Annual report of the Australian Meningococcal Surveillance Programme 1996

The Australian Meningococcal Surveillance Programme[1]

Abstract

The Australian Meningococcal Surveillance Programme has undertaken meningococcal isolate surveillance by means of a collaborative laboratory-based initiative since 1994. Serogroup data have been enhanced by the addition of serotype and serosubtype information in 1996. Ninety-two per cent of the 297 invasive isolates of *Neisseria meningitidis* examined in 1996 were serogroup B or C. Serogroup B strains predominated in all States and Territories and were isolated from sporadic cases of meningococcal disease. Serogroup C isolates were prominent in New South Wales, Queensland and the Northern Territory, and were also associated with mainly sporadic cases of meningococcal disease. A number of case clusters also occurred in association with serogroup C strains. Although most sporadic cases of meningococcal disease showed a diversity of phenotypes, clusters of cases were noted with the phenotypes C:2a:P1.5 and C:2a:P1.2,5. The number of isolates with the phenotype B:4:P1.4 also increased in New South Wales and Queensland. The proportion of isolates showing decreased susceptibility to the penicillin group of antibiotics (minimal inhibitory concentration, MIC, 0.06 to 0.5 mg/L) increased to 74% in 1996. Three isolates showed reduced susceptibility to rifampicin. *Comm Dis Intell* 1997;21:217-221.

Introduction

Invasive meningococcal disease, manifest as bacteraemia and/or meningitis remains a significant cause of morbidity and mortality in Australia[1]. The host response, outcome of the disease in an individual patient, and the patterns of the infection, may vary with the characteristics of the infecting organism. The public health response to an outbreak is also influenced by the particular meningococcus e.g. vaccines are available for serogroups A and C but not for B (newer conjugate vaccines are currently being trialed).

The Australian Meningococcal Surveillance Programme (AMSP) was commenced in 1994, for the examination of strains of *Neisseria meningitidis* (*N.meningitidis*) from cases of invasive meningococcal disease. It was established with the co-operation and participation of reference laboratories in each State and Territory. This programme is part of the National Neisseria Network.

The AMSP is designed to supplement data from the National Notifiable Diseases Surveillance Scheme by adding information on the serogroup, the serotype and subserotype of

ISSN 0725-3141
Volume 21
Number 16
7 August 1997

1. Corresponding author, John Tapsall, Department of Microbiology, The Prince of Wales Hospital, High Street, Randwick, NSW, 2031

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invasive isolates, as well as antibiotic sensitivity data.

Reports providing information gathered in the first two years of the programme were published in *Communicable Diseases Intelligence*[2,3]. This report covers data collected for the calendar year 1996.

Methods

The National Neisseria Network (NNN) is a collaborative programme for the laboratory surveillance of the pathogenic Neisseria, *N. meningitidis* and *N. gonorrhoeae*[2-4]. Meningococcal isolate surveillance is performed by a collaborative network of reference laboratories in each State and Territory.

Information on the site of infection, the age and sex of the patient and the outcome (survived/died) was recorded. The surveillance programme categorised cases on the basis of site of isolation of the organism. It is recognised that this probably underestimated the number of cases of meningitis e.g. where there was no lumbar puncture, or where lumbar puncture was delayed and the culture was sterile. This approach has been adopted since the beginning of the programme.

Differentiation of meningococcal strains by serotype and serosubtype was based on the detection of outer membrane protein antigens using a standard set of monoclonal antibodies obtained from Dr. J. Poolman, National Institute for Public Health, Royal Institute Veterinary Medicine, the Netherlands.

Antibiotic susceptibility was assessed by determining the minimal inhibitory concentration (MIC) to antibiotics used for therapeutic and prophylactic purposes. This programme used the following parameters to define the various levels of penicillin susceptibility/resistance when determined by a standardised agar plate dilution technique:

- sensitive, MIC $\leq$ 0.03 mg/L;
- less sensitive, MIC = 0.06 - 0.5 mg/L; and
- relatively resistant, MIC $\geq$ 1 mg/L.

Strains with MICs which place them in the category of 'sensitive' or 'less sensitive' are considered to be amenable to penicillin therapy when used in recommended doses.

Results

Phenotype Distribution

Two hundred and ninety-seven invasive isolates of *N. meningitidis* were examined in 1996 (Table 1).

Most of the isolates were serogroup B (186) representing 63% of all strains, followed by 86 serogroup C isolates representing 29%. Serogroup Y (11 strains, 4%) and serogroup W135 (9 strains, 3%) were also identified. No serogroup A isolates were identified in 1996.

The regional data show some differences between centres. Serogroup B predominated overall, and especially in the ACT (83% of isolates) Victoria (81%) and Western Australia (79%). Serogroup C constituted a large proportion of isolates in New South Wales, Queensland and the Northern Territory (41%, 35% and 44% respectively). In South Australia three of the 16 isolates (19%) were identified as serogroup Y. The percentage of serogroup Y isolates increased from 1% in 1995 to 4% in 1996.

There was considerable heterogeneity amongst phenotypes as determined by serotyping and serosubtyping (Table 2).

Age group and sex

The highest number of isolates was for the under 5 years age group (Figure). Those aged less than one year accounted for 16% of all cases and 22% were in the 1 - 4 years age group. Another peak was noted in the 15 - 19 years age group with 51 cases (17%) recorded. A further 29 cases (10%) occurred in the 20 - 24 years age group. The male:female ratio was 1.1:1

Site of isolation

There were 144 isolates (48% of total) from cerebrospinal fluid (CSF), either alone or with a blood culture isolate, and 150 (50%) from blood cultures alone. There were two isolates from synovial fluid and one from pleural fluid.

