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New Zealand Public Health Surveillance Report

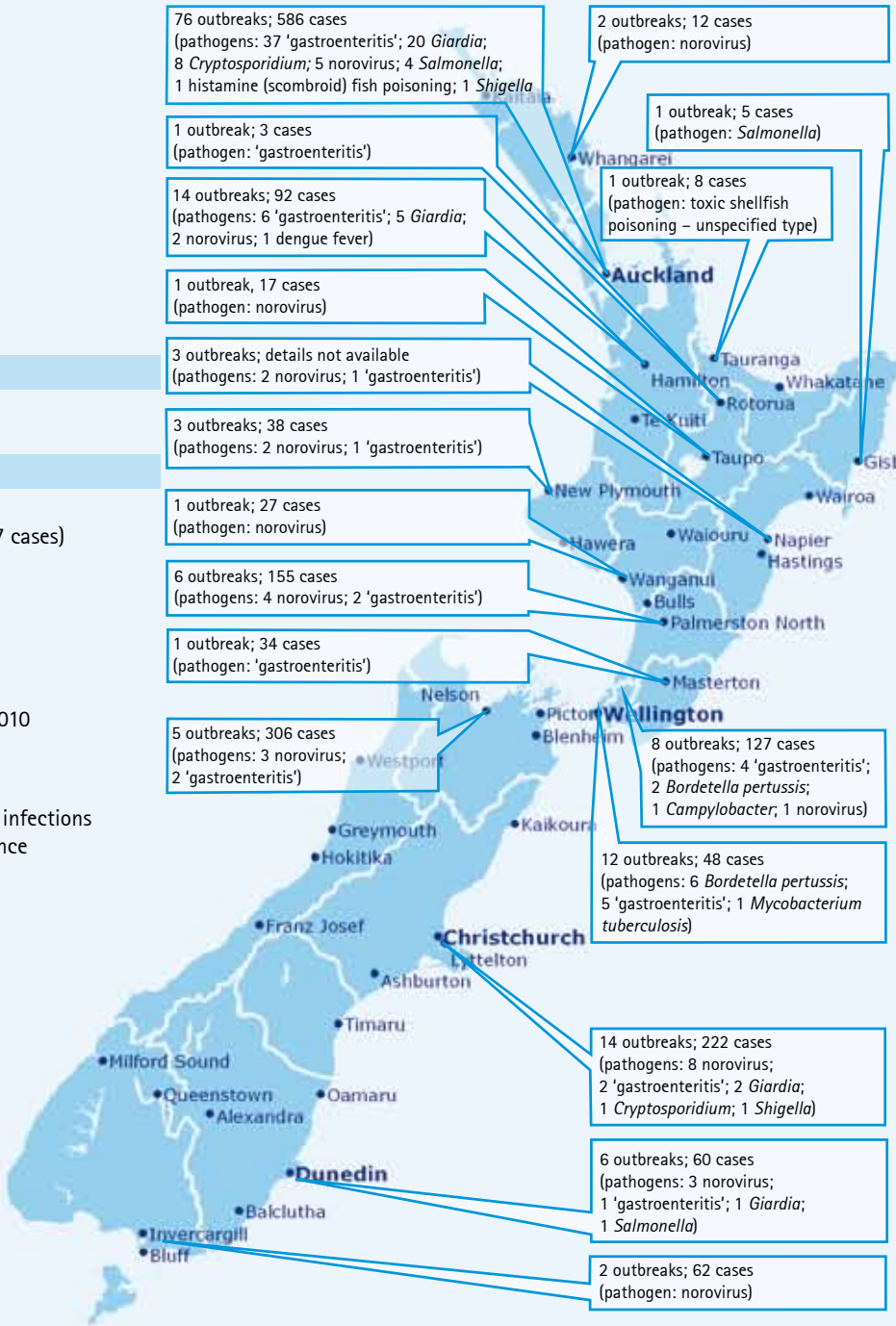
June 2010: Covering January–March 2010

Contents & Highlights

The latest reports from STI Surveillance, Antimicrobial Resistance, Virology and Enteric Reference Laboratory are available at www.surv.esr.cri.nz

This Quarter's Outbreaks

Notification and outbreak data in this issue are drawn from the January–March quarter of 2010. The outbreak map on this page summarises all of the outbreak information, final and interim. The total number of outbreaks and cases by region and outbreaks by pathogen are reported, as notified up to 7 April 2010.



1. Editorial

Summary of notifiable disease surveillance trends for 2009

In 2009, 19,856 cases of notifiable diseases were reported through EpiSurv, the National Notifiable Disease Database. This was higher than the previous two years, but lower than any of the seven years prior to 2007.

Between 2008 and 2009 there were some significant changes in the number of cases reported for individual diseases. There was a statistically significant increase in reported cases of campylobacteriosis (6694 to 7176, 7%), cryptosporidiosis (764 to 854, 12%), measles (12 to 253, 2008%), and pertussis (417 to 1399, 235%).

Conversely, there were statistically significant decreases in reported cases of acquired immune deficiency syndrome (AIDS) (48 to 28,-42%), hepatitis A (89 to 44,-51%), leptospirosis (118 to 71,-40%), salmonellosis (1345 to 1129,-16%) and yersiniosis (508 to 431,-15%).

Enteric diseases continued to comprise the majority of disease notifications in 2009. In particular, at 7176 notifications, campylobacteriosis contributed 36.1% of all disease notifications.

From 2008 to 2009, there were no statistically significant changes in the number of reported cases of exotic diseases. There was no evidence of recent locally-acquired hydatid disease, and all dengue fever cases with travel histories recorded had travelled overseas. For rickettsial disease, none of the murine typhus cases had reported overseas travel during the incubation period.

In 2009, the pertussis disease notification rate showed a significant increase compared with 2008. The pertussis rate per 100,000 population in 2009 was 32.4, compared with 9.8 the previous year. The 2009 pertussis notification rate was below that seen in previous epidemics in 2000 (107.6 per 100,000) and in 2004 and 2005 (85.3 and 65.8 per 100,000, respectively).

The measles disease notification rate showed a significant increase in 2009, from 0.3 to 5.9 per 100,000 population. Acute hepatitis A disease was the only other vaccine preventable disease to show a significant change in notification rate compared with 2008, with a significant decrease (2.1 to 1.0 per 100,000) returning to the same rate seen in 2007.

