneumococcal disease

- *Notifications:* 173 notifications in the quarter (2013, 179); 496 notifications over the last 12 months (2013, 463), giving a rate of 11.1 cases per 100,000 population (2013, 10.4), not a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (128 cases). Cases were aged between 4 month and 97 years, with 8 cases aged less than 2 years.

Measles

- *Notifications:* 48 notifications in the quarter (2013, 0); 285 notifications over the last 12 months (2013, 1), giving a rate of 6.4 cases per 100,000 population, a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (119 cases) and a statistically significant increase from the same quarter last year (no cases). Three cases were aged less than 15 months. 24 cases were laboratory confirmed.

Mumps

- *Notifications:* 8 notifications in the quarter (2013, 4); 17 notifications over the last 12 months (2013, 26), giving a rate of 0.4 cases per 100,000 population (2013, 0.6), not a statistically significant decrease.
- *Comments:* there has been a statistically significant increase from the previous quarter (no cases). One case was aged less than 15 months. Two cases were laboratory confirmed.

Pertussis

- *Notifications:* 260 notifications in the quarter (2013, 821); 1492 notifications over the last 12 months (2013, 4637), giving a rate of 33.4 cases per 100,000 population (2013, 103.7), a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly decrease from the same quarter last year (821 cases).

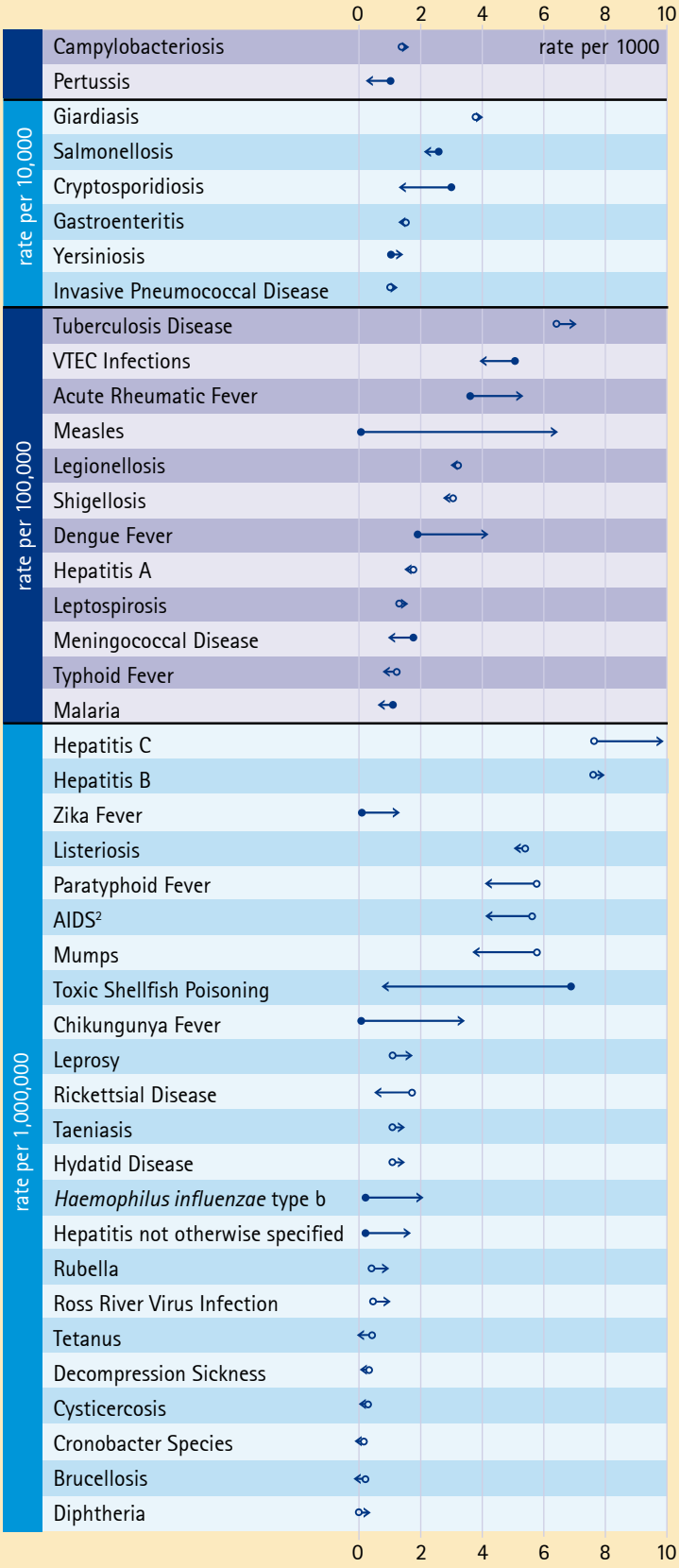
ENTERIC INFECTIONS

Campylobacteriosis

- *Notifications:* 1433 notifications in the quarter (2013, 1824); 6719 notifications over the last 12 months (2013, 6628), giving a rate of 150.3 cases per 100,000 population (2013, 148.2), not a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (1183 cases) and a statistically significant decrease from the same quarter last year (1824 cases).

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 October 2013 to September 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.

Gastroenteritis (acute)

- *Notifications:* 237 notifications in the quarter (2013, 181); 674 notifications over the last 12 months (2013, 706), giving a rate of 15.1 cases per 100,000 population (2013, 15.8), not a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (129 cases) and from the same quarter last year (181 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:* 227 notifications in the quarter (2013, 248); 1018 notifications over the last 12 months (2013, 1132), giving a rate of 22.8 cases per 100,000 population (2013, 25.3), a statistically significant decrease.