Outcome

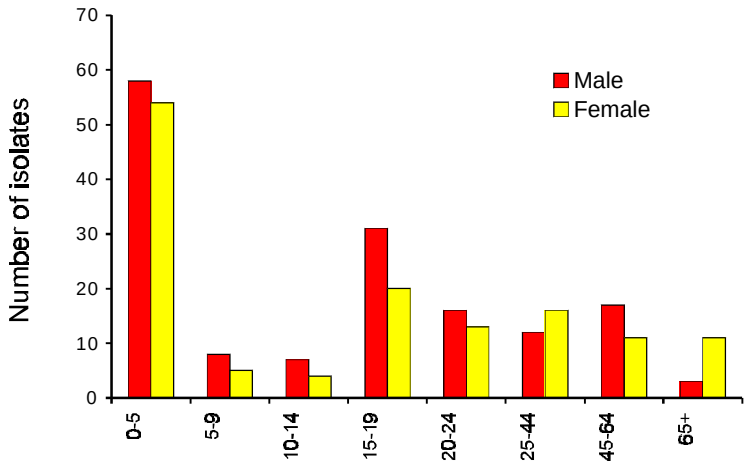
Outcome data (survived or died) including disease type and organism serogroup was available for 190 patients (Table 3). Out of the190 patients, eleven deaths were recorded (6%).There were five deaths in 86 patients (6%) with meningitis. Six deaths (6%) were recorded in 102 bacteraemic patients. One patient with a serogroup Y strain from a synovial fluid, and another with a serogroup B strain from a pleural fluid survived.

Antibiotic susceptibility

Penicillin

Using the defined criteria (above), 72 of 282 strains tested (25%) were fully sensitive to penicillin, and 209 (74%) were less sensitive. A single isolate from New South Wales had an MIC of 1 mg/L, and the patient was treated successfully with a third-generation cephalosporin . Minimal inhibitory

Figure. ***N. meningitidis*** **notifications, 1996, by age group and sex**



concentrations recorded ranged between 0.015 and 1 mg/L. The strains from the 11 fatal cases had MICs for penicillin in the range 0.03 to 0.25 mg/L.

Other antibiotics

The 295 isolates which were tested for susceptibility to ceftriaxone (and by extrapolation to other third-generation cephalosporins), and the 156 tested for susceptibility to chloramphenicol, were susceptible to these therapeutic agents. Two hundred and ninety-five isolates were also tested for susceptibility to the prophylactic agents rifampicin and ciprofloxacin. Three isolates had raised MICs to rifampicin; two with MICs of 1 mg/L and another with an MIC of 4 mg/L. All isolates tested were sensitive to ciprofloxacin.

Sulphonamide testing was not performed.

Discussion

The number of isolates examined increased in 1996, reflecting the consolidation of the AMSP since 1994. Two hundred and ninety-seven *N. meningitidis* isolates were examined in 1996 compared to 216 in

Table 1. *Neisseria meningitidis* isolates, 1996, by State or Territory and serogroup

State or Territory	Serogroup						
	B	C	A	Y	W135	NG[1]	Total
	n (%)	n (%)		n (%)	n (%)	n (%)	n (%)
Qld	36 (55)	23 (35)	0	2	4	1	66 (22)
NSW	49 (51)	40 (41)	0	5	2	1	97 (33)
ACT	5 (83)	1 (17)	0	0	0	0	6 (2)
Vic	54 (81)	10 (15)	0	0	0	3	67 (23)
Tas	8 (67)	4 (33)	0	0	0	0	12 (4)
SA	11 (68)	1 (6)	0	3	1	0	16 (5)
WA	19 (79)	3 (13)	0	1	1	0	24 (8)
NT	4 (44)	4 (44)	0	0	1	0	9 (3)
Total	186 (63)	86 (29)	0	11 (4)	9 (3)	5 (1)	297 (100)

1. NG = non-groupable

Table 2. Most frequently isolated serotypes and serosubtypes, 1996, by State and Territory

State/Territory	Serogroup B		Serogroup C	
	Serotypye:serosubtype	Number	Serotype:serosubtype	Number
Queensland	4:P1.4	6	2b:P1.2,5	10
	NT:P1.4	4	2a:P1.5	4
	NT:NST	5	2b:NST	4
New South Wales	4:P1.4	11	2a:P1.5	15
	NT:NST	9	2b:P1.2,5	10
	2b:P1.10	8	-	-
Victoria	NT:P1.4	13	various	-
	14.P1.7	3	-	-
	4:P1.4	2	-	-
Western Australia	NT:NST]	7	various	-
	NT:P1.4	5	-	-
South Australia	15:P1.7,16	3	one isolate only	-
	2b:NST	2	-	-
	NT:P1.10	2	-	-
Tasmania	14:P1.7	2	2b:NST	2
Australian Capital Territory	various		2a:P1.2,5	1
Northern Territory	NT:NST	2	2a:P1.5	2

Table 3. Outcome of meningitic and bacteraemic cases by serogroup, 1996

Disease	Outcome	Serogroup B	C	Y	W135	NG[2]	Total
Meningitis	Died	2	3	0	0	0	5
	Total	56	28	1	1	0	86
Septicaemia	Died	3	3	0	0	0	6
	Total	69	29	1	0	3	102
All cases[1]	Died	5	6	0	0	0	11
	Total	126	57	3	1	3	190

1. Includes one serogroup B and one serogroup Y from a pleural fluid and joint fluid respectively.
2. NG = Non groupable

1994[2] and 250 in 1995[3]. The National Notifiable Diseases Surveillance System received 426 reports of meningococcal disease in 1996 (Communicable Diseases Network of Australia and New Zealand, personal communication). The number of isolates available for examination will always be less than the number of notified cases. This is because the National Health & Medical Research Council surveillance case definition includes those instances where meningococcal antigen or Gram negative diplococci are present in material from sterile sites, in the absence of a positive culture[5].

In 1996 the overall pattern of meningococcal disease, based on serogroup analysis, was one of sporadic endemic disease with occasional localised clusters. Serogroup B and serogroup C isolates together accounted for 92% of all invasive meningococci. Serogroup B strains were again the main cause of sporadic meningococcal disease in Australia in 1996, with serogroup C isolates occurring both as sporadic cases and in disease clusters. No serogroup A meningococci were isolated in 1996. This picture is typical of the pattern of meningococcal disease in developed countries.

