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New Zealand Public Health Surveillance Report

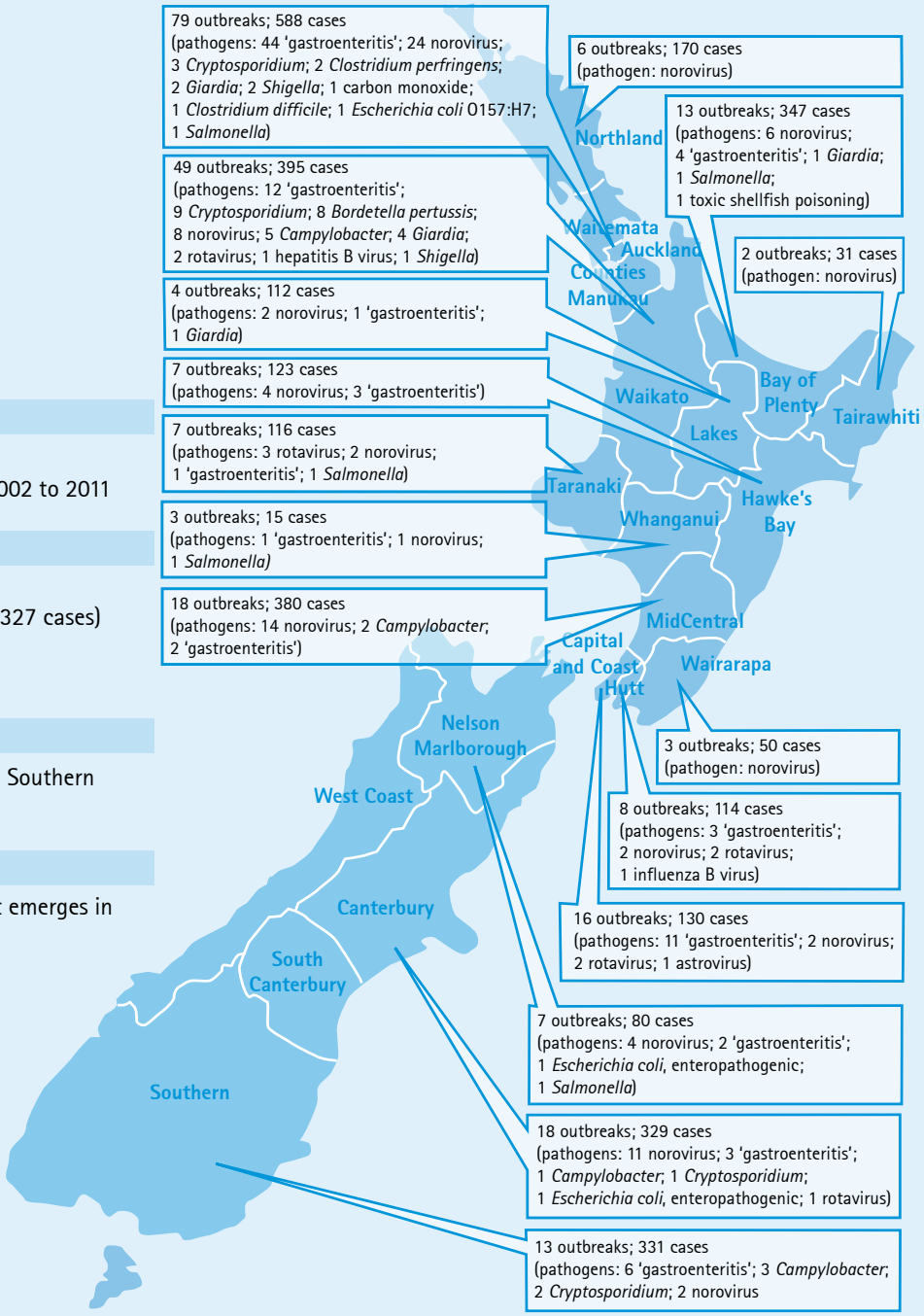
March 2013: Covering October to December 2012

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 October to December quarter of 2012. 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 14 January 2013. Outbreaks reporting exposures in more than one geographic location are assigned to the district health board with the most cases. Four outbreaks involved more than one pathogen therefore individual pathogen outbreak numbers may not sum to group totals.



1. Editorials

Medical practitioner notification is still important in the era of direct laboratory notification

Since direct laboratory notification of notifiable diseases to public health services (PHSs) began in 2007, there has often been an assumption by medical practitioners that there is no longer a requirement for them to notify the PHS as well. In the majority of cases a failure of the medical practitioner to notify does not affect the public health outcome. However, laboratory notifications do not include important risk factor information used to prioritise the need for public health action, such as high risk occupation/group. A recent delayed electronic laboratory notification to MidCentral Public Health Service (MCPHS) illustrates the need for medical practitioner notifications. This review of the delayed notification illustrates the importance of early notification of suspected cases in high risk groups by medical practitioners.

Shigellosis is a notifiable disease under the Health Act 1956 and carriage can continue for some time after the clinical illness has ceased. There are specific management and exclusion requirements for those considered at high risk of spreading the disease. These are contained in the Ministry of Health, Communicable Disease Control Manual, 2012.[1] For food handlers, health workers and early childhood education workers there is a requirement to be excluded from work until symptom free for 48 hours. In addition, cases must provide two consecutive negative stools specimens that are at least 48 hours apart. Close contacts of cases in high risk occupations, such as others living in the same household, are also routinely excluded until one negative faecal specimen has been provided.

Test results for a case of shigellosis were received by the MCPHS on 13 August 2012 via postal mail. Follow-up of this case revealed that they worked as a food handler and that a provisional identification of *Shigella* had been made on 19 July. This 25 day delay in notification to MCPHS was the result of a combination of issues relating to information system changes at both the local and the reference laboratories, limitations in the ability of the local laboratory to confirm the organism, and an assumption by the general practitioner (GP) that laboratory notification was sufficient.

