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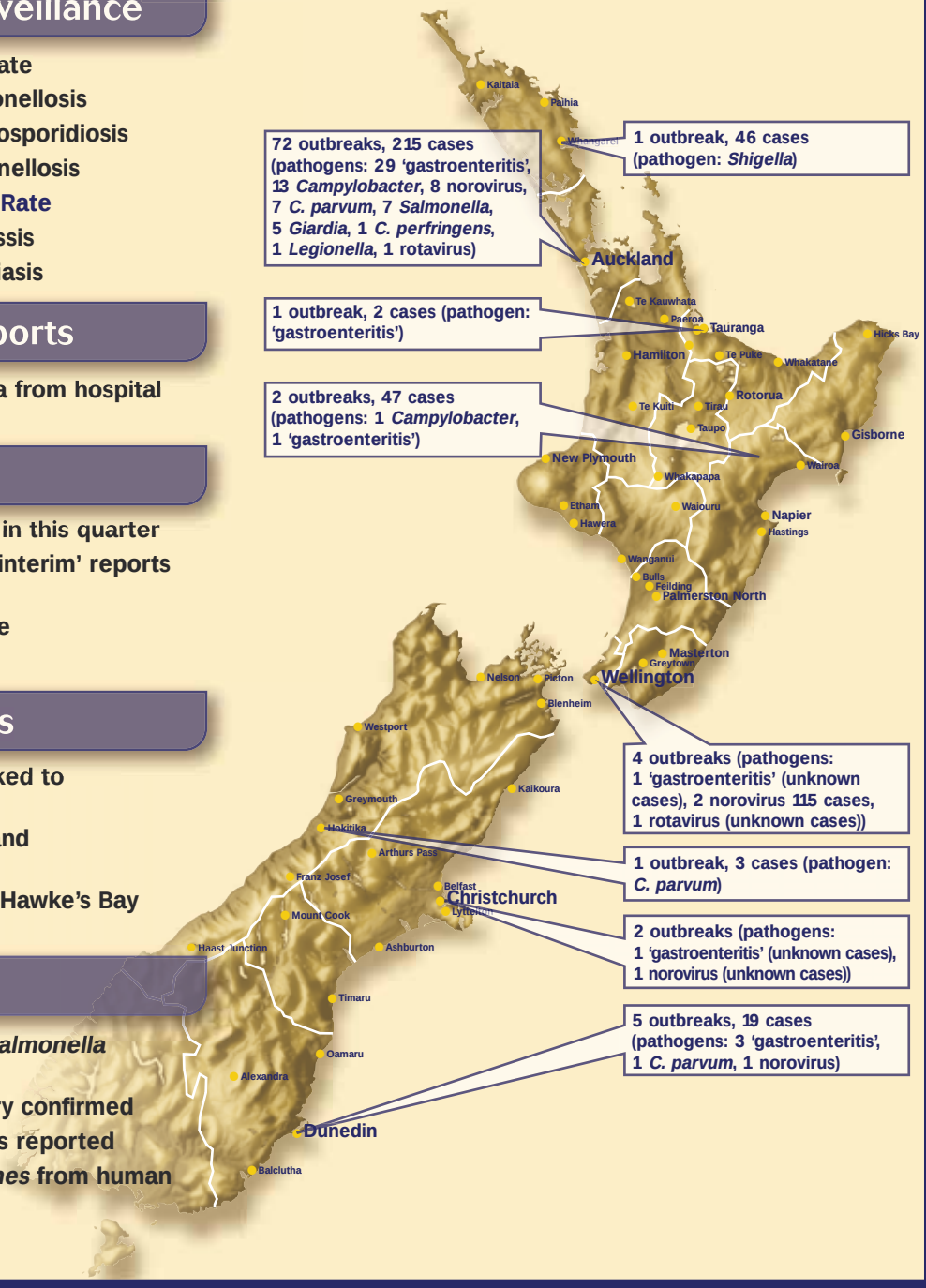
New Zealand Public Health Surveillance Report

March 2006

Contents & Highlights

This Quarter's Outbreaks

Notification and outbreak data in this issue are drawn from the October - December quarter of 2005. 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 by 17 January 2006.



The 2005 notifiable disease data and the 2004 Environmental Health Indicators report data are now available at The New Zealand Public Health Observatory web site www.nzpho.org.nz

1 Editorial

A new global treaty for the control of communicable disease

In May 2005 the World Health Assembly, the decision-making body of the World Health Organisation, adopted the revised International Health Regulations.[1] The existing International Health Regulations (IHR) date from 1969 and are the principal international legal framework for preventing and controlling the spread of disease between countries.

The new IHR will put a premium on the gathering, sharing and timely use of surveillance information to frame response measures to disease outbreaks and other events of public health significance. The IHR 2005 explicitly promote the use of surveillance capacities to inform local and national level assessments of the significance of public health events. A combination of detection, assessment and response functions must also be used to support national level consideration as to whether a particular public health event needs to be brought to the attention of, or even formally notified to, WHO as an event of potential international concern. In this sense, the IHR 2005 provide a mandate to review, maintain and even strengthen basic public health surveillance, investigation and response capacities. The new framework also sets out requirements for information flows within and between countries. Development of these capacities and systems will benefit public health service delivery on an ongoing and routine basis, as well as enhancing our ability to detect and alert the international community in the unlikely situation that a public health event in New Zealand meets the requirements for formal notification to WHO.