VTEC Infections

- *Notifications:* 51 notifications in the quarter (2013, 40); 178 notifications over the last 12 months (2013, 225), giving a rate of 4.0 cases per 100,000 population (2013, 5.0), a statistically significant decrease.

Yersiniosis

- *Notifications:* 246 notifications in the quarter (2013, 145); 589 notifications over the last 12 months (2013, 473), giving a rate of 13.2 cases per 100,000 population (2013, 10.6), a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (78 cases) and from the same quarter last year (145 cases).

INFECTIOUS RESPIRATORY DISEASES

Acute Rheumatic Fever

- *Notifications:* 78 notifications in the quarter (2013, 63); 235 notifications over the last 12 months (2013, 160), giving a rate of 5.3 cases per 100,000 population (2013, 3.6), a statistically significant increase.
- *Comments:* Cases were distributed by age as follows: 3 (1–4 years), 19 (5–9 years), 22 (10–14 years), and 34 (15 years and over). 68 cases were an initial attack of acute rheumatic fever and 10 cases were recurrent attacks.

Meningococcal Disease

- *Notifications:* 19 notifications in the quarter (2013, 31); 49 notifications over the last 12 months (2013, 81) giving a rate of 1.1 per 100,000 population (2013, 1.8), a statistically significant decrease.
- *Comments:* Cases were distributed by age as follows: 1 (<1 year), 7 (1–4 years), and 11 (15 years and over). 14 cases were laboratory confirmed. The strain group was identified for 14 cases: group B (10 cases, including 5 group B:P1.7-2,4), group C (3 cases, including 2 group C:P1.5-1,10-8), and group Y (1 case). Strain type B:P1.7-2,4 was previously known as the 'NZ epidemic strain'.

ENVIRONMENTAL EXPOSURES & INFECTIONS

Cryptosporidiosis

- *Notifications:* 194 notifications in the quarter (2013, 349); 630 notifications over the last 12 months (2013, 1381), giving a rate of 14.1 cases per 100,000 population (2013, 30.9), a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (70 cases) and a statistically significant decrease from the same quarter last year (349 cases).

Toxic Shellfish Poisoning

- *Notifications:* 2 notifications in the quarter (2013, 0); 4 notifications over the last 12 months (2013, 31), a statistically significant decrease.

NEW, EXOTIC & IMPORTED INFECTIONS

Chikungunya Fever

- *Notifications:* 3 notifications in the quarter (2013, 0); 15 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 decrease from the previous quarter (11 cases). All 3 cases were laboratory confirmed. Two cases had travelled to Tonga and one case to Samoa during the incubation period of the disease.