Fortunately, the GP had noted the case was a food handler, so sick leave was reinforced and antibiotics prescribed. However, no follow-up specimens were arranged before returning to work. Recent overseas travel to Samoa was attributed as the most likely source of infection. The workplace of the food handler was operating under a Food Control Plan with a very clear exclusion policy for sick staff enforced by the manager. All of these factors are likely to have contributed to prevention of further spread and no further shigellosis notifications were received by MCPHS over the subsequent two months. However, this notification delay could have resulted in further illness risk as the infected food handler worked in a busy café.

The review of this incident has led to some changes in laboratory systems. Problems with electronic systems may be unavoidable at times. Concurrent medical practitioner notification facilitates timely notification of high risk cases. Medical practitioners are encouraged to use a risk based approach to identify situations where early identification and notification of suspected cases is appropriate, such as this situation with gastroenteritis symptoms in a high risk worker recently returned from overseas travel.

The review of this case also highlighted a lack of understanding in primary care of the support that the PHS provides primary care via our response to the notification. This support includes identification of at risk contacts to prevent further spread, identification of a possible source to prevent new cases, and facilitation of clearance specimens and liaison with employers or institutions. The latter is particularly of value with complex cases where carriage of the pathogen is identified and extended exclusions or changes to work roles are required. In situations such as these PHSs can liaise with agencies such as Work and Income New Zealand regarding emergency benefits.

Public health action is most effective when clear and timely communication occurs between primary health and public health. Effectiveness is further strengthened by the timely identification of risk factors such as occupation which prioritise the need for public health intervention to prevent disease spread. More work needs to be done at a local and national level to support medical centres to report notifiable diseases and prioritise those cases with risk factors for further spread. Some promising projects are already underway that are exploring ways of using electronic-notification from primary care practice management systems to PHSs that include critical risk information such as occupation.[2]

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

Reported by Tui Shadbolt, Coordinator Health Protection and Dr Jill McKenzie, Medical Officer of Health, MidCentral Public Health Service.

2. Notifiable Disease Surveillance

The following is a summary of disease notifications for the October to December quarter of 2012 and cumulative notifications and rates calculated for a 12-month period (January to December 2012). For comparative purposes notification numbers and rates are presented in brackets for the same period 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 14 January 2013. 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

Hepatitis B

- *Notifications:* 19 notifications in the quarter (2011, 4); 46 notifications over the last 12 months (2011, 51), giving a rate of 1.0 cases per 100,000 population (2011, 1.2), not a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (4 cases). Cases were aged between 11 months and 73 years, with one case under the age of 16 years.

Invasive Pneumococcal Disease

- *Notifications:* 101 notifications in the quarter (2011, 123); 491 notifications over the last 12 months (2011, 552), giving a rate of 11.1 cases per 100,000 population (2011, 12.5), not a statistically significant decrease.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (206 cases). Cases were aged between 1 day and 96 years, with 7 cases under the age of 2 years.

Measles

- *Notifications:* 1 notification in the quarter (2011, 309); 70 notifications over the last 12 months (2011, 596), giving a rate of 1.6 cases per 100,000 population (2011, 13.5), a statistically significant decrease.
- *Comments:* the case was under investigation.

Mumps

- *Notifications:* 10 notifications in the quarter (2011, 9); 29 notifications over the last 12 months (2011, 51), giving a rate of 0.7 cases per 100,000 population (2011, 1.2), a statistically significant decrease.
- *Comments:* 6 cases were laboratory confirmed.

Pertussis

- *Notifications:* 1732 notifications in the quarter (2011, 1229); 5938 notifications over the last 12 months (2011, 1996), giving a rate of 134.8 cases per 100,000 population (2011, 45.3), a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (1593 cases) and from the same quarter last year (1229 cases).

Rubella

- *Notifications:* 1 notification in the quarter (2011, 2); 4 notifications over the last 12 months (2011, 22), a statistically significant decrease.
- *Comments:* the case was laboratory confirmed.

ENTERIC INFECTIONS

Campylobacteriosis

- *Notifications:* 2086 notifications in the quarter (2011, 2264); 7033 notifications over the last 12 months (2011, 6689), giving a rate of 159.7 cases per 100,000 population (2011, 151.8), a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (1412 cases) and a statistically significant decrease from the same quarter last year (2264 cases).

Gastroenteritis (acute)

- *Notifications:* 289 notifications in the quarter (2011, 163); 739 notifications over the last 12 months (2011, 630), giving a rate of 16.8 cases per 100,000 population (2011, 14.3), a statistically significant increase.
- *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 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:* 281 notifications in the quarter (2011, 214); 1087 notifications over the last 12 months (2011, 1056), giving a rate of 24.7 cases per 100,000 population (2011, 24.0), not a statistically significant increase.
- *Comments:* there was a statistically significant increase from the same quarter last year (214 cases).