The meningococcal disease rate (3.3 per 100,000 population) was well down on the peak annual rate observed during the epidemic in 2001 (16.7 per 100,000), but the rate remains higher than before the start of the epidemic in 1989–1990 (1.5 per 100,000).

In 2009, 28 cases of AIDS were notified. The 2009 notification rate (0.6 per 100,000 population) was a significant decrease from the 2008 rate (1.1 per 100,000, 48 cases).

In 2009, there were 638 reported outbreaks involving 10,734 cases. This represented an increase in the number of outbreaks and cases compared with 2008 figures (449 outbreaks with 6503 cases). The most common pathogen implicated was norovirus with 270 of the outbreaks and 7116 of the cases, followed by *Giardia* with 41 outbreaks and 131 cases. The most common setting linked to an outbreak was rest/retirement homes (231 outbreaks, 6354 cases) followed by private homes (140 outbreaks, 797 cases).

For a more detailed report see www.surv.esr.cri.nz

Reported by Population and Environmental Health Programme, ESR

2. Notifiable Disease Surveillance

The following is a summary of disease notifications for the January-March quarter of 2010 and cumulative notifications and rates calculated for a 12-month period (April 2009–March 2010). 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, R. G. and D. G. Altman. Proportions and their differences. In: *Statistics with Confidence*. 2000. BMJ Books. Bristol]. Data contained within this report are based on information recorded in EpiSurv by public health service staff up to 7 April 2010. As this information may be updated over time, these data should be regarded as provisional.

National surveillance data tables are available online (www.surv.esr.cri.nz).

VACCINE PREVENTABLE DISEASE

Haemophilus influenzae type b

- *Notifications:* 5 notifications in the quarter (2009, 1); 14 over the last 12 months (2009, 5) giving a rate of 0.3 cases per 100,000 population (2009, 0.1); a statistically significant increase
- *Comments:* two notifications were aged under 5 years and one of these cases was not immunised

Hepatitis B

- *Notifications:* 15 notifications in the quarter (2009, 12); 58 over the last 12 months (2009, 37) giving a rate of 1.3 cases per 100,000 population (2009, 0.9); a statistically significant increase
- *Comments:* cases were aged between 4 and 76 years, with a single case under the age of 16 years

Invasive Pneumococcal Disease

- *Notifications:* 72 notifications in the quarter (2009, 121); 648 over the last 12 months giving a rate of 15.0 per 100,000 population
- *Comments:* cases were aged between 3 days and 91 years, with five cases under the age of two years
- Note: Invasive pneumococcal disease became notifiable on 17 October 2008 therefore comparisons between 12-month rates are not valid

Measles

- *Notifications:* 22 notifications in the quarter (2009, 27); 243 in the last 12 months (2009, 39) giving a rate of 5.6 cases per 100,000 population (2009, 0.9); a statistically significant increase
- *Comments:* four notifications were laboratory confirmed

Mumps

- *Notifications:* 23 notifications in the quarter (2009, 5); 81 notifications over the last 12 months (2009, 52) giving a rate of 1.9 cases per 100,000 population (2009, 1.2); a statistically significant increase
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (5 cases); ten notifications were laboratory confirmed

Pertussis

- *Notifications:* 296 notifications in the quarter (2009, 335); 1359 notifications over the last 12 months (2009, 685) giving a rate of 31.5 cases per 100,000 population (2009, 16.0); a statistically significant increase
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (405 cases)

INFECTIOUS RESPIRATORY DISEASES

Non Seasonal Influenza A (H1N1)

- *Notifications:* 4 notifications in the quarter
- *Comments:* cases were distributed by age as follows: 1 (15-24 years), 3 (25-44 years); all cases were laboratory confirmed
- *Note:* non seasonal influenza became notifiable on 29 April 2009 therefore comparisons between quarters and 12-month rates are not valid

ENTERIC INFECTIONS

Campylobacteriosis

- *Notifications:* 2115 notifications in the quarter (2009, 1892); 7398 notifications over the last 12 months (2009, 6826) giving a rate of 171.4 cases per 100,000 population (2009, 159.9); a statistically significant increase

- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (2489 cases) and a statistically significant quarterly increase from the same quarter last year (1892 cases)

Gastroenteritis

- *Notifications:* 121 notifications in the quarter (2009, 141); 693 notifications over the last 12 months (2009, 649) giving a rate of 16.1 cases per 100,000 population (2009, 15.2); not a statistically significant increase
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (168 cases). Note that this is not a notifiable disease per se except in persons with a suspected common source or with a high risk occupation, and 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:* 337 notifications in the quarter (2009, 440); 1026 notifications over the last 12 months (2009, 1290) giving a rate of 23.8 cases per 100,000 population (2009, 30.2); a statistically significant decrease
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (246 cases) and a statistically significant quarterly decrease from the same quarter last year (440 cases)

Typhoid

- *Notifications:* 13 notifications in the quarter (2009, 19); 28 notifications over the last 12 months (2009, 39) giving a rate of 0.6 cases per 100,000 population (2009, 0.9), not a statistically significant decrease
- *Comments:* there has been a statistically significant increase from the previous quarter (3 cases)

VTEC Infections

- *Notifications:* 42 notifications in the quarter (2009, 68); 117 over the last 12 months (2009, 143) giving a rate of 2.7 cases per 100,000 population (2009, 3.3); not a statistically significant decrease
- *Comments:* there has been a statistically significant quarterly decrease from the same quarter last year (68 cases)

ENVIRONMENTAL EXPOSURES & INFECTIONS

Cryptosporidiosis

- *Notifications:* 234 notifications in the quarter (2009, 134); 954 notifications over the last 12 months (2009, 815) giving a rate of 22.1 cases per 100,000 population (2009, 19.1); a statistically significant increase
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (324 cases) and a statistically significant quarterly increase from the same quarter last year (134 cases)

Giardiasis

- *Notifications:* 555 cases in the quarter (2009, 470); 1723 over the last 12 months (2009, 1713) giving a rate of 39.9 cases per 100,000 population (2009, 40.1); not a statistically significant decrease
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (375 cases) and from the same quarter last year (470 cases)