While welcoming the more flexible approach taken by the revised IHR, the Ministry of Health also supports the retention of some of the 'tried and true' provisions from the IHR 1969, such as vector control and *pratique* (i.e. permission for an arriving craft to land or disembark).

Many of the key elements of the IHR have been incorporated into New Zealand legislation, in particular the quarantine provisions of the Health Act 1956. The primary vehicle for implementing the legal aspects of new requirements will be through the proposed Public Health Bill, which will replace the Health Act 1956.

Other important new features of the IHR 2005 include:

(1) A broad focus on a wider range of potential threats to public health, including those from chemical and radiological as well as biological sources.

(2) The new concept of a "public health emergency of international concern". This is supported by a "decision instrument" (Annex Two) as the primary means for assessing events that may constitute a public health emergency of international concern i.e. by member states and by WHO.

(3) An explicit requirement for countries to develop and maintain local, regional, national and border-based capacities for detecting, assessing, managing and reporting risks to public health (Annex One).

(4) A formal requirement to designate 'national IHR focal points'. These focal points will have a 'whole of government' co-ordinating and communication role. This function, to be based in the Ministry's Public Health Directorate, will need timely access to all surveillance and response information associated with significant public health events, including those of unknown aetiology.

(5) Recognition that WHO can and should take into account information received from non-governmental sources, but that such information should be verified before any action is taken or recommended.

The review of the IHR 1969 began in 1995 and this work was accelerated following SARS in 2003. New Zealand participated actively in the review process, including the formal inter-governmental negotiating sessions in Geneva in 2004 and 2005. The Ministry of Health is very supportive of the outcome of this review process. However, while the IHR themselves have now been finalised, there is still plenty to be done.

Most international treaties usually only enter into force for those countries which have completed a two step process of signature and ratification. The IHR take a different approach. All WHO member states (currently 192) will *automatically* be bound by the new IHR *unless* they initiate a process to "opt-out". Member states have until December 2006 to either reject the IHR outright, or to lodge reservations to one or more articles. If a country lodges a reservation, other member states may object, and if a sufficient number object, the matter may be referred to the World Health Assembly for decision. In New Zealand, Cabinet and Parliament will be considering our commitment to the revised IHR during 2006.

In the Ministry's view this higher threshold, while unusual in international law, is appropriate for a global public health framework. The experience with SARS in 2003 served to remind the international community of the inter-dependence of countries in relation to public health risks and the associated responses. More than ever before, countries are reliant on each other for the implementation of robust and timely measures to protect public health. The high speed and steadily growing volume of international traffic makes the threat of disease spread a potentially significant risk – certainly as least as significant as during the era of mass migration by sea, from which era the current IHR date and during which global influenza pandemics have had a major impact.

In conclusion, recent experience with new and re-emerging infectious disease and the potential threat of influenza have highlighted the need for robust surveillance and flexible and well co-ordinated responses to global public health issues. Good information and timely, proportionate control measures will remain the key to managing public health emergencies of international concern – the new IHR reflect all these considerations.

Reported by Andrew Forsyth, Ministry of Health

1 www.who.int/csr/ihr/revision/en/index.html

2. Notifiable Disease Surveillance

The following is a summary of disease notifications for the October-December quarter of 2005 and cumulative notifications and rates calculated for a 12-month period (January 2005 - December 2005). 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 by 17 January 2006. As this information may be updated over time, these data should be regarded as provisional.
The National Surveillance data tables are available online (www.surv.esr.cri.nz).

VACCINE PREVENTABLE DISEASE

Hepatitis B

- *Notifications*: 21 notifications in the quarter (2004, 5); 61 notifications over the last 12 months (2004, 38) giving a rate of 1.6 cases per 100,000 population (2004, 1.0); statistically significant increase
- *Comments*: there has been a statistically significant quarterly increase from the same quarter last year (5 cases). 1 notification was aged under 16 years

Meningococcal Disease

- *Notifications*: 46 notifications in the quarter (2004, 81); 229 notifications over the last 12 months (2004, 343) giving a rate of 6.1 cases per 100,000 population (2004, 9.2); statistically significant decrease
- *Comments*: there has been a statistically significant quarterly decrease from the previous quarter (68 cases) and from the same quarter last year (81 cases). Notifications were distributed by age as follows, 11 (under 1 year); 6 (1-4 years); 3 (5-9 years); 2 (10-14 years); and 24 in the 15 and over category. There were 3 deaths, 1 (under 1 year); 1 (40-49 years); and 1 (60-69 years); 2 from Waikato and 1 from Canterbury

Pertussis

- *Notifications*: 640 notifications in the quarter (2004, 1,717); 2,721 notifications over the last 12 months (2004, 3,485) giving a rate of 72.8 cases per 100,000 population (2004, 93.3); statistically significant decrease
- *Comments*: there has been a statistically significant quarterly decrease from the same quarter last year (1,717 cases)

INFECTIOUS RESPIRATORY DISEASES

Tuberculosis Disease

- *Notifications*: 83 notifications in the quarter (2004, 113); 354 notifications over the last 12 months (2004, 373) giving a rate of 9.5 cases per 100,000 population (2004, 10.0); not a statistically significant decrease
- *Comments*: there has been a statistically significant quarterly decrease from the same quarter last year (113 cases). 81 new cases and 2 reactivation cases notified