Toxic Shellfish Poisoning

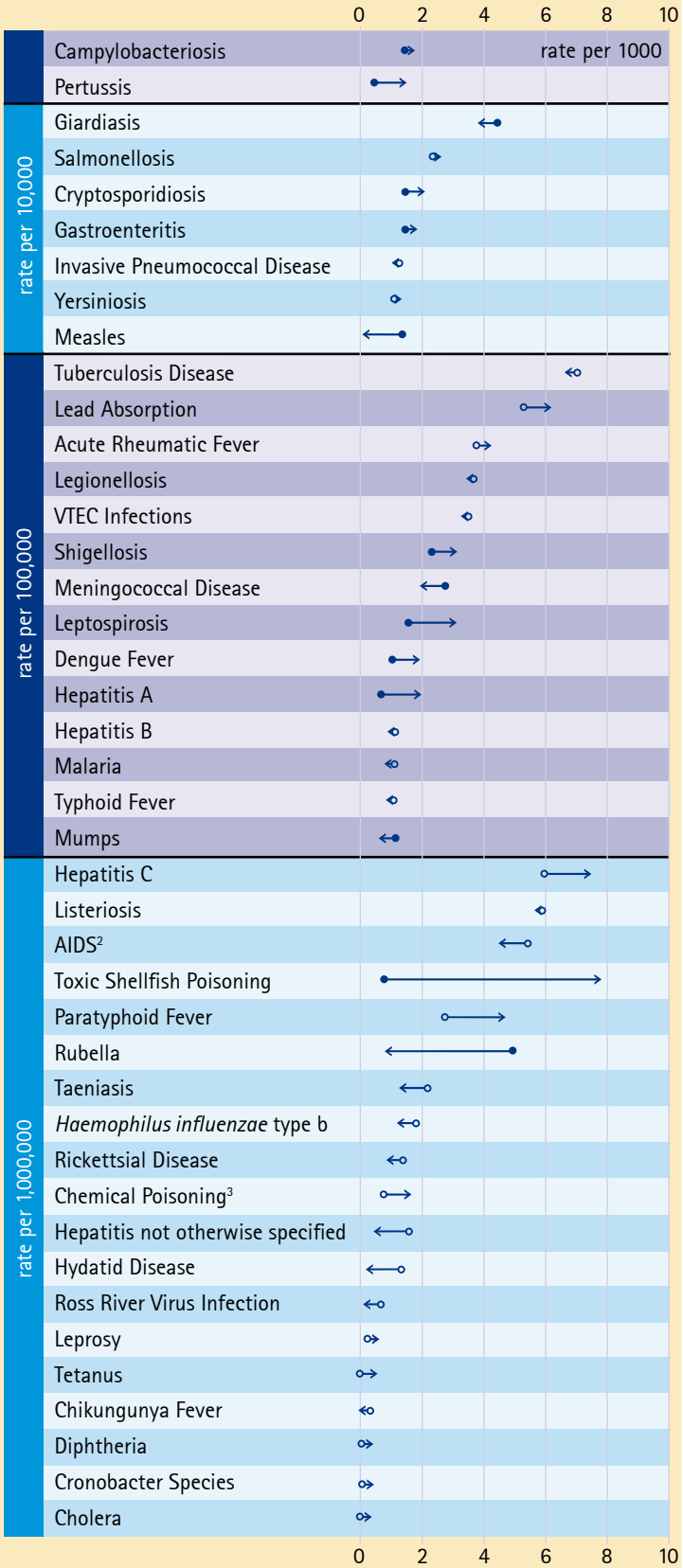
- *Notifications:* 34 notifications in the quarter (2011, 0); 34 notifications over the last 12 months (2011, 3), giving a rate of 0.8 cases per 100,000 population, a statistically significant increase.
- *Comments:* there was a statistically significant increase from the previous quarter (no cases) and the same quarter last year (no cases).

VTEC Infections

- *Notifications:* 42 notifications in the quarter (2011, 19); 153 notifications over the last 12 months (2011, 153), giving a rate of 3.5 cases per 100,000 population (2011, 3.5).

National Surveillance Data

12-Monthly Notification Rate Changes[1]



Notifications per 1000 or 10,000 or 100,000 or 1,000,000 population

Rate Change Symbol Key:

- > Rate increase from the previous 12-month period
- < Rate decrease from the previous 12-month period
- ● Statistically significant rate change
- ○ Statistically non-significant rate change

[1] Rates are calculated for the 12-month period January to December 2012 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.

[3] From the environment.

- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (19 cases).

INFECTIOUS RESPIRATORY DISEASES

Acute Rheumatic Fever

- *Notifications:* 17 notifications in the quarter (2011, 37); 181 notifications over the last 12 months (2011, 164), giving a rate of 4.1 cases per 100,000 population (2011, 3.7), not a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (46 cases) and the same quarter last year (37 cases). Cases were distributed by age as follows: 10 (5–14 years), 5 (15–24 years), and 2 (25–44 years). 16 cases were an initial attack of acute rheumatic fever and one case was a recurrent attack.

Meningococcal Disease

- *Notifications:* 25 notifications in the quarter (2011, 22); 87 notifications over the last 12 months (2011, 119), giving a rate of 2.0 cases per 100,000 population (2011, 2.7), a statistically significant decrease.
- *Comments:* cases were distributed by age as follows: 5 (<1 year), 7 (1–4 years), 1 (5–14 years), and 12 (15 years and over). 18 cases were laboratory confirmed. Of these, the strain group was identified for 17 cases: B (13 cases, including 7 cases with group B:P1.7-2,4 strain) and C (4 cases).

ENVIRONMENTAL EXPOSURES & INFECTIONS

Cryptosporidiosis

- *Notifications:* 317 notifications in the quarter (2011, 235); 876 notifications over the last 12 months (2011, 610), giving a rate of 19.9 cases per 100,000 population (2011, 13.8), a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (235 cases).

Giardiasis

- *Notifications:* 383 notifications in the quarter (2011, 392); 1720 notifications over the last 12 months (2011, 1934), giving a rate of 39.0 cases per 100,000 population (2011, 43.9), a statistically significant decrease.

Lead Absorption

- *Notifications:* 37 notifications in the quarter (2011, 48); 272 notifications over the last 12 months (2011, 230), giving a rate of 6.2 cases per 100,000 population (2011, 5.2), not a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (67 cases). Cases were distributed by age as follows: 1 (1–4 years), 1 (5–14 years), 2 (15–24 years), 13 (25–44 years), 15 (45–64 years), and 5 (65 years and over). There were 34 male and 3 female cases. 8 cases were recorded as having an occupation that involved exposure to lead. Occupations recorded were painter/decorator (4 cases), electrical engineer, lead tackle worker, and scrap metal worker (1 case each). One case did not have an occupation specified.