This report includes serotyping and serosubtyping data from the AMSP for the first time. This type of information has been available only on a limited basis in the past[1,6]. Expanded phenotypic data allows a more detailed analysis of case clusters and apparent clusters. The recognition of the phenotypes C:2a:P1.5 and C:2a:P1.2,5 in all States and Territories except South Australia and Western Australia was of particular interest in 1996. These phenotypes have been implicated in hyperendemic meningococcal disease in Canada for a number of years[7] and were responsible for a cluster of cases in western Sydney in 1996. However, additional comparisons are needed to establish the relationship of these isolates to overseas strains with the same phenotype.

There also appears to have been an increase in the number of isolates of B:4:P1.4 in Queensland and New South Wales. There were also two isolates of this subtype in Victoria and one in the Northern Territory. Although serogroup B isolates predominated in the other centres, this phenotype was infrequently encountered if at all. This phenotype is involved in a continuing outbreak of meningococcal disease in Auckland, New Zealand[8].

The age group and sex of patients from whom isolates were obtained both showed a normal distribution for meningococcal disease. Overall, the outcome data are similar to those observed in 1995 and are in the expected range where early diagnosis, and appropriate antibiotic therapy and supportive measures are undertaken[9].

Continuing interest has been shown in the decrease in susceptibility of meningococci to penicillin in many parts of the world. Sporadic reports of beta-lactamase producing meningococci also continue to appear[10]. Other isolates have occasionally been shown to be resistant to other antibiotics which are currently used in meningococcal disease, either therapeutically or prophylactically. This programme therefore includes routine examination of the antibiotic susceptiblity of invasive isolates as part of its surveillance. However, interpretation of the results of *in vitro* testing of the antibiotic susceptibility of *N. meningitidis* is hampered by the absence of accurate correlations between clinical responses and *in vitro* sensitivity data in meningococcal disease. Minimal inhibitory concentration data are also method-dependent and not necessarily directly comparable when different techniques are used. However, by using consistent methods over the three years of this scheme some data are now available on the trends in Australia. In 1994, 52% of 216 strains were less sensitive to penicillin (MICs, 0.008 to 0.25 mg/L). In 1995, 63% of 247 strains tested were less sensitive to penicillin (MICs, 0.002 to 0.5mg/L). The proportion of less sensitive isolates increased further to 74% of 297 isolates in 1996 (MIC range extending to 1 mg/L). An MIC in the less sensitive range does not mean that therapeutic failure will occur, but the increase in the number and proportion of stains in this category is an epidemiological marker of the slow progression towards resistance.

The definition of what constitutes ‘resistance’ to the prophylactic agent rifampicin varies. This programme has chosen to monitor the number of isolates with MICs of 1 mg/L or greater. There were three isolates in 1996 with rifampicin MICs of 1 mg/L or greater; the first time such isolates have been detected in this programme.

The programme has examined more than 760 strains from all States and

Territories over the past three years and has clarified and expanded information on invasive meningococcal isolates in Australia. The programme is currently exploring the utility of other means of enhancing laboratory diagnosis of meningococcal disease, and the need for other methods of strain differentiation in Australia.

Acknowledgements

Isolates were received in the reference centres from many laboratories throughout Australia. The considerable time and effort involved in forwarding these strains is recognised and these efforts are greatly appreciated. These data could not have been provided without this assistance and the help of clinical colleagues and Public Health personnel.

A seeding grant for the National Neisseria Network was provided by the Commonwealth Department of Health and Family Services.

N. meningitidis isolates should be referred to one of the Australian Meningococcal Surveillance Programme laboratories:

Queensland

Mr John Bates
Public Health Microbiology
Queensland Health Scientific Services
39 Kessels Road
Coopers Plains, Qld 4108

Western Australia

Mr. C. Richardson, Mr. P. Campbell, Ms K. Stowe
Department of Microbiology
Princess Margaret Hospital for Children
1 Thomas Street
Subiaco, WA 6008

Tasmania

Dr. K. Ott
Department of Microbiology
Royal Hobart Hospital
GPO Box 1061L
Hobart, Tas 7001

South Australia

Dr. D. Hansman
Microbiology Department
Women's and Children's Hospital
72 King William Road
North Adelaide, SA 5006

ACT

Dr. P. Collignon, Ms L.Halliday
Department of Microbiology
The Canberra Hospital
Woden, ACT 2606

Victoria

Dr. J. Griffith, Dr. G.Hogg
Microbiological Diagnostic Unit
University of Melbourne
Parkville, Vic 3052

Northern Territory

Dr G.Lum and staff
Microbiology Laboratory
Royal Darwin Hospital
Casuarina, NT 0811

New South Wales

A/Prof. J. Tapsall
Microbiology Department
The Prince of Wales Hospital
Randwick, NSW 2031 or

A/Prof. Rosemary Munro
Department of Microbiology and Infectious Diseases,SWAPS
Locked Mail Bag 90
Liverpool, NSW 2179

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Notice to Readers

Changes at the CDI Desk

In March 1996, Mr Graham Andrews joined the *CDI* editorial team as Deputy Editor. Over his 15 months with *CDI*, Graham worked closely with the Editor and other members of the editorial staff to develop and implement many significant improvements to the publication. His good humour and calm personality have been appreciated by the many contributors whom he has had to "hassle" in order to meet the tight deadlines of a fortnightly production. Graham is currently working on another Departmental project and we wish him well for the future.

At the beginning of July, the *CDI* team welcomed Ms Corrine Rann to the Deputy Editor position. Corrine comes to us with a background in microbiology and considerable editing experience.

Communicable Diseases Surveillance

Respiratory syncytial virus

Respiratory syncytial virus (RSV) is a paramyxovirus of the genus *pneumonvirus*. It occurs worldwide and is the major cause of lower respiratory tract infection in infants and young children. It is the predominant cause of bronchiolitis in these age groups, but can also cause pneumonia, croup, bronchitis, otitis media and febrile upper respiratory tract infections (URTIs). In older children and adults, RSV generally causes milder disease, most commonly manifest as URTI or tracheobronchitis. It can cause severe lower respiratory tract disease in those with pre-existing heart or lung disease or who are debilitated, aged or immune suppressed.

