

# New Zealand Public Health Surveillance Report

December 2007: Covering July – September 2007

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- 42 'final' reports (497 cases); 53 'interim' reports (354 cases)
- 118 cases per outbreak on average
- 15 hospitalisations, no deaths

### 5. Outbreak Case Reports

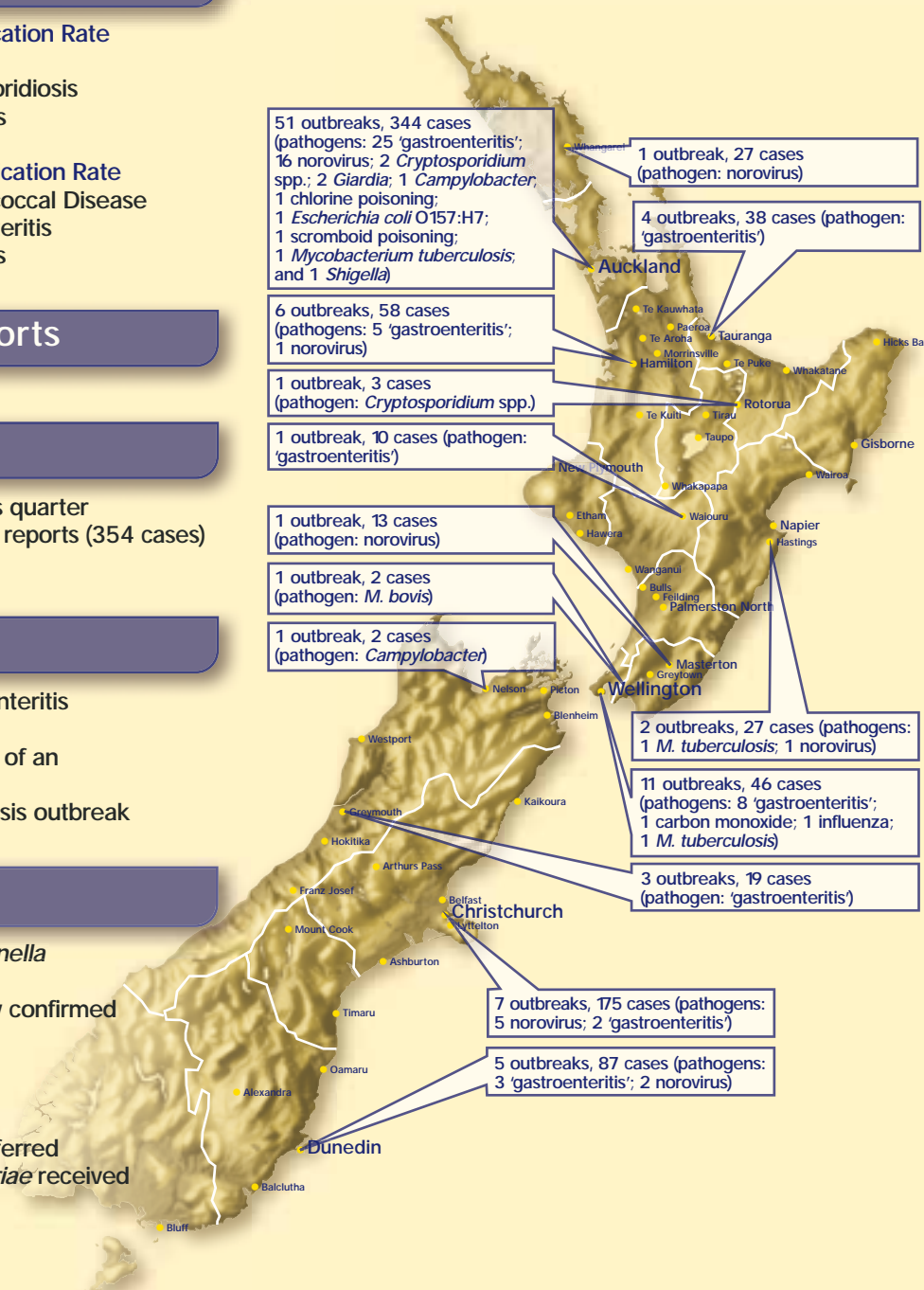
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- 250 human and 387 non-human *Salmonella* isolates submitted
- 25 isolates of *E. coli* O157:H7 laboratory confirmed
- 6 *Legionella* cases laboratory identified
- 630 influenza viruses reported
- 197 adenoviruses reported
- 32 enteroviruses reported
- 6 isolates of *Listeria monocytogenes* referred
- 10 isolates of *Corynebacterium diphtheriae* received

### This Quarter's Outbreaks

Notification and outbreak data in this issue are drawn from the July – September quarter of 2007. 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 8 October 2007.



The latest reports from STI Surveillance, Antimicrobial Resistance, Virology and Enteric Reference Laboratory are available at [www.surv.esr.cri.nz](http://www.surv.esr.cri.nz)

# 1. Editorial

## Hazardous Substance Injury – A Notifiable Illness

The notification of hazardous substance injuries is mandated by section 143 of the Hazardous Substances and New Organisms (HSNO) Act (1996). In December 2005, an amendment was made to the HSNO Act that requires all diagnosing medical practitioners, in addition to hospitals, to report injuries caused by hazardous substances to the Medical Officer of Health (MOH). In turn, the MOH is required to supply information about the notified injury (excluding person identifiable data) to the Ministry of Health for reporting to the Minister of Health.

In September 2007, a Hazardous Substances Injury case report form (CRF) was launched in EpiSurv (the National Notifiable Diseases Surveillance Database) to enable Public Health Units (PHUs) to enter and manage cases of injuries caused by hazardous substances as defined under the HSNO Act. It is the intention that the new CRF will be the mechanism for collecting the notification of hazardous substance injuries from PHUs for the Ministry of Health.