Dengue Fever

- *Notifications:* 36 notifications in the quarter (2013, 27); 184 notifications over the last 12 months (2013, 85), giving a rate of 4.1 cases per 100,000 population (2013, 1.9), a statistically significant increase.
- *Comments:* 31 cases were laboratory confirmed. 34 cases had travelled or resided overseas during the incubation period of the disease, the travel history for the remaining two cases was unknown. The most commonly visited countries were Indonesia (10 cases), Thailand (8 cases), and Fiji (4 cases).

Hepatitis A

- *Notifications:* 13 notifications in the quarter (2013, 28); 73 notifications over the last 12 months (2013, 80), giving a rate of 1.6 cases 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 (4 cases) and a statistically significant decrease from the same quarter last year (28 cases). Cases were aged between 17 and 90 years. Overseas travel information was recorded for 12 cases. Of these, 1 (8.3%) case had not travelled overseas during the incubation period of the disease.

Hepatitis (not otherwise specified)

- *Notifications:* 3 notifications in the quarter (2013, 0); 7 notifications over the last 12 months (2013, 1), a statistically significant increase.

Malaria

- *Notifications:* 13 notifications in the quarter (2013, 13); 32 notifications over the last 12 months (2013, 50), giving a rate of 0.7 cases per 100,000 population (2013, 1.1), a statistically significant decrease.
- *Comments:* All cases had malaria parasites in a blood film and had travelled or resided overseas during the incubation period of the disease. The most commonly visited country was India (7 cases).

Zika Fever

- *Notifications:* no notifications in the quarter.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (40 cases).

3. Other Surveillance Reports

Enhanced surveillance of infectious syphilis – key findings from 2013 report

Historically surveillance of syphilis in New Zealand has been part of the sexually transmitted infections (STI) sentinel system, using data provided by sexual health clinics (SHCs), family planning clinics (FPCs) and student and youth health clinics. This system does not collect information on sexual behaviour or other risk factors and most syphilis cases are reported by SHCs.[1]

An increase in the number of infectious syphilis cases reported from 2002–2009 led to a pilot project for enhanced national syphilis surveillance by the AIDS Epidemiology Group (AEG) in 2011 and 2012 using SHC data.[2,3] ESR undertook this surveillance from January 2013.

In 2013, 81 cases of infectious syphilis were reported by SHCs, an increase from 72 cases identified by AEG in 2011.[1] This information is limited as cases diagnosed and treated by other healthcare providers, such as general practitioners (GPs) are not reported. Studies from Wellington (2004–2005) and Auckland (2006–2007) showed an undercount if SHC data alone is used.[4,5]

From 2011 to 2013 cases were concentrated among men who have sex with men (MSM) living in the main centres, with the highest numbers in Auckland and Christchurch. In 2013, 73/81 reported cases were male (90.1%), with the majority MSM (86.3%). The highest number of male cases was in the 45–49 years age group.

In 2013, MSM cases were most likely to be of NZ European ethnicity (62.9%), followed by Asian (9.7%), Māori (8.1%) and Pacific Peoples (4.8%) ethnicity. The pattern for MSM newly diagnosed with HIV infection in 2013 was different, with 60.2% of European/Pakeha ethnicity, followed by 23.9% Asian, 7.1% Māori and 3.5% Pacific Peoples ethnicity.[6] The lower percentage of Asian ethnicity among MSM syphilis cases may indicate that this group is under screened, has different exposure risks, or is more likely to attend a GP than a SHC.

In 2013, 65.1% of MSM, 50.0% of heterosexual males, but no females reported symptoms. Although the number of female cases diagnosed each year, 2011–2013, is low (≤8), it is concerning that these cases are most commonly found through asymptomatic screening (eg, immigration purposes, antenatal care, contact follow up), as this suggests some women remain undiagnosed.

