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DEPARTMENT OF
HEALTH, HOUSING AND
COMMUNITY SERVICES

COMMUNICABLE DISEASES NETWORK-AUSTRALIA
A National Network for Communicable Diseases Surveillance

REVIEW OF PERTUSSIS IN QUEENSLAND, 1990 TO 1993

(John Scott, Communicable Disease Control Unit, Queensland Health and National Centre for Epidemiology and Population Health, Canberra)

Introduction

In spite of the ready availability of a cheap and effective vaccine against pertussis, identifications of this organism continue to be notified in significant numbers in Queensland. A review of these laboratory notifications indicates the changing epidemiology of the disease, and suggests that vaccine compliance has yet to reach optimum levels.

Notification

Pertussis has been notifiable in Queensland since July 1990. Under the Health Act in Queensland, notifications are required from laboratories following 'isolation or detection of *Bordetella pertussis* from nasopharyngeal secretions'. There is no routine active case surveillance nor contact tracing.

Results

From 1 July 1990 to 10 March 1993, 591 diagnoses of pertussis were notified to Queensland Health (Figure 1). This represented a mean annual incidence of 8.0 per 100,000. During the two years of complete notifications (1991 and 1992) there did not appear to be a seasonal pattern of notifications. (The 1990 figures are

incomplete.) During the period 1 January to 10 March 1993, 74 notifications were received. This compares with 40 and 22 for the corresponding periods in 1991 and 1992 respectively.

During the period under review three outbreaks occurred in separate Local Government Authority areas. In 1990 an outbreak occurred in the south-east of the State, with local authority incidence rates varying between 40 and 443 per 100,000. In 1991 an outbreak took place in the central coastal area, with rates between 34 and 94 per 100,000. In 1992 another outbreak occurred in the south-east, and rates were between 35 and 84 per 100,000. There has been considerable variation in disease rates in different areas of the State (Figure 2).

The ages of patients ranged between one month and 83 years with a mean age of 22.76 years (Figure 3). Thirty-three patients were aged under one year (Figure 4).

The highest age specific attack rates for pertussis in Queensland were in children in the age groups less than 15 years (Table 1). The sex ratio of notifications was 1.21 females to every male.

Discussion

Queensland has a high reporting rate for pertussis¹. This may reflect laboratory notification. The pattern of notifications is consistent with vaccination uptake insufficient to prevent a low background number of cases². If epidemic periods occur every three to four years³, then the State may experience an outbreak in 1993. The notifications for the first two months of 1993 would seem to support this.

The pattern of age-specific attack rates is similar to the experience of the disease reported from the USA⁴ and supports the concept of waning immunity after vaccination for pertussis^{2,5}. Notifications from the older age groups may reflect incidental findings in the presence of other respiratory disease. Alternatively, they may reflect a pool of attenuated disease in older individuals with the potential for spread to younger, non-

Figure 1. Pertussis notifications in Queensland, July 1990 to March 1993, by month

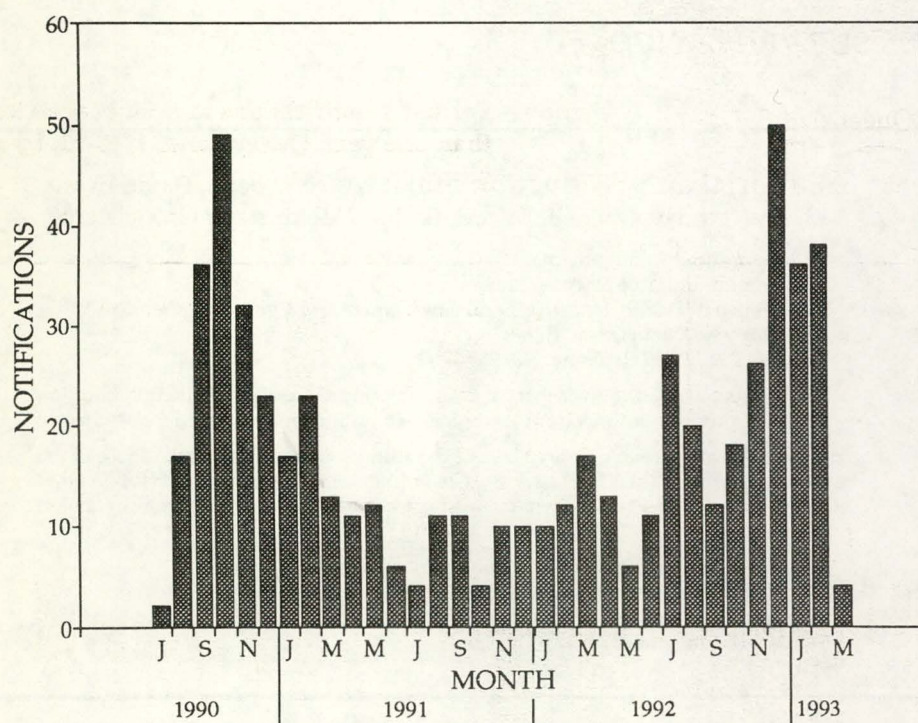
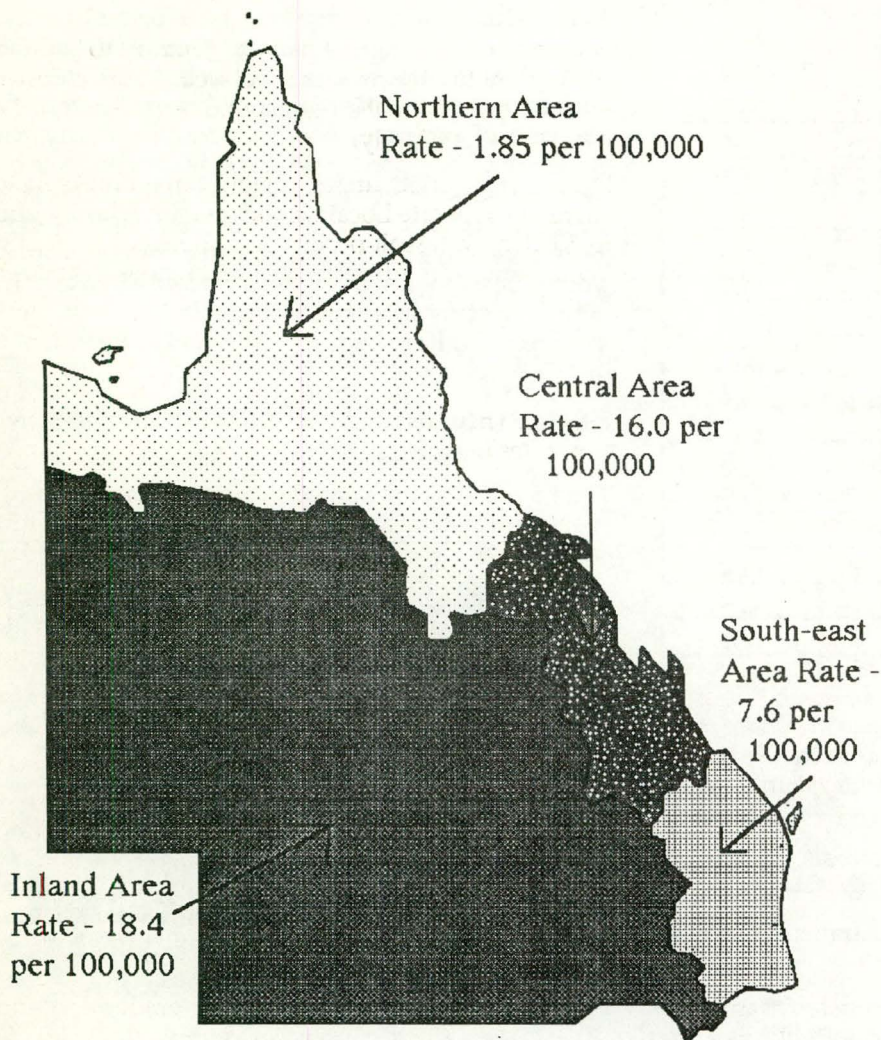


Figure 2. Pertussis notification rate, Queensland, 1990 to 1993, by area



immunised persons with a consequent classical form of the illness.

The geographical distribution of notified disease raises some important issues. Given the short period of laboratory notification on which these figures are based, conclusions should be guarded. The figures may give an indication of vaccination uptake rates or may reflect diagnostic or laboratory test variations. Documentation of a true geographical variation in attack rates will require further study over time.

Laboratory notification in the absence of active case surveillance provides information which must be interpreted with care. Case ascertainment is uncertain, and the severity of individual clinical presentation is unknown. The surveillance data support the notion of suboptimal vaccine uptake, and a need for greater efforts to achieve a universal level of protection.