As with communicable disease notifications, diagnosing medical and hospital based practitioners are required to notify the MOH (in practise, this involves a notification to PHU staff) of a hazardous substance injury. If required, the case is followed up and investigated further. Details of the case are then entered into the Hazardous Substances Injury CRF in EpiSurv. Fields that are unique to the CRF include details on the exposure event (place/date/length of exposure, type of injury, route of poisoning, and the intent of the injury/poisoning) and substance details (classification group of the hazardous substance involved and the generic/brand name of the substance).

Staff at the Institute of Environmental Science and Research Ltd (ESR) analyse hazardous substance injury data as part of the Chemical Injuries Surveillance System (CISS) and report notifications and findings to the Ministry of Health.<sup>1</sup> The CISS is intended to encompass the legislative requirements of the HSNO Act and extend it to achieve the greatest public health utility. For this reason, hazardous substances incorporated in the CISS include substances not covered by the HSNO Act such as medicines in finished dose form and party drugs or alcohol when classified as a food. The purpose of s143 and the CISS is therefore to provide information for public health action both at a local and national level, and to inform public health policy. These measures in combination can be used to reduce the incidence of hazardous substance injuries in New Zealand and improve public health.

National hazardous substance mortality data (provided by the Coronial Services Office) and inpatient hospitalisation data (provided by the New Zealand Health Information Service) are regularly acquired for the CISS. In addition, local hospital

hazardous substance notifications (emergency department patients and inpatients) are voluntarily submitted from a number of hospitals representing the following DHBs: Auckland, Capital and Coast, Wairarapa, West Coast and Southland. A range of chemical/poison related notifiable injuries (chemical poisoning from the environment, decompression sickness, lead absorption and toxic shellfish poisoning, in addition to hazardous substance injury) from EpiSurv are also included in the CISS. Summarised National Poison Centre calls and PHU spraydrift complaints are also included. The wide range of data sets enables the CISS to provide a comprehensive overview of the burden of injury associated with hazardous substance injuries in New Zealand. The CISS reports summarise annual data and provide commentary on the burden of injury associated with hazardous substances for New Zealand.<sup>1</sup>

The hospital inpatient data supplied by the New Zealand Health Information Service do not include emergency department patients, nor do they often include detailed substance information for inpatients, thus prohibiting a reliable evaluation of the impact of any poisoning related interventions and effectiveness of regulations. Attainment of emergency data from hospitals for the CISS can be resource intensive for them, and therefore expected to be gradual. Thus, sentinel surveillance comprising hospital data from a number of DHBs including a major metropolitan city, provincial town and rural area are to suffice in the interim.

Agrichemical spraydrift data for incorporation into the CISS are also sourced from PHU staff who collect information on spraydrift complaints and incidents with potential, reported or alleged health effects. Recent reports suggest the reporting of spraydrift incidents to PHU staff is an under representation of the overall number of events when compared with regional council data.<sup>2</sup> It seems that a large number of complaints are directed to regional councils and future discussion between PHUs and regional councils may improve the referral of spraydrift incidents with health impacts to PHUs. The data collected help monitor the extent of agrichemical spraydrift and to develop policy actions to protect public health.

Data from additional PHUs/hospitals would be readily and appreciatively encompassed into the CISS. ESR would like to hear from any other interested hospitals and PHUs regarding the provision of hazardous substance injury data. Please contact [survqueries@esr.cri.nz](mailto:survqueries@esr.cri.nz) for further information.

1 [www.surv.esr.cri.nz/surveillance/chemical\\_injuries.php](http://www.surv.esr.cri.nz/surveillance/chemical_injuries.php)

2 Mazzoni S. 2001. *Report on Agrichemical Spray Drift Incidents Reported to Public Health Services, 2000*. ESR Report to the Ministry of Health, Wellington.

Catherine Tisch, CISS Project Leader, ESR

## 2. Notifiable Disease Surveillance

The following is a summary of disease notifications for the July – September quarter of 2007 and cumulative notifications and rates calculated for a 12-month period (October 2006 – September 2007). 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 8 October 2007. 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](http://www.surv.esr.cri.nz)).

### Vaccine Preventable Disease

#### *Haemophilus influenzae* Type b

- **Notifications:** 5 notifications in the quarter (2006, 0); 16 notifications over the last 12 months (2006, 10) giving a rate of 0.4 cases per 100,000 population (2006, 0.2); not a statistically significant increase
- **Comments:** there has been a statistically significant quarterly increase from the same quarter last year (0 cases); 3 cases were aged under 5 years, of these, 1 was immunised, although not fully immunised for their age, and 2 were not immunised

## Mumps

- **Notifications:** 24 notifications in the quarter (2006, 8); 72 notifications over the last 12 months (2006, 44) giving a rate of 1.7 cases per 100,000 population (2006, 1.1); a statistically significant increase
- **Comments:** there has been a statistically significant quarterly increase from the previous quarter (8 cases) and from the same quarter last year (8 cases)

## Pertussis

- **Notifications:** 84 notifications in the quarter (2006, 326); 422 notifications over the last 12 months (2006, 1,603) giving a rate of 10.2 cases per 100,000 population (2006, 38.7); a statistically significant decrease
- **Comments:** there has been a statistically significant quarterly decrease from the same quarter last year (326 cases)

## Infectious Respiratory Diseases

### Acute Rheumatic Fever

- **Notifications:** 96 notifications in the quarter (2006, 29); 145 notifications over the last 12 months (2006, 114) giving a rate of 3.5 cases per 100,000 population (2006, 2.8); not a statistically significant increase
- **Comments:** there has been a statistically significant quarterly increase from the previous quarter (17 cases) and from the same quarter last year (29 cases). Cases were distributed by age as follows: 1 (1-4 years), 20 (5-9 years), 34 (10-14 years), 22 (15-19 years), 18 (over 19 years), and 1 case was of unknown age; 91 cases were initial attacks of rheumatic fever and 5 cases were recurrent attacks