Susceptibility to the infection is universal. Maternal immunity provides incomplete passive protection which wanes by the age of 6-7 months. Primary infection occurs early in life, with 95% seropositivity by two years of age. However, the resulting immunity is incomplete and repeated infections are common. The most severe illness from RSV infection occurs at the extremes of age, and it is more common in males than females, and in children from lower socio-economic groups.There is some evidence that breast-feeding can reduce the risk of infection.

The incubation period is 2-8 days and in most infants the duration of the illness is 7-21 days. Viral shedding in adults and older children lasts for 1-12 days, but in infants it can continue for several weeks after symptoms subside.

RSV is transmitted directly by the inhalation of airborne droplets, and indirectly by being carried to the mucous membranes of the nose and eyes, by hands and articles contaminated with respiratory secretions. Nosocomial spread occurs and there are high attack rates in child-care centres.

In Australia, RSV is not nationally notifiable and sentinel surveillance is undertaken through the Virology and Serology Laboratory Reporting Scheme (LabVISE). Reports for the last 5 years have shown regular peaks in July each year (Figure 1). This is consistent with the worldwide pattern of annual outbreaks in winter and spring with an unusually predictable and regular pattern. As reporting for July 1997 is incomplete at the time of writing, the anticipated peak for 1997 is not yet reflected in the figure. There has been an increase in the total number of RSV reports each year. This however, may reflect increases in both the amount of testing for RSV, and numbers of laboratories reporting to the scheme, rather than a real increase in the incidence of infection.

The age and sex of patients for 1997 has been similar to that observed over the past 5 years. For 1997 the male:female ratio was 1.3:1, and of the reports where age is known, 65% were for children under one year of age, and 96% were for children under 5 years of age (Figure 2). As testing for RSV is most likely to be carried out for patients with the most severe illness, the age profile reflects the pattern of occurrence of severe disease rather than the pattern of occurrence of RSV infection in the community.

Those most at risk of severe disease should avoid exposure.Transmission in the community, hospitals and child-care centres can be reduced by avoiding overcrowding and using good hygiene practices such as covering of the mouth and nose when sneezing and coughing, washing hands after nose blowing, disposing promptly of materials soiled with nose and throat discharges, and not sharing eating and drinking utensils. Children should be excluded from child-care centres only while unwell.

National Notifiable Diseases Surveillance System

The NNDSS is conducted under the auspices of the Communicable Diseases Network Australia New Zealand. The system coordinates the national surveillance of more than 40 communicable diseases or disease groups

Figure 1. Respiratory syncytial virus laboratory reports, 1994 to 1997, by month of specimen collection

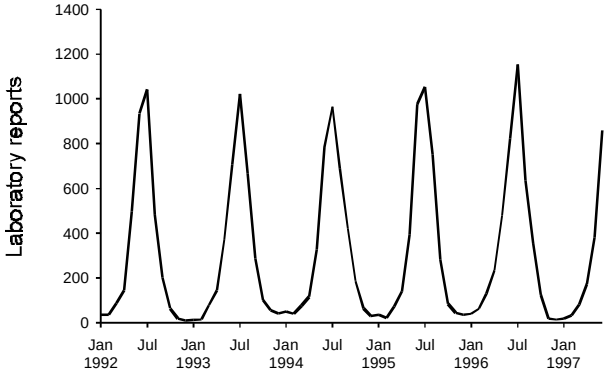


Figure 2. Respiratory syncytial virus laboratory reports, 1997, by age group and sex

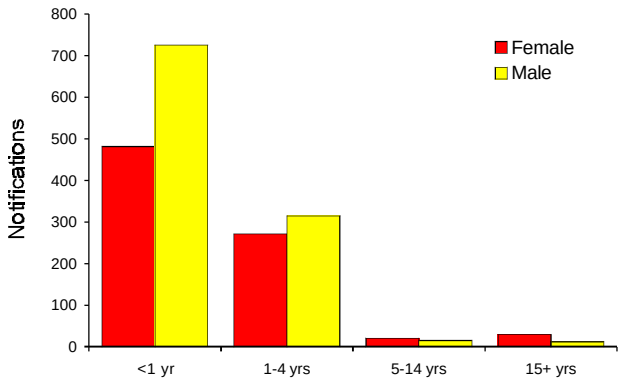
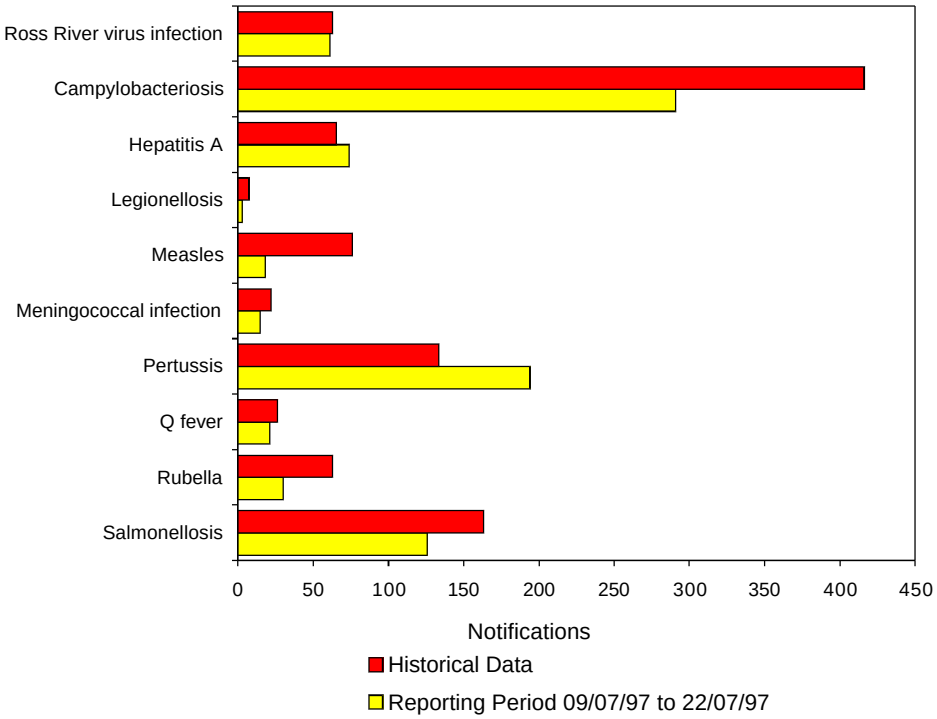