Hepatitis A

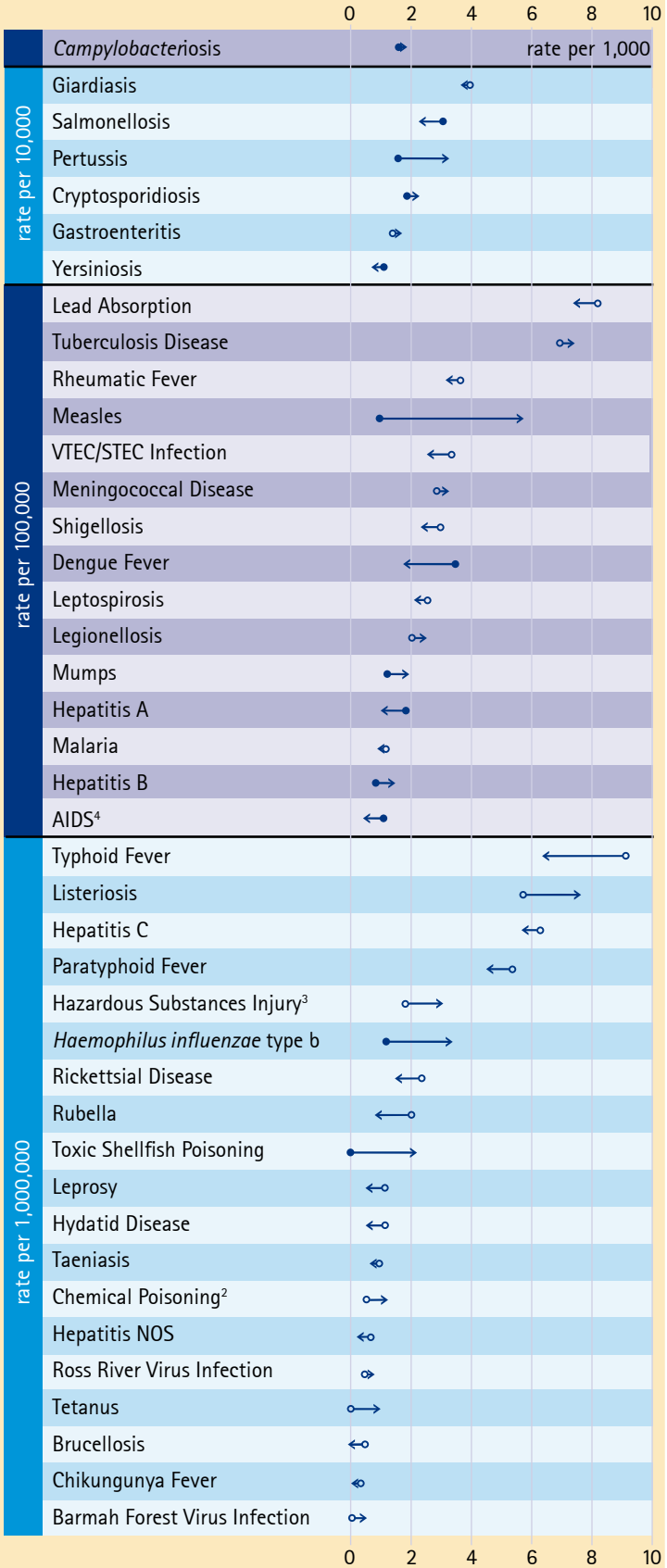
- *Notifications:* 14 notifications in the quarter (2009, 9); 49 over the last 12 months (2009, 80) giving a rate of 1.1 cases per 100,000 population (2009, 1.9); a statistically significant decrease
- *Comments:* cases were aged between 11 and 61 years, with two cases under the age of 16 years

Lead Absorption

- *Notifications:* 47 notifications in the quarter (2009, 92); 323 over the last 12 months (2009, 350) giving a rate of 7.5 cases per 100,000 population (2009, 8.2); not a statistically significant decrease
- *Comments:* there has been a statistically significant quarterly decrease from the previous quarter (71 cases) and from the same quarter last year (92 cases). Cases were distributed by age as follows: 1 (<1 years),

National Surveillance Data

12-Monthly Notification Rate Changes[1]



Notifications per 1,000 or 10,000 or 100,000 or 1,000,000 persons

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 2009–December 2009 and compared to previous 12-month rates

[2] From the environment

[3] Hazardous Substances Injury became notifiable in EpiSurv as of 19 September 2007

[4] 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 (5-14 years), 2 (15-24 years), 10 (25-44 years), 25 (45-64 years) and 6 (over 65 years). 39 male cases, 8 female cases. 19 cases recorded an occupation that involved exposure to lead: painter (5 cases), and abrasive blaster, artist, builder, process worker, radiator repairer (1 case each) and not specified (9 cases)

Legionellosis

- *Notifications:* 56 notifications in the quarter (2009, 29); 103 notifications over the last 12 months (2009, 86) giving a rate of 2.4 cases per 100,000 population (2009, 2.0); not a statistically significant increase
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (24 cases) and from the same quarter last year (29 cases). Sixteen cases recorded a definite or suspected environmental source of infection during the incubation period: contact with compost/potting mix/soil (14 cases), exposure to showers/hot water systems (4 cases), and exposure to an air conditioning unit (2 cases)

Leptospirosis

- *Notifications:* 40 notifications in the quarter (2009, 14); 95 notifications over the last 12 months (2009, 110) giving a rate of 2.2 cases per 100,000 population (2009, 2.6); not a statistically significant decrease
- *Comments:* there has been a statistically significant quarterly increase from the same quarter last year (14 cases). There were 33 male cases, and 7 female cases; 18 farmers/farm workers, 5 meat process workers, 2 fruit or nut grower/workers, and a furniture maker, hunter-trapper, labourer, stock agent, student nurse (case possibly exposed during gardening) and waste water or water plant operator (1 case each). The remaining eight cases did not have an occupation stated

Yersiniosis

- *Notifications:* 112 notifications in the quarter (2009, 162); 381 over the last 12 months (2009, 489) giving a rate of 8.8 cases per 100,000 population (2009, 11.5); a statistically significant decrease
- *Comments:* there has been a statistically significant quarterly decrease from the same quarter last year (162 cases)

NEW, EXOTIC & IMPORTED INFECTIONS

Dengue Fever

- *Notifications:* 11 notifications in the quarter (2009, 69); 81 notifications over the last 12 months (2009, 151) giving a rate of 1.9 cases per 100,000 population (2009, 3.5); a statistically significant decrease
- *Comments:* there has been a statistically significant quarterly decrease from the same quarter last year (69 cases); all notifications were laboratory confirmed; all cases were overseas during the incubation period. Places visited were Indonesia (7 cases), Malaysia, Papua New Guinea, Thailand and Vanuatu (1 case each)