### Meningococcal Disease

- **Notifications:** 44 notifications in the quarter (2006, 60); 121 notifications over the last 12 months (2006, 164) giving a rate of 2.9 cases per 100,000 population (2006, 4.0); a statistically significant decrease
- **Comments:** there has been a statistically significant quarterly increase from the previous quarter (20 cases), reflecting the expected seasonal peak of cases in winter/spring. Cases were distributed by age as follows: 8 under 1 year of age, 18 (1-4 years), 4 (5-9 years), 2 (10-14 years), and 12 (over 14 years)

### Tuberculosis Disease

- **Notifications:** 73 notifications in the quarter (2006, 120); 300 notifications over the last 12 months (2006, 340) giving a rate of 7.2 cases per 100,000 population (2006, 8.2); not a statistically significant decrease
- **Comments:** there has been a statistically significant quarterly decrease from the same quarter last year (120 cases); 72 new cases and 1 reactivated case; 48 laboratory confirmed cases, 11 probable cases, and 14 cases under investigation

## Enteric Infections

### Campylobacteriosis

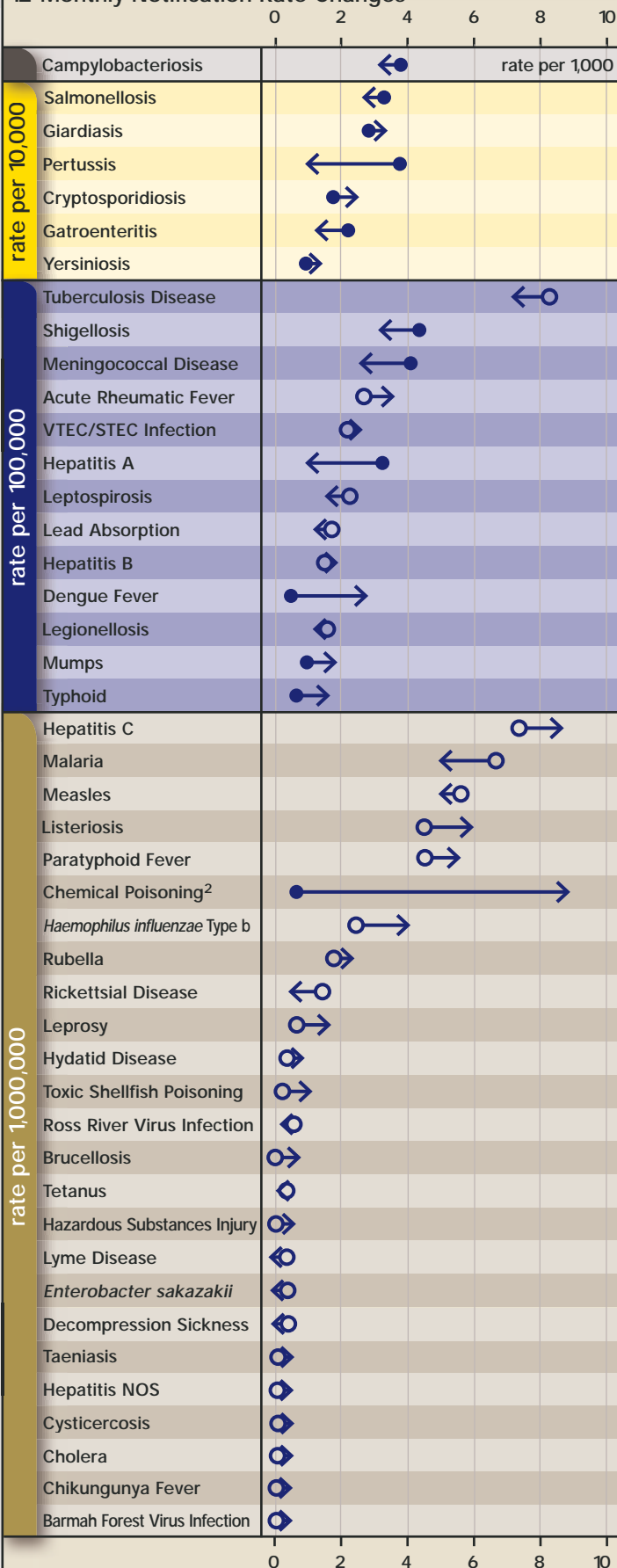
- **Notifications:** 2,658 notifications in the quarter (2006, 3,518); 14,119 notifications over the last 12 months (2006, 16,123) giving a rate of 341.1 cases per 100,000 population (2006, 389.5); a statistically significant decrease
- **Comments:** there has been a statistically significant quarterly increase from the previous quarter (2,419 cases) and a statistically significant quarterly decrease from the same quarter last year (3,518 cases)

### Gastroenteritis

- **Notifications:** 141 notifications in the quarter (2006, 198); 616 notifications over the last 12 months (2006, 870) giving a rate of 14.9 cases per 100,000 population (2006, 21.0); a statistically significant decrease

## National Surveillance Data

### 12-Monthly Notification Rate Changes<sup>(1)</sup>



Notifications per 1,000 or 10,000 or 100,000 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 October 2006 - September 2007

(2) From the environment

continued...