Figure 3. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]



1. The historical data are the averages of the number of notifications in 9 previous 2-week reporting periods, the corresponding perioerds of the last 3 years and the periods immediately preceding and following those.

Figure 4. Meningococcal notifications, 1992 to 1997, by month of onset

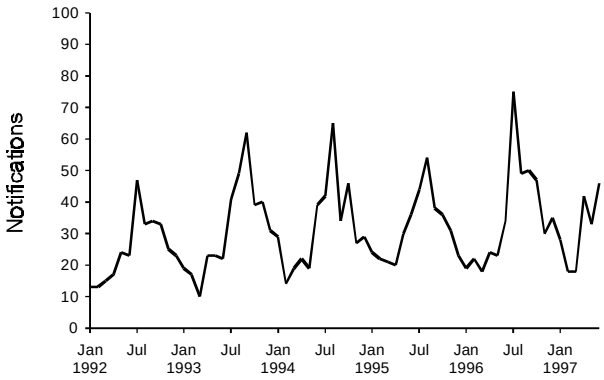
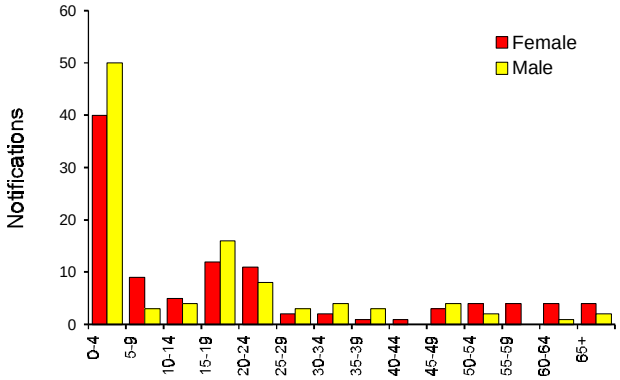


Figure 5. Meningococcal notifications, 1997, by age group and sex.



endorsed by the National Health and Medical Research Council (NHMRC). Notifications of these diseases are made to State and Territory health authorities under the provisions of their respective public health legislations. De-identified core unit data are supplied fortnightly for collation, analysis and dissemination. For further information, see CDI 1997;21:5.

Reporting period 9 July to 22 July 1997

There were 1,765 notifications received for this two week period (Tables 1, 2 and 3). The numbers of reports for selected diseases have been compared with historical data for corresponding periods in the previous three years (Figure 3).

There were 248 notifications of pertussis this period, which is higher than the number recorded in the historical data.

The number of notifications of meningococcal disease has risen in recent months (Figure 4). We can expect a further increase in the coming months. Of the 203 notifications received for the year to date, most were for cases in the 0 - 4 years age group (Figure 5). The male:female ratio for this age group was 1.25:1 compared to 1:1 overall.

Table 1. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 9 to 22 July 1997

Disease[1,2]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
Diphtheria	0	0	0	0	0	0	0	0	0	0	0[3]	0
Haemophilus influenzae type b	0	0	0	0	0	1	1	0	2	5	25	32
Measles	1	4	0	3	4	0	15	6	33	14	253	225
Mumps	0	0	1	NN	0	0	3	1	5	4	95	53
Pertussis	0	64	0	22	44	5	47	21	203	98	3523	1489
Rubella	0	1	1	16	1	0	12	1	32	78	668	1288
Tetanus	0	0	0	2	0	0	0	0	2	0	6	1

NN. Not Notifiable

1. No notifications of poliomyelitis have been reported since 1986.
2. 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.
3. The reported case of diptheria (*CDI* 1997;21:13) has since been found to be non-toxigenic.

Table 2. Notifications of other diseases received by State and Territory health authorities in the period 9 to 22 July 1997

Disease[1,2]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
Arbovirus Infection (NEC)[3]	0	1	2	0	0	0	1	1	5	3	107	72
Barmah Forest virus infection	0	4	-	14	0	0	0	0	18	35	455	583
Campylobacteriosis[4]	14	-	7	147	78	13	118	53	430	382	5643	5521
Chlamydial infection (NEC)[5]	7	NN	23	152	0	4	76	68	330	318	3990	3502
Dengue	0	0	0	1	0	-	0	0	1	0	190	23
Donovanosis	0	NN	0	0	NN	0	0	1	1	1	15	26
Gonococcal infection[6]	0	10	58	37	0	0	10	49	164	142	2224	1827
Hepatitis A	1	68	6	28	3	0	4	1	111	87	1755	1235
Hepatitis B incident	0	1	2	0	0	0	2	3	8	6	188	110
Hepatitis C incident	0	0	0	-	0	0	-	-	0	0	5	16
Hepatitis C unspecified	11	NN	12	133	NN	10	154	15	335	486	4379	4543
Hepatitis (NEC)	0	0	0	0	0	0	1	NN	1	0	10	10
Legionellosis	0	3	0	1	2	0	0	4	10	5	87	91
Leptospirosis	0	0	0	10	0	0	0	0	10	16	68	125
Listeriosis	0	0	0	0	0	0	0	0	0	3	44	27
Malaria	0	4	7	31	0	0	1	4	47	37	412	388
Meningococcal infection	1	6	1	4	0	0	5	3	20	18	171	132
Ornithosis	0	NN	0	0	0	0	2	0	2	2	34	42
Q Fever	0	14	0	19	0	0	2	1	36	35	293	249
Ross River virus infection	0	71	10	99	8	0	8	7	203	168	5929	7098
Salmonellosis (NEC)	5	17	12	58	13	2	34	21	162	209	4249	3290
Shigellosis[4]	0	-	1	7	1	1	6	16	32	31	463	336
Syphilis	2	19	7	11	0	0	0	4	43	48	613	709
Tuberculosis	0	6	4	4	1	0	13	2	30	56	472	559
Typhoid[7]	0	0	0	0	0	0	2	0	2	1	42	50
Yersiniosis (NEC)[4]	0	-	0	4	2	0	1	0	7	14	150	131