ENTERIC INFECTIONS

Campylobacteriosis

- *Notifications*: 4,648 notifications in the quarter (2004, 3,595); 13,836 notifications over the last 12 months (2004, 12,214) giving a rate of 370.2 cases per 100,000 population (2004, 326.8); statistically significant increase
- *Comments*: there has been a statistically significant quarterly increase from the previous quarter (3,562 cases) and from the same quarter last year (3,595 cases)

Gastroenteritis

- *Notifications*: 107 notifications in the quarter (2004, 346); 562 notifications over the last 12 months (2004, 1,363) giving a rate of 15.0 cases per 100,000 population (2004, 36.5); statistically significant decrease
- *Comments*: there has been a statistically significant quarterly decrease from the same quarter last year (346 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*: 373 notifications in the quarter (2004, 265); 1,379 notifications over the last 12 months (2004, 1,080) giving a rate of 36.9 cases per 100,000 population (2004, 28.9); statistically significant increase
- *Comments*: there has been a statistically significant quarterly increase from the previous quarter (303 cases) and from the same quarter last year (265 cases)

Shigellosis

- *Notifications*: 94 notifications in the quarter (2004, 39); 184 notifications over the last 12 months (2004, 140) giving a rate of 4.9 cases per 100,000 population (2004, 3.7); statistically significant increase
- *Comments*: there has been a statistically significant quarterly increase from the previous quarter (26 cases) and from the same quarter last year (39 cases)

ENVIRONMENTAL EXPOSURES AND INFECTIONS

Cryptosporidiosis

- *Notifications*: 361 notifications in the quarter (2004, 292); 888 notifications over the last 12 months (2004, 612) giving a rate of 23.8 cases per 100,000 population (2004, 16.4); statistically significant increase
- *Comments*: there has been a statistically significant quarterly increase from the previous quarter (274 cases) and from the same quarter last year (292 cases)

Giardiasis

- *Notifications*: 285 notifications in the quarter (2004, 356); 1,230 notifications over the last 12 months (2004, 1,514) giving a rate of 32.9 cases per 100,000 population (2004, 40.5); statistically significant decrease
- *Comments*: there has been a statistically significant quarterly decrease from the same quarter last year (356 cases)

Legionellosis

- *Notifications*: 24 notifications in the quarter (2004, 13); 86 notifications over the last 12 months (2004, 62) giving a rate of 2.3 cases per 100,000 population (2004, 1.7); statistically significant increase

Yersiniosis

- *Notifications*: 115 notifications in the quarter (2004, 78); 406 notifications over the last 12 months (2004, 420) giving a rate of 10.9 cases per 100,000 population (2004, 11.2); not a statistically significant decrease
- *Comments*: there has been a statistically significant quarterly increase from the same quarter last year (78 cases)

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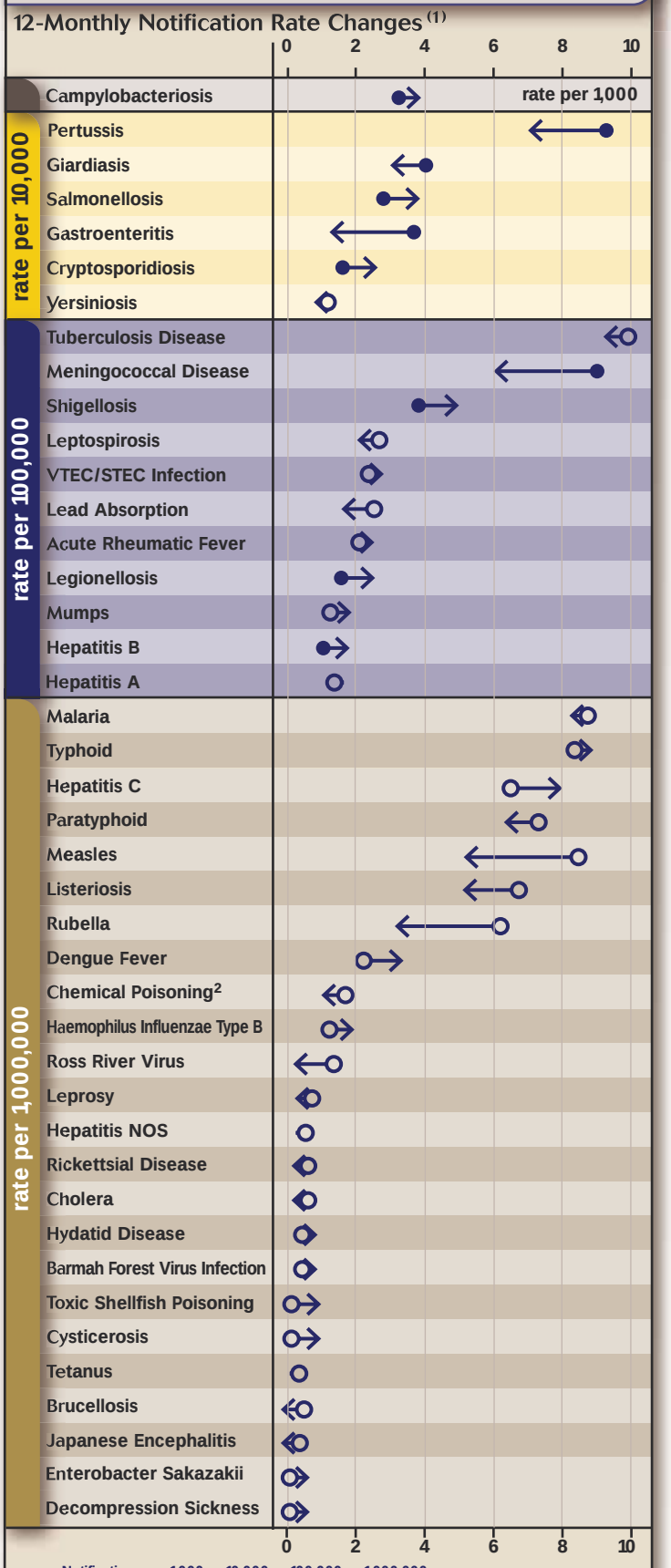
National Surveillance Data