- **Comments:** there has been a statistically significant decrease from the same quarter last year (198 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:** 237 notifications in the quarter (2006, 258); 1,233 notifications over the last 12 months (2006, 1,404) giving a rate of 29.8 cases per 100,000 population (2006, 33.9); a statistically significant decrease
- **Comments:** there has been a statistically significant quarterly decrease from the previous quarter (317 cases)

## Shigellosis

- **Notifications:** 39 notifications in the quarter (2006, 23); 128 notifications over the last 12 months (2006, 173) giving a rate of 3.1 cases per 100,000 population (2006, 4.2); a statistically significant decrease
- **Comments:** there has been a statistically significant quarterly increase from the same quarter last year (23 cases)

## Typhoid

- **Notifications:** 9 notifications in the quarter (2006, 7); 64 notifications over the last 12 months (2006, 24) giving a rate of 1.5 cases per 100,000 population (2006, 0.6); a statistically significant increase

## VTEC Infections

- **Notifications:** 24 notifications in the quarter (2006, 12); 93 notifications over the last 12 months (2006, 90) giving a rate of 2.2 cases per 100,000 population (2006, 2.2); no change
- **Comments:** there has been a statistically significant quarterly increase from the same quarter last year (12 cases)

## Environmental Exposures and Infections

### Chemical Poisoning

- **Notifications:** 8 notifications in the quarter (2006, 1); 37 notifications over the last 12 months (2006, 4) giving a rate of 0.9 cases per 100,000 population (2006, 0.1); a statistically significant increase
- **Comments:** there has been a statistically significant quarterly increase from the same quarter last year (1 case)

### Cryptosporidiosis

- **Notifications:** 222 notifications in the quarter (2006, 232); 975 notifications over the last 12 months (2006, 774) giving a rate of 23.6 cases per 100,000 population (2006, 18.7); a statistically significant increase

### Giardiasis

- **Notifications:** 318 notifications in the quarter (2006, 302); 1,365 notifications over the last 12 months (2006, 1,222) giving a rate of 33.0 cases per 100,000 population (2006, 29.5); a statistically significant increase

### Hepatitis A

- **Notifications:** 6 notifications in the quarter (2006, 22); 43 notifications over the last 12 months (2006, 128) giving a rate of 1.0 cases per 100,000 population (2006, 3.1); a statistically significant decrease
- **Comments:** there has been a statistically significant quarterly decrease from the same quarter last year (22 cases). Cases were aged between 5 and 55 years, with 2 cases under the age of 16 years

## Leptospirosis

- **Notifications:** 10 notifications in the quarter (2006, 29); 74 notifications over the last 12 months (2006, 93) giving a rate of 1.8 cases per 100,000 population (2006, 2.2); not a statistically significant decrease
- **Comments:** there has been a statistically significant quarterly decrease from the previous quarter (22 cases) and from the same quarter last year (29 cases); 8 cases were male, 1 was female, and the sex of 1 case was unknown; 4 cases were meat process workers, 1 dairy cattle farmer, 1 beef cattle farmer, 1 agricultural technician, 1 machine operator, 1 rubbish or recycling collector, and 1 health worker

## Yersiniosis

- **Notifications:** 132 notifications in the quarter (2006, 113); 542 notifications over the last 12 months (2006, 451) giving a rate of 13.1 cases per 100,000 population (2006, 10.9); a statistically significant increase

## New, Exotic and Imported Infections

### Dengue Fever

- **Notifications:** 7 notifications in the quarter (2006, 1); 111 notifications over the last 12 months (2006, 11) giving a rate of 2.7 cases per 100,000 population (2006, 0.3); a statistically significant increase
- **Comments:** there has been a statistically significant quarterly decrease from the previous quarter (32 cases) and a statistically significant increase from the same quarter last year (1 case); 6 notifications were laboratory confirmed and the laboratory status of 1 case is unknown; 6 cases were overseas during the incubation period, the travel history of 1 case is unknown. Places visited were South America (1), Hong Kong (1), Taiwan (1), Cambodia (2), Laos (1), Thailand (1), Cook Islands (1), French Polynesia (1), Samoa (1), and Tonga (1)

## 3. Other Surveillance Reports

### Antituberculosis-drug resistance

The national surveillance of antituberculosis-drug resistance is based on the results of susceptibility testing of isolates in the Mycobacteriology Reference Laboratories at Auckland City, Wellington and Waikato Hospitals. Susceptibility to five antituberculosis drugs (isoniazid, rifampicin, ethambutol, pyrazinamide and streptomycin) is routinely tested.

In 2006, 357 cases of tuberculosis were notified, 266 (74.5%) of which were reported by the Mycobacteriology Reference Laboratories as culture positive. The 266 isolates from the culture-positive cases included 258 *Mycobacterium tuberculosis* and 8 *M. bovis* isolates. Resistance to isoniazid (6.8%) and streptomycin (6.8%) was most common, followed by resistance to pyrazinamide (4.1%), rifampicin (0.4%) and ethambutol (0.4%). Compared with New Zealand-born cases, cases born overseas were more resistant to each of the antimicrobials except pyrazinamide, although the differences were not significant ( $p \geq 0.05$ ).

Trends in resistance to the five antimicrobials are shown in Figure 1. Overall, during the last 10 years, 1997-2006, there has been no significant change in resistance to any of the five antimicrobials.

The majority (86.5%) of the isolates in 2006 were susceptible to all five antimicrobials tested. One isolate (0.4%) was multidrug resistant (MDR-TB, resistant to at least isoniazid and rifampicin). MDR-TB is rare in New Zealand, with an average annual incidence of 0.8% and a total of 24 cases recorded in the 12 years since national surveillance of antituberculosis-drug resistance began in 1995. All 24 MDR-TB cases were born overseas; however, one is known to have developed MDR-TB during treatment in New Zealand. No extensively drug-resistant

## 4. Outbreak Surveillance

The following information is a summary of the outbreak trends for New Zealand, from data collected in the last quarter (July – September 2007). Comparisons are made to the previous quarter (April – June 2007), and to the same quarter in the previous year (July – September 2006). Note that the outbreak data in this section are notified to ESR by the Public Health Services.

### General

- 95 outbreaks notified in this quarter (851 cases)
- 42 are 'final' reports (497 cases); 53 are 'interim' reports (354 cases) that have yet to be finalised and closed

All following data pertain to final reports only.

