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# New Zealand Public Health Surveillance Report

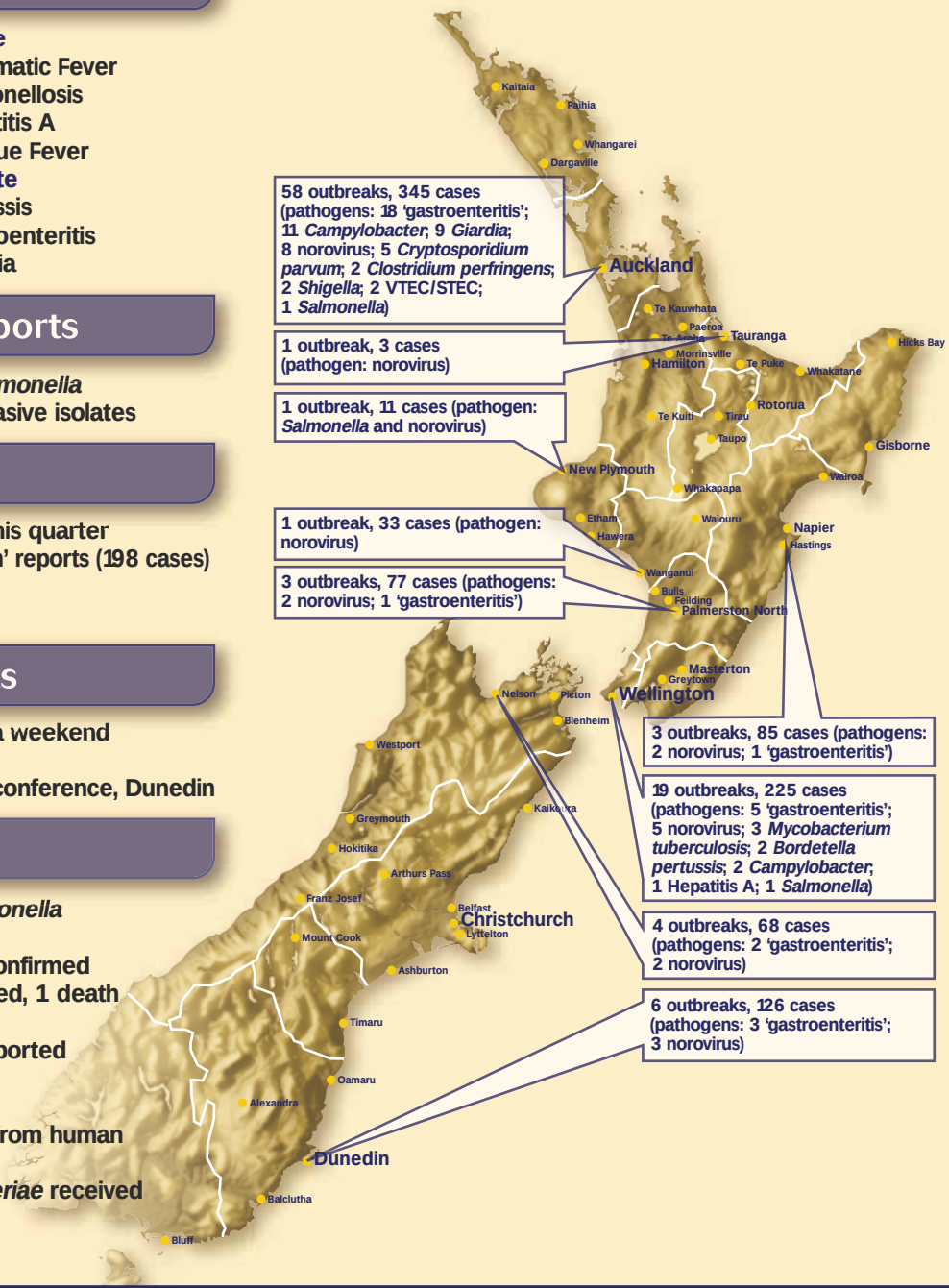
## September 2006

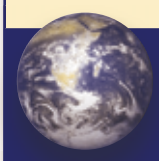
## Contents & Highlights



### This Quarter's Outbreaks

Notification and outbreak data in this issue are drawn from the April – June quarter of 2006. 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 10 July 2006.



New Zealand Post has recently changed the address and postcode standards. As part of updating our mail out database we are requesting any mail subscribers to the NZPHSR to check their address label and inform us if the postcode or any other postal details are incorrect, via survqueries@esr.cri.nz. Postcodes can be found at www.nzpost.co.nz/cultures/en-nz/onlinetools/postcodefinder/apf/

# 1. Editorial

## PulseNet Aotearoa New Zealand

PulseNet is an International network of public health and food regulatory agency laboratories that perform standardised molecular subtyping (or "fingerprinting") of foodborne disease-causing bacteria by pulsed-field gel electrophoresis (PFGE). PFGE can be used to distinguish strains of organisms such as *Escherichia coli* O157:H7, *Salmonella*, *Shigella*, *Listeria*, or *Campylobacter* at the DNA level. DNA "fingerprints," or patterns can be electronically compared across the Internet, allowing for rapid comparison of the patterns. The global vision for PulseNet is the creation of worldwide regional networks utilising standardised identification and isolate characterisation methods and sharing information in real-time to provide early warning on foodborne disease outbreaks, emerging foodborne infections, and acts of food bioterrorism.