Legionellosis

- *Notifications:* 56 notifications in the quarter (2011, 56); 158 notifications over the last 12 months (2011, 158), giving a rate of 3.6 cases per 100,000 population (2011, 3.6), not a statistically significant change.
- *Comments:* there has been a significant quarterly increase from the previous quarter (21 cases). 21 notifications from this quarter remain under investigation, a proportion of these will fail to meet the case definition and be classified as 'not a case'.

Leptospirosis

- *Notifications:* 31 notifications in the quarter (2011, 20); 131 notifications over the last 12 months (2011, 68), giving a rate of 3.0 cases per 100,000 population (2011, 1.5), a statistically significant increase.
- *Comments:* there were 23 male and 8 female cases. 15 cases were recorded as having an occupation identified as high risk for exposure. The most commonly recorded occupation was farmer (8 cases).

NEW, EXOTIC & IMPORTED INFECTIONS

Dengue Fever

- *Notifications:* 16 notifications in the quarter (2011, 9); 81 notifications over the last 12 months (2011, 42), giving a rate of 1.8 cases per 100,000 population (2011, 1.0), a statistically significant increase.
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (32 cases). 10 cases were laboratory confirmed. 13 cases were overseas during the incubation period of the disease. Places visited or resided in were India (4 cases), Thailand, Papua New Guinea (3 cases each), Fiji (2 cases), Cambodia, Taiwan, and Vanuatu (1 case each). 3 cases were under investigation.

Hepatitis A

- *Notifications:* 7 notifications in the quarter (2011, 6); 83 notifications over the last 12 months (2011, 26), giving a rate of 1.9 cases per 100,000 population (2011, 0.6), a statistically significant increase.
- *Comments:* cases were aged between 12 and 37 years, with one case under the age of 16 years. All cases had travelled overseas during the incubation period of the disease.

Shigellosis

- *Notifications:* 24 notifications in the quarter (2011, 28); 132 notifications over the last 12 months (2011, 101), giving a rate of 3.0 cases per 100,000 population (2011, 2.3), a statistically significant increase.
- *Comments:* Overseas travel or prior travel information was recorded for 9 (37.5%) cases. Of these, 3 (33.3%) cases had not travelled overseas during the incubation period and had no prior history of travel that could account for their infection.

3. Other Surveillance Reports

Invasive pneumococcal disease, 2011

Pneumococcal conjugate vaccine (PCV) was added to the New Zealand childhood immunisation schedule in June 2008. A catch-up programme was available for all children born on or after 1 January 2008. The 7-valent conjugate vaccine (PCV7), Prevenar®, was used until late 2011, when it was replaced with the 10-valent conjugate vaccine (PCV10), Synflorix®. Since 17 October 2008, invasive pneumococcal disease (IPD) has been notifiable to medical officers of health under the Health Act 1956.

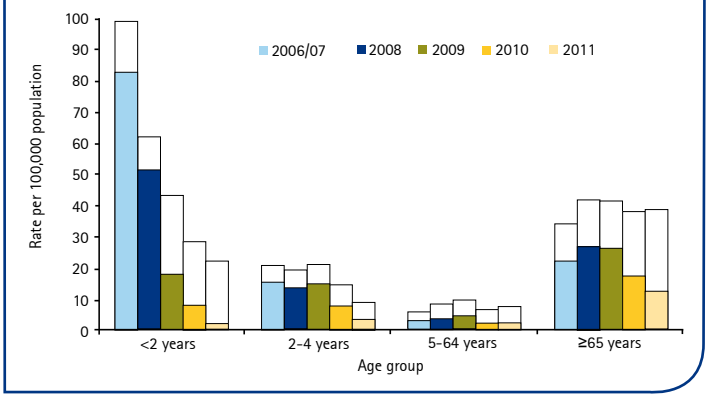
In 2011, 552 cases of IPD were notified, which equates to an annual rate of 12.5 cases per 100,000 population. For 533 (96.6%) of the notified cases, a *Streptococcus pneumoniae* isolate from an invasive site was received by ESR for serotyping and antimicrobial susceptibility testing.

The incidence of IPD in infants less than 2 years of age has decreased by 76.3% since the introduction of PCV7, from an average annual rate of 100.3 cases per 100,000 population in 2006/07 to 23.8 per 100,000 in 2011. The decrease in IPD caused by PCV7 serotypes in this age group is even more striking than the reduction in all IPD, with a 97.1% decrease from an average of 83.1 per 100,000 population in 2006/07 to 2.4 per 100,000 in 2011 (Figure 1). In fact, there were just three cases of IPD due to a PCV7 type in infants less than 2 years old in 2011.

Rates of IPD have also decreased in the 2–4 years age group, with a 53.9% reduction from an average of 20.8 per 100,000 population in 2006/07 to 9.6 per 100,000 in 2011. Again, the decrease in the subset of IPD caused by PCV7 types over the same time period was greater, with a 76.1% reduction from 15.5 to 3.7 per 100,000. This result is as expected, as some vaccine-eligible children (ie, those born in 2008 and 2009) would have been in this age group in 2011.

In 2011 the indirect or herd immunity effects of routine infant PCV immunisation were evident. The rate of IPD due to PCV7 serotypes in the 65 years and older age group has now decreased by 41.0%, from an average of 22.2 per 100,000 population in 2006/07 to 13.1 per 100,000 in 2011. In the 5–64 years age group there has been a 27.8% decrease over the same period, from 3.6 to 2.6 per 100,000. These results indicate that there have now been significant reductions ($p \leq 0.05$) in IPD due to PCV7 types in all age groups. However, unlike the situation in the less than 5 year olds, there have been no corresponding significant decreases in the overall rates of IPD in either the 5–64 or the 65 years and older age groups. This is due to PCV7 serotypes constituting a smaller proportion of the disease in these age groups than those groups directly targeted for vaccination, as well as some serotype replacement in the older age groups.