- 11.8 cases on average per outbreak, compared with 12.9 cases per outbreak in the previous quarter (11.7 cases per outbreak in the same quarter of last year)
- 15 hospitalisations: norovirus (10 cases), *Mycobacterium tuberculosis* (4), and gastroenteritis (1)
- no deaths

### Pathogens

- 22 norovirus outbreaks (358 cases) during this quarter
- 12 'gastroenteritis' outbreaks (114 cases)
- 2 *Campylobacter* outbreaks (4 cases)
- 2 *Cryptosporidium* spp. outbreaks (5 cases)
- 2 *Giardia* outbreaks (8 cases)
- 1 carbon monoxide (4 cases)
- 1 *Mycobacterium tuberculosis* outbreak (4 cases)

### Modes of Transmission

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

- 28 person-to-person, from (non-sexual) contact with an infected person (including droplets): 17 norovirus (335 cases), 6 gastroenteritis (94 cases), 2 *Giardia* (8 cases), 2 *Cryptosporidium* spp. (5 cases), and 1 *M. tuberculosis* (4 cases)
- 11 environmental, from contact with an environmental source (e.g. swimming): 6 norovirus (182 cases), 3 gastroenteritis (60 cases), 1 *Cryptosporidium* spp. (3 cases), and 1 carbon monoxide (4 cases)

- 3 foodborne, from consumption of contaminated food or drink (excluding water): 1 *Campylobacter* (2 cases), 1 gastroenteritis (7 cases), and 1 norovirus (15 cases)
- 3 waterborne, from consumption of contaminated drinking water: 2 *Giardia* (8 cases), and 1 *Cryptosporidium* spp. (3 cases)
- 3 other mode of transmission: 2 gastroenteritis (16 cases) (1 via fomites), and 1 norovirus (via fomites) (13 cases)
- 2 zoonotic: 1 *Cryptosporidium* spp. (3 cases), and 1 *Giardia* (4 cases)
- 11 mode of transmission unknown: 5 gastroenteritis (13 cases), 5 norovirus (23 cases), and 1 *Campylobacter* (2 cases)

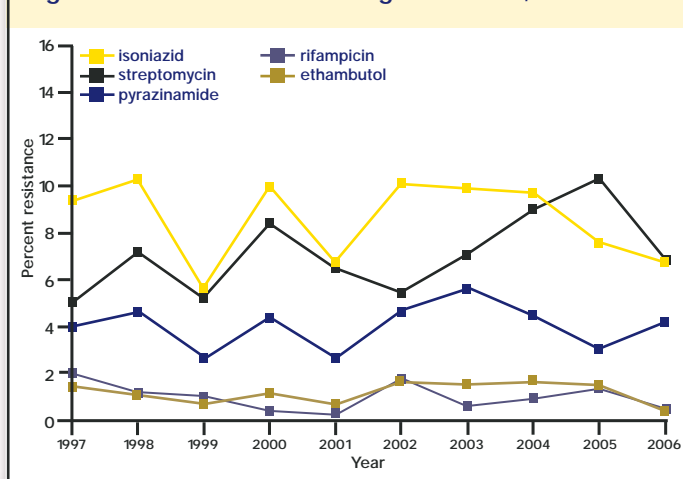
### Circumstances of Exposure/Transmission

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.

- 11 rest home: 8 norovirus (169 cases) and 3 gastroenteritis (66 cases)
- 8 home: 3 norovirus (45 cases), 2 *Giardia* (8 cases), 1 carbon monoxide (4 cases), 1 *Cryptosporidium* spp. (3 cases), and 1 gastroenteritis (10 cases)
- 4 café: 2 gastroenteritis (10 cases), 1 *Campylobacter* (2 cases), and 1 norovirus (15 cases)
- 4 hospital (continuing care): 2 gastroenteritis (24 cases) and 2 norovirus (35 cases)
- 3 childcare: 3 norovirus (90 cases)
- 2 hospital (acute care): 2 norovirus (24 cases)
- 3 'other setting': 2 gastroenteritis (15 cases) and 1 *Cryptosporidium* spp. (3 cases)
- 1 community: gastroenteritis (5 cases)
- 11 outbreaks with no setting selected: 4 gastroenteritis (10 cases), 4 norovirus (20 cases), 1 *Campylobacter* (2 cases), 1 *Cryptosporidium* spp. (2 cases), and 1 *M. tuberculosis* (4 cases)

TB (XDR-TB) isolates have been identified in New Zealand. XDR-TB is MDR-TB that is also resistant to any fluoroquinolone and at least one of the following second-line drugs: capreomycin, kanamycin and amikacin.

Figure 1. Antituberculosis-drug resistance, 1997-2006



A full report on antituberculosis-drug resistance in 2006 is available at [www.surv.esr.cri.nz/antimicrobial/tuberculosis.php](http://www.surv.esr.cri.nz/antimicrobial/tuberculosis.php)

Reported by Helen Heffernan, Communicable Disease Programme, ESR, on behalf of the Mycobacteriology Reference Laboratories

## 5. Outbreak Case Reports

### An extensive outbreak of acute gastroenteritis at a school camp

Outbreaks of acute gastroenteritis are common in New Zealand, however, a recent outbreak at a school camp was significant for the large number of people affected and the number of other potential problems identified.

On 19 February 2007 Regional Public Health (RPH) was notified of an outbreak of gastroenteritis affecting 96 of 112 school children who had attended a camp from 14 to 16 February. On the day of notification, another group of children from the same school had commenced camp. RPH advised the school to consider finishing this camp early. At least 50 of 120 students went on to develop illness, at which time camp management suspended operations.

Epidemiological investigation of illness at the first camp demonstrated an attack rate of 67% (cases with diarrhoea or vomiting). 85% of all camp attendees experienced nausea. The epidemic curve suggested a point-source outbreak. Five of six faecal specimens tested positive for norovirus Genogroup I. No statistically significant associations with food items were demonstrated. Several children identified concerns about food-handling practices at the camp.