PulseNet Aotearoa New Zealand has been established initially focusing on four important notified bacterial diseases in New Zealand - *Campylobacter*, *Salmonella*, shiga-toxin producing *E. coli* (STEC) and *Listeria*. In 2005, there were over 15,000 notified cases of these diseases in New Zealand, with an estimated economic impact in excess of $100 million annually.[1,2] For each organism the standardised PulseNet methodology for PFGE has been established at ESR, and certification with PulseNet USA completed. When cases contract an illness from a common source, the PFGE profiles or patterns generated from the bacteria are often the same. This information can be very useful to investigators trying to find the source of a disease outbreak, enabling them to focus on individuals with the same strain or type of bacteria, without the distraction of unrelated cases. This assists with identifying common source, and builds the case for effective interventions. PulseNet Aotearoa New Zealand is one tool that will be included in the redeveloped SurvINZ surveillance platform that ESR is currently investing in.

Currently all *Campylobacter*, *Salmonella*, STEC and *Listeria* isolates subtyped by PFGE at ESR, are uploaded to the server databases, along with key non-confidential source information. To date, the databases collectively contain more than 2000 profiles generated at ESR, and profiles generated by International PulseNet collaborators. As new isolates are subtyped, comparison using these databases will allow the determination of where and when this subtype has been identified before, whether this is a new subtype, identification of emerging subtypes and assignment of standardised nomenclature. In addition, the databases will act as a platform for the exchange of data both within New Zealand and internationally.

PulseNet Aotearoa New Zealand has allowed interaction with the PulseNet International community, which are all using the same methodology, and the same BioNumerics-based databases. In addition to PulseNet USA, this includes PulseNet Canada, PulseNet Europe (27 European countries), PulseNet América Latina (13 South American countries) and PulseNet Asia Pacific (13 countries in the Asia Pacific region). Solid relationships have been established with all of these networks.

While PulseNet Aotearoa New Zealand is compatible with PulseNet USA, it is not equivalent to PulseNet USA. PulseNet USA was established in recognition of the value of laboratory based subtyping in identifying potential outbreaks. To work optimally, all isolates of an organism should be subtyped immediately after they are isolated, and subtyping compared between laboratories using electronic databases. Subtyping in New Zealand is mostly applied to confirm, negate or delineate outbreaks recognised by other means. As such, relatively few isolates are subtyped to the level of PFGE analysis, and PFGE analysis occurs on batched isolates, usually, considerably after the suspected outbreak event.

To establish a true PulseNet Network in New Zealand would require a paradigm shift toward laboratory based surveillance as a crucial tool in outbreak identification. This would require additional funding to support increased laboratory costs, and would also, at least in the interim, result in an increased workload for Public Health Units as more cases were identified that required investigation. The subtyping analysis would need to happen rapidly after initial isolation to provide a useful timeframe for meaningful investigation. For each of the four organisms addressed, to date, in PulseNet New Zealand, different strategies and potentially additional methodology would need to be developed for practical implementation of a PulseNet laboratory based strategy. The result however would be improved health outcomes for New Zealanders, reduced incidence of food and waterborne disease, and in the long-term, reduced health costs for New Zealand and increased productivity.

**Reported by Brent Gilpin, Water Group, ESR**


**1 ESR (2006) Notifiable and Other Diseases in New Zealand, Annual Report 2005. Institute of Environmental Science and Research Limited, Wellington.**

**2 Scott, W. G., Scott, H. M., Lake, R. J. & Baker, M. G. (2002) Economic cost to New Zealand of foodborne infectious disease. *New Zealand Medical Journal* 113: 281-284.**


# 2. Notifiable Disease Surveillance

**The following is a summary of disease notifications for the April - June quarter of 2006 and cumulative notifications and rates calculated for a 12-month period (July 2005 – June 2006). 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 10 July 2006. 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*: 8 notifications in the quarter (2005, 2); 13 notifications over the last 12 months (2005, 6) giving a rate of 0.3 cases per 100,000 population (2005, 0.2); not a statistically significant increase
- *Comments*: there has been a statistically significant quarterly increase from the previous quarter (1 case); 5 notifications were aged under 5 years, of these, 3 were immunised, 2 were not immunised

### Hepatitis B

- *Notifications*: 18 notifications in the quarter (2005, 17); 70 notifications over the last 12 months (2005, 43) giving a rate of 1.9 cases per 100,000 population (2005, 1.2); statistically significant increase
- *Comments*: All cases were aged 19 years or older

## Pertussis

- *Notifications*: 256 notifications in the quarter (2005, 495); 1,856 notifications over the last 12 months (2005, 4,276) giving a rate of 49.7 cases per 100,000 population (2005, 114.4); statistically significant decrease
- *Comments*: there has been a statistically significant quarterly decrease from the previous quarter (375 cases) and from the same quarter last year (495 cases)

# INFECTIOUS RESPIRATORY DISEASES

## Acute Rheumatic Fever

- *Notifications*: 38 notifications in the quarter (2005, 11); 105 notifications over the last 12-months (2005, 69) giving a rate of 2.8 cases per 100,000 population (2005, 1.8); statistically significant increase
- *Comments*: there has been a statistically significant quarterly increase from the previous quarter (22 cases) and from the same quarter last year (11 cases); notifications were distributed by age as follows, 7 (5-9 years), 19 (10-14 years), 5 (15-19 years), 6 (20-29 years) and 1 (30-39 years); 37 notifications had rheumatic fever initial attacks with 1 case of recurrence attack

## Meningococcal Disease

- *Notifications*: 28 notifications in the quarter (2005, 64); 170 notifications over the last 12 months (2005, 323) giving a rate of 4.5 cases per 100,000 population (2005, 8.6); statistically significant decrease
- *Comments*: there has been a statistically significant quarterly decrease from the same quarter last year (64 cases). Notifications were distributed by age as follows, 5 under 1 year of age, 6 (1-4 years), 1 (10-14 years), 5 (15-19 years) and 11 in the 20 and over category. No deaths were reported in this quarter