Toxic Shellfish Poisoning

- *Notifications:* 8 notifications in the quarter (2009, 0 cases); 9 over the last 12 months (2009, 0 cases) giving a rate of 0.2 cases per 100,000 population (2009, 0.0); a statistically significant increase
- *Comments:* there has been a statistically significant quarterly increase from the previous quarter (1 case) and from the same quarter last year (0 cases)

3. Other Surveillance Reports

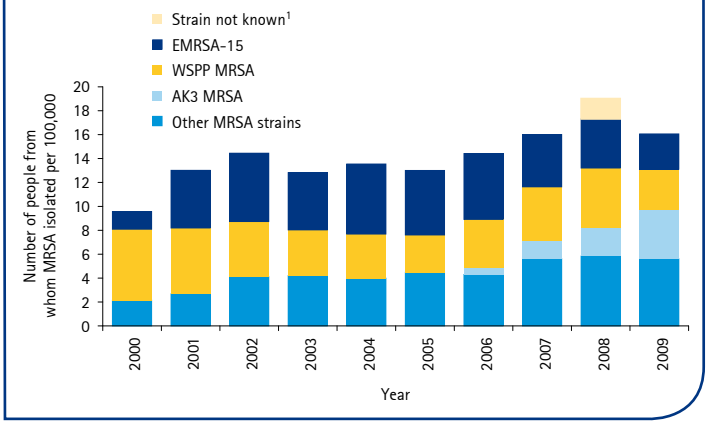
Annual survey of MRSA, August 2009

Each year ESR conducts a one-month survey of methicillin-resistant *Staphylococcus aureus* (MRSA) to provide information on the epidemiology of MRSA in New Zealand.

Prior to 1999, hospital and community microbiology laboratories were asked to refer all MRSA isolated throughout the year to ESR. Each year since 2000, laboratories have been asked to refer all MRSA isolated during a one-month period only. For the data collected during the 2000-2008 to be comparable to previous years, the data were annualised. Now there is a 10-year (2000-2009) span of data from these one-month surveys that can be directly compared, data are no longer being annualised. Instead, point-prevalence rates are being used and these are based on the number of MRSA isolated per 100,000 population during the one-month period of the survey (Figure 1).

For the 2009 survey, hospital and community microbiology laboratories were asked to refer all MRSA isolated during August or October 2009 to ESR. During the month, MRSA were referred from 693 people (683 patients and 10 staff). The point-prevalence rate of MRSA in 2009 was estimated at 16.1 MRSA per 100,000 population, a 15.6% decrease on the 2008 rate of 19.0 (Figure 1).

Figure 1. MRSA point-prevalence rates, 2000–2009

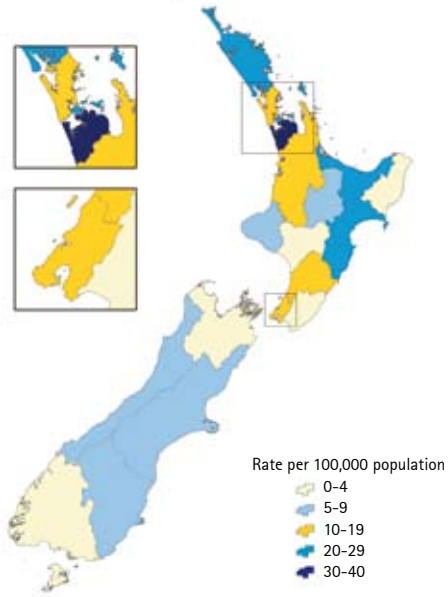


[1] The category 'Strain not known' for 2008 represents the number of people identified with MRSA by a laboratory which did not refer the isolates to ESR for strain identification.

MRSA strains were identified using *spa* typing and, where necessary, pulsed-field gel electrophoresis. Six MRSA strains were predominant in 2009 and represented 85.7% of all MRSA isolations. During the preceding nine years (2000-2008), the two most commonly identified MRSA strains were the WSPP MRSA strain and the EMRSA-15 strain. In 2009, the AK3 MRSA strain was the most commonly identified strain, accounting for 25.8% of isolates. The WSPP MRSA strain, which accounted for 20.9% of isolates, was the second most commonly identified strain, followed by the EMRSA-15 strain, which accounted for 18.3% of isolates (Figure 1). The prevalence of other strains was: USA300 MRSA strain, 8.4%; WR/AK1 MRSA strain, 7.9%; and the Queensland clone MRSA strain, 4.3%. For a description of these MRSA strains, including their typical antimicrobial susceptibility patterns, see www.esr.cri.nz/competencies/communicabledisease/Pages/MRSA%20strains.aspx

Marked geographic variations in the prevalence of MRSA in New Zealand continue to occur (Figure 2). Differences in screening policies may contribute to some of the differences in prevalence between district health boards (DHBs).

Figure 2. Point-prevalence rates of MRSA by DHB[2], 2009



[2] Data for the two DHBs in the greater Wellington area (Hutt Valley and Capital & Coast) are combined. Similarly, data for the Canterbury and South Canterbury DHBs are combined.

MRSA was reported as causing infection in 74.3% of the 595 patients for whom this information was provided. Among the 683 patients with MRSA, 42.8% were categorised as hospital patients and 57.2% as community patients. Patients were classified as hospital patients if they were in a healthcare facility (including residential-care facility) when MRSA was isolated or had been in a healthcare facility in the three months before MRSA was isolated. The majority (62.2%) of EMRSA-15 were isolated from hospital patients or staff, whereas most AK3 MRSA, WSPP MRSA and WR/AK1 MRSA (68.2%, 66.9% and 63.6%, respectively) were isolated from people in the community. Despite the USA300 and Queensland clone MRSA strains being considered to be primarily community-associated, 48.3% of USA300 MRSA isolates and 46.7% of Queensland clone MRSA isolates were from hospital patients or staff.

A more detailed report will be available at www.surv.esr.cri.nz/PDF_surveillance/Antimicrobial/MRSA/aMRSA_2009

Reported by Alice Richardson, Communicable Disease 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 (January–March 2010). Comparisons are made to the previous quarter (October–December 2009), and to the same quarter in the previous year (January–March 2009). Note that the outbreak data in this section are notified to ESR by the Public Health Services.