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All camp food is prepared in advance at a commercial kitchen in Wellington and transported on the first day of camp, a journey that should take less than one hour. All staff denied the presence of enteric illness. The food safety investigation identified:

- (1) Unsatisfactory food handling practices at the Wellington kitchen.
- (2) Inadequate covering and no temperature control of the food during transportation to the camp.
- (3) Inadequate fly and insect prevention and control in the camp kitchen.
- (4) Poor food safety practices at the camp.

The water supply for the camp is a concrete-lined well adjacent to the Akatarawa River. Issues identified at the camp included confusion about the source of the drinking water, unclear procedures on water supply management and chlorination and no recent testing records were available. Analysis of drinking water found no free available chlorine and samples from three areas of the camp demonstrated high *E. coli* levels in breach of the New Zealand Drinking Water Standards 2005. Norovirus was not demonstrated in the drinking water. It is possible that viral contamination of the drinking water was beneath the detection threshold of microbiological testing or was no longer present when the samples were collected. Management of the swimming pool was also inadequate and not consistent with the New Zealand Standard 5826/2000.

Immediate control measures included issuing a 'boil water' notice and the camp closed for one week while additional food safety and other control measures were put in place.

A report from an independent water consultant identified that neither the chlorination nor pH correction system were operational at the time of the outbreak. Testing of the raw well water did not find any faecal contamination, indicating that contamination occurred between the well and the reservoir. The possible explanations for the contamination of the drinking water supply are a combination of mechanical failure, pipework failure and inadequate backflow prevention. In the week prior to the outbreak, a pump from the sewage treatment plant was washed down using a hose outside the water treatment shed. The hose had no backflow prevention. It is possible that the hose was dropped into sewage-contaminated wash water. The reverse flow when the tap was turned off could have sucked sewage contaminated water into the unchlorinated system. Alternatively, or as well, the contaminated wash water could have soaked into the ground adjacent to a cracked underground rising water main.

Subsequently during May, RPH became aware of approximately 40-50 children and three adults who developed diarrhoea and or vomiting immediately following a three day stay at the camp in March. Due to the delay in notification to RPH only basic information could be gathered. Consequently, the source of this outbreak is not known. RPH reiterated to the camp operators the importance of notifying outbreaks of illness promptly to RPH, particularly while a 'boil water' notice remains in place.

The findings from this serious outbreak highlight the important responsibilities of camp operators to provide a safe camp environment. Water supply management is particularly important. The consequences of poor water supply management can result in a large number of people becoming ill.

Reported by Amanda D'Souza, Public Health Medicine Registrar, Quentin Ruscoe, Health Protection Officer, Annette Nesdale, Medical Officer of Health, and Kate Kemp, Food Act Officer, Regional Public Health, Hutt Valley District Health Board

## Molecular typing helps determine origin of an extrapulmonary tuberculosis case

Earlier this year a case of extrapulmonary tuberculosis (TB) in a 15 year old student was notified to our Greymouth office. The case was born in the Philippines and had lived in New Zealand for seven years. He lived with his mother and two siblings (all born in the Philippines), and his New Zealand-born stepfather. He had presented with a slow-growing lump in the neck and underwent surgery at Grey Hospital. During the operation his surgeon identified an unusual looking cervical lymph node which was sent for microscopy and culture. Culture grew *Mycobacterium tuberculosis*.

Investigation found that the case and his mother had returned to the Philippines in 2002 for a holiday. X-rays of the mother and other family members showed no signs of TB and no other obvious source of exposure to TB in New Zealand was found. Due to the unusual nature of the case Dr Sushil Pandey at LabPlus was consulted about whether molecular typing might assist in identifying whether the organism isolated from the case was more likely to be of overseas rather than New Zealand origin (Labplus is contracted to undertake routine molecular typing of *M. tuberculosis* isolates in New Zealand).

An isolate was found in the TB molecular typing database that had a typing pattern indistinguishable from the Greymouth case. That isolate came from a visitor to New Zealand from the Philippines in February 2006 who had no connection to our case.

Molecular typing supported the finding from our investigation that the probable source of exposure for our case was outside New Zealand.

Reported by Vern Newcombe, Health Protection Officer and Dr Cheryl Brunton, Medical Officer of Health, Community and Public Health, West Coast, and Dr Sushil Pandey, LabPlus, Auckland

## The logistics behind the 2006 tuberculosis outbreak in a Palmerston North high school

A routine tuberculosis (TB) disease notification to MidCentral Health (MCH) Public Health Service (PHS) developed into the largest TB outbreak investigation described to-date in New Zealand (NZ).

The index case was a Korean year 9 student from Palmerston North. He had emigrated to NZ four years previously. In January 2006, he developed a persistent cough, sweating with rigors, weight loss and general malaise. Despite two visits to his GP, it was not until August 2006 (by which time he was unable to attend school, had lost 7kg, and was vomiting all food) that an after hours doctor made a presumptive diagnosis of active pulmonary TB. Sputum was smear positive with 2+ acid fast bacilli and the case was considered likely to be extremely infectious. Sputum culture isolated *M. tuberculosis* which was fully sensitive to all first-line antibiotics.

Close family and household members (n=15) were all Mantoux positive.<sup>1</sup> Two were found to have TB disease and the remaining 13 were referred for treatment of latent TB infection (LTBI). Hospital respiratory and paediatric services, the Ministry of Health (the Ministry) and the boy's school were advised of an emergent event.

Arrangements were made to Mantoux test the boy's class. A letter and printed information was sent to all parents advising them their children may have been exposed to TB. A contact number was included and phone enquiries to the public health nurse (PHN) reached up to 200 per day. Open information channels were maintained with the school, parents, the Ministry, MCH management, and the wider community and media.