## Tuberculosis Disease

- *Notifications*: 61 notifications in the quarter (2005, 100); 300 notifications over the last 12-months (2005, 390) giving a rate of 8.0 cases per 100,000 population (2005, 10.4); statistically significant decrease
- *Comments*: there has been a statistically significant quarterly decrease from the same quarter last year (100 cases); 58 new cases and 3 reactivated cases; 50 laboratory confirmed cases, 8 probable cases and 3 cases under investigation

# ENTERIC INFECTIONS

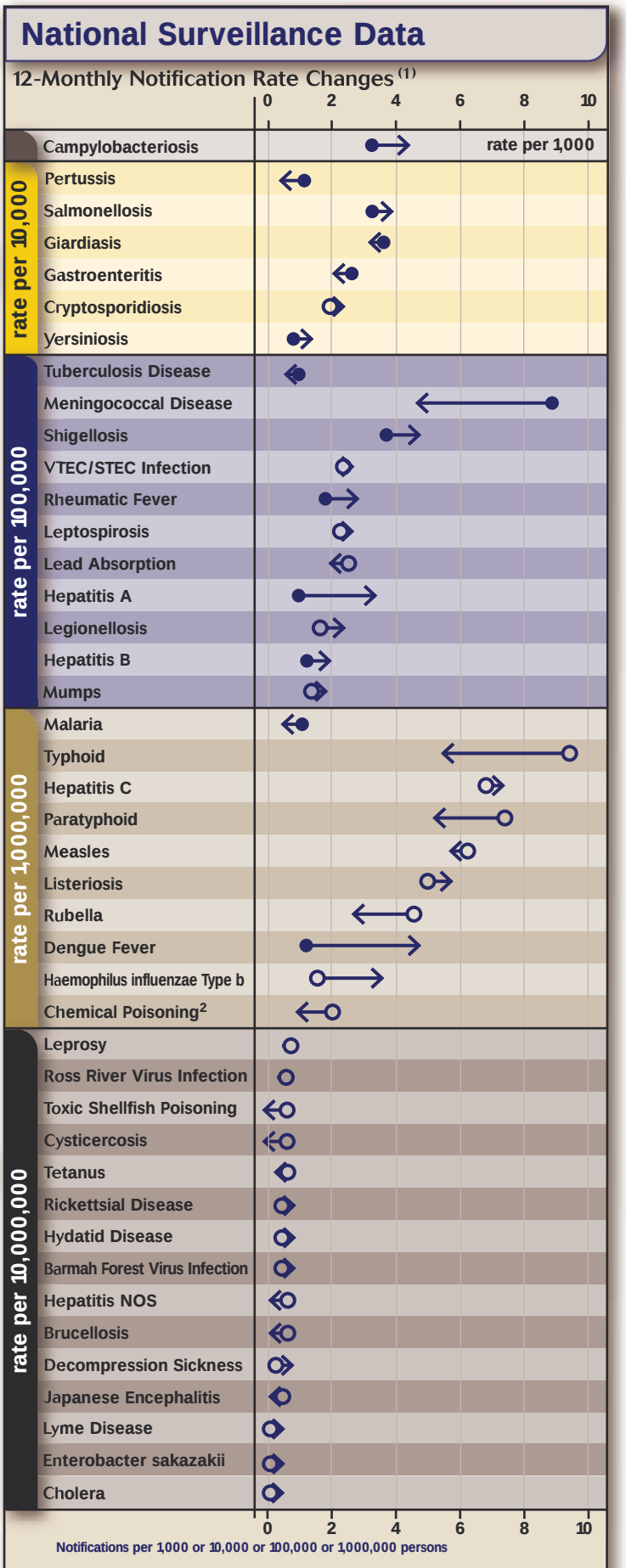
## Campylobacteriosis

- *Notifications*: 3,596 notifications in the quarter (2005, 2,218); 16,161 notifications over the last 12 months (2005, 11,872) giving a rate of 432.4 cases per 100,000 population (2005, 317.7); statistically significant increase
- *Comments*: there has been a statistically significant quarterly decrease from the previous quarter (4,354 cases) and a statistically significant increase from the same quarter last year (2,218 cases)

## Gastroenteritis

- *Notifications*: 237 notifications in the quarter (2005, 145); 783 notifications over the last 12 months (2005, 963) giving a rate of 21.0 cases per 100,000 population (2005, 25.8); statistically significant decrease
- *Comments*: there has been a statistically significant quarterly decrease from the previous quarter (323 cases) and a statistically significant increase from the same quarter last year (145 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

# National Surveillance Data




**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 to the end of this quarter.
(2) From the environment

*continued...*

that come through public health units, including direct reports from the public where the causative pathogen may never be known

### Salmonellosis

- *Notifications*: 323 notifications in the quarter (2005, 336); 1,451 notifications over the last 12 months (2005, 1,191) giving a rate of 38.8 cases per 100,000 population (2005, 31.9); statistically significant increase
- *Comments*: there has been a statistically significant quarterly decrease from the previous quarter (449 cases)

### Shigellosis

- *Notifications*: 16 notifications in the quarter (2005, 36); 176 notifications over the last 12 months (2005, 140) giving a rate of 4.7 cases per 100,000 population (2005, 3.7); statistically significant increase
- *Comments*: there has been a statistically significant quarterly decrease from the previous quarter (41 cases) and from the same quarter last year (36 cases)