1. For HIV and AIDS, see Tables 4 and 5. For rarely notified diseases, see Table 3.
2. 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.
3. NT: includes Barmah Forest virus.
4. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
5. WA: genital only.
6. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
7. NSW, Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified

\- Elsewhere Classified.

Table 3. Notifications of rare[1] diseases received by State and Territory health authorities in the period 9 to 22 July 1997

Disease[2]	Total this period	Reporting States or Territories	Total notifications 1997
Brucellosis			17
Chancroid			1
Cholera			2
Hydatid infection	1	Qld	21
Leprosy			7

1. Fewer than 60 cases of each of these diseases were notified each year during the period 1988 to 1996.
2. No notifications have been received during 1997 for the following rare diseases: botulism, lymphogranuloma venereum, plague, rabies, yellow fever, or other viral haemorrhagic fevers.

Notifications of campylobacteriosis for 1997 were highest for the 0 - 4 years age group (Figure 6). More males were reported than females, with an overall male:female ratio of 1.2:1. The number of notifications of campylobacteriosis received for the year to date is 5,880.

National Influenza Surveillance, 1997

Three types of data are included in National Influenza Surveillance, 1997. These are sentinel general practitioner surveillance conducted by the Australian Sentinel Practice Research Network, Department of Human Services, Victoria, Department of Health, New South Wales and Department of Health and Community Services, Northern Territory; laboratory surveillance data from the Communicable Diseases Intelligence Virology and Serology Laboratory Reporting Scheme, LabVISE, and the World Health Organization Collaborating Centre for Influenza Reference and Research; and absenteeism surveillance conducted by Australia Post. For further information about these schemes, see CDI 1997; 21:126.

Overall influenza activity continued to rise this fortnight, although the sentinel general practitioner consultation rate recorded by the Department of Health, New South Wales, was lower than that seen in late June. Reports of both influenza A and B were received. The majority of reports this period were for influenza A. The epidemic of influenza B throughout May, June and July this year is declining, and influenza A activity remains high.

Laboratory Surveillance

Two hundred and thirty-seven reports of influenza virus were recorded by the LabVISE scheme this fortnight. Of these, 123 were for influenza A, 94 for influenza B and 20 were untyped (Figure 7). An epidemic of influenza B has occurred this season, which is consistent with the two-yearly pattern for influenza B outbreaks. Data for the months of May and June demonstrate higher numbers of influenza B reports than the other epidemic years; 1993 and 1995. The influenza A:influenza B ratio in 1993 and

Figure 6. Campylobacteriosis notifications, 1997, by age group and sex.

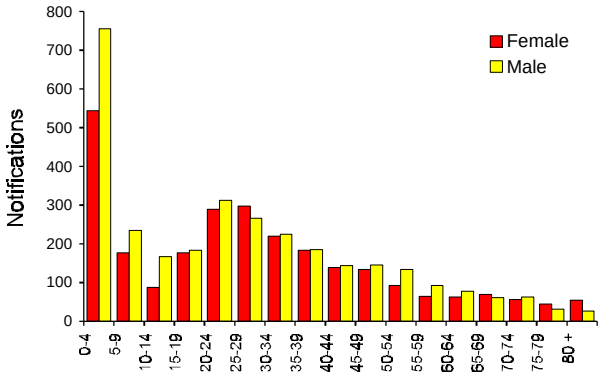


Figure 7. Laboratory reports of influenza, 1997, by type and week of specimen collection

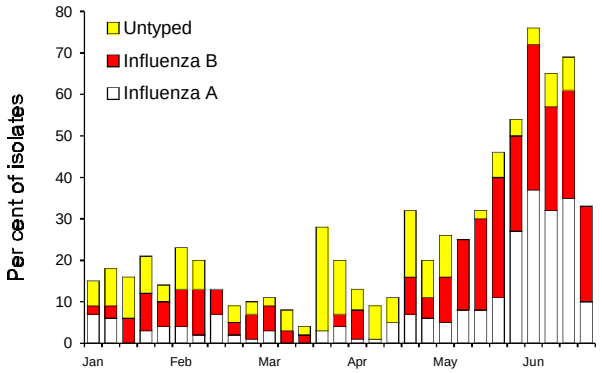
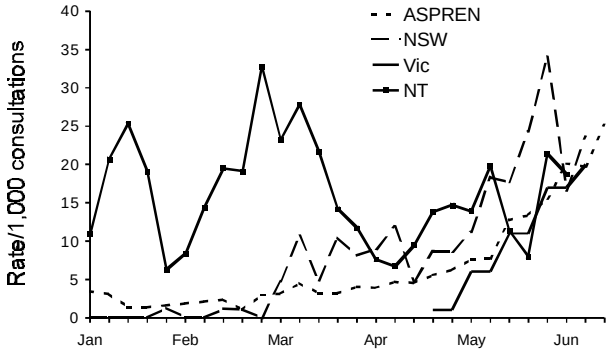


Figure 8. Sentinel general practitioner influenza consultation rates, 1997, by week and scheme



1995 was 0.8:1 and 2:1 respectively. This is in contrast to the ratio in the non-epidemic years of 1994 and 1996; when it was 14:1 and 21:1 respectively. The ratio for 1997 to date is 0.8:1, again demonstrating that an epidemic of influenza B has occurred this year. Reports of both influenza A and B are predominantly in the younger age groups.