General

- 155 outbreaks notified in this quarter (1751 cases)
- 89 are 'final' reports (1224 cases); 66 are 'interim' reports (527 cases) that have yet to be finalised and closed

All data following are pertaining to final reports only.

- 13.8 cases on average per outbreak, compared with 14.6 cases per outbreak in the previous quarter (13.5 cases per outbreak in the same quarter of last year)
- 19 hospitalisations: norovirus (11 cases), gastroenteritis (4), *Mycobacterium tuberculosis* (2), *Giardia* (1), and *Shigella* (1)
- No deaths

Pathogens

- 29 norovirus outbreaks (880 cases) during this quarter
- 24 'gastroenteritis' outbreaks (199 cases)
- 19 *Giardia* outbreaks (68 cases)
- 6 *Bordetella pertussis* outbreaks (31 cases)
- 3 *Cryptosporidium* outbreaks (10 cases)
- 3 *Salmonella* outbreaks (11 cases)
- 2 *Shigella* outbreaks (4 cases)
- 1 *Campylobacter* outbreak (16 cases)
- 1 dengue fever outbreak (2 cases)
- 1 *Mycobacterium tuberculosis* outbreak (3 cases)

Modes of Transmission

Note that reporting allows for multiple modes of transmission to be selected. In many instances no modes of transmission are selected for outbreaks notified to ESR, consequently, numbers may not add up to the total number of outbreaks reported.

- 72 person-to-person, from (non-sexual) contact with an infected person (including droplets): 26 norovirus (807 cases), 18 gastroenteritis (176 cases), 16 *Giardia* (60 cases), 6 *B. pertussis* (31 cases), 3 *Cryptosporidium* (10 cases), 1 *M. tuberculosis* (3 cases), 1 *Salmonella* (3 cases), and 1 *Shigella* (2 cases)
- 26 environmental, from contact with an environmental source (e.g. swimming): 14 norovirus (515 cases), 6 *Giardia* (19 cases), 4 gastroenteritis (27 cases), and 2 *Cryptosporidium* (8 cases)
- 11 foodborne, from consumption of contaminated food or drink (excluding water): 5 gastroenteritis (16 cases), 3 *Salmonella* (11 cases), 1 *Campylobacter* (16 cases), 1 norovirus (28 cases), and 1 *Shigella* (2 cases)
- 9 waterborne, from consumption of contaminated drinking water: 7 *Giardia* (33 cases), 1 *Campylobacter* (16 cases), and 1 *Cryptosporidium* (2 cases)
- 1 zoonotic, from contact with infected animal: *Giardia* (5 cases)
- 1 Other mode of transmission: *Giardia* (5 cases)
- 1 vectorborne, from contact with an insect vector: dengue fever (2 cases)
- 7 mode of transmission unknown: 3 gastroenteritis (11 cases), 3 *Giardia* (8 cases), and 1 norovirus (43 cases)

Circumstances of Exposure/Transmission

Common 'settings' where exposure/transmission occurred or contaminated food/beverage was prepared for consumption are identified below. Note that multiple settings can be selected and in many instances no settings are selected in outbreaks notified to ESR.

- 41 home: 17 *Giardia* (62 cases), 7 norovirus (70 cases), 5 *B. pertussis* (23 cases), 4 gastroenteritis (9 cases), 3 *Cryptosporidium* (10 cases), 3 *Salmonella* (11 cases), 1 *M. tuberculosis* (3 cases), and 1 *Shigella* (2 cases)
- 18 rest home: 12 norovirus (392 cases), and 6 gastroenteritis (103 cases)
- 10 hospital (acute care): 7 norovirus (148 cases), 2 gastroenteritis (11 cases), and 1 *Campylobacter* (16 cases)
- 8 hospital (continuing care): 5 gastroenteritis (70 cases), and 3 norovirus (143 cases)
- 7 restaurant/café: gastroenteritis (26 cases)
- 5 takeaways: 3 gastroenteritis (9 cases), and 2 norovirus (5 cases)
- 4 childcare centre: 1 *B. pertussis* (8 cases), 1 gastroenteritis (10 cases), 1 *Giardia* (2 cases), and 1 norovirus (62 cases)
- 3 camp: 2 *Giardia* (11 cases), and 1 norovirus (200 cases)
- 3 school: 1 *B. pertussis* (3 cases), 1 gastroenteritis (13 cases), and 1 norovirus (29 cases)
- 3 swimming/spa pool: 2 *Giardia* (7 cases), and 1 *Cryptosporidium* (4 cases)
- 1 farm: *Giardia* (7 cases)
- 1 hotel/motel: *Salmonella* (5 cases)
- 1 other food outlet: *Shigella* (2 cases)
- 1 tangi/hui: norovirus (28 cases)
- 1 workplace: norovirus (2 cases)
- 7 'other setting': 1 *B. pertussis* (4 cases), 1 *Cryptosporidium* (2 cases), 1 dengue fever (2 cases), 1 gastroenteritis (4 cases), 1 *Giardia* (2 cases), 1 *M. tuberculosis* (3 cases), and 1 norovirus (28 cases)
- 3 outbreaks with no setting selected: 2 *Giardia* (6 cases) and 1 *B. pertussis* (8 cases)

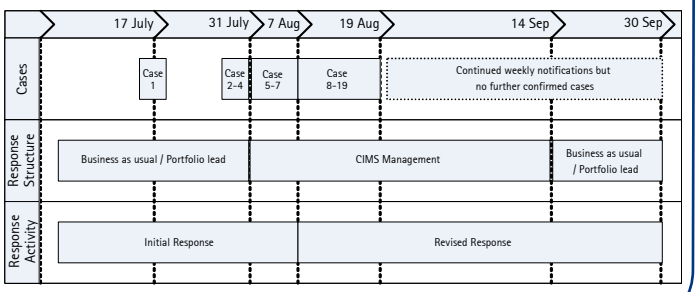
5. Outbreak Case Reports

Auckland measles outbreak, 2009

Between 14 July and 19 August 2009, Auckland experienced its largest outbreak of measles in a decade (EpiSurv data). The Auckland Regional Public Health Service (ARPHS) investigation and management of this outbreak is briefly outlined with key recommendations highlighted.