Among MSM syphilis cases, 29.0% were reported to be HIV seropositive, whereas no heterosexual cases were HIV seropositive. In the 2002–2004 Auckland study 4/40 (10.0%) of MSM syphilis cases were HIV seropositive and in 2011, AEG reported 19.0% of MSM cases were HIV seropositive.[2,3] Increasing HIV co-infection amongst MSM syphilis cases has also been noted in overseas surveillance (30–60%).[7] Co-infection is important as the risk of HIV acquisition and transmission increases when genital ulceration is present.[2]

Most MSM and heterosexual cases were infected in New Zealand (81.0% and 80.0% respectively). Five MSM cases reported being infected in Australia (8.6%). Three heterosexual cases (20.0%) were reported as being infected outside of New Zealand but none in Fiji (previously noted as a risk country in the Auckland study 2002–2004).[3]

Where information was recorded for the context of infection (<50% of cases), internet-dating and sex-on-site venues (10 cases each) were most commonly reported by MSM. GPS mobile device applications were reported far less commonly, in contrast with overseas reports where they have been reported as important drivers of transmission. Use of these applications is thought to connect previously isolated sexual networks and reduce the time for outbreaks to evolve.[8]

Enhanced surveillance of infectious syphilis has provided useful information to inform a response to recent increases in case numbers but has highlighted some limitations in the data collected. Adjustments to the questionnaire used by SHCs and possibly an extension of surveillance to cover cases diagnosed by GPs may help give a more complete picture.

For a more detailed report see www.surv.esr.cri.nz/surveillance/annual_syphilis.php
For list of reference see www.surv.esr.cri.nz/surveillance/NZPHSR.php

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

4. Outbreak Surveillance

The following information is a summary of the outbreak trends for New Zealand from data collected in the last quarter (July to September 2014). Comparisons are made to the previous quarter (April to June 2014), and to the same quarter in the previous year (July to September 2013). Data contained within this section are based on information recorded in EpiSurv by public health service staff up to 3 October 2014. As this information may be updated over time, these data should be regarded as provisional.

General

- 223 outbreaks notified in this quarter (2179 cases).
- 145 are final reports (1964 cases); 78 are interim reports (215 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 18.7 cases per outbreak in the previous quarter (12.2 cases per outbreak in the same quarter of last year).

- 24 hospitalisations: norovirus (6 cases), rotavirus (3 cases), *Mycobacterium tuberculosis* (3 cases), influenza A virus (2 cases), influenza A(H3N2) virus (2 cases), influenza-like illness (2 cases), measles virus (2 cases), *Neisseria meningitidis* (2 cases), 'gastroenteritis' (1 case), and *Escherichia coli* O157:H7 infection (1 case).
- 4 deaths: influenza A virus/norovirus (3 cases) and influenza A(H3N2) virus (1 case).
- Two outbreaks involved more than one pathogen therefore individual pathogen outbreak numbers may not sum to group totals.

Pathogens

- 36 norovirus outbreaks (940 cases).
- 35 'gastroenteritis' outbreaks (412 cases).
- 20 *Giardia* outbreaks (75 cases).
- 17 rotavirus outbreaks (286 cases).
- 6 *Cryptosporidium* outbreaks (18 cases).
- 6 *Salmonella* outbreaks (23 cases).
- 5 *Campylobacter* outbreaks (17 cases).
- 4 influenza A virus outbreaks (138 cases).
- 2 *M. tuberculosis* outbreaks (6 cases).
- 2 sapovirus outbreaks (17 cases).
- 2 *Shigella* outbreaks (5 cases).
- 2 astrovirus outbreaks (60 cases).
- 1 *Bacillus cereus* outbreak (3 cases).
- 1 *Clostridium perfringens* outbreak (2 cases).
- 1 *E. coli* O157:H7 infection outbreak (2 cases).
- 1 influenza A(H3N2) virus outbreak (27 cases).
- 1 influenza-like illness outbreak (6 cases).
- 1 measles virus outbreak (6 cases).
- 1 *N. meningitidis* outbreak (2 cases).
- 1 rubella virus outbreak (3 cases).
- 1 *Varicella zoster* outbreak (21 cases).
- 1 *Yersinia* outbreak (4 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.