## ENVIRONMENTAL EXPOSURES AND INFECTIONS

### Cryptosporidiosis

- *Notifications*: 84 notifications in the quarter (2005, 130); 814 notifications over the last 12 months (2005, 767) giving a rate of 21.8 cases per 100,000 population (2005, 20.5); not a statistically significant increase
- *Comments*: there has been a statistically significant quarterly decrease from the same quarter last year (130 cases)

### Giardiasis

- *Notifications*: 315 notifications in the quarter (2005, 307); 1,230 notifications over the last 12 months (2005, 1,331) giving a rate of 32.9 cases per 100,000 population (2005, 35.6); statistically significant decrease

### Hepatitis A

- *Notifications*: 25 notifications in the quarter (2005, 4); 120 notifications over the last 12 months (2005, 37) giving a rate of 3.2 cases per 100,000 population (2005, 1.0); a statistically significant increase
- *Comments*: there has been a statistically significant quarterly decrease from the previous quarter (64 cases) and a statistically significant increase from the same quarter last year (4 cases); 15 cases were under the age of 16 years

### Yersiniosis

*Notifications*: 107 notifications in the quarter (2005, 88); 437 notifications over the last 12 months (2005, 346) giving a rate of 11.7 cases per 100,000 population (2005, 9.3); statistically significant increase

## NEW, EXOTIC AND IMPORTED INFECTIONS

### Dengue Fever

- *Notifications*: 5 notifications in the quarter (2005, 1); 17 notifications over the last 12 months (2005, 4) giving a rate of 0.5 cases per 100,000 population (2005, 0.1); a statistically significant increase
- *Comments*: 2 males and 3 females aged between 23 and 59 years; all cases were overseas during the incubation period; countries visited were Fiji, Canada, Indonesia, Samoa, Singapore and Thailand

### Malaria

- *Notifications*: 3 notifications in the quarter (2005, 13); 19 notifications over the last 12 months (2005, 39) giving a rate of 0.5 cases per 100,000 population (2005, 1.0); a statistically significant decrease
- *Comments*: there has been a statistically significant decrease from the same quarter last year (13 cases); all notifications were laboratory confirmed; 2 of the cases were overseas during the incubation period; countries visited were Solomon Islands and Papua New Guinea; the third case was a resident of India

# 3. Other Surveillance Reports

## Antimicrobial susceptibility among *Salmonella*

Each year a representative sample of non-typhoidal *Salmonella*, chosen from isolates routinely referred to ESR for serotyping, is tested for antimicrobial susceptibility. In addition, all isolates of *S.* Typhi, *S.* Paratyphi A and *S.* Paratyphi B are tested. More detailed information is available at www.surv.esr.cri.nz/PDF_surveillance/Antimicrobial/SAL_2005.pdf

Antimicrobial resistance among *Salmonella* remains relatively uncommon in New Zealand. Among the 616 non-typhoidal *Salmonella* tested in 2005, 93% were fully susceptible to all 12 antimicrobials tested. Two percent of isolates were ampicillin resistant, 1% co-trimoxazole resistant, and there was one (0.2%) ciprofloxacin-resistant isolate. All isolates were susceptible to third-generation cephalosporins. Isolates from salmonellosis cases who had recently travelled overseas were significantly ($p \leq 0.05$) more resistant than isolates from other cases.

Although none of the 28 *S.* Typhi or 11 *S.* Paratyphi isolates tested were resistant to ciprofloxacin, 44% were resistant to nalidixic acid. Fluoroquinolone (ciprofloxacin)-susceptible strains of *Salmonella* that are resistant to the older-generation quinolone nalidixic acid may be associated with clinical failure or delayed response when fluoroquinolones are used to treat extra-intestinal salmonella infections. All typhoidal *Salmonella* were susceptible to third-generation cephalosporins.

**Reported by Helen Heffernan, Communicable Disease Programme, ESR**

## Antimicrobial susceptibility among invasive isolates

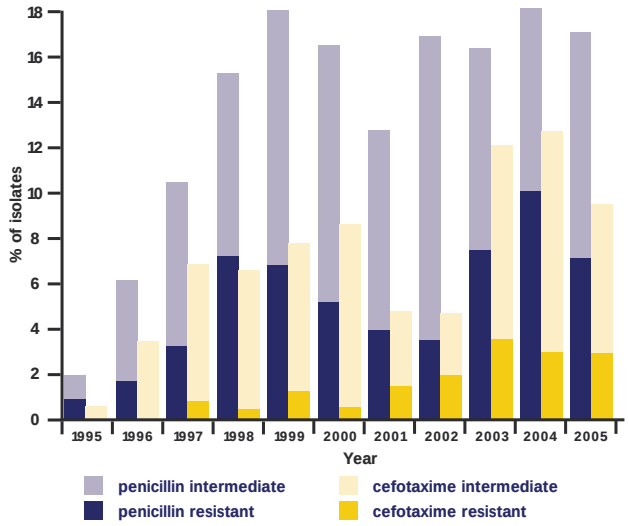
*Streptococcus pneumoniae*, *Neisseria meningitidis* and *Haemophilus influenzae* isolated from normally sterile sites are routinely referred to ESR for the national laboratory-based surveillance of invasive disease due to these organisms. The antimicrobial susceptibility of all viable invasive isolates of these three organisms referred in 2005 was tested. More detailed information is available at www.surv.esr.cri.nz/antimicrobial/antimicrobial_resistance.php.