Initial cases were investigated using the ARPHS measles protocol. A full containment response was undertaken covering laboratory confirmation of diagnosis, case isolation, contact tracing, exclusion of susceptible contacts and ring vaccination. This proved very labour intensive with the first four cases generating 201 contacts. This initial approach was unsustainable, with the resources of the business-as-usual team quickly overwhelmed. ARPHS then switched to a revised outbreak management approach in which both the response structure and the response activities were adjusted. The timeline of events is shown in Figure 3.

Figure 3. Auckland measles outbreak 2009 timeline



A Coordinated Incident Management System (CIMS) structure was initiated on July 31, the day after the fourth case was indentified. Through CIMS the resources of approximately half of the organisation were mobilised. ARPHS' revised response activities focussed on communicating key messages to the public, supporting primary care management of measles cases, and limited contact tracing to household contacts and high risk institutions such as Early Childhood Education Centres (ECECs), and schools.

Between 1 July and 1 October 2009, one probable and 19 confirmed measles cases were identified. However, ARPHS subsequently received notifications for another 109 potential cases, which were de-notified after investigation. There have been no locally-acquired confirmed cases since the 19 August. Of 20 confirmed/probable cases, nine had an epidemiologic link to the Christchurch outbreak and one was acquired overseas. No fatalities occurred and three of the confirmed/probable cases were hospitalised. Eight of the confirmed/probable cases were aged less than 5 years, and six were aged between 5 and 14 years.

Early in the outbreak a policy decision was made not to offer normal human immunoglobulin (NHIG) in Auckland in the community setting, because low circulating levels of measles antibody in NHIG results in difficulties in immunoglobulin prophylaxis delivery. Further, there was debate around isolation advice given to vulnerable contacts administered the MMR vaccine after exposure. ARPHS considered isolation and exclusion of cases and contacts its primary response. The Communicable Disease Control Manual[1] and the Immunisation Handbook 2006[2] both recommended allowing non immune contacts to return to work/school/ECEC immediately if they receive a single MMR without any specified time period (e.g. <72 hours from exposure).[3,4] There was concern that this may not be effective, because vulnerable 'contacts' who get immunised (particularly those after 72 hours of exposure) may be incubating the disease and be infectious. The evidence for the effectiveness of post-exposure prophylaxis with MMR is weak[5-8], and two measles cases occurred in Auckland in susceptible contacts who had been given post-exposure MMR. ARPHS also found it unfeasible in the majority of cases to immunise anyone within 72 hours of exposure. Therefore the precautionary approach adopted by our technical advisory group (TAG) (4/8/09) was that unimmunised children should be excluded from ECEC/school for 14 days from last contact with an infectious person, irrespective of whether they had MMR1 as part of contact management. Timely MMR immunisation of all vulnerable contacts was still promoted, as vaccination has been shown to be the best way to prevent future outbreaks.[9]

The use of the CIMS structure appears key to this successful public health response because:

- a large number of people can be deployed to deal with escalating demands
- the early activation of CIMS ensured the prompt mobilisation of resources
- the TAG addressed technical issues, so decisions could be made promptly
- other core business was also accounted for under the CIMS structure, with tasks being prioritised
- a health and safety officer was appointed to ensure staff wellbeing was supported.

The decision to move from the initial to revised response activities was instigated in light of apparent community transmission and public health resource limitations. The fact that the outbreak was brought under control relatively quickly supports this approach. It meant resources could be focussed on areas of key cluster control activity namely, schools, ECECs and advice to primary care. This facilitated more pragmatic and efficient management of an outbreak involving community transmission.

From this outbreak experience, we recommend that:

- Public Health Units (PHUs) review their measles protocols
- isolation and exclusion are retained as key tools in controlling measles outbreaks
- when their resources are overwhelmed, PHUs consider revising their outbreak response to focus on the most important and efficacious activities
- communications, advice and support to primary health/schools/ECECs be prioritised
- the CIMS structure be activated early to manage an outbreak where there is potential requirement for intensive public health action.

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

Reported by Dr Michael Hale, Public Health Medicine Registrar and Dr Brad Novak, Medical Officer of Health; Auckland Regional Public Health Service

Canterbury *Cryptosporidium* outbreak, January–April 2010

The Canterbury region, and Christchurch in particular, had an unseasonal increase in cryptosporidiosis notifications in January and February 2010. Initial review of case statistics revealed no obvious point source and, with ongoing high levels of notifications presenting, a formal investigation began late in February. Although both Christchurch and rural territorial authorities had an increase in cases, the decision was made to focus only on Christchurch cases because a) the increase in case numbers was greater in the metropolitan area, and b) there was an improved chance of identifying a common source due to fewer risk exposures.

Initial analyses indicated that the disease was impacting predominantly on 1-14 year old children and 30-39 year old adults. The ethnicity profile of cases was largely NZ European and similar to that of the Christchurch population. One case (with a pre-existing condition) was hospitalised.

As this disease is predominantly waterborne, the local territorial authorities were asked to review their drinking-water and recreational water quality monitoring results. A map of drinking-water supply zones overlaid by cases' domiciles did not implicate any particular zone. Discussions with Christchurch City Council indicated that the four main public swimming pools in Christchurch had filtration systems that could remove *Cryptosporidium*. The circulation time for filtration, however, is approximately 4 hours, providing opportunities for cysts to infect other swimmers. Rainfall graphs were examined but did not show any correlation with the onset of cases.

A case-control study was then conducted. Controls were selected from campylobacteriosis cases previously investigated by ESR, occurring over a similar period of time and matched for age and sex. Although some questions asked of cases and controls were different, the major risk exposures could be compared.

Results showed statistically significant odds ratios for five risk exposures: swimming at a beach, drinking un-boiled water (outside of Christchurch), contact with nappies, eating food from a delicatessen, and travel outside of Christchurch during the incubation period. Exposure to swimming pools could not be compared as this question was not directly comparable in the campylobacteriosis questionnaire.

On-going management of cases included advice on personal hygiene to help eliminate person-to-person spread. After seeking advice from ESR and other key communicable disease staff outside Community and Public Health, we were alerted to the potential for swimming pools to have an amplification effect during increased community loading of the disease. Advice to individual cases on the importance of keeping away from pools for two weeks after becoming asymptomatic (the 'two week rule') was given more emphasis than previously. Media releases highlighting this message to the general public, as well as a fax advisory to general practitioners, and further communication with Christchurch City Council to improve signage at their public swimming pools, were the wider control measures implemented. Since these measures have been implemented there has been a gradual downward trend in cases notified, although it is too early to attribute this decline to our actions to date. Efforts to improve public awareness of the 'two week rule' and communication with pool (both public and privately-run) managers in the area to promote this key message are ongoing control measures being taken.