- 124 person-to-person, from (non-sexual) contact with an infected person (including droplets): 32 norovirus (907 cases), 29 'gastroenteritis' (392 cases), 18 *Giardia* (68 cases), 16 rotavirus (284 cases), 5 *Cryptosporidium* (14 cases), 5 *Salmonella* (17 cases), 4 influenza A virus (138 cases), 3 *Campylobacter* (10 cases), 2 astrovirus (60 cases), 2 *M. tuberculosis* (6 cases), 2 sapovirus (17 cases), 1 *E. coli* O157:H7 (2 cases), 1 influenza A(H3N2) virus (27 cases), 1 influenza-like illness (6 cases), 1 measles virus (6 cases), 1 *N. meningitidis* (2 cases), 1 rubella virus (3 cases), 1 *V. zoster* (21 cases), and 1 *Yersinia* (4 cases).
- 28 environmental, from contact with an environmental source (eg, swimming): 12 norovirus (259 cases), 5 rotavirus (59 cases), 4 'gastroenteritis' (98 cases), 3 *Giardia* (11 cases), 2 astrovirus (60 cases), 2 *Cryptosporidium* (5 cases), and 1 *E. coli* O157:H7 (2 cases).
- 17 foodborne, from consumption of contaminated food or drink (excluding water): 7 'gastroenteritis' (17 cases), 3 *Giardia* (17 cases), 2 norovirus (8 cases), 1 *B. cereus* (3 cases), 1 *Campylobacter* (2 cases), 1 *C. perfringens* (2 cases), 1 *E. coli* O157:H7 (2 cases), and 1 *Salmonella* (6 cases).
- 12 waterborne, from consumption of contaminated drinking water: 7 *Giardia* (30 cases), 3 *Cryptosporidium* (8 cases), 1 *Campylobacter* (5 cases), and 1 *E. coli* O157:H7 (2 cases).
- 12 zoonotic, from contact with an infected animal: 4 *Cryptosporidium* (12 cases), 4 *Giardia* (12 cases), 2 *Campylobacter* (4 cases), 1 *E. coli* O157:H7 (2 cases), and 1 *Salmonella* (2 cases).
- 3 'other' mode: 2 *Salmonella* (5 cases) and 1 *Giardia* (3 cases).
- 9 mode of transmission unknown: 3 'gastroenteritis' (14 cases), 3 norovirus (27 cases), 2 *Shigella* (5 cases), and 1 rotavirus (2 cases).

Circumstances of Exposure

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

- 44 long term care facility: 22 norovirus (771 cases), 15 'gastroenteritis' (183 cases), 2 astrovirus (60 cases), 2 influenza A virus (94 cases), 2 rotavirus (11 cases), 1 influenza A(H3N2) virus (27 cases), 1 influenza-like illness (6 cases), 1 sapovirus (12 cases).
- 36 home: 12 *Giardia* (36 cases), 5 *Campylobacter* (17 cases), 5 *Cryptosporidium* (15 cases), 4 norovirus (19 cases), 3 *Salmonella* (7 cases), 2 'gastroenteritis' (5 cases), 1 *E. coli* O157:H7 (2 cases), 1 measles virus (6 cases), 1 *M. tuberculosis* (2 cases), 1 rotavirus (4 cases), and 1 *Yersinia* (4 cases).
- 27 childcare centre: 13 rotavirus (269 cases), 7 'gastroenteritis' (69 cases), 1 *Cryptosporidium* (3 cases), 1 *Giardia* (9 cases), 1 influenza A virus (13 cases), 1 *N. meningitidis* (2 cases), 1 norovirus (18 cases), 1 *Salmonella* (8 cases), and 1 *V. zoster* (21 cases).
- 9 restaurant/café/bakery: 4 'gastroenteritis' (9 cases), 3 norovirus (16 cases), 1 *B. cereus* (3 cases), and 1 *C. perfringens* (2 cases).
- 6 hospital (acute care): 5 norovirus (81 cases) and 1 'gastroenteritis' (5 cases).
- 3 farm: 1 *Cryptosporidium* (3 cases), 1 *E. coli* O157:H7 (2 cases) and 1 *Giardia* (5 cases).
- 2 community gathering: 1 *Giardia* (12 cases) and 1 *Salmonella* (6 cases).
- 2 school: 1 'gastroenteritis' (62 cases) and 1 influenza A virus (31 cases).
- 1 camp: 'gastroenteritis' (8 cases).
- 1 hotel/motel: *Giardia* (2 cases).
- 1 other food outlet: *Campylobacter* (4 cases).