### *Streptococcus pneumoniae*

The antimicrobial susceptibility of 492 invasive *S. pneumoniae* isolates was tested in 2005. Seven percent of invasive pneumococci were penicillin resistant (MIC ≥2 mg/L) and 10% had intermediate penicillin resistance (MIC 0.12-1 mg/L). Over the last decade there has been considerable variation in the prevalence of penicillin resistance, with a significant increase between 1995 and 1998-9, a decrease between 1999 and 2002 and then a further increase (Figure 1).

Applying the Clinical and Laboratory Standards Institute (CLSI) meningitis interpretive standards, 3% of the invasive pneumococci in 2005 were cefotaxime resistant (MIC ≥2 mg/L) and 7% had intermediate cefotaxime resistance (MIC 1 mg/L). Applying the non-meningitis interpretive standards, 1% were cefotaxime resistant (MIC ≥4 mg/L) and 2% had intermediate cefotaxime resistance (MIC 2 mg/L). There has been a trend of increasing resistance to third-generation cephalosporins in recent years, although during the last two years there were no further

**Figure 1 Penicillin and cefotaxime* resistance among invasive *S. pneumoniae*, 1995-2005**




* cefotaxime susceptibility based on the CLSI meningitis interpretive standards

increases (Figure 1). All isolates were susceptible to moxifloxacin and vancomycin.

In 2005, capsular antigen types 19F, 14, 9V, 6B and 23F accounted for all of the penicillin-resistant invasive pneumococci, while serotype 19F accounted for 80% of the cefotaxime-resistant isolates.

### *Neisseria meningitidis*

The antimicrobial susceptibility of 128 meningococcal isolates from cases of invasive disease in 2005 was tested. There was no resistance to penicillin, ceftriaxone, rifampicin or ciprofloxacin. Fifteen percent of isolates had reduced penicillin susceptibility, with MICs of 0.12-0.5 mg/L. Isolates with reduced penicillin susceptibility have been increasing over the last 10 years. However, meningococcal infections due to such isolates are still treatable with penicillin.

### *Haemophilus influenzae*

The antimicrobial susceptibility of 40 invasive *H. influenzae* isolates was tested in 2005. Four of the 40 isolates were serotype b. Twenty percent of isolates produced ß-lactamase. There was no resistance to cefotaxime and one isolate was rifampicin resistant.

**Reported by Helen Heffernan, 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 (April - June 2006). Comparisons are made to the previous quarter (January - March 2006), and to the same quarter in the previous year (April - June 2005). Note that the outbreak data in this section are notified to ESR by the Public Health Services.**

## General

- 96 outbreaks notified in this quarter (973 cases)
- 66 are 'final' reports (775 cases); 30 are 'interim' reports (198 cases) that have yet to be finalised and closed

*All data following are pertaining to final reports only.*

- 11.7 cases on average per outbreak, compared with 12.4 cases per outbreak in the previous quarter (4.6 cases per outbreak in the same quarter of last year)
- 16 hospitalisations: salmonella (6 cases), norovirus (6 cases), *Mycobacterium tuberculosis* (2 cases), Hepatitis A (1 case), *Bordetella pertussis* (1 case)
- no deaths

## Pathogens

- 23 norovirus outbreaks (551 cases) during this quarter
- 16 'gastroenteritis' outbreaks (134 cases)
- 7 *Campylobacter* outbreaks (18 cases)
- 4 *Cryptosporidium parvum* outbreaks (11 cases)
- 4 *Giardia* outbreaks (11 cases)
- 2 *Clostridium perfringens* outbreaks (5 cases)
- 2 *M. tuberculosis* outbreaks (4 cases)
- 2 *Salmonella* outbreaks (17 cases)
- 2 *Shigella* outbreaks (6 cases)
- 1 *B. pertussis* outbreak (3 cases)
- 1 Hepatitis A outbreak (2 cases)
- 1 *Salmonella* and norovirus outbreak (11 cases)
- 1 VTEC/STEC outbreak (2 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.

- 39 person-to-person, from (non-sexual) contact with an infected person (including droplets): 19 norovirus (524 cases), 6 gastroenteritis (83 cases), 3 *Campylobacter* (7 cases), 3 *C. parvum* (9 cases), 2 *Giardia* (6 cases), 2 *Shigella* (6 cases), 1 *B. pertussis* (3 cases), 1 Hepatitis A (2 cases), 1 *M. tuberculosis* (2 cases), and 1 *Salmonella* and norovirus (11 cases)
- 16 foodborne, from consumption of contaminated food or drink (excluding water): 6 gastroenteritis (26 cases), 4 *Campylobacter* (11 cases), 2 *C. perfringens* (5 cases), 2 norovirus (22 cases), and 2 *Salmonella* (17 cases)
- 6 other mode of transmission (via formites): 5 norovirus (139 cases), and 1 gastroenteritis (18 cases)
- 4 environmental, from contact with an environmental source (e.g. swimming): 4 norovirus (153 cases)
- 1 waterborne, from consumption of contaminated drinking water: *Giardia* (3 cases)
- 8 mode of transmission unknown: 3 gastroenteritis (8 cases), 2 norovirus (5 cases), 1 *C. parvum* (2 cases), 1 *Giardia* (2 cases), and 1 VTEC/STEC (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.