Considerable effort has gone into this investigation, but the delay in starting it meant that any initial point source was not likely to be identified. Concerns about recall reliability prevented us from interviewing earlier cases. Notifications are still being received, and this indicates the difficulty in controlling a cryptosporidiosis outbreak of this nature once it is widely dispersed in the community.

The adverse health and social impacts of cryptosporidiosis are significant if not severe. The debilitating symptoms of profuse watery diarrhoea frequently require time off work and school with both children and caregivers affected. We have had 82 notifications so far this year in the Christchurch metropolitan area compared with an average of 12 cases over the past three years as of 31 March 2010.

This case has highlighted the need to take prompt investigative action and to use communication as a key tool in control. Seeking early co-operation with the local authorities supported the outbreak response. Raising awareness about the role of swimming pools in maintaining the spread of cryptosporidiosis in a widely dispersed community outbreak is important, whatever the initial source.

Reported by Dr Rachel Eyre, Public Health Medicine Registrar, Community and Public Health, Canterbury District Health Board

6. Laboratory Surveillance

Improvements to the reporting of sexually transmitted infections in New Zealand through expanded laboratory surveillance

In New Zealand, sexually transmitted infections (STIs) are not notifiable. However, acquired immune deficiency syndrome (AIDS), the late sequelae of human immunodeficiency virus (HIV) infection, is notifiable. Therefore surveillance efforts are based on voluntary provision of data from several different sources (sexual health clinics (SHCs), family planning clinics (FPCs), student and youth health clinics (SYHCs) and laboratories). Clinics provide data on STIs of public health importance including chlamydia, gonorrhoea, genital herpes, genital warts, syphilis, non-specific urethritis, chancroid, granuloma inguinale and lymphogranuloma venereum. Diagnostic laboratories provide complementary data on chlamydia and gonorrhoea.

At present, data from SHCs provide the most comprehensive information on the epidemiology of STIs. This is for a number of reasons including the stability of the number of SHCs across New Zealand, the number of clinics participating in the surveillance programme, and the availability of ethnicity data. However, the number of cases of STIs reported through the clinic-based surveillance system underestimates the true burden of STIs because a substantial percentage of STIs are diagnosed by other health care providers, particularly primary healthcare practitioners.

Laboratories receive specimens from all health providers, and so, provide useful, complementary sources of STI data. For example, in areas where both clinic and laboratory surveillance data are collected, laboratory surveillance data aggregated across New Zealand in 2009 reported nearly four-times the number of chlamydia and gonorrhoea cases compared with that reported by STI clinic surveillance. These estimates generally varied by two-to-seven-times across the district health boards (DHBs).

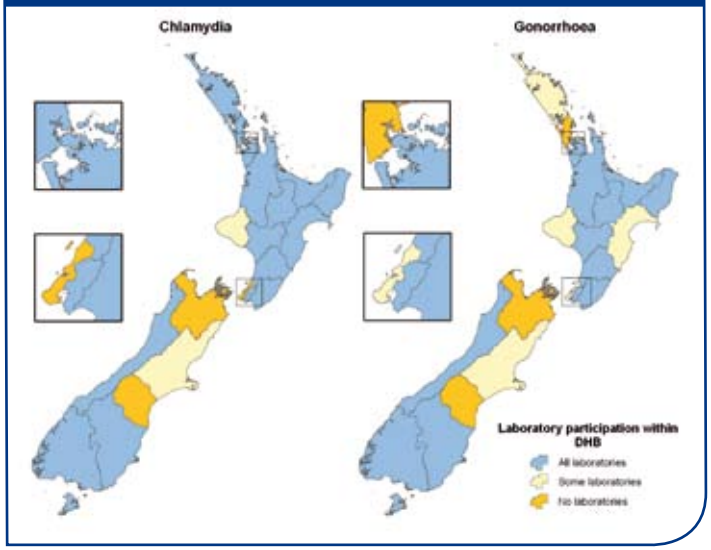
Laboratory-based surveillance of gonorrhoea began in the Auckland, Waikato and Bay of Plenty (BOP) regions in 1998. Laboratory surveillance of chlamydia began in the Waikato and BOP regions in 1998 and in the Auckland region in 2001. Since June 2004, efforts have been made to extend STI surveillance to additional laboratories across New Zealand. In 2009, laboratories from 19 of the 21 DHBs participated in the STI surveillance programme (40 laboratories provided chlamydia data and 35 laboratories provided gonorrhoea data) (Figure 4).

In 2009, laboratory-based surveillance reporting has improved to include population-based estimates of the burden of disease of chlamydia and gonorrhoea for many DHBs across New Zealand. To enable reporting of population rates for individual DHBs and the whole of New Zealand, selection criteria have been developed to account for incomplete temporal and spatial participation by laboratories (for more detail on selection criteria see the 2009 STI Annual Surveillance Report). This is the first time since STI surveillance began that comprehensive regional and national population estimates of STI incidence have been produced.

Chlamydia, gonorrhoea and syphilis have been added to the notifiable diseases schedule in the proposed Public Health Bill which has completed its first reading in Parliament and is waiting for its second reading. If these STIs become notifiable, STI surveillance will be vastly improved through direct laboratory reporting, a legal requirement for all notifiable conditions under the Epidemic Preparedness Act 2006. As the notifications are likely to exclude identifiable data (e.g. name and National Health Index number) the experience gained by laboratories in providing anonymous electronic data currently will be very helpful in any future surveillance endeavours. However, other solutions will still be needed to obtain the more comprehensive data required for effective monitoring and public health action. Information on the ethnicity of cases, their area of residence, and other risk factors and behaviours is needed as well as information on negative and positive tests.