Figure 3. Pertussis notifications, Queensland, 1990-93, by age group

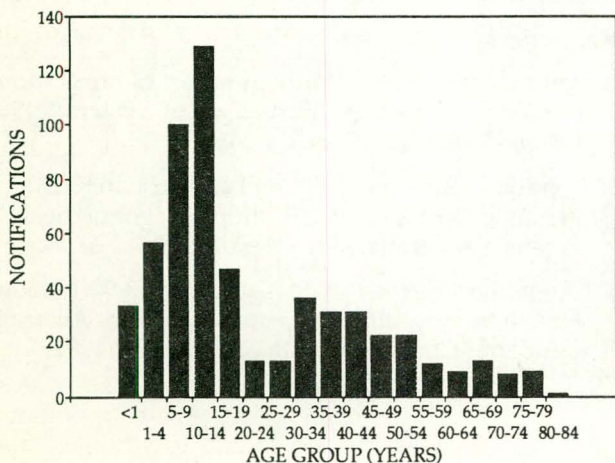


Figure 4. Pertussis notifications in infants aged less than one year, Queensland, 1990-93, by age group

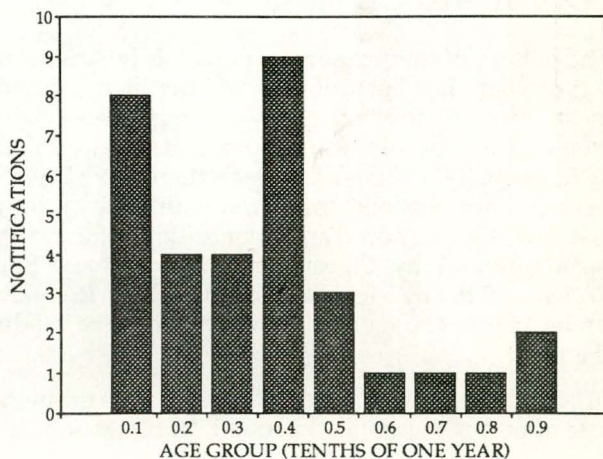


Table 1. Age specific attack rates for pertussis, Queensland, 1990-93

Age group (years)	Cases	Attack rate (per 100,000)
0-4	90	42.6
5-9	100	45.2
10-14	129	58.7
15-19	47	18.6
20-24	13	5.5
25-29	13	5.4
30-34	36	15.5
35-39	31	14.1
40-44	31	14.4
45-49	22	13.0
50-54	22	16.2
55-59	12	10.1
60-64	9	7.5
65-69	13	11.8
70-74	8	9.7
75-79	9	14.4
80-84	1	2.8
Total	591	8.0

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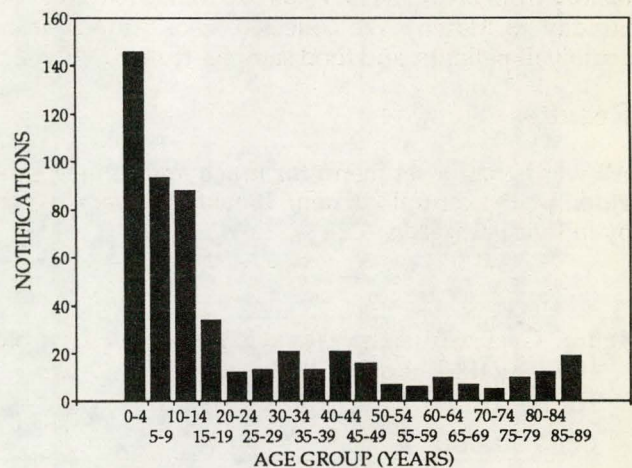
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CDI Editorial Comment

The pattern of notifications of pertussis in Australia in recent years has been of a cycle of epidemic periods every three or four years, overlaying a seasonal increase in notifications every summer (*CDI* 1992;16:496-497). So far this year, there have been 564 pertussis notifications, compared with 392 by this time last year. One hundred and twenty-three of these have been reported by Queensland, 176 by New South Wales, and 104 by Victoria. Most have been in children under 15 years of age, but there have been 198 in adults (Figure).

In both 1991 and 1992, Queensland reported the highest rate of pertussis notification of all the States and Terri-

tories, 4.4 per 100,000 in 1991¹ and 7.2 per 100,000 in 1992 (unpublished data). In Australia overall, the rates were 1.9 and 4.3 per 100,000, respectively. As is mentioned above, the higher rates in Queensland may reflect the laboratory based notification system in that State. This type of system may have better case ascertainment than those which rely on notification by individual treating doctors, as has been demonstrated for gonorrhoea notifications in Western Australia². In the case of pertussis, however, the laboratory based system may be biased towards patients who have more severe disease which is recognised early and is able to be confirmed by culture or direct identification. It may be less sensitive to cases in partially immune adults, in young infants who may have modified disease or from whom specimens may be difficult to collect, and in patients who have begun erythromycin treatment.

Figure. Pertussis notifications, Australia, 1993, by age group

In the 1989-90 National Health Survey, pertussis vaccination coverage in Queensland was found to be no lower than that in Australia overall³. A total of 73.6% of children aged 0 to 6 years were fully immunised against pertussis, and a further 19.5% were partially immunised. The corresponding rates for Australia overall were 70.9% and 19.3%.

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AN OUTBREAK OF CLOSTRIDIUM PERFRINGENS GASTROENTERITIS AT A MELBOURNE HOSPITAL, 1993

(Raina MacIntyre, Infectious Diseases Unit, Health and Community Services Victoria, and Communicable Diseases Network Australia; and Rory Wilby, Infectious Diseases Unit, Health and Community Services, Victoria)

On 29 March 1993 we were notified of an outbreak of gastroenteritis among residents of a psychiatric hospital in Melbourne. One patient had died on March 29.

There were 8 psycho-geriatric wards (A-H) in the hospital, each located in separate buildings. The wards were catered for from a common kitchen, and had a common water supply. Most of the inpatients resided on a long term basis at the hospital.

Methods

We inspected the hospital and surveyed inpatients of all wards. Questionnaires, which were filled out by nursing staff on behalf of the 129 patients, asked a food history from breakfast on Friday 26 March to dinner on Sunday 28 March. We collected stool samples from acutely ill patients, and food samples from the kitchen.

Results

All wards had a set menu for lunch and dinner, provided by the central kitchen. Breakfast was provided by individual wards.

Food for most patients for lunch and dinner was prepared in a main kitchen and transported in bulk form on trolleys to individual wards. The food was served onto plates in each ward, using individual ward serving implements. Some patients were given a soft diet, consisting of standard food pureed and minced into a soft consistency in the central kitchen.

All menus except Sunday dinner consisted of a choice of two meals. The Sunday dinner menu was the same for all patients. Some patients had attended a lunchtime barbecue on Sunday 28 March.

There were 26 different items of food served during the survey time frame.

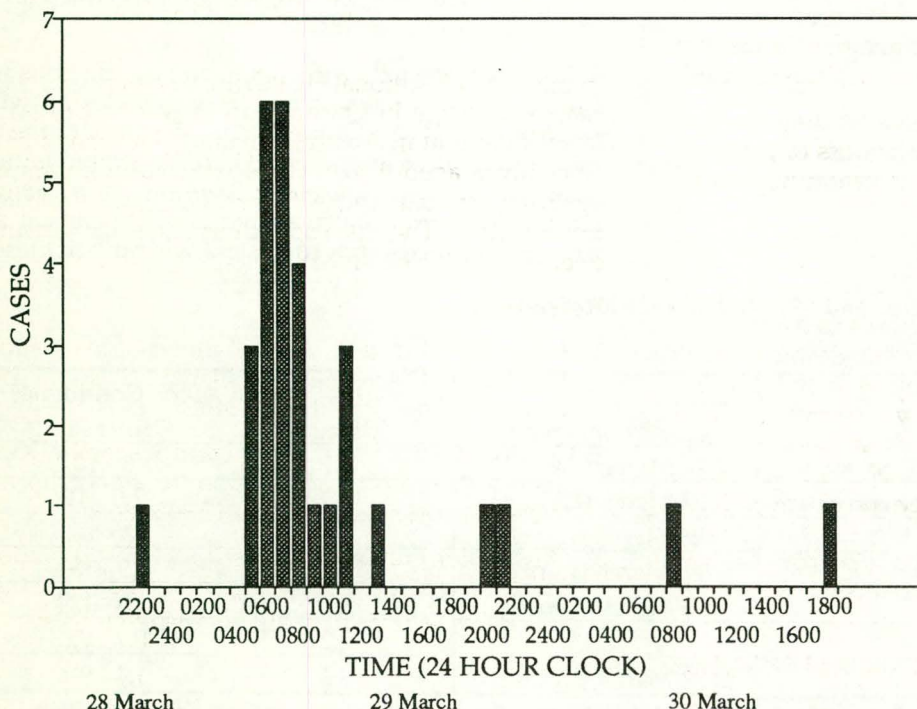
We identified 37 cases of gastroenteritis. There was a discrete outbreak, with the majority of cases (32) occurring on 29 March. The peak of illness occurred in the early hours of the morning of 29 March (Figure). The duration of illness was short, with 47% being ill for one day and 94% being ill for two days or less.

The predominant symptom was diarrhoea (36 of the 37 patients). Other symptoms were rare, and included abdominal pain (two patients), nausea (one patient), vomiting (one patient), general aches and pains (two patients) and fever (one patient).

The mean age of patients was 74 years. There was no significant difference in age between ill and well patients. The attack rate for females was 20% and for males 37% (p=0.03).

We calculated odds ratios for the 26 food items consumed. There were significant results for five items (Table). We were unable to calculate a meaningful odds ratio for dinner on Sunday 28 March because of a lack of consensus between some ward staff and kitchen staff as to whether the menu was roast beef or roast pork. The catering manager informed us there was only one meat served (beef), but ward staff had varying recall of what that meat was. The odds ratio was calculated assuming that roast beef was served to all patients (except those on a vegetarian diet).

Figure. Gastroenteritis cases at a Melbourne hospital, 28 to 30 March 1993, by time of onset



Five of the eight wards were affected, with attack rates of 16% (ward A), 74% (ward B), 47% (ward C) and 28% (ward D). Ward G had one case.

We divided the wards into those with illness (I+) and those without (I-). On the I+ wards there were significantly more patients consuming vegetable flan ($p=0.002$), spaghetti ($p=0.001$) and cottage pie ($p=0.0003$) and a soft diet ($p=0.0000001$, odds ratio 39) than on the I- wards. Two of the I- wards did not have any patients on soft diet. There was no difference in the consumption of vegetarian quiche or roast beef/pork between I+ and I- wards.