- 16 home: 3 *Campylobacter* (7 cases), 3 *C. parvum* (9 cases), 3 gastroenteritis (9 cases), 2 *Giardia* (6 cases), 2 *Shigella* (6 cases), 1 Hepatitis A (2 cases), 1 *M. tuberculosis* (2 cases), 1 *Salmonella* and novovirus outbreak (11 cases)
- 15 rest homes: 10 norovirus (287 cases), 4 gastroenteritis (77 cases), 1 *Campylobacter* (3 cases)
- 10 café: 3 *Campylobacter* (8 cases), 3 norovirus (25 cases), 2 gastroenteritis (13 cases), 1 *C. perfringens* (3 cases), and 1 *Salmonella* (2 cases)
- 6 continuing care: 6 norovirus (218 cases)
- 2 other food outlet: gastroenteritis (11 cases) and *Salmonella* (15 cases)

*continued...*

...Outbreak Surveillance continued

- 1 acute care: norovirus (40 cases)
- 1 camp: norovirus (29 cases)
- 1 caterers: gastroenteritis (6 cases)
- 1 childcare centre: norovirus (17 cases)
- 1 community: *M. tuberculosis* (2 cases)
- 1 takeaways: gastroenteritis (2 cases)
- 1 hostel: norovirus (60 cases)
- 1 hotel/motel: gastroenteritis (11 cases)
- 5 'other setting': 3 norovirus (66 cases) (High Dependency Unit within a rest home (30 cases), institutional home (10 cases), training college (26 cases)); 1 sports stadium: gastroenteritis (6 cases); 1 overseas acquired: Hepatitis A (2 cases)
- 11 outbreaks with no setting selected: 4 gastroenteritis (10 cases), 2 *Giardia* (5 cases), 2 norovirus (5 cases), 1 *C. perfringens* (2 cases), 1 *C. parvum* (2 cases), and 1 VTEC/STEC (2 cases)

# 5. Outbreak Case Reports

## *Salmonella* outbreak associated with a weekend market stall, Wellington region

On 27 April 2006 Regional Public Health was notified by Capital Coast Health laboratory of five cases of salmonellosis caused by *Salmonella* Group C, later identified as *Salmonella* Thompson. Four of the cases were from two different families. All cases were of the same ethnic group and lived largely in one geographic area in greater Wellington. Case interviews and case finding from local laboratories found a further five cases on the 27 and 28 April 2006, and a further two cases were identified on 29 April 2006. Public health alerts were sent out to local medical centres and Emergency Departments on the 28 April 2006, and a further three cases were notified during the subsequent three weeks. In total, 15 cases were identified, 11 were confirmed cases and all of *Salmonella* Group C, with six hospitalised.

All cases had consumed pre-prepared food from a market on the 22 May 2006. Although they had eaten a variety of food (including roast taro and coconut cream, barbequed lamb flaps, chop suey and taro and steamed buns), it appeared that all cases had eaten food from one particular stall. Some individuals had also eaten from other stalls. The market is quite casual, stalls are not named and many sell similar foods, however three different people were able to positively identify the stall from its location.

The market was due to occur again on 29 April 2006, and a team from RPH and the city council attended the market at 6.30am to inspect the stall in question. The following was discovered:

(1) All food was prepared in a domestic kitchen prior to the market.

(2) The stallholder had not done a food safety course and did not have a food safety plan for the produce.

(3) The food licence of the stall holder had expired.

(4) Two people prepared the food every week, however they were assisted by different people each week (the week of the outbreak three people from a youth group assisted in the food preparation and sale).

(5) There was no awareness on the part of the stallholder of the need to exclude sick people from food preparation.

(6) There were poor hand washing facilities.

(7) There was no known history of illness or travel in the stallholders and assistants (however RPH was not able to directly talk to all of them).

A general inspection of other stalls in the market revealed other food safety issues, such as un-refrigerated dairy products and raw fish. In addition, raw chickens were defrosting in boxes on the pavement.

The following control measures were implemented:

(1) The food licence of the stall in question was not renewed until food safety procedures were revised and the council was satisfied.

(2) Stool samples were requested from all food handlers who worked on the 22 April 2006, with agreement that they would not work at the stall or in preparing food for it until they had been microbiologically cleared.

Typing at ESR confirmed 11 cases of *Salmonella* Thompson. This is a relatively uncommon *Salmonella* species; there were only 16 isolates in New Zealand in 2005, nine of which were associated with one outbreak in the Wairarapa. Three serologically identical cases had been notified to RPH in March 2006. These individuals were re-interviewed, but were not obviously related to the current outbreak.

All clearance samples from food handlers at the stall were negative for *Salmonella*. It seems likely, but not proven, that one of the food handlers had been ill or was an asymptomatic carrier and was still shedding the bacteria when they prepared and sold the food for the 22 April 2006 market, resulting in contamination of the food. However it is unclear where the food handlers may have acquired the initial infection.

This large point source outbreak resulted in six individuals requiring hospitalisation. No doubt there were many other cases that did not come to the attention of health professionals and RPH. This outbreak also highlighted poor food safety standards among other food stallholders in the market, not just the stall that appeared to be the source of the outbreak. The local authority issues resource consent and food licences for the market and volunteers from a local social club oversee the market. However the volunteers have little formal training in food safety and little ability to enforce actions against breaches of food licences. A particularly socio-economically vulnerable population frequents this market (one person has thus far been unable to return to work a month after her illness); therefore it is vital that food safety standards are improved in order to protect their health. The council have been proactively working with stallholders and the social club volunteers at the market and the food safety issues have been addressed. Work on the longer-term issues at the market is continuing.