Figure 1. Rates of invasive pneumococcal disease by age group each year, 2006/07 to 2011



The total rate of IPD is shown for each year and age group, with the subset caused by PCV7 serotypes represented by the lower, coloured portion of each bar and the subset caused by non-PCV7 serotypes represented by the upper, unfilled portion of each bar.

In 2011, the age-standardised rates of IPD in the Māori (29.4 per 100,000) and Pacific Peoples (32.4 per 100,000) ethnic groups were approximately three times the rate in the European or Other ethnic group (9.8 per 100,000). Between 2009 (the first year for which data on IPD in the different ethnic groups is available) and 2011, there were significant decreases in IPD rates among infants less than 2 years of age belonging to the Māori and the European or Other, but not Pacific Peoples, ethnic groups.

In 2011, the highest rates of IPD were in Lakes (28.2 per 100,000), followed by Wairarapa (17.2 per 100,000) and Hawke's Bay (16.7 per 100,000) District Health Boards.

The all-age rate of pneumococcal meningitis was 0.9 per 100,000 population in 2011. The highest rate of meningitis occurred in the less than 2 years age group (4.8 per 100,000). The case-fatality rate was 6.3%.

As with all vaccines that only target specific types, there is concern that the pneumococcal serotypes not included in the PCV used will increase and 'replace' the vaccine types as the principal cause of IPD. In other countries, serotype 19A is the non-PCV7 type that is most frequently reported to have increased following the use of this vaccine. Serotype 19A was the most frequent serotype among cases of IPD in New Zealand in 2011. There have been significant increases in the rates of IPD due to serotype 19A in the 5–64 and 65 years and older age groups since PCV7 was introduced, but rates have remained relatively stable in the less than 5 years age group.

Three other non-PCV7 serotypes were prevalent in 2011: 1, 3 and 22F. It is now clear that in recent years New Zealand has experienced an 'outbreak' of serotype 1 disease which started in 2006, peaked in 2009 with 153 cases and then declined to 35 cases in 2011. These serotype 1 cases were strongly associated with IPD in Māori and Pacific school-age children and young adults. Serotypes 3 and 22F are also most commonly isolated from IPD cases 5 years and older. There were no cases of either of these serotypes in less than 5 year olds in 2011.

A more detailed report is available at http://www.surv.esr.cri.nz/surveillance/IPD.php

Reported by Helen Heffernan and Esther Lim, Health Programme, ESR.

The epidemiology of rheumatic fever in Northland, 2002 to 2011

Background

Acute rheumatic fever (ARF) is a preventable disease of poverty which is now rare in most developed countries. In Northland, rates of ARF have historically been among the highest in New Zealand.

Aim

An audit of Northland ARF data from 2002 to 2011 aimed to establish the accuracy and completeness of ARF surveillance in the area. This information will provide a robust baseline to monitor the ARF prevention efforts currently underway.

Methods

Acute rheumatic fever cases from 2002 to 2011 were identified and evaluated by auditing Northland hospital discharges, the Northland rheumatic fever secondary penicillin prophylaxis register ('the Northland RF Register') and the national notifiable diseases database (EpiSurv). Patients aged less than 35 years discharged from hospital with rheumatic heart disease (RHD) or ARF between 2002 and 2011 were identified using the ICD-9 and ICD-10 coding systems.[1] All patients on the Northland RF register who currently receive or received benzathine penicillin prophylaxis for ARF and RHD during the study period were reviewed. Northland ARF cases and recurrences notified to EpiSurv from 2002 to 2011 were also evaluated.

Cases were included in the audit if they were diagnosed with ARF or recurrent RF, and met criteria for ARF or a recurrence according to the 2006 National Heart Foundation guidelines.[2] Only those resident in Northland and aged less than 35 years at the time of diagnosis were included.

Where multiple ethnicities were reported, cases were classified as Māori if any of their stated ethnicities were Māori, otherwise cases were classified as non-Māori. Socioeconomic status was assigned using the NZDep2006 Index of Deprivation.[3]

Results

One hundred and seventeen ARF case notes (including six notified recurrences) were reviewed that were identified from EpiSurv. Thirteen cases were discarded because either they did not meet the audit criteria for ARF or a recurrence (10 cases, including 5 recurrent cases) or they were diagnosed outside the Northland area (3 cases). 104 EpiSurv notified cases remained after the audit, with one notified case of "recurrent" RF meeting the criteria for an initial ARF case (it had been incorrectly entered as a recurrence on EpiSurv).

One hundred and fifty seven cases of RHD and ARF were identified from hospital discharge ICD coding and were reviewed to ensure RHD cases were not incorrectly coded as ARF and vice versa. The majority of cases were RHD and not ARF and were subsequently excluded. Others were found to be outside the time period or age range and were also excluded. Ten cases met the criteria for ARF that were not duplicated on the EpiSurv list.

Cases on the Northland RF Register were compared with the 104 EpiSurv cases, and 10 cases were identified that were not on EpiSurv. These were the same 10 cases identified through review of hospital discharge data.

A total of 114 cases of ARF thus met the audit criteria and were classified as definite (81), probable (18) and possible (15). This gave an annualised incidence rate of 7.7 per 100,000 population (approximately 12 cases per year). Ten cases (5 definite, 4 probable, 1 possible) had not been notified and were identified via ICD coded hospital discharge data and the Northland RF Register.

Ninety five percent (108 cases) were Māori and a large disparity between Māori (24.8 cases per 100,000 population) and non-Māori (0.6 cases per 100,000) was found. The highest rate and largest disparity was found in the 5–14 years age group, where 93.8% (91 cases) of cases were Māori, and the rate for Māori was 78.0 cases per 100,000 compared with 3.8 cases per 100,000 for non-Māori.

Of the 114 ARF cases, 59.6% (68 cases) were male. Cases were aged from 4–26 years with 85.1% (97 cases) aged 5–14years. The mean age was 11.4 years.