Sentinel General Practitioner Surveillance

Consultation rates for influenza-like illness from the New South Wales scheme decreased during early July, after peaking at 34 per 1,000 encounters in the latter part of June (Figure 8). The Department of Human Services, Victoria, recorded a rate of 20 consultations per 1,000 encounters for the first 2 weeks of July. Consultation rates for influenza-like illness in the ASPREN scheme rose again in the last two weeks to 25 cases per 1,000 consultants. Updated data from the Northern Territory were not available for this period.

Absenteeism Surveillance

Australia Post recorded a national absenteeism rate of 2.9%. This has remained stable throughout the season so far.

HIV and AIDS Surveillance

National surveillance for HIV disease is coordinated by the National Centre in HIV Epidemiology and Clinical Research (NCHECR), in collaboration with State and Territory health authorities and the Commonwealth of Australia. Cases of HIV infection are notified to the National HIV Database on the first occasion of diagnosis in Australia, by either the diagnosing laboratory (ACT, New South Wales, Tasmania, Victoria) or by a combination of laboratory and doctor sources (Northern Territory, Queensland, South Australia, Western Australia). Cases of AIDS are notified through the State and Territory health authorities to the National AIDS Registry. Diagnoses of both HIV infection and AIDS are notified with the person's date of birth and name code, to minimise duplicate notifications while maintaining confidentiality.

Tabulations of diagnoses of HIV infection and AIDS are based on data available three months after the end of the reporting interval indicated, to allow for reporting delay and to incorporate newly available information. More detailed information on diagnoses of HIV infection and AIDS is

Table 4. New diagnoses of HIV infection, new diagnoses of AIDS and deaths following AIDS occurring in the period 1 to 31 March 1997, by sex and State or Territory of diagnosis

										Totals for Australia			
		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
HIV diagnoses	Female	2	1	0	2	1	0	2	0	8	11	22	24
	Male	1	12	2	8	1	0	14	1	39	73	171	200
	Sex not reported	0	6	0	0	0	0	0	0	6	0	12	2
	Total[1]	3	19	2	10	2	0	16	1	53	84	205	226
AIDS diagnoses	Female	0	1	0	0	0	0	1	0	2	4	4	6
	Male	0	7	1	0	1	0	5	0	14	72	56	182
	Total[1]	0	8	1	0	1	0	6	0	16	76	60	188
AIDS deaths	Female	0	0	0	0	0	0	0	0	0	0	3	8
	Male	0	7	0	3	1	0	4	2	17	58	52	143
	Total[1]	0	7	0	3	1	0	4	2	17	58	55	151

1. Persons whose sex was reported as transsexual are included in the totals.

Table 5. Cumulative diagnoses of HIV infection, AIDS and deaths following AIDS since the introduction of HIV antibody testing to 31 March 1997, by sex and State or Territory

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia
HIV diagnoses	Female	21	483	4	108	46	4	182	76	924
	Male	178	10426	91	1740	607	78	3545	812	17477
	Sex not reported	0	2055	0	0	0	0	28	0	2083
	Total[1]	199	12978	95	1853	653	82	3764	891	20515
AIDS diagnoses	Female	7	150	0	34	19	2	57	19	288
	Male	80	4127	28	710	302	39	1468	319	7073
	Total[1]	87	4288	28	746	321	41	1532	340	7383
AIDS deaths	Female	2	107	0	27	14	2	39	13	204
	Male	52	2918	22	499	206	26	1151	232	5106
	Total[1]	54	3031	22	528	220	28	1196	246	5325

1. Persons whose sex was reported as transsexual are included in the totals.

Table 6. Australian Sentinel Practice Research Network reports, weeks 28 and 29, 1997

Condition	*Week 28, to 13 July 1997* Reports	*Week 28, to 13 July 1997* Rate per 1,000 encounters	*Week 29, to 20 July 1997* Reports	*Week 29, to 20 July 1997* Rate per 1,000 encounters
Chickenpox	9	1.4	8	1.1
Gastroenteritis	52	7.9	66	8.9
HIV testing (doctor initiated)	6	0.9	6	0.8
HIV testing (patient initiated)	13	2.0	11	1.5
Influenza	166	25.2	187	25.2
Measles	0	0.0	1	0.1
Pertussis	1	0.2	1	0.1
Ross River virus infection	0	0.0	0	0.0
Rubella	1	0.2	1	0.1

published in the quarterly Australian HIV Surveillance Report, available from the National Centre in HIV Epidemiology and Clinical Research,

376 Victoria Street, Darlinghurst NSW 2010. Telephone: (02) 9332 4648 Facsimile: (02) 9332 1837.

HIV and AIDS diagnoses and deaths following AIDS reported for March 1997, as reported to 30 June1997, are included in this issue of *CDI* (Tables 4 and 5).

Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network (ASPREN) currently comprises 107 general practitioners from throughout the country. Up to 9,000 consultations are reported each week, with special attention to 12 conditions chosen for sentinel surveillance. Of these, CDI reports the consultation rates for chickenpox, gastroenteritis, HIV testing (doctor initiated), HIV testing (patient initiated), influenza, measles, pertussis, Ross River virus infection and rubella. For further information, including case definitions, see CDI 1997;21:6.

Australian Sentinel Practice Research Network

Data for weeks 28 and 29 ending 13 and 20 July respectively are included in this issue of *CDI* (Table 6). The rate of reporting for gastroenteritis has remained stable in recent weeks whilst that for chickenpox has fallen. The consultation rates for measles, pertussis and rubella remain low.

LabVISE

The Virology and Serology Laboratory Reporting Scheme, LabVISE, is a sentinel reporting scheme. Twenty-one laboratories contribute data on the laboratory identification of viruses and other organisms. Data are collated and published in Communicable Diseases Intelligence each fortnight. These data should be interpreted with caution as the number and type of reports received is subject to a number of biases. For further information, see CDI 1997;21:8-9.