- 1 prison: norovirus (43 cases).
- 1 supermarket: 'gastroenteritis' (2 cases).
- 1 takeaways: 'gastroenteritis' (3 cases).
- 5 other institution: 2 norovirus (19 cases), 1 'gastroenteritis' (8 cases), 1 *Giardia* (5 cases), and 1 sapovirus (5 cases).
- 6 'other setting': 2 *Giardia* (5 cases), 2 *Salmonella* (5 cases), 1 rubella virus (3 cases), and 1 *Shigella* (2 cases).
- 8 outbreaks had two or more exposure settings recorded.
- 7 outbreaks had no exposure settings recorded.

Common 'settings' where the preparations occurred in foodborne outbreaks are identified below.

- 7 restaurant/café/bakery: 4 'gastroenteritis' (9 cases), 1 *B. cereus* (3 cases), 1 *C. perfringens* (2 cases), and 1 norovirus (2 cases).
- 2 home: 1 'gastroenteritis' (3 cases) and 1 *Giardia* (3 cases).
- 1 community gathering: *Giardia* (12 cases).
- 1 hotel/motel: *Giardia* (2 cases).
- 1 farm: *E. coli* O157:H7 (2 cases).
- 1 supermarket/delicatessen: 'gastroenteritis' (2 cases).
- 1 takeaways: 'gastroenteritis' (3 cases).
- 3 outbreaks had no preparation settings recorded.

5. Outbreak Case Reports

Typhoid cases in an extended family investigated

Five cases of *Salmonella* Typhi were reported to Auckland Regional Public Health Service (ARPHS) from November 2013 to March 2014. The cases (three females and two males) ranged from 5 to 63 years. These five cases had up to 23 close contacts spread across eight households, including the households referred to as A, B and C, where the confirmed cases lived.

The date of onset of illness onset ranged from 12 November 2013 to 15 March 2014. Symptoms included fever (100%), diarrhoea (80%) and stomach cramps and all five cases were hospitalised.

The majority of typhoid cases reported in New Zealand are associated with overseas exposure, but in this outbreak, the index case in household A did not report travel abroad, have contact with overseas visitors or have contact with sick individuals approximately one month prior to the onset of the illness.

Interviews with family members revealed that the fourth and the fifth cases had hosted visitors from Tonga and Samoa respectively, one month before the onset of their symptoms. The Tongan visitors brought raw fish, raw seaslugs and cooked yams to household B and some yams were also given to household C. The Samoan visitors brought whole raw coconuts to household B.

No imported foods were available for testing, but the overseas visitors and the self-imported Pacific foods were recognised as potential sources of infection for the outbreak.

Based on detailed interviews with the main family representative, it was hypothesised that the outbreak resulted from person to person transmission because all five cases had frequent and close social interactions. This hypothesis was considered more plausible than a foodborne transmission hypothesis since not all the confirmed cases ate the imported foods. In addition, contact with the overseas visitors occurred after the onset of disease in cases 1 and 2. While usual range of the incubation period for typhoid is 8–14 days, it can be prolonged to over 60 days.

The following social interactions were reported by the family: all five cases and up to 23 family contacts met at household B for weekend family gatherings; case 3 stayed with case 4 at household B every day after school; case 3 stayed weekly at household C; case 3 was looked after by case 5 while recovering from illness; and cases 2 and 5 worked together and had daily contact.

ARPHS decided to vaccinate every extended family contact, to reduce the risk of further disease transmission. This decision was taken because of the complex social interactions within the large family, the perceived difficulties of getting timely clearance specimens from cases 1–3, the nature of typhoid transmission and its low infectious dose, <103 cells.

Vaccinations were given in addition to adopting the Ministry of Health's guidelines for communicable disease control. These guidelines advise that contacts be provided with personal hygiene advice and have faecal specimens taken. Of the 23 extended contacts, 21 were eligible for the TYPHIM Vi vaccine, while the remaining two were ineligible, since they were less than 2 years old.

The vaccination exercise was initiated within 48 hours of case 5 being notified and 19 of the contacts were then vaccinated within three hours. The exercise was regarded as a proactive and successful public health intervention as no further typhoid cases were reported from the extended family for the next three months.

The vaccination exercise also illustrates the collaborative relationships that exist within ARPHS. The ARPHS Pacific Liaison Advisor had a key role in advocating for the necessary public health measures (particularly to the elder family members), while considering their cultural needs. The public health nurses led the programme to administer the vaccine and counselled contacts about the post-vaccine symptoms they could expect. The Health Protection Officers established a rapport with the confirmed cases and built a trusting relationship with the key family representative, who was vital in gaining the family's cooperation for the investigation.