More detailed reports are available at:
Sexually Transmitted Infections Annual reports:
http://www.surv.esr.cri.nz/surveillance/annual_sti.php
Sexually Transmitted Infections Quarterly Laboratory reports:
http://www.surv.esr.cri.nz/surveillance/quarterly_stilab.php
Sexually Transmitted Infections Quarterly Clinic reports:
http://www.surv.esr.cri.nz/surveillance/quarterly_sticlinic.php

Figure 4. STI laboratory surveillance coverage for chlamydia and gonorrhoea by DHB, 2009



Reported by Tammy Hambling, Population and Environmental Health group, ESR

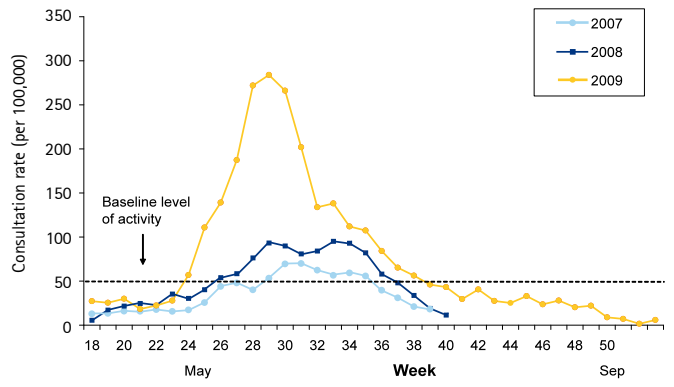
Influenza in New Zealand in 2009

National influenza surveillance in 2009 was undertaken between May and December 2009 using a sentinel network of 101 general practices/practitioners. On average, 86 practices, with a total patient roll of 402,884, participated each week. It is estimated that influenza-like illness (ILI), resulting in a visit to a general practitioner, affected over 116,335 New Zealanders (an annual cumulative incidence rate of 2695.6 per 100,000 population).

During the surveillance period, 10,860 consultations for ILI were reported. The peak weekly consultation rate of 284.0 per 100,000 practice patient population was the highest recorded by the sentinel surveillance system since 1997 (Figure 5).

The average weekly consultation rate was 77.9 per 100,000 patient population. This was the third highest rate since 1997. The previous highest rates were in 1997 (163.7 per 100,000) and 1999 (112.3 per 100,000). The lowest rate was recorded in 2000 (32.5 per 100,000). Overall, influenza activity in 2009 was high. Influenza consultation activity remained at the baseline level from weeks 18 to 23, and then increased to a peak at week 29 (13–19 July) with a consultation rate of 284.0 per 100,000, three-to-four-times higher than the peaks in 2007–2008.

Figure 5. Weekly sentinel surveillance consultation rates for influenza-like illness, 2007–2009

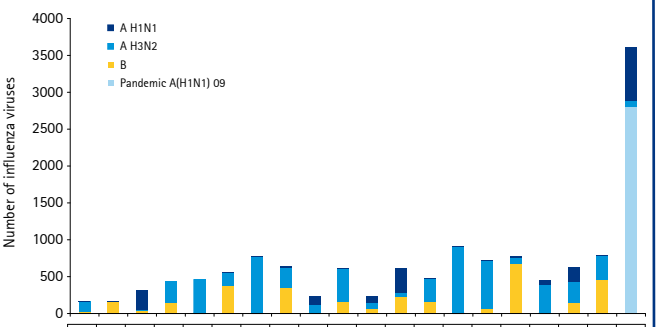


A total of 4900 influenza viruses was identified in 2009, higher than in 2008 (1,054) and 2007 (744). Of the 4900 viruses identified, 624 came from sentinel practice surveillance during May to December. There were 4276 non-sentinel isolates identified in 2009 compared with 588 in 2008 and 505 in 2007.

Figure 6 shows the number and percentage of typed and subtyped influenza viruses from 1990-2009. There are noticeable changes in terms of predominant patterns.

- The pandemic A(H1N1) 09 strain became the predominant strain in 2009.
- The seasonal influenza A(H1N1) strain predominated in three seasons (1992, 2000 and 2001), with associated relatively low hospitalisations (193 in 1992, 222 in 2000 and 343 in 2001).
- The seasonal influenza A(H3N2) strain predominated for 11 seasons (1990, 1993, 1994, 1996, 1998, 1999, 2002, 2003, 2004, 2006 and 2007). A/Fujian/411/02 (H3N2)-like strain predominated in 2003 with the highest recorded hospitalisations during 1990–2008. A/Wuhan/359/95 (H3N2)-like strain predominated in 1996, with 94 associated deaths (93 out 94 deaths occurred for people aged 65 years and over).
- Influenza B strains predominated for five seasons (1991, 1995, 1997, 2005 and 2008). B/HongKong/330/2001-like strain (B-Victoria lineage) predominated in 2005, and the disease burden was high in children aged 5–19 years with associated deaths in three children.

Figure 6. Influenza viruses by type, 1990–2009



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
A H1N1	0.6%	7.7%	85.7%	0.0%	0.2%	1.1%	0.3%	3.6%	47.4%	0.3%	36.0%	54.4%	0.4%	0.1%	0.1%	2.3%	12.6%	32.1%	0.8%	20.0%
A H3N2	83.2%	0.0%	2.8%	65.7%	98.7%	30.1%	99.1%	43.0%	51.7%	73.7%	32.9%	7.9%	68.0%	99.6%	91.3%	10.7%	86.3%	45.0%	41.0%	2.2%
B	16.2%	92.3%	11.5%	34.3%	1.1%	68.8%	0.7%	53.5%	0.9%	26.0%	31.1%	37.8%	31.6%	0.3%	8.6%	87.0%	1.1%	23.0%	58.3%	0.2%
Pandemic A(H1N1) 09	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	77.6%

Characterisation of the influenza viruses isolated during the 2009 winter indicated a need for changes to three components of the vaccine for the 2010 winter. Accordingly, the 2010 southern hemisphere winter influenza vaccine has the following composition:

- A(H1N1) an A/California/7/2009 (H1N1)-like strain
- A(H3N2) an A/Perth/16/2009 (H3N2)-like strain
- B a B/Brisbane/60/2008-like strain.

Note: A/California/7/2009 (H1N1)-like strain is a pandemic A(H1N1) 09 strain.

Influenza immunisation is recommended for those at increased risk of complications from influenza due to either age or medical condition. Influenza vaccination has been free for people aged 65 years and over since 1997. Since 1999, it has been extended to younger people with chronic illnesses who are at risk of developing complications from influenza.

A full report on influenza in New Zealand for 2009 can be found at www.surv.esr.cri.nz

Reported by Dr Sue Huang, ESR NCBID

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