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

3. Other Surveillance Reports

2004 antimicrobial resistance data from hospital and community laboratories

Each year ESR collects antimicrobial resistance data from hospital and community diagnostic laboratories throughout New Zealand. The data are derived from the results of the laboratories' routine antimicrobial susceptibility testing. Thirty-three laboratories were able to provide their 2004 resistance data. The data are collated and analysed to provide estimates of national rates of resistance. The 2004 rates are published in full on the ESR surveillance website at www.surv.esr.cri.nz/PDF_surveillance/Antimicrobial/National_AR_2004.pdf

Some of the key points from the 2004 data were:

- Rates of resistance among *Escherichia coli* from blood and urinary sources were, respectively, 2.8% and 2.7% for second-generation cephalosporins, 1.3% and 0.9% for third-generation cephalosporins, 15.6% and 8.5% for co-amoxiclav, and 5.0% and 3.4% for fluoroquinolones. Trimethoprim resistance among urinary isolates is stable, with a 2004 rate of 21.9%.
- Methicillin resistance in *Staphylococcus aureus* appears to have stabilised with 7.8% resistance in 2004 and 7.5% in 2003. However, there are wide geographical variations. 8.3% of *S. aureus* were resistant to fluoroquinolones, 15.9% were mupirocin resistant and 22.3% fusidic acid resistant.
- Vancomycin resistance among *Enterococcus faecium* and *E. faecalis* remains rare, with just three isolates (0.1%) confirmed in 2004.
- Rates of penicillin resistance among non-invasive *Streptococcus pneumoniae* continue to be high, with 20.5% penicillin resistance (MIC ≥2.0 mg/L) and 27.3% penicillin non-susceptibility (MIC ≥0.12 mg/L). These rates are higher than those among invasive pneumococcal isolates tested at ESR, which were 10.1% and 18.2% respectively.
- Fluoroquinolone resistance continued to increase among *Neisseria gonorrhoeae* in 2004 and reached 16.0%, while penicillin resistance was 6.6%.
- Fluoroquinolone and erythromycin resistance remains uncommon among *Campylobacter*, with 2.3% fluoroquinolone resistance and no erythromycin resistance reported in 2004.

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 (October - December 2005). Comparisons are made to the previous quarter (July - September 2005), and to the same quarter in the previous year (October - December 2004). Note that the outbreak data in this section are notified to ESR by the Public Health Services.

General

- 88 outbreaks notified in this quarter (447 cases)
- 56 are 'final' reports (303 cases); 32 are 'interim' reports (144 cases) that have yet to be finalised and closed

All following data pertain to final reports only.

- 5.4 cases on average per outbreak, compared with 4.9 cases per outbreak in the previous quarter (10.1 cases per outbreak in the same quarter of last year)
- 1 hospitalisation: *Cryptosporidium parvum*
- no deaths

Pathogens

- 14 'gastroenteritis' outbreaks (51 cases) during this quarter
- 10 norovirus outbreaks (152 cases)
- 9 *Campylobacter* outbreaks (22 cases)
- 9 *Cryptosporidium parvum* outbreaks (25 cases)
- 6 *Salmonella* outbreaks (23 cases)
- 5 *Giardia* outbreaks (13 cases)
- 1 *Clostridium perfringens* outbreak (6 cases)
- 1 *Legionella* outbreak (2 cases)
- 1 rotavirus outbreak (9 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.

- 30 person-to-person, from (non-sexual) contact with an infected person (including droplets): 8 *C. parvum* (20 cases), 7 norovirus (137 cases), 4 gastroenteritis (21 cases), 4 *Giardia* (11 cases), 3 *Campylobacter* (8 cases), 3 *Salmonella* (14 cases), and 1 rotavirus (9 cases)
- 21 foodborne, from consumption of contaminated food or drink (excluding water): 8 gastroenteritis (20 cases), 5 norovirus (29 cases), 4 *Campylobacter* (9 cases), 3 *Salmonella* (14 cases), and 1 *C. perfringens* (6 cases)
- 6 waterborne, from consumption of contaminated drinking water: 3 *Giardia* (7 cases), 2 *C. parvum* (8 cases), and 1 *Campylobacter* (2 cases)
- 4 zoonotic, from contact with an infected animal: 2 *C. parvum* (8 cases), 1 *Campylobacter* (2 cases), and 1 *Salmonella* (2 cases)
- 1 environmental, from contact with an environmental source (e.g. swimming): 1 *Legionella* (2 cases)
- 2 'other mode'- fomite: 2 norovirus (115 cases)
- 7 mode of transmission unknown: 3 gastroenteritis (13 cases), 2 *Salmonella* (7 cases), and 2 *Campylobacter* (5 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.