A sample of fruit flummery, served as dessert on Saturday 27 March, was sent for analysis. It was negative for gastrointestinal pathogens. No other food served during 26 to 28 March was available for testing at the time of the investigation (29 March).

A ward nurse reported that she had thrown out some minced meat (used in the soft diet) on Sunday night (28 March), since it was 'bubbling ... and appeared fermented'.

Eight stool samples were taken. One was negative for gastrointestinal pathogens. The remaining seven contained *Clostridium perfringens*. Only one of these had numbers of organisms in excess of 10^6 per gram of faeces. The others varied between 10^3 and 10^5 organisms per gram.

The samples were negative for parasites, viruses and other pathogenic bacteria.

The patient who died had diarrhoea and vomiting on 29 March, prior to death. A postmortem showed myocardial infarction as the cause of death. The presence or absence of gastrointestinal pathology was not reported.

There was no association between the presence of illness on a particular ward and the geographic location of that ward.

There was no association between attending the Sunday lunch barbecue and illness or health.

Discussion

The outbreak was characterised by rapid onset, short duration, and diarrhoea. There was a conspicuous absence of vomiting, fever and other systemic symptoms.

The clinical syndrome, and the finding of pathogenic quantities of *C. perfringens* in one of the stool samples suggests that this organism was responsible. The anecdotal evidence of the 'bubbling' minced meat which was thrown out on Sunday by a ward nurse is also consistent with this conclusion.

The incubation period for *C. perfringens* food poisoning is 8 to 18 hours. The first case occurred at 2200 hours on Sunday 28 March. If Sunday lunch were the responsible meal, this would mean a mean incubation of 19 hours with a range of 9 to 31 hours.

The vegetarian quiche and the cottage pie were both served at this meal. Cottage pie is a more biologically plausible source of *C. perfringens* than vegetarian quiche, since it contains meat. However, we consider lunch an unlikely source because the incubation period would have been so long. In addition, there was no association between attending the lunchtime barbecue and illness or health. If the ward lunch were responsible, we would expect to have found a protective effect of attending the barbecue.

Had the source been dinner on 28 March, the mean incubation period would have been 13 hours, with a range of 3 to 25 hours. This, together with the likely menu of roast beef, is more consistent with a *C. perfringens* outbreak. The soft diet (minced roast beef) was also associated with illness, with a highly significant difference in the proportion of patients consuming soft diets between the wards with illness and those without. The preparation of the soft diet requires further handling and reheating, creating conditions which favour the growth of *C. perfringens*.

The other two foods with significant associations with illness were the spaghetti and the vegetable flan, which were served 24 to 48 hours before the onset of the first case. Long incubation periods are associated with organisms such as *Salmonella* Typhimurium, *Shigella*, *Campylobacter* and Norwalk virus. The clinical syndrome described is not consistent with any of these.

Table 1. Selected foods, odds ratios and 95% confidence intervals

Food	Date consumed	Odds ratio	95% Confidence interval
Vegetable flan	26 March (Dinner)	3.7	1.3 - 10.4
Spaghetti with mushroom and tomato sauce	27 March (Dinner)	6.2	2.0 - 19
Cottage pie	28 March (Lunch)	4.4	1.3 - 16.5
Vegetarian quiche	28 March (Lunch)	17.1	2.9 - 131
Roast beef ¹	28 March (Dinner)	6.0	0.8 - 124
Soft diet		2.2	0.7 - 7.0
Minced roast beef (soft diet)	28 March (Dinner)	3.6	1.4 - 9.4

1. There was a lack of consensus as to whether the dinner on Sunday 28 March was roast beef or roast pork. See text for further details.

We are uncertain why there were five foods with significant associations with illness. It is possible that patients who ate the spaghetti and the vegetable flan were more likely to also eat the contaminated food. If there were a common source ingredient in all five foods, we would expect the cases to have begun earlier and to have continued for longer, with a bi- or tri-phasic epidemic curve. Instead, the epidemic curve suggests a more discrete source. The 'bubbling' mince meat thrown out on Sunday 28 March was a preparation of the dinner meat for the soft diet.

We suspect that the dinner meat was roast beef, and that this in its minced form (soft diet) was the main source of the outbreak. This is a logical conclusion, but one unsupported by confirmatory evidence.

It is plausible that the deceased patient had preexisting coronary disease exacerbated by the stress of acute gastroenteritis, but we do not have enough information to speculate further.

We are unsure of the reason for the varying attack rates in the eight wards, particularly since consumption of the most likely food source, roast beef, was not significantly different between wards. Soft diets, however, were 39 times more likely to have been consumed in the wards with illness than those without. It is possible that the minced beef used in the soft diet had a higher load of bacteria, accounting for the varying attack rates between wards. In addition, differential heating and cooling of trays stacked on the food transport trolley from the central kitchen to the wards may account for different attack rates on wards.

Clostridium perfringens is a common cause of foodborne illness, with a high attack rate in outbreaks. It is often seen in settings where bulk food preparation occurs, such as institutions, and fast food restaurants, where heating of large portions of meat may be inadequate^{1,2}. The organism occurs as a saprophyte in soil and dust, and is commonly found in low numbers in human and animal faeces. It is also a natural and unavoidable contaminant of raw foods, and is omnipresent in the

kitchen³. The presence of 10^6 organisms per gram of faeces or more indicates active infection in humans.

Outbreaks of *C. perfringens* are associated primarily with beef and poultry, and foods such as stews and creamed dishes made with these meats. Typically the food has been heated and kept in a warm atmosphere for several hours. The heating depletes oxygen in the food and favours rapid germination of the spores. Growth is initiated at 43°C and continues until the food becomes cool. The bacterium produces copious amounts of gas, and causes bubbling in creamed meats¹. *C. perfringens* usually causes a self limiting gastroenteritis. Less commonly, it causes necrotising enterocolitis with a high mortality rate.

We advised kitchen and ward staff about safe food storage, preparation and handling, emphasising temperature control in heating of food. There have been no further cases to date.

Acknowledgments

We would like to thank the staff at The Microbiological Diagnostic Unit, Melbourne University; and the staff of the Fairfield Hospital Virology department for analysing the faecal specimens. We would particularly like to thank Dr Joc Jorsyth and Mrs Agnes Tan for their valuable insights.

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NATIONAL ANTIMICROBIAL RESISTANCE SURVEILLANCE PROGRAM 1992 REPORT

(Jan Bell, Infectious Diseases Unit, Woden Valley Hospital, Canberra, and John Turnidge, Microbiology and Infectious Diseases, Monash Medical Centre, Melbourne; extracted from the National Antimicrobial Resistance Surveillance Program 1992 Report)

The National Antimicrobial Resistance Surveillance Program (NARSP) is the first comprehensive national program for collating data on resistance prevalence in common pathogenic medical bacteria in Australia. It began in June 1991, with the support of the National Health and Medical Research Council and members of the pharmaceutical industry. This is a summary of the first compilation of data, collected for the calendar year 1992.

Up to the beginning of February 1993, data for 1992 had been received from nineteen laboratories (Table). Attempts were made to cover the important areas, that is, metropolitan versus country, hospital versus community practice (public hospital laboratory versus private pathology laboratories) and to cover the various methodologies in popular use around Australia. Data from some laboratories represent the whole of 1992, while for other laboratories partial periods during

Table. Contributing laboratories, 1992, by State or Territory and type

State or Territory	Total	Metropolitan	Private	Country
NSW/ACT	6	5	1	0
Queensland	2	2	0	0
South Australia	3	2	1	0
Victoria	5	4	0	1
Western Australia	3	2	0	1
Total	19	15	2	2

the year are covered. Each laboratory provided summary data on susceptibilities rather than data on individual isolates.

Not surprisingly, some problems have been encountered. Duplicate patient isolates and repeat tests have been difficult to eliminate from the datasets. The duplicates probably have little effect on common resistance rates in common organisms. They can, however, have a significant effect on uncommon resistances because the isolate may be retested for confirmation, or it may be more difficult to eliminate from the patient, causing it to be recultured and retested. They are also likely to affect data on uncommon organisms, particularly if the organism is isolated from more than one body site simultaneously (for example, urine and blood).

Some laboratories have only stored results of susceptibilities reported and not all susceptibilities tested. These results will inevitably also have included interpreted susceptibility test results rather than the true result of the test, for example ampicillin resistance and *Klebsiella* species, co-trimoxazole (trimethoprim-sulphamethoxazole combination) and enterococci, nitrofurantoin and *Proteus mirabilis* or third generation cephalosporins and *Enterobacter* species.

Unusual results may have only come to light when they were collated in the laboratory for NARSP, and not at the time of testing. This has meant that some unusual results have been unable to be validated. All unusual results have been checked wherever possible with the sending laboratory.

Different methodologies have used different levels of categorisation. For example, there is no intermediate category in the Calibrated Dichotomous Sensitivity disc method. Laboratories using agar dilution breakpoint methodology often have different breakpoints. In addition, some laboratories have separate, higher breakpoints for urinary versus non-urinary isolates of Gram negative organisms.

Different laboratories use different levels of speciation, for example for enterococci.

Not all laboratories were able to divide their *Haemophilus influenzae* and *Streptococcus pneumoniae* data into 'invasive' and 'non-invasive' categories, or *Escherichia coli* data into 'urinary' and 'non-urinary' categories. For these organisms, results are for strains from these two categories and for strains from laboratories that

were not able to provide separated data. Results for methicillin-resistant *Staphylococcus aureus* strains (MRSA) are also not available separately.