Testing of the case's class showed 28 of 31 (90.3%) students and 3 of 5 (60.0%) teachers were Mantoux positive. An outbreak management team was formed comprising: the Communicable Disease Coordinator (CDC), the Hawke's Bay Medical Officer of Health (MOH) – covering in the absence of the local MOH, Ministry support, MCH media spokesperson, MCH public health and finance managers, and respiratory and paediatric physicians. Daily teleconferences were held and media releases prepared. A modified coordinated incident management system (CIMS) structure was used with the CDC assuming the role of Incident Controller.

Contact tracing was extended across the entire school (1,440 students and 130 staff) and 99% of consent forms were returned. From 1-21 September 1,569 Mantoux tests were performed by 10 PHNs, with additionally three PHNs loading syringes, two staff distributing consent forms, one post-test recording, and three in the post-test recovery area. Eighteen to 20 tests per hour per PHN were performed, with no errors or adverse events noted.

Table 1. Mantoux test results by student year			
Student year	Mantoux + No. (%)	Mantoux – No. (%)	Total students in year
Year 9 (3rd Form)	103 (29.9)	242 (70.1)	345
Year 10	64 (16.5)	324 (83.5)	389*
Year 11	25 (8.0)	289 (92.0)	314
Year 12	15 (6.1)	229 (93.9)	244
Year 13	3 (2.0)	149 (98.0)	152
Total	210 (14.6)	1233 (85.4)	1444

\*1 year 10 student left school and later tested negative

Mantoux testing (Table 1) showed increased positivity in age groups closest to the index case. Of note, 23 of 30 (76.7%) students in one year 10 class tested positive but had no known personal contact with the index case. This class used a classroom up to four times per week that had been used by the index case in the immediate preceding period, indicating infection following limited exposure. Students from years 9 and 10 who were negative to the first Mantoux were retested eight weeks after last contact with the case, 1 of 566 (0.2%) Mantoux converted.

The hospital radiology department opened after hours and processed around 30 persons per hour. School-based clinical assessment of those likely to have LTBI was performed in four stages: (1) a parent's education session by specialist physicians and the CDC; (2) PHN assessment using a standardised data collection form; (3) Blood sampling at three phlebotomist stations; (4) Medical assessments and prescribing of anti-TB prophylactic treatment by up to nine volunteer doctors, each examining around 15 students per day. These doctors were supervised by specialist physicians. Prophylaxis of twice weekly rifampicin and isoniazid was prescribed. This drug regime over four months was preferred to the usual six-month course of isoniazid so that Directly Observed Therapy (DOTs) could be conducted at the school and completed by the end of the academic year. All scripts were double checked by specialists and dispensing was through one pharmacy thus ensuring continuity of supply, communication and script regeneration.

Out of school activities undertaken by the index case required screening an additional 139 contacts, of which 13 (9.4%) were Mantoux positive and offered treatment for LTBI. Mantoux testing of 171 contacts of the secondary TB disease cases found no evidence of spread of infection.

Overall, there were 240 positive Mantoux tests, including 15 secondary TB disease cases. Six cultured *M. tuberculosis* from sputum, all indistinguishable by DNA molecular typing from the index case. DOTs was completed for 219 persons with another 13 considered compliant to self-administer. Two LTBI cases discontinued treatment due to drug intolerance and seven LTBI cases were assessed as not requiring treatment.

This outbreak required: 2,360 Mantoux tests, 520 prescriptions, 250 nurse assessments, 272 medical assessments, 255 Chest X-rays (CXR), 2,000 consent forms processed, and 219 DOTs over a four month period. The estimated cost was \$380,000.

Lessons from a post-event evaluation included that more staff processing consent forms, more resources for communications (especially phone calls) and having nursing staff present at the CXR clinics to answer parents' questions would have been beneficial. Clinical input into communications was also important. However, overall management and control of the outbreak was very effective.

1 Ministry of Health 2002. Chapter 2: Mantoux Testing. In: *Guidelines for Tuberculosis Control in New Zealand 2003*. Ministry of Health, Wellington.

Reported by Jane Rivers, Communicable Disease Coordinator, Public Health Regulation Services, MidCentral Health

## 6. Pathogen Surveillance

Unless otherwise reported, pathogen surveillance covers the July – September 2007 quarter.

### Enteric Pathogens

The Enteric Reference Laboratory (ERL) is responsible for the confirmation of the following notifiable diseases *Salmonellae*, *Shigellae*, *Vibrio cholerae* O1 and VTEC.

#### Salmonella (ERL)

Human and non-human Salmonella isolate data are available at [www.surv.esr.cri.nz/enteric\\_reference/enteric\\_reference.php](http://www.surv.esr.cri.nz/enteric_reference/enteric_reference.php)

- 250 human and 387 non-human isolates were submitted to ERL (2006, 248 and 387 respectively)
- no outbreaks were reported
- isolates of the strain of *S. Brandenburg*, which causes animal abortions have remained the same from bovine sources but have shown a decrease from ovine sources

#### VTEC/STEC (ERL)

- 25 isolates of O157 were laboratory confirmed (2006, 12)
- 1 case linked to a private water supply
- several family clusters, 1 of 3 cases and 5 of 2 cases
- PFGE demonstrated that there is no common DNA profile circulating in New Zealand
- each family cluster has a distinct DNA profile

#### Shigella (ERL)

- 1 case of *Shigella sonnei* biotype g acquired in Australia
- PFGE profile was indistinguishable from isolates from outbreaks in Denmark and Australia linked to the consumption of fresh baby corn imported from Thailand

#### Norovirus (Norovirus Reference Laboratory)

- 46 confirmed norovirus outbreaks reported of which 12 occurred in July, 17 in August and 17 in September
- 18 outbreaks occurred in rest homes (39%), 6 occurred in hospitals (13%), and 8 in catered food settings including restaurants and takeaway outlets (17%)
- other settings included 2 childcare centres and an institutional refugee centre
- genotyping showed that GII/4 strains continue to predominate, accounting for 26/46 (57%) outbreaks, including 17/24 (71%) outbreaks in healthcare settings
- 2 GII/4 variant strains, 2006a and 2006b, first identified in 2006 have been predominant during the year
- occurrence of 2006a strains is now waning (4 outbreaks) whilst 2006b strains are increasingly prevalent (22 outbreaks)

continued...