- 24 home: 8 *C. parvum* (20 cases), 6 *Campylobacter* (15 cases), 4 *Giardia* (11 cases), 2 *Salmonella* (11 cases), 1 gastroenteritis (4 cases), 1 *Legionella* (2 cases), 1 norovirus (2 cases), and 1 rotavirus (9 cases)
- 11 café: 5 norovirus (20 cases), 4 gastroenteritis (9 cases), 1 *C. perfringens* (6 cases), and 1 *Salmonella* (2 cases)
- 4 childcare centre: 1 *C. parvum* (2 cases), 1 gastroenteritis (9 cases), 1 norovirus (3 cases), and 1 rotavirus (9 cases)
- 4 takeaways: 4 gastroenteritis (11 cases)
- 3 workplace: 1 *Campylobacter* (2 cases), 1 gastroenteritis (6 cases), and 1 norovirus (12 cases)
- 1 farm: *C. parvum* (3 cases)
- 1 camp: norovirus (21 cases)
- 1 rest home: norovirus (94 cases)
- 4 'other setting': 2 overseas acquired: 2 *Salmonella* (5 cases); 1 Community care house: gastroenteritis (7 cases); and 1 retreat: *C. parvum* (5 cases)
- 7 outbreaks with no setting selected: 3 gastroenteritis (9 cases), 2 *Campylobacter* (5 cases), 1 *Giardia* (2 cases), and 1 *Salmonella* (5 cases)

5. Outbreak Case Reports

Shigella outbreak in Northland linked to contaminated shellfish

A cluster of cases of confirmed shigellosis was notified to the Northland Public Health Unit during late October 2005. Initial follow up suggested a possible relationship with recent consumption of raw shellfish collected from the Opua marina in the Bay of Islands. An outbreak investigation was started and attempts were made to interview all of the notified patients. Local health providers in Northland were alerted and asked to notify all patients with confirmed shigellosis and also patients with gastrointestinal illness who had a recent history of shellfish consumption or recent contact with a confirmed shigellosis case. Shellfish was collected from the Opua marina and sent for bacteriological testing. A media release was sent out to local news alerting people to the possibility of contaminated shellfish and stressing the importance of hand washing.

Between 18 October and 31 December 2005, 38 bacteriologically confirmed cases of *Shigella sonnei* Biotype a were notified. An additional 10 probable cases were also notified during this time period with gastrointestinal illness with a recent history of consuming shellfish collected from the Opua marina and three probable cases who had recent contact with a confirmed shigellosis case. Sixteen of the 30 confirmed cases who were able to be interviewed reported consuming raw shellfish 1-4 days before the onset of their illness. A number of these people did not know where the shellfish had been collected. Eight identified the Opua marina and three identified the Bay of Islands area. Shellfish that appeared to be related to illness had been collected between 12 October and 22 October 2005.

The Enteric Reference laboratory at ESR in Porirua carried out pulsed-field gel electrophoresis (PFGE) on seven of the faecal specimen isolates and found that all were indistinguishable from one another. A norovirus strain (GII/12) was also detected in several of the faecal specimens with *Shigella sonnei*. Shellfish samples that were collected from the Opua marina on 27 October 2005 showed high levels of faecal coliforms up to 35,000 MPN/100g but were negative for *Shigella*.

It seems likely that the outbreak was initially caused by the consumption of shellfish contaminated by human faeces. Further cases were either associated with contact with other cases or had no obvious risk factors identified. Warning signs were erected at the Opua Marina, information was provided to local Iwi groups and public health warnings were provided via the news media. The importance of hand washing was stressed for all people with symptoms of gastrointestinal illness. Northland Health also worked with the Far North District Council and the Northland Regional Council to identify the source of the human effluent contamination of the marina. No definite source for the ongoing faecal pollution of the marina has yet been identified.

Reported by Jonathan Jarman, Medical Officer of Health; Neil Silver and Jeff Garnham, Health Protection Officers; Public Health Unit, Northland District Health Board

continued...

Salmonella outbreak in the Auckland and Waikato regions

Salmonella enterica serotype Saintpaul (*S.* Saintpaul) is a rare cause of human infection in New Zealand, identified as the infecting organism in 1.7% of reported salmonellosis cases in 2003 and 2.7% in 2004[1]. Most reported *S.* Saintpaul cases occur in the South Island. No cases were reported from the Auckland region during 2003 and 2004. During the months of July and August 2005, 16 cases of *S.* Saintpaul infection were notified to the Auckland Regional Public Health Service. Initial questioning suggested that cases had commonly consumed raw carrots in the three-day period prior to the onset of illness; 12 of the 16 notified cases had eaten raw carrots (86%), and only two cases had not, with data on vegetable consumption missing for two cases. A case-control study was performed to test a range of hypotheses including the consumption of fresh produce.

Study cases were defined as persons living in either the Auckland or Waikato regions and developing diarrhoea (≥3 loose stools in a 24-hour period) after 1 April 2005, with faecal specimen positive for *S.* Saintpaul. Each case was matched with three controls, found by calling sequential telephone numbers commencing with the case's residential telephone number. Controls were, therefore, geographically matched by residential address.

Cases and controls were interviewed by telephone using a standardised questionnaire. The questionnaire included demographic data and specific questions about the consumption of meat and vegetables, either during the three-day period prior to onset of illness (cases) or during the three-day period prior to interview (controls). Data were analysed using EpiInfo version 3.2.2. Univariate matched and unmatched odds ratios (OR) and 95% confidence intervals (CI) were calculated for the exposures. Logistic regression analysis was performed to control for age.