Data for *Neisseria gonorrhoeae* are collated by the Australian Gonococcal Surveillance Programme. They are regularly published in *Communicable Diseases Intelligence*, and are not included as part of NARSP.

Emerging resistances

Third generation cephalosporin resistance in type I β -lactamase producing enterobacteriaceae

A significant proportion of *Enterobacter cloacae* (mean 18%, range 7-25%) and *Citrobacter freundii* (mean 15%, range 8-19%) were resistant to third generation cephalosporins. Resistant strains were less commonly reported from country and private laboratories, consistent with lower usage of third generation cephalosporins by their clientele. Although this type of resistance was originally ascribed to enzyme induction, it is now known that it emerges largely through the selection of stably derepressed mutants that constitutively produce very high levels of enzyme sufficient to inactivate third generation cephalosporins.

High level gentamicin resistance in enterococci

Although not tested for by every laboratory, sufficient strains have been tested from different areas of Australia to show that about 7% of enterococci strains were resistant to high levels of gentamicin. This confirms the recommendation that strains from cases of endocarditis must be tested to confirm the likelihood of *in vivo* synergy.

Co-trimoxazole and trimethoprim resistance

Although this is the first comprehensive data collation from around Australia, resistance to co-trimoxazole appears to be increasing despite reduced usage in the community. Average levels of resistance were 25% in *E. coli*, 15% in *Klebsiella pneumoniae*, 17% in *Proteus mirabilis*, 9% in *Haemophilus influenzae* and 45% in *Streptococcus pneumoniae*. Equivalent figures for trimethoprim were 18%, 16%, 16%, 12% and 39%. The levels of resistance in pneumococci in particular are worrying as three-quarters of the co-trimoxazole prescribed in community practice is for respiratory tract infections. Far fewer laboratories are testing for resistance in pneumococci than should be the case, given the

prevalence of resistance and the frequency of prescribing intended to cover this pathogen.

Extended spectrum β -lactamase producing *Klebsiella* species

The emergence of resistance to third generation cephalosporins in *Klebsiella* species (especially *K. pneumoniae*) has recently come to the attention of Australians. The NARSP data show that it is starting to become important in Australia with average resistance levels in 1992 of 3%, 10% and 4% to cefotaxime, ceftriaxone and ceftazidime respectively in *K. pneumoniae*. There was much less resistance in *K. oxytoca*.

Laboratories using high breakpoints such as those currently suggested by the National Committee for Clinical Laboratory Standards will miss a significant percentage of these strains, and should consider lowering the breakpoint to 0.5 mg/L or using an additional method in order to detect these strains. The majority of resistant strains are being reported in laboratories servicing tertiary care hospitals where there are likely to be high levels of third generation cephalosporin usage and cross-infection problems.

Ampicillin and other resistances in *Haemophilus influenzae*

Ampicillin resistance in *H. influenzae* has been recognised for some time and is still climbing. Average levels in 1992 were 20%, ranging from 15 to 35% in different geographical areas. Low levels of resistance to amoxicillin-clavulanate were reported. This was

likely to be in organisms that fell just above the cut-off for susceptibility and were not truly resistant. Chloramphenicol resistance was low, at 2%.

Rifampicin and ciprofloxacin resistance in *Staphylococcus aureus*

Resistance to rifampicin and ciprofloxacin is emerging in *Staphylococcus aureus*. Evidence from other national investigations suggest that this is principally in MRSA, with a high proportion coming from Queensland.

Penicillin resistant pneumococci

Penicillin resistant *Streptococcus pneumoniae* are appearing more frequently around Australia. The figure for 1992 was about 3%, compared with 1%, determined in a study two years ago. All laboratories should ensure that they have up to date methods to detect these strains.

Erythromycin resistant *Streptococcus pyogenes*

An average of 5% of strains of *Streptococcus pyogenes* were resistant to erythromycin. The resistant strains appeared to be commonest in the Sydney area. Experience suggests that the prevalence of resistance can vary widely over time and place, consistent with the epidemic spread of strains through the community. This resistance is important, as erythromycin is still recommended as the drug of choice for streptococcal infections in penicillin allergic patients, and many laboratories and prescribers consider this organism to be always susceptible (as it still is to penicillin).

PATHOGENIC BACTERIA ISOLATED FROM FAECES AND URINE, QUEENSLAND MEDICAL LABORATORY, 1992

(WR Forgan-Smith, Queensland Medical Laboratory, West End, Brisbane, Queensland)

This report summarises isolations of pathogenic bacteria made from urine and faeces samples submitted to Queensland Medical Laboratory (QML) during 1992. The data have been derived from the central and peripheral laboratories of QML (Brisbane, Gladstone, Mt Isa, Gympie, Kingaroy, Nambour, Caloundra, Buderim, Ipswich, Caboolture, Redcliff, Armidale and Tamworth).

Urine Isolates

Samples of 2000 consecutive urine bacterial isolates from separate patients were collated for 1977, 1984 and 1990. In addition, a sample of 30,852 consecutive bacterial isolates from separate patients presenting in 1992 has been compiled and analysed for susceptibility to antimicrobial agents.

Figure 1. Bacterial isolates from urine as per cent of total isolates, 1977, 1984, 1990 and 1992

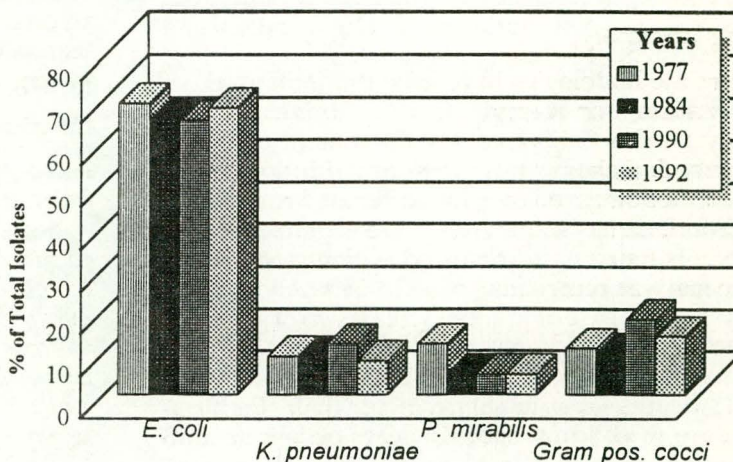


Table. Antibiotic sensitivities of urine isolates of *Escherichia coli*, *Klebsiella pneumoniae* and *Proteus mirabilis*, by antibiotic, 1992

	Sensitive isolates (per cent)							
	Amoxycillin	Augmentin ¹	Trimethoprim	Sulphonamide	Norfloxacin	Gentamicin	Nitrofurantoin	Cephalexin
<i>Escherichia coli</i>	53	87	86	60	100	99	98	86
<i>Klebsiella pneumoniae</i>	0	91	82	65	95	99	65	92
<i>Proteus mirabilis</i>	80	80	79	67	99	98	0	89

1. Amoxycillin-clavulanate

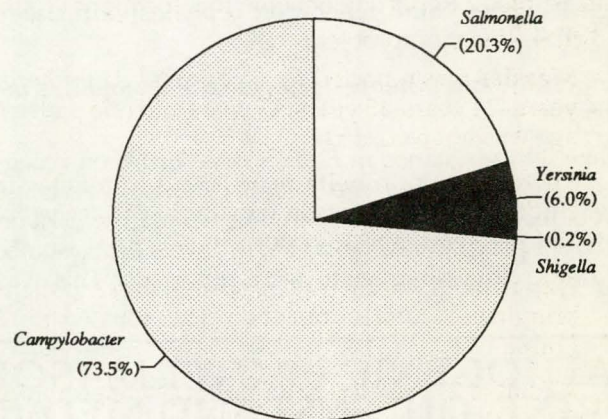
Isolates of *Escherichia coli* were the most common urine isolates in each of the years studied (Figure 1). In 1992, *E. coli*, *Proteus mirabilis* and *Klebsiella pneumoniae* made up about 80% of all isolates. Other organisms isolated included Gram positive cocci 15% (*Streptococcus faecalis* 4%, *Staphylococcus epidermis* 2%, *Staphylococcus saprophyticus* 5%, Group B *Streptococcus*, *Staphylococcus aureus* 2%) and various species of Gram negative bacilli.

Antibiotic sensitivities were analysed for isolates of *E. coli*, *P. mirabilis* and *K. pneumoniae*, as they comprised the majority of urine isolates (Table).

Faeces isolates

There was a total of 1604 patients with faecal pathogens in 1992. *Campylobacter* was the most commonly isolated organism (Figure 2).

Figure 2. Bacterial isolates from faeces as per cent of total isolates, 1992



OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization, and the Department of Foreign Affairs and Trade.

Yellow Fever in Kenya

The outbreak of yellow fever in Kenya appears to have ended. Cases occurred only in the Baringo and Elgeyo Marakwet Districts in the Kerio Valley, north-west of Nairobi. The first cases occurred in September 1992, and the last was recorded in March 1993. A total of 54 patients met the case definition (at least two of jaundice, haemorrhage, signs suggestive of encephalitis, signs of renal involvement, fever greater than 38°C) and there were 28 deaths (case fatality rate of 52%). Eighteen cases were in children aged 19 years or less, and 19 cases were in females. Virus has been isolated from five cases, and four of these isolates have been confirmed as yellow fever virus.

Epidemiological investigations have found the characteristics of the outbreak to be consistent with jungle yellow fever. Young males were predominantly infected, rural exposure was a significant risk factor, non-human primates were abundant in the outbreak area and may have served as amplifying hosts, the forest dwelling *Aedes africanus* and *Ae. bromeliae* were the likely vectors, and the vector of urban yellow fever, *Aedes aegypti* was not abundant in the outbreak area.