**Reported by Caroline Shaw, Public Health Registrar, Quentin Ruscoe, Health Protection Officer, Annette Nesdale, Medical Officer of Health, Margot McLean Medical Officer of Health, Regional Public Health, Hutt Valley DHB.**

## Norovirus outbreak associated with a conference, Dunedin

On 30 January 2006, Public Health South was alerted to a possible outbreak of illness associated with an international conference in Dunedin (25 to 28 January 2006) by the notification of a conference attendee who had been admitted to Dunedin Hospital suffering from dehydration as a result of diarrhoea and vomiting. Dunedin City Council Environmental Health staff were simultaneously contacted by several attendees suffering from diarrhoea and vomiting. On 31 January 2006, the morning newspaper contained comment from the conference organiser that "... some people who had attended the conference ... have since become violently ill." At 1100hrs the conference organiser met with public health staff and agreed to send a global email to the 459 registrants asking them to complete a brief questionnaire about illness and exposure to meals at the conference. The use of an email questionnaire was considered the only means for getting a timely response because the conference organisers only had an email address and many people had left Dunedin before the outbreak was identified. Confidentiality was not seen as a problem

because no personal identifying information was sought apart from an email address.

The questionnaire was an unformatted email text attachment and was sent at 1710hrs on 31 January 2006. Within 24 hours, 141 (31%) responses were received. Overall, 186 (41%) email questionnaires were returned within 10 days of the event after one reminder. An additional 22 (48%) written questionnaires were returned from 46 catering staff (2/14 (14%) from food preparation staff and 20/32 (63%) for waiting staff). Some people commented they had been unwell before the conference and thus 12 records were excluded from the analysis, leaving 196 individuals (attendees plus catering staff).

Nausea, diarrhoea, and vomiting were the main symptoms experienced by those who were ill but others experienced fever and general tiredness. A confirmed case was defined as a previously well person who attended, all or part of, the conference in Dunedin and who developed nausea, vomiting, stomach cramps or diarrhoea after 25 January 2006 and had norovirus isolated from a faecal specimen. A probable case was defined the same as a confirmed case but with no laboratory confirmation. Several other people only experienced a sore throat or other symptoms of upper respiratory tract infection but these did not fit into the case definition and so were excluded from the analysis. Six people met the confirmed case definition and 68 were probable cases of gastrointestinal illness, giving an attack rate of 38% in those who returned the questionnaire.

The epidemic curve of all who became ill with diarrhoea, nausea or vomiting suggested some illness was present before the start of the conference. There was no significant difference in the attack rates between those staying in hall of residence, those living in hotels/motels or in private residences. The median time interval between the reported onset of symptoms and the return of the questionnaire was 62.0 hours (range 12.5 hours to 216.3 hours). It was expected that conference attendees would be able to remember what functions they had attended over the preceding seven days (168 hours) but about 10% of the respondents could not recall the functions they had attended and many left blanks in the list of foods. This may have been an assumption on their part that "blank" equals "no" when a tick was clearly "yes". The questionnaire did not specifically request that all boxes should be answered.

There were three main catered social events. The relative risk of developing symptoms was significantly greater for those attending the conference dinner on 27 January 2006 than for the other catered meals - odds ratio 4.60 (95% CI 1.27<OR< 25.04 $p < 0.01$). The fact that some waiting staff at the dinner became ill further highlighted that presence at the dinner was a risk factor. No food at the conference dinner was implicated as a source of infection. Nobody commented on any vomiting at the dinner although several people commented on apparent poor personal hygiene by conference attendees and a lack of cleanliness of toilet facilities in all venues. Infection may have been spread from person to person either by close contact or poor personal hygiene. For the cases who attended the dinner, the median onset time was 38.3 hours, with a minimum of 24 hours and a maximum of 102 hours. The median duration of symptoms in the 54 people who indicated a limited duration of symptoms was 24 hours with a minimum of 1 hour and a maximum of 72 hours. Fifteen respondents indicated symptoms were ongoing at the time they completed the questionnaire. The onset of illness in those meeting the case definition fits within the usual incubation period of norovirus (24 to 48 hours) and the duration of illness fits within that expected of an acute viral gastroenteropathy.[1]

Faecal specimens were obtained from three conference attendees and three waiting staff and all were PCR positive for norovirus (Group 2/1,4,8). Inspection and investigation of the three conference venues showed all had appropriate food handling practices and staff sickness policies. No food preparation staff had reported symptoms before or after the events.

Four people reported they had been admitted to hospital since arriving in Dunedin for the conference but three of these people had reported illness prior to the start of the conference. Two were admitted after the conference dinner, one had a history of diarrhoea and vomiting leading to moderate dehydration, which the patient attributed to eating a meal of chicken four hours before admission. No food samples were available and the faecal specimen was negative on culture but PCR positive for norovirus. The second patient also had vomiting and abdominal symptoms 48 hours after the conference and the patient attributed these to sea-sickness following a coastal cruise. No laboratory specimens were taken from this case.

The source of the outbreak appears to have been the conference dinner. However, no food appeared to be associated with increased odds for illness. Close personal contact between persons carrying the virus may have been the reason for the outbreak. Poor personal hygiene and poorly maintained toilet facilities would allow easy transmission of norovirus which can survive for many hours on surfaces. Electronic questionnaires provided the means for a rapid international survey of attendees at a conference. The traditional telephone survey was not possible given only email addresses of conference registrants were available. More careful instructions about responding to the questionnaire may have improved the data quality and reduced uncertainty of responses.