Traceback information was collected from those cases who could remember the brand, place and date of purchase of the food exposure of interest. Retailers were approached for the names of distributors and packers. Washings for culture were taken from Auckland pack houses, and were negative for *Salmonella*. The names of producers were collected from pack houses. Purchase dates, and presumed purchase dates based on case onset dates, were used to narrow down the sites.

A total of 19 cases, reported between 17 April and 4 August 2005, met the study case definition. All of these participated in the study, along with 57 controls. Cases ranged in age from 1-63 years, with most being aged 10 years or under. Typical symptoms included stomach cramps, nausea and vomiting, diarrhoea (sometimes bloody), fever and headaches, and lasted for 3-10 days (median 7 days). The age distribution of cases differed significantly from that of controls (median age in years cases=7, controls=35, ANOVA p-value=0.0007).

Consumption of raw carrots was the only exposure with a significant univariate association with increased risk of illness (Table 1). During the 3-day period prior to illness, 12 cases (63.2 %) had consumed raw carrots, while 17 controls (29.8 %) had eaten raw carrots during the 3-day period prior to interview (unmatched OR 4.0, 95% CI 1.35-12.01; matched OR 7.3, 95% CI 1.8-30.6; Note that some data on vegetable consumption were missing for three cases). Logistic regression analysis, controlling for age (<15 years or not) and matching for telephone number, revealed a non-significant adjusted odds ratio for raw carrot consumption (OR 2.86, 95% CI 0.66-12.3).

Table 1 Frequency of selected exposures among cases and controls

	Cases (n=19)	Controls (n=57)	Univariate Odds Ratio (95% CI)	P-value
Beef	7 (36.8%)	30 (52.6%)	0.65 (0.18-2.27)	0.63
Chicken	13 (68.4%)	37 (64.9%)	1.17 (0.39-3.55)	1.00
Salad greens (lettuce, spinach, etc)	11 (57.9%)	38 (66.7%)	0.69 (0.24-2.00)	0.68
Tomatoes (raw)	9 (47.4%)	31 (54.4%)	0.84 (0.26-2.74)	0.96
All carrots	14 (73.7%)	33 (57.9%)	2.03 (0.65-6.42)	0.34
Raw carrots	12 (63.2%)	17 (29.8%)	4.03 (1.35-12.01)	0.02

Through traceback, four farms were identified as the sources of carrots consumed by the majority of cases. Each of these farms was located in the same region. Site investigations were performed on the implicated farms. There were no reports of staff illness with gastroenteritis during the period of interest. None of the farms used organic fertilisers. Three of the four farms used stream water to rinse the carrots after harvesting and pipe water samples were taken from each of these. Specimens revealed a high coliform count (total coliform count range 460 to >2400, *E. coli* count range 9.8 to 88/100 mL) but no *Salmonella* growth. One farm was on municipal water, which was not tested. Soil samples were taken from fields from which produce was harvested during the period of interest, and subsequently tested negative for *Salmonella*.

There have been reports of *Salmonella* outbreaks linked to contaminated produce in the USA involving tomatoes[2,3] and alfalfa sprouts[4]. Lettuce has also been implicated as a source of *Salmonella* exposure in the USA[5], the UK[6] and Australia[7]. To date, there have been no reports in New Zealand of *Salmonella* outbreaks due to contaminated produce.

This study failed to confirm carrots as the source of infection, possibly due to sample size. However, incident cases of *S.* Saintpaul should be interviewed with a view to obtaining a careful history about vegetable consumption. Further, given that the water used to wash carrots may contain significant levels of *E. coli*, consumers would be wise to scrub, peel and thoroughly rinse carrots before eating them raw.

Reported by Pat Neuwelt, Public Health Registrar; Greg Simmons and Craig Thornley, Medical Officers of Health; Jasmine Mohiuddin, Health Protection Officer; Auckland Regional Public Health Service. With the assistance of Bruce Butters, Health Protection Officer, Public Health Unit, MidCentral Health

1 Institute of Environmental Science and Research (ESR) (2005). Public Health Surveillance: Information for New Zealand Public Health Action: Human Salmonella Isolates. Wellington, ESR.

2 Hedberg, C. W., F. J. Angulo, et al. (1999). Outbreaks of Salmonellosis associated with eating uncooked tomatoes: implications for public health. Epidemiology and Infection 122: 385-393.

3 Cummings, K., E. Barrett, et al. (2001). A Multistate Outbreak of Salmonella enterica Serotype Baildon Associated with Domestic Raw Tomatoes. Emerging Infectious Diseases 7(6): 1046-1048.

4 Gill, C. J., W. E. Keene, et al. (2003). Alfalfa Seed Decontamination in a Salmonella Outbreak. Emerging Infectious Diseases 9(4): 474-479.

5 Islam, M., J. Morgan, et al. (2004). Persistence of Salmonella enterica Serovar Typhimurium on lettuce and parsley and in soils on which they were grown in fields treated with contaminated manure composts or irrigation water. Foodborne Pathogens and Disease 1(1): 27-35.

6 Horby, P. W., S. J. O'Brien, et al. (2003). A national outbreak of multi-resistant Salmonella enterica serovar Typhimurium definitive phage type (DT) 104 associated with consumption of lettuce. Epidemiology and Infection 130: 169-178.

7 Stafford, R. J., B. J. McCall, et al. (2002). A statewide outbreak of Salmonella Bovismorbificans phage type 32 infection in Queensland. Communicable Diseases Intelligence 26(4).