Yellow fever vaccine was administered to 749,422 people in and near the affected areas in February and March.

Typhoid in Western Samoa

There have now been 55 cases of typhoid confirmed in Western Samoa this year. The outbreak appears to have been mainly connected to the consumption of contaminated food. Workers at all the major restau-

rants and food handlers at the markets have all been tested.

Influenza Update

Influenza reports from Southern Hemisphere locations are beginning to increase. There have been reports of influenza-like illness from Madagascar, influenza A from Argentina and influenza A H₃N₂ from Brazil. Influenza A H₁N₁ and influenza A H₃N₂ have been isolated in New Zealand in school outbreaks in April and May, respectively.

Cholera Update

Nampula City in Mozambique has been declared cholera infected. Other districts within the Mozambique Provinces of Gaza, Inhambane, Manica, Maputo, Sofala, Tete and Zambezia have been removed from the list of infected areas.

Cases have been reported for March, April and May from Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, El Salvador, Guatemala, India, Malawi, Mexico, Mozambique, Nicaragua, Panama, Peru, Togo, Zambia and Zimbabwe.

COMMUNICABLE DISEASES SURVEILLANCE

Laboratory Reporting Schemes

There were 1,717 reports received in the CDI Virology and Serology Reporting Scheme this fortnight (Tables 8, 9 and 10).

- Measles was reported for 5 patients. Ages were 3 years, 14 years, 15 years, 17 years and one patient's age was not recorded.
- There were 22 rubella reports this fortnight. Included were 3 reports in females in the age group 15 to 44 years, and 15 reports in males.
- Hepatitis A virus was reported in 27 patients bringing the total number of reports for 1993 to 229 (Table 1).
- A total of 271 reports of hepatitis C were received. Six of the patients had a history of injecting drug use.
- There were 45 reports of Ross River virus infection. One patient, a 28 year old female from Broome, showed a fourfold rise in titre. The remainder were presumptive cases.
- Barmah Forest virus was reported for 2 patients from Queensland, a 44 year old male and a 47 year old male (both presumptive IgM).

- A case of Australian encephalitis caused by Murray Valley encephalitis virus was reported from Western Australia. This was case 4 described in 'Preliminary report of Australian encephalitis in Western Australia and the Northern Territory, 1993' (CDI 1993;16:209-210).
- An isolation of adenovirus type 46 was reported from a 46 year old HIV positive male patient. The virus was isolated from an anal ulcer biopsy.
- There were 48 reports of cytomegalovirus infection. Included were six patients with HIV, 3 patients with a history of transplants and one pregnant female.
- Coxsackievirus B4 was reported from the urine, faeces, throat and skin of an 8 day old baby who had a history of meningitis and subsequently died. The mother of the infant had been ill 4 days after a caesarian section.
- Echovirus type 11 was isolated from the CSF of a 9 day old female and 2 year old male, both with a history of meningitis.
- Echovirus type 14 was reported from the CSF of a 2 month infant with a history of meningitis.
- Echovirus type 30 was isolated from the CSF of a one month old infant with a history of septicaemia.
- There were 32 reports of influenza. Twenty reports of influenza A included 2 isolations (one patient was a 2 month old boy with a history of pneumonia) and one report of a fourfold rise in titre. Seven of the patients recording single high titres were over 65 years of age.
- Twelve reports of influenza B were reported. Included were 3 isolations; the remainder were all single high titres.

Table 1. Hepatitis A laboratory reports, by State or Territory of reporting laboratory and month of specimen collection

State	JAN	FEB	MAR	APR	MAY	Total
ACT	0	1	2	0	0	3
NSW	11	24	6	5	3	49
Qld	21	34	19	19	12	105
SA	8	15	3	10	5	41
Vic	1	4	1	2	3	11
WA	3	5	4	6	2	20
Total	44	83	35	42	25	229

- **Parainfluenza type 2** was reported in 8 patients, 6 were under 12 months of age. **Parainfluenza type 3** was reported in 13 patients. Nine of these were under 12 months of age. Parainfluenza type 2 reports have increased slightly recently. This virus shows a seasonal peak, usually every second year in April-May. **Parainfluenza type 3** tends to show a slight seasonal peak in spring. There has been very low level parainfluenza type 1 activity with only 11 cases reported this year (Figure 1).

- There have been 174 reports of **respiratory syncytial virus** this fortnight bringing the total for May to 210 reports. The sharp increase in reports is consistent with the trend seen in previous years. A peak is usually reached in July.

- **Rotavirus** was reported in 30 patients this fortnight. Twenty-eight of the patients were children less than 2 years old, and there was one 4 year old and one 14 year old male. Rotavirus reports usually peak in August-September (Figure 2).

Figure 1. Parainfluenza laboratory reports, by month of specimen collection, 1992

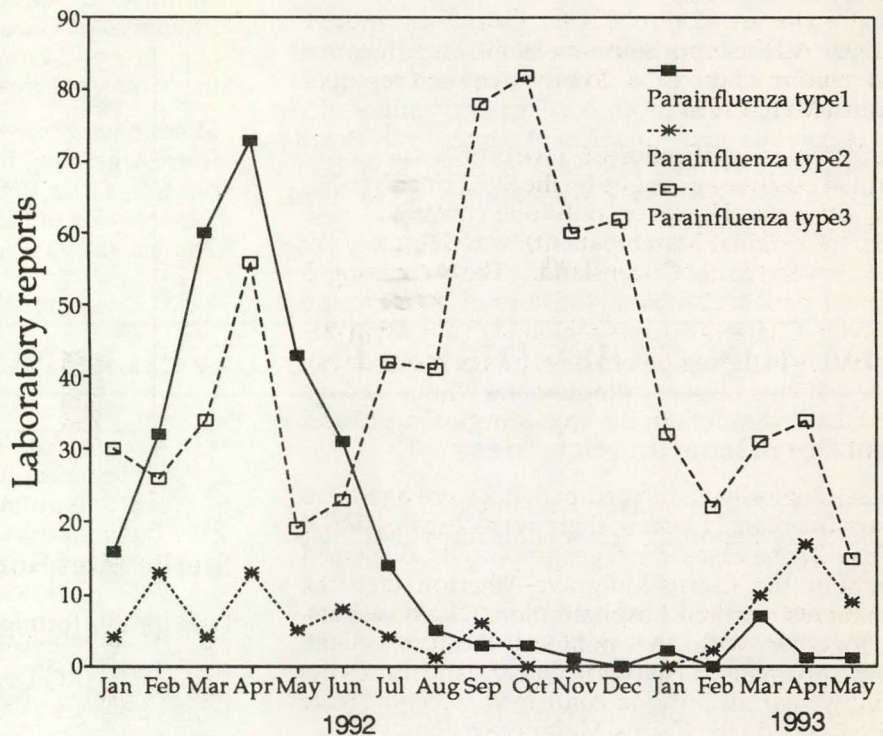
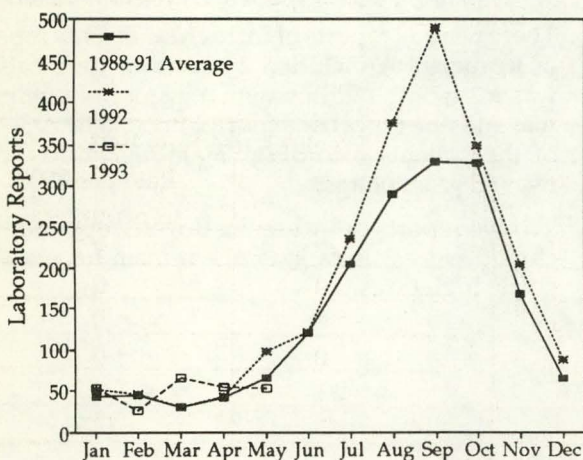


Figure 2. Rotavirus laboratory reports, 1988-91 average, 1992 and 1993, by month of specimen collection



- Reports for **Q fever** were received from reporting laboratories in Queensland (4), New South Wales (5), Western Australia (3), Victoria (2) and South Australia (1).
- *Chlamydia psittaci* was reported in 4 patients South Australia (1) and Victoria (3).
- *Toxoplasma gondii* was reported in a 27 year old pregnant female from Victoria.
- Fifty reports of *Mycoplasma pneumoniae* were received this fortnight. The total number of reports for May was 48, a decrease on previous months. Peak activity was recorded in spring (September) during 1992.

Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network collected data from 6,158 patient encounters in Week 22 and from 5,107 patient encounters in Week 23 (Table 2). The rate of reporting of influenza has continued to increase in recent weeks.

Dengue in Far North Queensland: Update 1

Further to an initial report¹, a total of 50 clinically suspect cases of dengue have been reported to the Centre for Disease Control (CDC), Cairns, up until 31 May 1993. All the reports occurred following the serological confirmation of a locally acquired case of dengue in March 1993¹.

Of the 50 clinical notifications, 6 have been serologically confirmed positive as dengue by the State Health Laboratory, Brisbane. However, only one confirmed case (that is, the original March patient), was definitely acquired in Far North Queensland. The remaining 5 confirmed patients all have a history of travel to the Townsville-Charters Towers region with a median duration of stay in the region of 4 days (range 2 to 11 days). All five patients became symptomatic within 10 days of the Easter vacation, in the weeks beginning 10 and 17 April (Figure 3).