Having ARF was strongly associated with living in highly deprived areas. Over half (55.3%, 63 cases) of cases resided in areas classified as NZDep2006 decile 10 and 89.5% (102 cases) in deciles 8–10 areas.

The majority of cases had a definite diagnosis (71.1%, 81 cases) and were low risk (ie, had either no evidence of RHD or trivial to mild valvular disease only (80.7%, 92 cases)). At diagnosis, 85.1% (97 cases) had carditis, 42.1% (48 cases) had polyarthritis, 7.0% (8 cases) had chorea and 8.8% (10 cases) had erythema marginatum. No cases with a history of nodules were recorded. Only 46.5% (53 cases) of ARF cases had a history of a sore throat; 22.8% (26 cases) had a Group A *Streptococcus* (GAS) positive throat swab and 14.0% (16 cases) had both a sore throat and GAS-positive throat swab.

Comments and recommendations

Both under- and over-notification of ARF were noted in the audit. Gaps were found in the clinical reporting and follow up of ARF cases. These factors contributed to the exclusion of most recurrences from the audit.

At 78.0 cases per 100,000 population, rates of ARF in Northland Māori aged 5–14 years are similar to those seen in developing countries and nearly twice the rates of Māori children in Auckland (41.2 cases per 100,000 in 1993 to 1999) and Waikato (39.6 cases per 100,000 in 1998 to 2004).[4-6]

It is also concerning to report an increased number of cases in Northland in each of the last four years, with 12, 16, 18 and 19 cases notified from 2008 to 2011 respectively. These findings highlight the urgent need to address crowding, poverty and inequitable primary care access if rheumatic fever is to be eliminated.

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

Reported by Dr Audrey Robin, Senior House Officer (Paediatrics) and Dr Clair Mills, Medical Officer of Health, Northland District Health Board.

4. Outbreak Surveillance

The following information is a summary of the outbreak trends for New Zealand from data collected in the last quarter (October to December 2012). Comparisons are made to the previous quarter (July to September 2012), and to the same quarter in the previous year (October to December 2011). Note that the outbreak data in this section are notified to ESR by the Public Health Services.

General

- 253 outbreaks notified in this quarter (3311 cases).
- 187 are 'final' reports (2984 cases); 66 are 'interim' reports (327 cases) that have yet to be finalised and closed.

All data that follow relate to final reports only.

- 16.0 cases on average per outbreak, compared with 16.3 cases per outbreak in the previous quarter (10.4 cases per outbreak in the same quarter of last year).
- 37 hospitalisations: norovirus (32 cases), *Campylobacter* (2 cases), *Giardia*, hepatitis B virus, and *Shigella* (1 case each).
- 3 deaths: norovirus.
- Four outbreaks involved more than one pathogen therefore individual pathogen outbreak numbers may not sum to group totals.

Pathogens

- 86 norovirus outbreaks (2167 cases).
- 44 'gastroenteritis' outbreaks (509 cases).
- 15 *Cryptosporidium* outbreaks (55 cases).
- 10 *Campylobacter* outbreaks (30 cases).
- 9 rotavirus outbreaks (106 cases).
- 8 *Bordetella pertussis* outbreaks (16 cases).
- 6 *Giardia* outbreaks (20 cases).
- 3 *Salmonella* outbreaks (28 cases).
- 3 *Shigella* outbreaks (9 cases).
- 2 *Clostridium perfringens* outbreaks (9 cases).
- 2 *Escherichia coli*, enteropathogenic outbreaks (35 cases)
- 1 *Clostridium difficile* outbreak (14 cases)
- 1 hepatitis B virus outbreak (2 cases).
- 1 influenza B virus outbreak (28 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.

- 156 person-to-person, from (non-sexual) contact with an infected person (including droplets): 77 norovirus (2031 cases), 32 'gastroenteritis' (469 cases), 13 *Cryptosporidium* (50 cases), 9 rotavirus (106 cases), 8 *B. pertussis* (16 cases), 5 *Giardia* (18 cases), 3 *Shigella* (9 cases), 2 *E. coli*, enteropathogenic (35 cases), 1 *C. difficile* (14 cases), and 1 influenza B virus (28 cases).
- 23 environmental, from contact with an environmental source (eg, swimming): 14 norovirus (579 cases), 4 *Cryptosporidium* (9 cases), 2 'gastroenteritis' (5 cases), 1 *Campylobacter* (5 cases), 1 *Giardia* (2 cases), and 1 *Salmonella* (3 cases).
- 26 foodborne, from consumption of contaminated food or drink (excluding water): 8 'gastroenteritis' (18 cases), 7 norovirus (74 cases), 3 *Campylobacter* (11 cases), 3 *Salmonella* (28 cases), 2 *C. perfringens* (9 cases), 2 *E. coli*, enteropathogenic (35 cases), 2 *Shigella* (6 cases), and 1 *Giardia* (4 cases).
- 12 zoonotic, from contact with an infected animal: 7 *Cryptosporidium* (23 cases), 4 *Campylobacter* (13 cases), and 1 'gastroenteritis' (2 cases).
- 10 waterborne, from consumption of contaminated drinking water: 5 *Cryptosporidium* (13 cases), 3 *Campylobacter* (10 cases), and 2 *Giardia* (5 cases).
- 1 sexual contact: hepatitis B virus (2 cases).
- 2 'other' modes: 1 'gastroenteritis' (4 cases) and 1 norovirus (18 cases).
- 13 mode of transmission unknown: 7 norovirus (119 cases), 5 'gastroenteritis' (24 cases), and 1 *Campylobacter* (4 cases).

Circumstances of Exposure

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

- 59 long term care facility: 44 norovirus (1237 cases), 12 'gastroenteritis' (167 cases), 1 *Campylobacter* (3 cases), 1 influenza B virus (28 cases), and 1 rotavirus (5 cases).