Campylobacteriosis outbreak at a Hawke's Bay school camp

On 7 December 2005, the Hawke's Bay public health unit was informed that a case of campylobacteriosis had attended an intermediate school camp the previous week and there were other children with similar symptoms who had attended the camp. The camp was held at a farm from 30 November 2005 to 2 December 2005. The camp attendees undertook a number of outdoor activities including swimming, tramping, eeling, water crossings and raft building. The children stayed in tents and meals were prepared on campfires. The food was purchased by the school and parents helped prepare the food.

A list of children, parents and staff was obtained from the school. A questionnaire covering all meals (including drinks) and recreational activities was administered to all camp attendees. A case was defined as a person who attended the camp and suffered from one of the following symptoms between 30 November and 12 December: diarrhoea, vomiting, nausea, headache, fever or abdominal pain. Faecal samples were collected from eight cases. A teacher was interviewed on aspects relating to food safety and recreational activities during the camp. An environmental assessment of the camp was made.

Ninety three percent (55/59) of the camp attendees completed a questionnaire. Forty of those interviewed satisfied the case definition; an attack rate of 73%. Analysis of the questionnaire data indicated elevated relative risks for a number of risk factors. However, logistic regression analysis revealed that only recreational water exposure to the river was significantly associated with illness (odds ratio = 15.5, p=0.02). Six of the eight cases who submitted faecal specimens were confirmed positive for *Campylobacter*.

The farm is a pastoral property grazing both sheep and cattle. Animal faeces were seen throughout the farm, but not around the immediate campsite. Children had played in paddocks where sheep faeces were visible. The toilets were long drops, and the hand washing facilities were very basic, consisting of old drench containers fitted with a tap. Food was cooked on wood fired barbeques or on campfires. Food was kept in a refrigerator in an old wool shed and then transported to the cooking area in chilly bins when required. The children assisted with the preparation of food and also one activity involved the children learning to make and cook damper.

The drinking water on the property came from two separate springs. There was no treatment system in place at either supply and both springs were unprotected from access by animals and surface runoff. *E. coli* was found in both drinking water sources (57 and 8.6 MPN/100ml *E. coli*). No *Campylobacter spp* were isolated from either source.

Heavy rainfall had occurred in Hawke's Bay between 26 November and the early hours of 29 November 2005. Rainfall data confirmed heavy rain occurred around the campsite area. The Public Health Unit issued a health warning on 1 December 2005, advising the public to avoid all freshwater recreational waterways for a three-day period. The school was not aware of the health warning. Although recreational water samples taken nine days after the rainfall event complied with the *Microbiological Water Quality Guidelines For Marine and Freshwater Recreational Areas*, it is likely that the recreational water was heavily contaminated at the time of the camp. The questionnaire survey showed high risk ratios for exposure to recreational water. Logistic regression analysis of survey data showed strong statistical evidence for river exposure as the source. This is the most likely source of infection for most camp attendees.

Follow-up actions by the Public Health Unit were:

(1) Recommendations have been made to the camp owner to protect the spring supply and install a drinking water treatment system.

(2) The school has been advised of the recreational water swimming information line. This will allow them to obtain up-to-date information about recreational water quality at monitored sites within the Hawke's Bay Health District.

(3) Additional food safety advice was provided to the school.

(4) A letter will be sent to all Hawke's Bay schools giving health protection advice for school camps.

Reported by Theresa Husband, Ray Wibrow, Marie Beatty, Ian Inkson, Lester Calder, Hawkes Bay District Health Board; and Lou Gallagher, ESR

6. Pathogen Surveillance

Unless otherwise reported, pathogen surveillance covers the October - December 2005 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

- 331 human and 317 non-human isolates were submitted to ERL (2004: 301 and 278 respectively)
- 6 cases *S.* Typhimurium phage type 135 confirmed, all part of a group who consumed spit roasted pork at a family gathering. The pork had been home killed in Northland and transported to Auckland for consumption
- *S.* Typhimurium DT 160 confirmed from two separate household water supply samples (South Auckland) linked to human cases

Shigella (ERL)

- 38 isolates of *Shigella sonnei* Biotype a confirmed, cases linked to consumption raw oysters Opua marina Bay of Islands
- PFGE has been done on 7 of these isolates as well as 2 from North West Auckland, 2 from South Auckland and 1 from Wellington to determine any clonal relationship between strains circulating in New Zealand at the present time. All except 1 isolate from South Auckland are indistinguishable from each other. The profile obtained from these 11 isolates is closely related to isolates from 2000 and 2001 (Hill PC et al (2002). Geographically separate Outbreaks of shigellosis in Auckland, New Zealand, linked by molecular subtyping to cases returning from Samoa. NZ Med J. 115(1156): 281-3)
- The distinct isolate from South Auckland has an indistinguishable profile from a March 2000 case with a history of travel from Samoa

VTEC/STEC (ERL)

- 15 laboratory confirmed cases *E. coli* O157: H7 (2004, n = 15)

Other (ERL)

- 1 isolate *Enterobacter sakazakii* isolated from peritoneal dialysis fluid M/86 South Auckland
- 1 isolate *Ewingella americana* isolated from sputum F/55 Manawatu. *E. americana* is a rarely isolated pathogen which appears to have limited pathogenic potential. It is more commonly isolated from immuno-compromised patients
- 2 isolates *Vibrio cholerae* nonO1, nonO139. F/65 Wellington, and M/25 Wellington (recent travel Cambodia). NonO1 and nonO139 strains may cause diarrhoea but do not demonstrate the "O" antigen and also do not produce toxins as in the case of genuine *Vibrio cholerae* strains. These strains were previously also known as NAGGS (non agglutinating strains)