The 6 serologically confirmed patients were aged 7 to 63 years (median 34 years); there were 2 males and 4 females. These cases were geographically dispersed throughout the Cairns-Mulgrave-Atherton districts. Two patients required hospitalisation. The travel history, together with the nonfocal location of the confirmed patients in Far North Queensland, raises the possibility that all but one confirmed infection were acquired outside the Cairns-Mulgrave region.

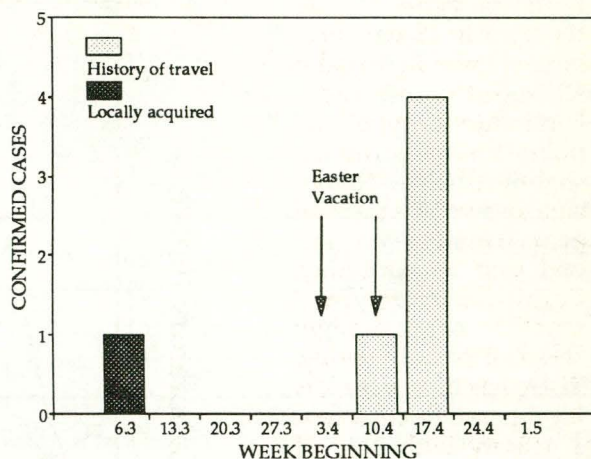
Twenty-one of the 45 remaining reported cases have been confirmed as serologically negative. This emphasised the difficulties medical practitioners may face in differentiating between non-specific viraemic illnesses and dengue².

References

1. Streeton C. Dengue in far north Queensland. *Comm Dis Intell* 1993;17:215.
2. Benenson AS. *Control of Communicable Disease in Man*. Washington: American Public Health Association, 1990.

(Catherine Streeton, Centre for Disease Control, Cairns, and National Centre for Epidemiology and Population Health, Canberra)

Figure 3. Confirmed dengue cases in Far North Queensland, by week of onset of symptoms



Sterile Sites Surveillance (LabDOSS)

Data for this fortnight have been provided by 4 laboratories. The CDI welcomes Sullivan Nicolaides Pathologists, Queensland to the laboratory surveillance schemes. A total of 124 reports have been included: Sullivan Nicolaides Queensland 91, Royal Hobart Hospital 28, Northern Tasmanian Pathology Service 3, TB Lynch Pathologists, Rockhampton 2.

Organisms reported 5 or more times from blood are detailed in Table 3. Other blood isolates not included in Table 3 were:

Gram positive: 1 *Streptococcus* Group B, 2 *Streptococcus 'milleri'* /group F, 2 *Streptococcus sanguis*, 2 *Streptococcus 'viridans'*, 2 *Streptococcus mitis*, 1 *Streptococcus hominis*, 1 *Streptococcus pneumoniae*, 2 *Corynebacterium* species, 3 *Enterococcus faecalis*, 1 *Bacillus* species, 1 *Arcanobacterium haemolyticum*, 1 *Micrococcus* species.

Gram negative: 1 *Salmonella* Typhi (Queensland report, 13 year old male, recent travel to Indonesia), 1 *Enterobacter aerogenes*, 1 *Serratia marcescens*, 1 *Pseudomonas aeruginosa*, 1 *Haemophilus influenzae* type b (10 month old male), 1 *Vibrio* species, 2 *Proteus mirabilis*.

Table 2. Australian Sentinel Practice Research Network, Weeks 22 and 23 1993

Condition	Week 22, to 30 May 1993		Week 23, to 6 June 1993	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	61	9.9	47	9.2
Measles	0	0	0	0
Rubella	0	0	0	0
Pertussis	0	0	0	0
Genital herpes	4	0.8	1	0.2
Gastroenteritis	79	12.8	65	12.7

Table 3. LabDOSS reports of blood isolates, by organism and clinical information

Organism	Total ¹	Clinical Information						Risk Factors				
		Bone/Joint	Lower respiratory	Endocarditis	Gastrointestinal	Urinary Tract	Skin	Surgery	Immunosuppressed	IV line	Perinatal	Neonatal
<i>Staphylococcus aureus</i>	20 ²						2	1	1	1	2	
<i>Staphylococcus epidermidis</i>	9	1	1	1				1	2			
<i>Staphylococcus coagulase negative</i>	12 ³	2		1				1		1		
<i>Escherichia coli</i>	20				1				2			
<i>Acinobacter</i> species	6			3					2			
<i>Klebsiella</i> species	8 ⁴				2					1		1

1. Only organisms with 5 or more reports are included in this table.

2. MRSA 1.

3. *Staphylococcus haemolyticus* 1, *S. warneri* 1.

4. *Klebsiella pneumoniae* 5, *K. oxytoca* 3.

Table 4. LabDOSS reports of meningitis, by organism and age group

Organism	1-11 months	1-4 years	5-14 years	15-24 years	65-74 years	Total
<i>Haemophilus influenzae</i> type b	1	1				2
<i>Staphylococcus aureus</i>					1	1
<i>Staphylococcus coagulase negative</i>				1		1
<i>Streptococcus</i> group A			1			2
Total	1	1	1	1	1	5

Yersinia enterocolitica, *Branhamella* species and *Acinetobacter* species were all isolated from a 42 year old male with endocarditis and HIV.

Anaerobes: 3 *Bacteroides fragilis*, 1 *Clostridium* species, 2 *Fusobacterium* species, 1 *Peptostreptococcus* species.

Fungi: 1 *Candida albicans*, 1 *Candida* species.

Isolates from Sites other than Blood or CSF

Peritoneal dialysate: 1 *Staphylococcus epidermidis*.

Joint fluid: 2 *Staphylococcus aureus*.

Other: 2 *Staphylococcus aureus*, 1 *Staphylococcus epidermidis*.

Reports of meningitis/CSF isolates are summarised in Table 4. Also provided was a report of isolation of *Bordetella pertussis* from a nasopharyngeal aspirate in a female 2 months of age (Tasmania).

National Notifiable Diseases Surveillance System, 16 to 29 May 1993

A total of 2,056 reports was received for this period. Reports were not received from the Northern Territory or from Queensland (Tables 5, 6 and 7, and Figure 4). Figure 4 must be interpreted with caution since data for this period from Queensland and the Northern Territory are not included.

- There were 47 reports of **Ross River virus infection**. The reports were for 17 males and 30 females. Reported ages ranged from the 10-14 to the 75-79 years age groups. Locations were given as over wide areas of the Australian Capital Territory, New South Wales, South Australia, Victoria and Western Australia.
- **Gonococcal infection** was notified for 42 cases. Twenty-six were males and 16 were females. Ages ranged from the 10-14 to the 85-89 years age groups.
- There were 8 notifications of *Haemophilus influenzae* type b infection. Six were males and 2 were females. One was aged less than one year and 7

were less than 5 years. There were no apparent clusters of cases.

- Forty-one notifications of **hepatitis A** were received. Twenty-five were males, 26 female and sex was not recorded in one case.
- Four reports of **legionellosis** were received, all were males. There was no apparent clustering of cases.
- A single case of **leptospirosis** was reported for a male in the 60-65 years age group.
- There were 7 reports of **malaria**, 4 males and 3 females. Recorded locations were all well south of 19 degrees South.
- There were 61 reports of **measles** notifications, bringing the total for this year to 555 (Figure 4). Of these, 33 were males and 28 were females. In 4 cases the age was recorded as less than one year, and the mean age was 9.9 years. There were 7 apparent clusters in separate postcode areas with 2 to 14 cases each. Six of these apparent clusters were in Tasmania.
- Five reports of **meningococcal infection** were received. Of these, 3 were males and 2 were females, recorded ages were in the 0-4, 20-24, 30-34 and 50-54 years age groups (one case each).

- **Pertussis** was notified for 52 cases. Twenty-two were males and 29 were females. Nine of these cases were aged less than 1 year and 18 were aged less than 5 years. There were 6 apparent clusters of 2 or 3 cases each, occurring in separate postcode areas. Intervals between the index and further cases ranged from onset on the following day to 8 days.
- There were 7 reports of notifications of **Q fever**. All were males and ages ranged from the 15-19 to the 55-59 years age groups. All cases were reported from rural New South Wales.
- There were 22 notifications of **rubella**. Sex was recorded as male for 14 and female for 8. A single case was recorded as being aged less than one year. The mean age of cases notified was 18.2 years. There were 2 reports for females in the 15-44 years age group. There was one apparent cluster of 2 cases in one postcode area.
- There were 33 notifications of **syphilis** received. Of these, 13 were males and 20 were females. The age was recorded as less than one year in one case and less than 15 in 3 cases.
- There were 21 notifications of **tuberculosis**, 11 males and 10 females. Ages ranged from the 0-4 to the 85-89 years age groups.