- 38 home: 11 *Cryptosporidium* (31 cases), 6 *Giardia* (20 cases), 5 *B. pertussis* (10 cases), 6 *Campylobacter* (17 cases), 4 norovirus (22 cases), 3 *Shigella* (9 cases), 2 'gastroenteritis' (6 cases), 2 *Salmonella* (5 cases), and 1 hepatitis B virus (2 cases).
- 25 childcare centre: 10 'gastroenteritis' (125 cases), 8 rotavirus (101 cases), 6 norovirus (146 cases), and 1 *Cryptosporidium* (14 cases).
- 15 hospital (acute care): 12 norovirus (226 cases), 3 'gastroenteritis' (37 cases), and 1 *C. difficile* (14 cases).
- 10 restaurant/café/bakery: 6 norovirus (44 cases) and 4 'gastroenteritis' (8 cases).
- 8 takeaways: 5 'gastroenteritis' (12 cases), 1 *C. perfringens* (6 cases), 1 *E. coli*, enteropathogenic (12 cases), and 1 norovirus (7 cases).
- 6 farm: 5 *Cryptosporidium* (17 cases) and 1 *Campylobacter* (3 cases).
- 5 workplace: 3 norovirus (64 cases) and 2 'gastroenteritis' (6 cases).
- 4 other institution: 3 norovirus (41 cases) and 1 'gastroenteritis' (20 cases).
- 2 camp: 1 *C. perfringens* (6 cases) and 1 'gastroenteritis' (10 cases).
- 2 cruise ship: 1 'gastroenteritis' (102 cases) and 1 norovirus (261 cases).
- 1 fast food restaurant: 'gastroenteritis' (2 cases).
- 1 hostel/boarding house: *Campylobacter* (3 cases).
- 1 other food outlet: 'gastroenteritis' (8 cases).
- 1 petting zoo: *Cryptosporidium* (3 cases).
- 1 school: norovirus (19 cases).
- 1 temporary or mobile food premises: *C. perfringens* (3 cases).
- 4 'other setting': 1 *Campylobacter* (3 cases), 1 'gastroenteritis' (7 cases), 1 norovirus (5 cases), and 1 *Shigella* (2 cases).
- 10 outbreaks had 2 exposure settings recorded.
- 13 outbreaks had no exposure settings recorded.

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

- 8 restaurant/café/bakery: 4 'gastroenteritis' (8 cases) and 4 norovirus (30 cases).
- 8 takeaways: 4 'gastroenteritis' (10 cases), 2 *E. coli*, enteropathogenic (35 cases), 1 *C. perfringens* (6 cases), 1 norovirus (7 cases), and 1 *Salmonella* (23 cases).
- 3 home: 2 *Salmonella* (5 cases), 1 *Giardia* (4 cases), and 1 *Shigella* (4 cases)
- 1 caterer: norovirus (19 cases).
- 1 camp: *C. perfringens* (6 cases)
- 1 sports gathering: *Campylobacter* (3 cases).
- 1 temporary or mobile food premises: *C. perfringens* (3 cases).
- 4 outbreaks had no preparation settings recorded.
- 1 outbreak had 2 preparation settings recorded.

5. Outbreak Case Reports

Influenza outbreak in a long-term care facility in the Southern District Health Board area

Summary

An outbreak of influenza-like illness (ILI) occurred from July to August 2012, affecting 39 patients and 16 staff members at a long-term care facility in the Southern District Health Board area. Despite reasonably high levels of patient immunisation with the seasonal influenza vaccine, over 80% of residents were affected and seven residents died. Laboratory testing identified an influenza A/Perth/16/2009 (H3N2)-like virus, which was a component of the 2012 seasonal influenza vaccine. Low staff uptake of influenza vaccination may have contributed to the spread of infection.

Background

On 1 August 2012, Public Health South was advised of an outbreak of 27 cases of sudden onset of acute respiratory illness in residents and staff starting on 28 July 2012 in a community-based elder-care facility.

Methods

The manager of the facility was asked to complete a log of all cases of illness in residents and staff. After consultation with ESR, six viral swabs were collected from patients in both wings. The local immunisation coordinator visited the facility to assess the immunisation status of the cases. The data from case logs was entered into EpiInfo™ (version 3.5.3) for analysis.

The case definition used for ILI was an acute respiratory tract infection characterised by abrupt onset and two of the following: fever, chills, headache and myalgia. A confirmed case was one that fitted the case definition and had a positive polymerase chain reaction (PCR) test for influenza virus and a probable case fitted the case.

Results

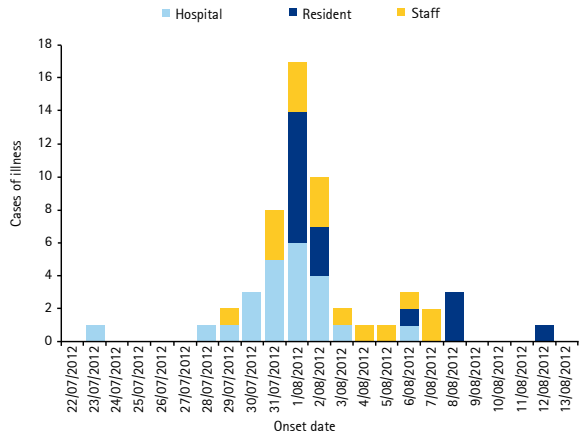
The facility comprises one wing of 26 hospital beds (all occupied at the time of outbreak) and a second wing of 42 assisted care beds (25 were occupied at the time of outbreak), with a total of 63 staff working between the wings The median age of residents was 89 years in the Hospital (range 63 to 98) and 86 years for the rest home (range 74 to 97).

Influenza vaccination is encouraged for residents, and 78.4% (40/51) of residents were vaccinated at the time of the outbreak, with most having been vaccinated in April 2012. Although the cost of staff influenza vaccination is reimbursed as part of employment, only 11.1% (7/63) of staff had received the seasonal influenza vaccination in 2012.