**Reported by John Holmes, Medical Officer of Health, Otago/Southland, Megan Callaghan, Health Protection Officer**

**1 Heymann DL Control of *Communicable Diseases Manual* 2004 Washington, APHA**

# 6. Pathogen Surveillance

**Unless otherwise reported, pathogen surveillance covers the April - June 2006 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

- 317 human and 363 non-human isolates were submitted to ERL (2005, 390 and 317 respectively)
- cluster of 14 cases of *S.* Thompson linked to food served at an open-air market, Wellington

### VTEC/STEC (ERL)

- 23 laboratory confirmed human cases of *E. coli* O157:H7 (2005, 34)
- 2 isolates *E. coli* O157:H7 from the same registered untreated water supply also confirmed. One isolate had an indistinguishable PFGE profile from a human case known to have consumed water from the supply
- 2 human cases (contacts) *E. coli* O128:H2 also confirmed

### Norovirus (Norovirus Reference Laboratory)

- 61 confirmed norovirus outbreaks were reported to the NRL
- 29 outbreaks occurred in April
- 37 outbreaks (60.7%) occurred in rest homes (25) and hospitals (12). Catered settings featured in 6 outbreaks, 4 in institutional, hotel or school settings and 1 outbreak was associated with a coach trip
- 2 outbreaks were associated with the consumption of imported Korean oysters. 1 outbreak occurred in Tauranga in May. Both GI and GII norovirus were detected in oyster samples associated with the outbreak and genotyping of these strains is in progress. The genotype of the faecal specimen was GII/17
- a large outbreak of ~ 350 cases associated with consumption

*continued...*

of imported Korean oysters occurred following the Eden Park rugby test in June. GI and GII norovirus strains were detected in different batches of oyster samples associated with the outbreak. Genotyping of norovirus strains from oysters is in progress. Multiple strains (GII/2, GII/6,7,9 and GII/1,4,8) have been identified in the faecal samples

- of the faecal specimens genotyped to date, the majority (41, 67.2%) are GII/1,4,8, and others belong to GII/6, GII/3 and GII/8

## LEGIONELLOSIS AND ENVIRONMENTAL LEGIONELLA

- 13 legionellosis cases were laboratory identified, 1 death, with all but one case notified
- a further 6 notified cases have not been laboratory-proven
- no outbreaks were identified in this quarter, with all cases identified as sporadic community-acquired pneumonia cases
- of the 13 cases identified, 7 fitted the confirmed case definition and 6 fitted the probable case definition
- the 7 confirmed cases demonstrated either antibody titres >512 on two or more occasions (2 case), or at least a four-fold rise in antibody titre by the legionella IFAT (4 cases), or both PCR-positive & serologically positive to the same strain (1 case)
- the 6 probable cases demonstrated either stable antibody titres of 512 (2 case), or a single antibody titre of ≥512 (2 cases), or were PCR-positive (2 cases)
- *L. pneumophila* serogroup 1 was identified as the causative agent in 5 cases
- *L. pneumophila* serogroup 5 was identified as the causative agent in 1 case
- *L. pneumophila* serogroup 12 or 15 was identified as the causative agent in 1 case (a serological cross-reaction meant the strain could not be determined)
- *L. longbeachae* was identified in a further 4 cases
- *L. bozemanii* or *L. longbeachae* was identified in 1 case (a serological cross-reaction meant the strain could not be determined)
- *L. dumoffii* was identified in 1 case
- the environmental isolates from the February-March 2006 Beachlands outbreak that were associated with contaminated rainwater tanks were all *L. pneumophila* serogroup 1 isolates with the same sequence-based typing allele profile of 1,4,3,1,1,1. The only clinical isolate from the outbreak had the same allele profile. This finding supports a point source infection by a plume effect from the contaminated high-pressure water blaster at the marina to the rainwater tanks
- other environmental isolates identified this quarter were *L. pneumophila* serogroup 1 isolated from cooling tower samples and *L. longbeachae* serogroup 1 isolated from compost samples

## RESPIRATORY VIRUSES

### Influenza Virus

- 173 influenza viruses were reported from laboratory-based surveillance (2005, 338)
- 171 were influenza A, 140 as A/New York/55/2004 (H3N2)-like, 3 as A/New Caledonia/20/99 (H1N1)-like and 28 yet to be sub-typed
- 2 were identified as influenza B, 1 as B/Shanghai/361/2002-like and 1 B/Malasia/2506/2004-like

### Respiratory Syncytial Virus, Rhinovirus & Parainfluenza Virus

- 92 cases of respiratory syncytial virus were reported (2005, 77)
- 7 rhinoviruses were reported (2005, 11)
- 25 parainfluenza viruses were reported (2005, 22), 23 were typed as parainfluenza type 1, 1 as type 2 and 1 as type 3

## ADENOVIRUSES AND ENTEROVIRUSES

### Adenoviruses

- 64 adenoviruses were reported (2005, 63)
- Adenovirus type 2 and type 19 were the predominant serotypes
- 49 adenoviruses were serotyped as adenovirus type 1 (2), type 2 (10), type 3 (2), type 4 (8), type 8 (2), type 11 (1), type 15/29 (4), type 16 (1), type 19 (9), type 22 (1), type 37 (3), type 41 (2), and untypable (4)

### Enteroviruses

- 33 enteroviruses were reported (2005, 44)
- 15 enteroviruses were serotyped as Coxsackie B2 (1), Coxsackie B5 (1), Coxsackie A6 (2), Coxsackie A10 (2), Coxsackie A24 (1), Echovirus 3 (1), Echovirus 6 (1), Echovirus 7 (2), Echovirus 9 (1), Echovirus 18 (1), Echovirus 22 (1), and untypable (1)

## SPECIAL BACTERIOLOGY

### *Listeria monocytogenes*

- 2 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)
- 1 case was perinatal, the baby was asymptomatic
- 1 case was an adult who had an underlying illness

### *Corynebacterium diphtheriae*

- 4 isolates of *Corynebacterium diphtheriae* were received for toxigenicity testing, typing and surveillance purposes
- all isolates were var. *mitis* strains from cutaneous sources, patients were aged between 5 and 73 years and came from Auckland
- all isolates were non-toxigenic by PCR examination for the toxin gene

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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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