Figure 4. Measles notifications, 1992 and 1993, by month of onset

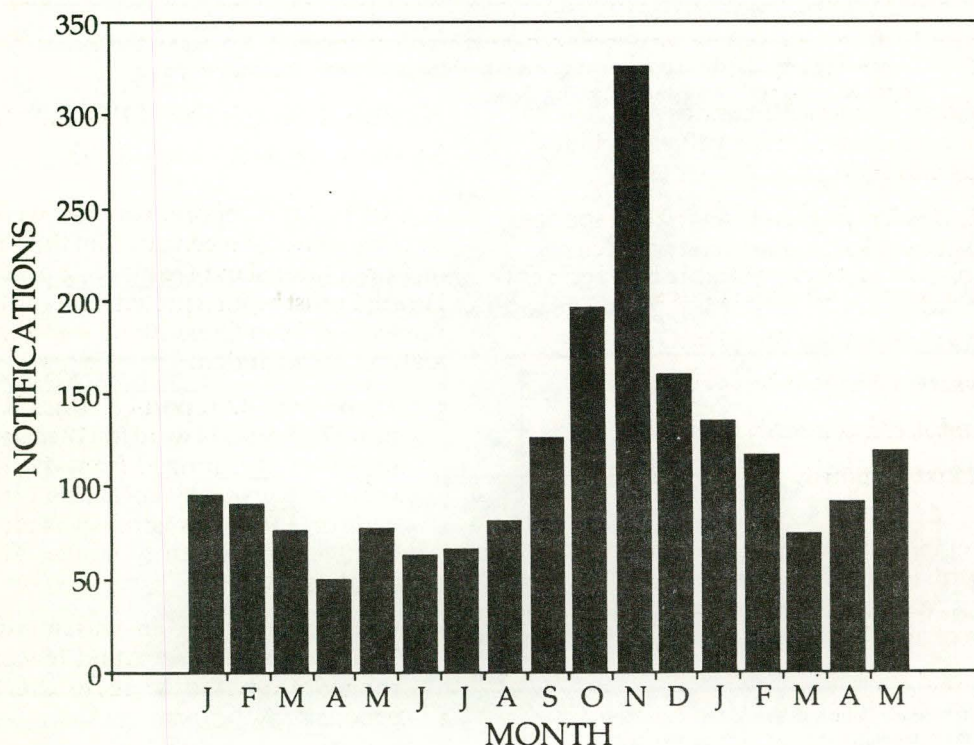
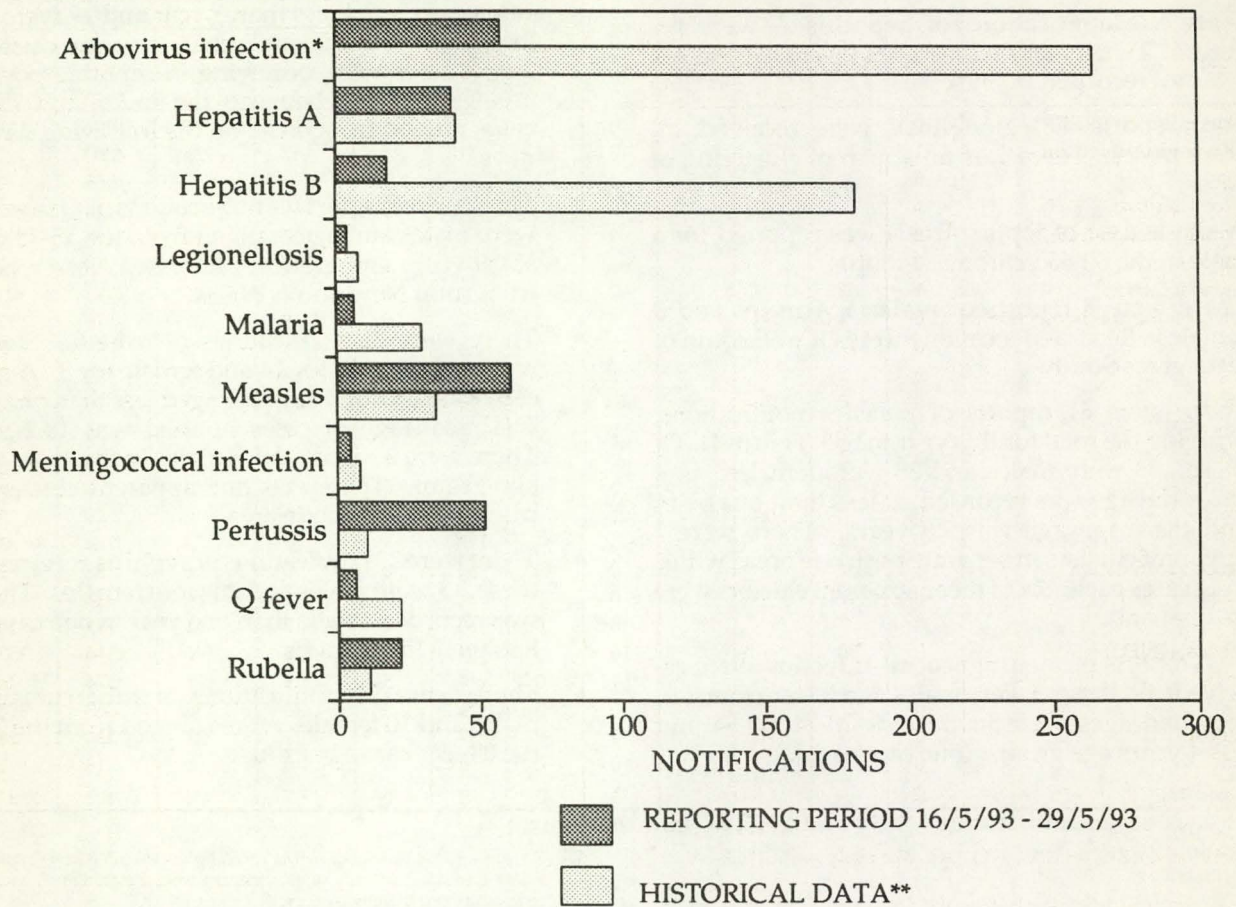


Figure 5. Selected National Notifiable Diseases Surveillance System reports, and historical data **



* Includes Ross River virus and Dengue

** The historical data are the averages of the number of notifications in 6 previous 2-week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceding and following those.

Table 5. Notifiable Diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation for the reporting period 16 to 29 May 1993

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA ¹			
									This Period 1993	This Period 1992	Year to Date 1993	Year to Date 1992
Diphtheria	0	0			0	0	0	0	0	1	13	5
Measles	1	12			0	46	1	1	61	29	529	392
Mumps	1	0	NN	NN	NN	NN	0	0	1	0	1	12
Pertussis	2	8			13	6	12	11	52	11	625	190
Poliomyelitis	0	0			0	0	0	0	0	0	0	0
Rubella ²	2	4			7	0	8	1	22	11	1224	189
Tetanus	0	0		NN	0	0	0	0	0	0	3	6

1. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision, so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.

2. NT, Tas: CRS only; ACT, NSW, Qld: rubella only. NN Not Notifiable.

Table 6. Other Notifiable Diseases¹, for the reporting period 16 to 29 May 1993

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA ²			
									This Period 1993	This Period 1992	Year to Date 1993	Year to Date 1992
Arbovirus infection (NEC) ³	0	0	NN		0	2	6	3	11	8	296	148
Ross River virus infection	1	20			10	NN	11	5	47	234	4003	4223
Dengue	0	-			-	NN	0	NN	0	4	99	17
Campylobacteriosis ⁴	14	-			39	7	50	30	140	289	3214	3360
Chlamydial infection (NEC) ⁵	3	NN			0	15	48	37	103	242	2476	2961
Donovanosis	0	NN			NN	NN	0	0	0	4	19	29
Gonococcal infection ⁶	1	7			0	0	2	32	42	126	1195	1210
<i>Haemophilus influenzae</i> b infection ⁷	0	4	NN		3	0	1	0	8	21	174	171
Hepatitis A	0	17			19	0	3	2	41	72	797	884
Hepatitis B	5	2			1	1	1	8	18	257	903	2045
Hepatitis C	15	0	NN		NN	2	74	50	141	297	2336	3209
Hepatitis (NEC)	0	0			1	0	1	NN	2	4	34	24
Legionellosis	0	3			0	0	0	1	4	10	78	98
Leptospirosis	0	0			0	0	1	0	1	3	73	45
Listeriosis	0	0	NN		NN	0	0	0	0	0	20	17
Malaria	0	1			0	1	4	1	7	53	268	314
Meningococcal infection	1	2			0	0	2	0	5	8	88	70
Ornithosis	0	NN			0	0	1	0	1	4	38	40
Q fever	0	7			0	0	0	0	7	11	289	185
Salmonellosis (NEC)	3	30			16	5	19	55	128	196	2344	2574
Shigellosis ⁴	0	-			1	0	3	5	9	21	374	264
Syphilis	0	27			0	0	3	3	33	130	863	1081
Tuberculosis	0	9			0	0	11	1	21	21	330	297
Typhoid ⁸	0	0			0	0	0	0	0	1	18	26
Yersiniosis (NEC) ⁴	0	-			4	0	3	0	7	34	191	310

- For HIV and AIDS, see CDI 1993;17:244. For rarely notified diseases, see Table 7.
- Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
- SA, Tas: includes Ross River virus and dengue. WA: includes dengue.
- NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
- WA: genital only.
- NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.

- SA: only as 'bacterial meningitis'; meningococcal infection is separately notified; Tas: only as 'non-meningococcal meningitis'; Vic: epiglottitis and meningitis only.
 - NSW and Vic: includes paratyphoid.
- NN Not Notifiable.
NEC Not Elsewhere Classified.
- Elsewhere Classified.