There was no significant difference in the age-specific sickness rates between residents in the rest home and hospital wings and vaccination coverage was similar in the two populations, with 80.8% (21/26) of the hospital patients and 76.0% (19/25) of the rest home residents being vaccinated. The apparent difference in the sickness rates among staff members (1 case among 7 vaccinated staff members and 15 cases among 56 unvaccinated staff members) was not statistically significant (Relative Risk 0.53 95%; CI 0.08–3.45; p=0.477).

The epidemic curve (Figure 2) suggests the infection originated in the hospital wing and may have been transferred to the rest home wing by infected staff members.

Figure 2. Epidemic curve of influenza-like illness cases



Four of the six viral swabs tested positive by PCR for influenza A/H3, but antigenic typing was only possible on one swab. A swab taken on 2 August 2012 from an unvaccinated patient was identified as influenza A/Perth/16/2009 (H3N2)-like as tested using the World

Health Organization's 2012 influenza virus diagnostic agents. All the other viral swabs were taken from patients who had been vaccinated.

Discussion

All the patients in the hospital beds had significant co-morbidities. Five of the seven patients who died had been vaccinated with the seasonal influenza vaccine. The low level of vaccine uptake by the staff is of concern because influenza is highly infectious in the prodromal period and health care workers can easily spread the infection to vulnerable patients. At the time the outbreak was notified, the majority of residents had been infected or were showing signs of disease so the use of anti-viral medication was not justified.

Conclusions and recommendations

The low level of influenza vaccination in the staff may have contributed to the spread of influenza throughout the health care facility. This outbreak demonstrates that influenza in frail elderly patients can have significant morbidity and mortality, despite reasonable levels of vaccination.

All workers in long-stay facilities for older people should be vaccinated annually with the seasonal influenza vaccine to reduce the possibility of the nosocomial spread of the influenza virus.

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

Reported by Dr John Holmes, Medical Officer of Health, Ryan McLane, Immunisation Coordinator, Megan Callaghan, Health Protection Officer, Public Health South.

6. Laboratory Surveillance

Norovirus outbreak surveillance – a new GII.4 variant emerges in 2012

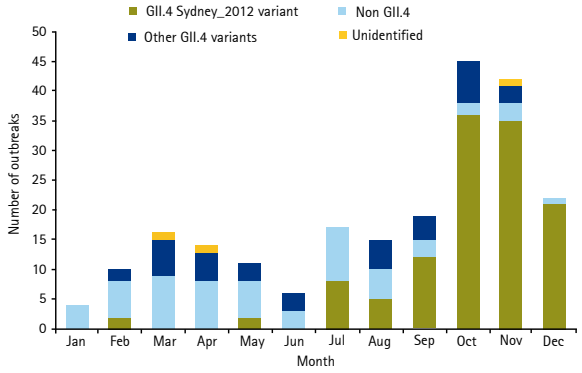
Noroviruses are the leading cause of epidemic acute non-bacterial gastroenteritis worldwide. The ESR Norovirus Reference Laboratory carries out laboratory surveillance of norovirus outbreaks for the New Zealand Ministry of Health. This includes identifying noroviruses in faecal specimens from gastroenteritis outbreak cases, genotyping representative outbreak strains and collating data on the predominant genotypes occurring in New Zealand.[1]

New Zealand norovirus sequences are submitted to Noronet, a global network for norovirus molecular and epidemiological surveillance. Noronet aids the early identification of emerging noroviruses and the comparison of circulating strains, and informs public health agencies of potential norovirus epidemics.

In 2012, 221 ESR laboratory-confirmed norovirus outbreaks were recorded. The majority occurred in aged-care facilities (53.4%, 118/221), often causing significant economic costs for healthcare services due to factors such as ward closures, additional infection control measures and prolonged admission times.[2] Outbreaks also occurred in catered settings, early childcare centres, schools, hospitals, workplace, on a cruise ship and in the home. Two norovirus outbreaks were associated with consumption of contaminated imported oysters, with both norovirus genogroup I and II (GI and GII) detected in the cases. One of these outbreaks occurred at a large community gathering and has been described previously.[3]

The norovirus genotype was identified for 218 outbreaks. The most common genotypes identified for the year were GII.4 in 73.9% (161/218) and GII.6 in 13.8% (30/218) of outbreaks. Up to the end of July, the most frequently identified GII.4 was the New Orleans_2009 variant, identified in 81.3% (26/32) of GII.4 outbreaks during that period. However, in late 2012 a large increase in laboratory-confirmed norovirus outbreaks was observed, primarily in health care settings. Laboratory analysis by ESR showed that a new variant termed GII.4 Sydney_2012 was responsible for 84.4% (92/109) of norovirus outbreaks from October to December (Figure 3). In New Zealand, GII.4 Sydney_2012 was first detected in February 2012. With the emergence of this new GII.4 variant, the number of New Zealand laboratory-confirmed outbreaks increased to 45 in October, the highest number ever recorded by the Norovirus Reference Laboratory in a single month. The GII.4 Sydney_2012 variant was also identified in Australia, Europe, USA and Japan in late 2012.[4]

Figure 3. Occurrence of norovirus GII.4 and non GII.4 outbreaks, January to December 2012



Based on historical trends, this emerging variant could be the next significant global norovirus GII.4 variant. The previous global pandemic GII.4 variant (GII.4 New Orleans_2009) emerged in 2009 and was responsible for a large increase in norovirus outbreaks during that year, particularly in aged-care facilities and hospitals.

Timely identification of emerging new norovirus variants plays an important part in the development of public health management and control strategies. Continued vigilance, as well as effective outbreak management and prevention strategies, can help to minimise the impact of norovirus outbreaks.

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

Reported by Joanne Hewitt and Gail Greening, Norovirus Reference Laboratory, 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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