Norovirus (Norovirus Reference Laboratory)

- 23 confirmed norovirus outbreaks were reported. The majority occurred in the Auckland district but outbreaks were also reported in the Wellington, Otago, Waikato, Canterbury and Northland health districts

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- Catered settings featured in 11 outbreaks, and institutional settings (rest homes and hospitals) in 5 outbreaks. One outbreak occurred in a hotel where the chef was ill
- 2 outbreaks occurred in child-related settings, specifically a school camp and a kindergarten
- A norovirus outbreak was associated with consumption of the same oysters implicated in the recent *Shigella* outbreak (see page 5 this issue). The strain identified in this oyster-related outbreak was GII/12. Two other outbreaks were associated with consumption of marinated seafood products
- Sequencing in the capsid region of the norovirus genome has allowed further discrimination of strains. Many different genotypes were identified, including genotype GI/7 that has not been identified in New Zealand before. Genotypes GII/4, GII/8 and GII/12, previously included in the GII/1,4,8 group, were responsible for 16/23 (69.5%) outbreaks. No variant GII/4 strains were detected

LEGIONELLOSIS AND ENVIRONMENTAL LEGIONELLA

- 21 legionellosis cases were laboratory identified this quarter
- 20 of the cases have been notified
- no outbreaks were identified, all cases appeared to be sporadic CAP cases
- 2 deaths occurred, both involving *L. longbeachae* infection following compost use
- 17 of the 21 cases fitted the confirmed case definition and 4 fitted the probable case definition
- 17 confirmed cases demonstrated either antibody titres >512 on two or more occasions (5 cases), or at least a four-fold rise in antibody titre by the legionella IFAT (4 cases), or successful isolation of legionella from the case (6 cases), or a rising antibody titre to >2048 (2 cases)
- 4 probable cases were either PCR-positive (1 case: immunocompromised with no seroconversion), or had a single high antibody titre >1024 (1 case), or demonstrated antibody titres of 512 on two or more occasions (2 cases)
- *L. longbeachae* serogroup 1 was identified in 11 cases
- *L. longbeachae* serogroup 2 was identified in 1 case
- *L. longbeachae* with the serogroup unidentified was the causative agent in 3 cases
- *L. pneumophila* serogroup 1 was identified as the causative agent in 4 cases
- *L. pneumophila* with an unidentified serogroup was the causative agent in 1 case
- *L. bozemanii* serogroup 1 was identified in 1 case
- 16 cases are known to have been using compost material or have occupational exposure to soil in the incubation period. These involved 14 infections with *L. longbeachae*, 1 each with *L. bozemanii* and *L. pneumophila*
- 2 of the cases were travel-associated, both being infected outside New Zealand: one with *L. pneumophila* sg 1 and one with *L. longbeachae*
- Legionellae isolated from industrial water systems including cooling towers included *L. pneumophila* serogroups 1, 6, & 8, *L. anisa* and *L. feeleii* serogroup 1, plus two uncharacterised *Legionella* species

RESPIRATORY VIRUSES

Influenza Virus

- 9 influenza A viruses were reported from laboratory-based surveillance (2004, 138)
- 4 were influenza A (yet to be subtyped), 1 as A/California/7/2004 (H3N2) and 4 as A/New Caledonia/20/99

Respiratory Syncytial Virus, Rhinovirus & Parainfluenza Virus

- 26 cases of respiratory syncytial virus were reported (2004, 23)
- 30 rhinoviruses were reported (2004, 41)
- 26 parainfluenza viruses were reported (2004, 49) with parainfluenza type 1 (1), type 2 (2) and type 3 (23)

ADENOVIRUSES AND ENTEROVIRUSES

Adenoviruses

- 110 adenoviruses were reported (2004, 119)
- Adenovirus type 4 was the predominant serotype
- 88 adenoviruses were serotyped as adenovirus type 1 (13), type 2 (10), type 3 (34), type 4 (26), type 5 (1), type 8 (1), type 37 (1), and type 41 (2)

Enteroviruses

- 76 enteroviruses were reported (2004, 90)
- Coxsackie A16 was the predominant serotype
- 26 enteroviruses were serotyped as Coxsackie B1 (6), Coxsackie B2 (3), Coxsackie B5 (2), Coxsackie A12 (1), Coxsackie A16 (8), Echovirus 11 (1), Echovirus 18 (3), Echovirus 25 (1) and untypable (1)

SPECIAL BACTERIOLOGY

Listeria monocytogenes

- 5 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)
- 3 cases were perinatal, 1 resulted in intrauterine death
- 2 were in adults with underlying illnesses and/or were elderly
- 19 isolates from separate cases were received during 2005; 5 from perinatal and 14 from non-perinatal cases

Corynebacterium diphtheriae

- 13 isolates of *Corynebacterium diphtheriae* were received for toxigenicity testing, typing and surveillance purposes
- 1 isolate was a var. *gravis* strain from blood of an Auckland male case aged 22 years with endocarditis
- 12 isolates (all var. *mitis*) were from cutaneous sources; patients were aged between 2 and 53 years and came from Auckland (10) and Wellington (2)
- all isolates were non-toxigenic by PCR examination for the toxin gene
- 35 isolates (all non-toxigenic) were received during 2005; 33 from cutaneous sources, 1 from blood, 1 from respiratory source

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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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