Reported by Jenny Wong, Health Protection Officer and Dr Bruce Adlam, Medical Officer Communicable Diseases, Auckland Regional Public Health Service.

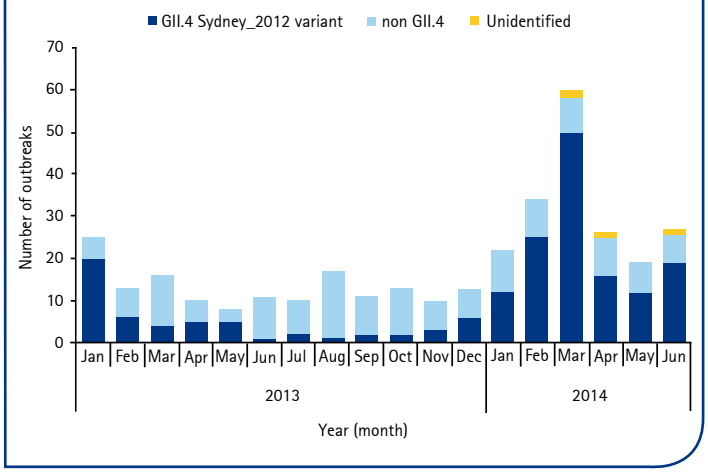
6. Laboratory Surveillance

Norovirus surveillance and the GII.4 Sydney_2012 variant

Laboratory surveillance on a local and global scale identifies the circulating strains and increases knowledge of norovirus epidemiology. 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 its identification and initial typing into genogroups I and II. Genotyping of these genetically diverse viruses includes sequencing a segment of the viral genome that codes for the virus capsid. Through Noronet (www.noronet.nl), the global norovirus surveillance network, of which ESR is an active member, New Zealand outbreak and typing data can be compared with overseas data. In late 2012, Noronet described the emergence of the GII.4 Sydney_2012 variant in several countries including New Zealand.[1] This variant quickly became the predominant circulating virus globally. The emergence of this strain in New Zealand and the subsequent increase in laboratory-confirmed norovirus outbreaks has been previously described.[2]

Laboratory-based surveillance confirmed 157 norovirus outbreaks in New Zealand in 2013 compared to 218 in 2012. A total of 188 outbreaks were confirmed in the first six months of 2014, 60 of which occurred in March. Of the 188 outbreaks, 134 (71.3%) were associated with the GII.4 Sydney_2012 variant. Figure 1 shows the increased number of outbreaks in 2014 (mainly due to GII.4 Sydney_2012), which reached a peak in March 2014. The number of outbreaks due to non-GII.4 noroviruses remained relatively constant from January 2013 to June 2014.

Figure 1. Number of norovirus outbreaks by type, January 2013–June 2014



In New Zealand from January 2013 to June 2014, most of the reported norovirus outbreaks occurred in aged-care facilities (58.3%, 201/345). Such outbreaks are challenging to manage due to the high attack rate, the residents' relative lack of mobility, the use of communal areas and the requirement to manage visitors. In addition, if some staff contract the virus, the pressure on remaining healthy staff increases.[3] In the 18 months between January 2013 to June 2014, norovirus outbreaks were also reported in acute care hospitals (5.5%, 19/345), early childcare centres (11.3%, 39/345), privates homes (2.6%, 5/345) and hostels (1.8%, 6/345). Other settings accounted for 8.1% (28/345) of norovirus outbreaks; two occurred on commercial flights, as well as children's parties and schools. Commercial food operators were associated with 12.5% (43/345) of norovirus outbreaks. While these reports do not necessarily imply that the virus was transmitted via food, there is a growing awareness of the importance of foodborne transmission in norovirus outbreaks. A recent US report concluded that noroviruses are the leading cause of reported foodborne illness.[4] Most viral contamination was reported to occur during food preparation, although leafy salads, soft fruits and bivalve shellfish were identified also as potential risks. While food, water and fomites are important transmission routes, in New Zealand, person to person is the most common transmission route reported.[5]

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

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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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