- this mirrors the pattern of norovirus spread across Australia during 2007
- other genotypes identified include GI/3, GI/4, GII/2, GII/6 and a newly recognised rare genotype, GII/15, which was associated with an outbreak at a buffet restaurant
- the outbreaks in childcare centres were caused by 2 distinct GII/6 strains

## Legionellosis and Environmental Legionella

- 6 legionellosis cases were laboratory identified
- no deaths associated with legionellosis were reported
- 5 laboratory-identified cases have been notified, with a further 7 notified cases not being laboratory-proven
- all 6 lab-identified cases involved sporadic community acquired pneumonia cases
- of the 6 cases identified, 4 fitted the confirmed case definition and 2 fitted the probable case definition
- the 4 confirmed cases demonstrated either antibody titres >512 on two or more occasions (1 case), or at least a four-fold rise in antibody titre by the legionella IFAT (1 case), or a rising titre to at least 1024 (2 cases)
- the 2 probable cases demonstrated either stable antibody titres of 512 (1 case), or a single antibody titre of >512 (1 case)
- *L. pneumophila* serogroup 1 was identified as the causative agent in 1 case
- *L. pneumophila* serogroup 2 was identified as the causative agent in 1 case
- *L. pneumophila* serogroup 3 & 5 serological cross-reaction showed in 1 case
- *L. longbeachae* was identified in a further 2 cases
- *L. micdadei* was identified as the causative agent in 1 case
- Legionellae isolated from industrial water systems including cooling towers included *L. feeleii*
- Legionellae isolated from composts and soils included *L. anisa*, *L. bozemanii* and *L. longbeachae*

## Respiratory Viruses

### Influenza Virus

- 630 influenza viruses were reported from sentinel and laboratory-based surveillance (2006, 585)
- 505 were identified as influenza A, 124 as A/New Caledonia/20/99 (H1N1)-like strains, 22 as A(H1N1) not-antigenically-subtyped, 36 as A/Wisconsin/67/2005 (H3N2)-like strains, 83 as A(H3N2) not-antigenically-subtyped, and 240 as A not-subtyped
- 125 were identified as influenza B, 69 as B/Shanghai/361/2002-like strain, 1 as B/Shanghai/361/2002 like-low reactor strain, 2 as B/Malaysia/2506/2004-like and 53 as B not-antigenically-typed
- the Australian Influenza Vaccine Committee (AIVC), with a New Zealand representative, met in Canberra on 3 October 2007 to consult on the influenza vaccine composition for 2008. The recommended composition is:

- o A(H1N1) an A/Solomon/3/2006-like strain
- o A(H3N2) an A/Brisbane/10/2007 - like strain
- o B a B/Florida/4/2006 - like strain

(For more details on the influenza vaccine recommendation, please refer to the report: [www.surv.esr.cri.nz/virology/influenza\\_vaccine.php](http://www.surv.esr.cri.nz/virology/influenza_vaccine.php))

## Respiratory Syncytial Virus, Rhinovirus & Parainfluenza Virus

- 542 cases of respiratory syncytial virus were reported (2006, 559)
- 5 rhinoviruses were reported (2006, 11)
- 55 parainfluenza viruses were reported (2006, 47), 4 were typed as parainfluenza type 2, and 51 as type 3

## Adenoviruses and Enteroviruses

### Adenoviruses

- 197 adenoviruses were reported (2006, 66)
- adenovirus type 8 was the predominant serotype. The outbreak of adenovirus type 8 has continued since the first quarter (January to March 2007). For more details of this outbreak, see: [www.surv.esr.cri.nz/PDF\\_surveillance/NZPHSR/2007/NZPHSR2007June.pdf](http://www.surv.esr.cri.nz/PDF_surveillance/NZPHSR/2007/NZPHSR2007June.pdf)
- 163 adenoviruses were serotyped as adenovirus type 1 (14), type 2 (9), type 3 (20), type 4 (6), type 5 (5), type 7 (8), type 8 (71), type 15/29 (1), type 19 (3), type 37 (19), and untypable (7)

### Enteroviruses

- 32 enteroviruses were reported (2006, 40)
- 4 enteroviruses were serotyped as Echovirus 30 (3) and untypable (1)

## Mycology

A table detailing the biannual summary of opportunistic mycoses and aerobic actinomycetes in New Zealand for the period January – June 2007 is available at [www.surv.esr.cri.nz/surveillance/NZPHSR.php](http://www.surv.esr.cri.nz/surveillance/NZPHSR.php)

## Special Bacteriology

### Listeria monocytogenes

- 6 isolates of *Listeria monocytogenes* from human cases were referred (for table of human *L. monocytogenes* cases giving more details see [www.surv.esr.cri.nz/surveillance/NZPHSR.php](http://www.surv.esr.cri.nz/surveillance/NZPHSR.php))
- 2 cases were perinatal, 1 resulted in intrauterine death
- 3 cases were in adults who were elderly and/or had underlying illness
- 1 case was in an adult airlifted from Samoa, no clinical details were provided

### Corynebacterium diphtheriae

- 10 isolates of *Corynebacterium diphtheriae* were received for toxigenicity testing, typing and surveillance purposes
- 1 var. *gravis* isolate was from blood of 40 year old female from Whangarei; 3 var. *gravis* isolates from cutaneous sources were from patients in Auckland (2) and Christchurch (1); 6 var. *mitis* isolates from cutaneous sources were from Auckland patients
- the isolates were determined to be non-toxigenic by PCR examination for the toxin gene



New Zealand Public Health Surveillance Report is produced quarterly by ESR for the Ministry of Health and may be downloaded in PDF format from [www.surv.esr.cri.nz](http://www.surv.esr.cri.nz)

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