Table 7. Rarely Notified Diseases¹ for the reporting period 16 to 29 May 1993

DISEASES	Total This Period	Reporting States or Territories	Year to Date 1993
Botulism	0		0
Brucellosis	0		9
Chancroid	0		1
Cholera	0		2
Hydatid infection	0		14
Leprosy	0		5
Lymphogranuloma venereum	0		0
Plague	0		0
Rabies	0		0
Yellow fever	0		0
Other viral haemorrhagic fevers	0		0

1. Fewer than 50 cases of each of these diseases were notified each year during the period 1987 to 1992.

Table 8. Laboratory reports by State or Territory of reporting laboratory for the reporting period 20 May to 2 June 1993, historical data¹, and total reports for the year

	STATE OR TERRITORY OF REPORTING LABORATORY							Total this fortnight	Historical data	Total reported this year
	ACT	NSW	Qld	SA	Tas	Vic	WA			
MEASLES, MUMPS, RUBELLA										
Measles virus		2	1	1		1		5	8.5	166
Mumps virus			1	1				2	1.0	28
Rubella virus		1	17	2			2	22	6.3	522
HEPATITIS VIRUSES										
Hepatitis A virus		1	10	11		3	2	27	13.5	296
Hepatitis B virus	1	31	31	13		13	16	105	94.0	1,229
Hepatitis C virus	3	7	38	138	10		75	271	33.2	1,762
ARBOVIRUSES										
Ross River virus		1	20	18		2	4	45	77.2	1,290
Barmah Forest virus			2					2	6.2	117
Dengue not typed							1	1	1.8	27
MVE virus							1	1	.3	6
Flavivirus (unspecified)						1		1	.7	41
ADENOVIRUSES										
Adenovirus type 2		6						6	4.5	46
Adenovirus type 3		1				2	1	4	2.2	104
Adenovirus type 4						2		2	.8	55
Adenovirus type 8						1		1	1.2	11
Adenovirus type 9						1		1	.2	1
Adenovirus type 12		1						1	.0	2
Adenovirus type 40		1						1	.0	10
Adenovirus type 46						1		1	.0	3
Adenovirus not typed/pending		2	6	23		2	6	39	39.5	562
HERPES VIRUSES										
Herpes simplex virus type 1		5	53	50	6	48	20	182	114.8	1,989
Herpes simplex virus type 2		9	62	47	2	38	39	197	147.8	2,331
Herpes simplex not typed/pending	5	3	2	5		5	1	21	33.2	294
Cytomegalovirus	2	5	12	3		22	4	48	75.3	747
Varicella-zoster virus		3	12	7	1	9	7	39	20.5	461
Epstein-Barr virus		6	9	40		7	2	64	62.0	884
Herpes virus group - not typed				1				1	4.2	13
OTHER DNA VIRUSES										
Poxvirus group not typed						1		1	.2	3
Parvovirus						1		1	2.7	61
PICORNA VIRUS FAMILY										
Coxsackievirus A9		1						1	1.3	30
Coxsackievirus B1		1						1	.7	57
Coxsackievirus B4						2		2	1.7	3
Coxsackievirus B untyped/pending						1		1	.2	2
Echovirus type 6						1		1	7.5	2
Echovirus type 7		2						2	.5	85
Echovirus type 9		1						1	13.8	44
Echovirus type 11		1				2		3	.3	26
Echovirus type 14		1				1		2	.3	12
Echovirus type 21		2						2	.5	2
Echovirus type 22		1						1	.3	11

Table 8. Laboratory reports by State or Territory of reporting laboratory for the reporting period 20 May to 2 June 1993, historical data¹, and total reports for the year, continued

	STATE OR TERRITORY OF REPORTING LABORATORY							Total this fortnight	Historical data	Total reported this year
	ACT	NSW	Qld	SA	Tas	Vic	WA			
Echovirus type 25							1	1	.0	15
Echovirus type 30		1					1	2	.0	10
Poliovirus type 2 (uncharacterised)		1						1	2.5	18
Rhinovirus (all types)	1	3	1	2	2	7	5	21	27.0	347
Enterovirus not typed/pending			19					7	31.0	337
ORTHO/PARAMYXOVIRUSES										
Influenza A virus		2		12	1			5	25.0	78
Influenza B virus				10				2	4.3	41
Parainfluenza virus type 2		3	1	1		1	2	8	8.3	40
Parainfluenza virus type 3		4	1	3	1	4		13	15.3	229
Parainfluenza virus typing pending					6			6	4.5	16
Respiratory syncytial virus	10	81	47	12	4	12	8	174	144.8	479
OTHER RNA VIRUSES										
HIV-1			1					1	2.8	38
HTLV-1							2	2	.7	8
Rotavirus	5	6		3	3		13	30	67.3	418
Norwalk agent		1						1	.8	9
OTHER										
<i>Chlamydia trachomatis</i> not typed	2	4	52	28	1	14	42	143	84.7	1,447
<i>Chlamydia psittaci</i>				1		3		4	3.0	46
<i>Chlamydia</i> species	1	1					1	3	.0	7
<i>Mycoplasma pneumoniae</i>	1	13	18	12	1	4	1	50	22.5	949
<i>Coxiella burnetii</i> (Q fever)		5	4	1		2	3	15	6.5	216
<i>Streptococcus</i> group A			12					12	.0	130
<i>Yersinia enterocolitica</i>			1					1	.0	3
<i>Bordetella pertussis</i>						1		1	.0	63
<i>Bordetella</i> species			6					6	.0	100
<i>Legionella</i> species			1					1	.0	2
<i>Leptospira pomona</i>			2					2	.0	5
<i>Leptospira hardjo</i>			2					2	.0	5
<i>Leptospira australis</i>			2					2	.0	4
<i>Leptospira</i> species			2					2	.0	8
<i>Treponema pallidum</i>		7	36					43	.2	321
<i>Toxoplasma gondii</i>			1			1		2	.5	29
<i>Echinococcus granulosus</i>			1					1	.0	8
TOTAL	31	227	486	445	38	217	273	1,717	1,230.7	18,699

1. The historical data are the averages of the numbers of reports in 6 previous 2 week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceding and following those.

Table 9. Laboratory reports by clinical information for the reporting period 20 May to 2 June 1993

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA													
Measles virus								3				2	5
Mumps virus												2	2
Rubella virus								7				15	22
HEPATITIS VIRUSES													
Hepatitis A virus							21					6	27
Hepatitis B virus							35				1	69	105
Hepatitis C virus							32					239	271
ARBOVIRUSES													
Ross River virus								2		26		17	45
Barmah Forest virus										1		1	2
Dengue not typed												1	1
MVE virus												1	1
Flavivirus (unspecified)								1					1
ADENOVIRUSES													
Adenovirus type 2					4	2							6
Adenovirus type 3					4								4
Adenovirus type 4									2				2
Adenovirus type 8									1				1
Adenovirus type 9												1	1
Adenovirus type 12						1							1
Adenovirus type 40						1							1
Adenovirus type 46												1	1
Adenovirus not typed/pending					18	16			2			3	39
HERPES VIRUSES													
Herpes simplex virus type 1	1				12			93	14		46	16	182
Herpes simplex virus type 2								64	1		128	4	197
Herpes simplex not typed/pending	1							7			5	8	21
Cytomegalovirus				4	14		1		2			27	48
Varicella-zoster virus								35			1	3	39
Epstein-Barr virus					4	1						59	64
Herpes virus group - not typed												1	1
OTHER DNA VIRUSES													
Poxvirus group not typed								1					1
Parvovirus												1	1
PICORNA VIRUS FAMILY													
Coxsackievirus A9												1	1
Coxsackievirus B1					1								1
Coxsackievirus B4	1											1	2
Coxsackievirus B untyped/pending								1					1
Echovirus type 6			1										1
Echovirus type 7		1				1							2
Echovirus type 9		1											1
Echovirus type 11		2										1	3
Echovirus type 14		1				1							2

Table 9. Laboratory reports by clinical information for the reporting period 20 May to 2 June 1993, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
Echovirus type 21												2	2
Echovirus type 22												1	1
Echovirus type 25												1	1
Echovirus type 30		1										1	2
Poliovirus type 2 (uncharacterised)												1	1
Rhinovirus (all types)					18							3	21
Enterovirus not typed/pending			1	1	9	5			1			9	26
ORTHO/PARAMYXOVIRUSES													
Influenza A virus					15				1			4	20
Influenza B virus					12								12
Parainfluenza virus type 2					7							1	8
Parainfluenza virus type 3					11							2	13
Parainfluenza virus typing pending					6								6
Respiratory syncytial virus					166							8	174
OTHER RNA VIRUSES													
HIV-1												1	1
HTLV-1												2	2
Rotavirus						30							30
Norwalk agent												1	1
OTHER													
<i>Chlamydia trachomatis</i> not typed					3						102	38	143
<i>Chlamydia psittaci</i>					4								4
<i>Chlamydia</i> species					2						1		3
<i>Mycoplasma pneumoniae</i>					31					1		18	50
<i>Coxiella burnetii</i> (Q fever)												15	15
<i>Streptococcus</i> group A										1		11	12
<i>Yersinia enterocolitica</i>												1	1
<i>Bordetella pertussis</i>					1								1
<i>Bordetella</i> species					4							2	6
<i>Legionella</i> species												1	1
<i>Leptospira pomona</i>												2	2
<i>Leptospira hardjo</i>												2	2
<i>Leptospira australis</i>												2	2
<i>Leptospira</i> species												2	2
<i>Treponema pallidum</i>								1			6	36	43
<i>Toxoplasma gondii</i>												2	2
<i>Echinococcus granulosus</i>							1						1
TOTAL	3	6	2	5	346	58	90	215	24	29	290	649	1717

Table 10. Laboratory reports by contributing laboratories for the reporting period 20 May to 2 June 1993

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	31
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	113
	Royal Alexandra Hospital for Children, Camperdown	51
	South West Area Pathology Service, Liverpool	63
Queensland	Queensland Medical Laboratory, West End	324
	State Health Laboratory, Brisbane	162
South Australia	Institute of Medical & Veterinary Science, Adelaide	445
Tasmania	Northern Tasmanian Pathology Service, Launceston	10
	Royal Hobart Hospital, Hobart	28
Victoria	Fairfield Hospital, Melbourne	203
	Microbiological Diagnostic Unit, University of Melbourne	14
Western Australia	Princess Margaret Hospital, Perth	35
	State Health Laboratory Services, Perth	238
TOTAL		1717