There were 1,550 reports received in the *CDI* Virology and Serology Laboratory Reporting Scheme this period (Tables 7 and 8).

Figure 9. Parvovirus laboratory reports, 1995 to 1997, by month of specimen collection

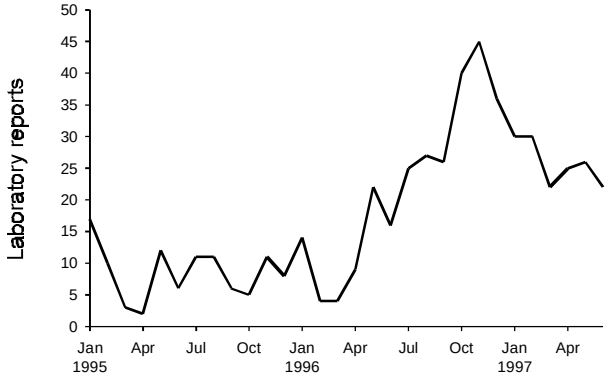


Figure 10. Parvovirus notifications, 1997, by age group and sex

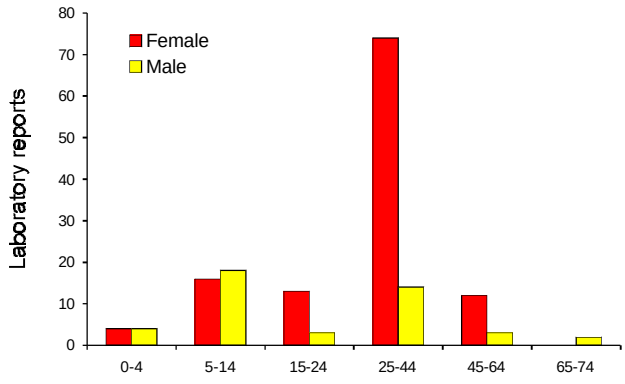


Figure 11. Parainfluenza virus laboratory reports, 1995 to 1997, by type and month of specimen collection

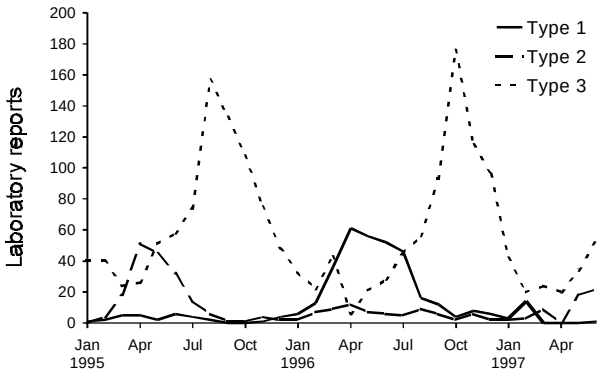
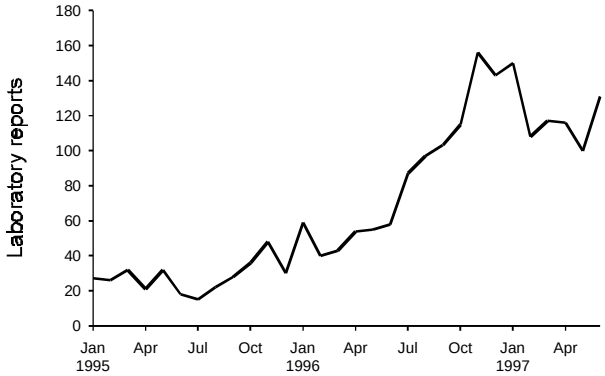


Figure 12. Mycoplasma pneumoniae laboratory reports, 1995 to 1997, by month of specimen collection



The number of parvovirus reports has declined after peaking in November 1996 (Figure 9). There were 17 laboratory reports of parvovirus this fortnight. For the year to date there have been 167 reports received. Most were females in the 25 - 44 years age group (Figure 10).

Thirty-eight reports of parainfluenza virus were received this period. These included parainfluenza virus type 1(1), type 2(3), type 3(30) and untyped (4) (Figure 11). The number of reports of parainfluenza virus type 3 has risen recently with 29 (97%) patients below 14 years of age. We can expect more reports in the coming months as they usually peak in September/October.

Eighty-seven reports of rotavirus were received this period for 46 males and 38 females. Eighty-two per cent of reports were for children under 5 years of age. The number of reports remains average for the time of year.

Laboratory reports of *Mycoplasma pneumoniae* have remained high since late 1996 (Figure 12). There were 73 reports received in the last fortnight. The male:female ratio was 1:2, with 71% in patients under 25 years of age.

Table 7. Virology and serology laboratory reports by State or Territory[1] for the reporting period 3 to16 July 1997, historical data[2], and total reports for the year

	States or Territory[1]							Total this fortnight	Historical data[2]	Total reported in *CDI* in 1997
	ACT	NSW	Qld	SA	Tas	Vic	WA			
Measles, mumps, rubella										
Measles virus						1		1	2.3	37
Mumps virus						1		1	1.3	23
Rubella virus	3		2	2			1	8	13.2	404
Hepatitis viruses										
Hepatitis A virus	7	3	4	2		1	1	18	10	499
Arboviruses										
Ross River virus			4	1				5	18.7	1,954
Barmah Forest virus			1					1	6.2	187
Adenoviruses										
Adenovirus type 1				2		1		3	0.8	17
Adenovirus type 7						1		1	0.7	5
Adenovirus not typed/pending	6	5	1	9		18	7	46	41.8	573

Table 7. Virology and serology laboratory reports by State or Territory[1] for the reporting period 3 to16 July 1997, historical data[2], and total reports for the year, continued

	States or Territory[1]							Total this fortnight	Historical data[2]	Total reported in *CDI* in 1997
	ACT	NSW	Qld	SA	Tas	Vic	WA			
Herpes viruses										
Cytomegalovirus	5	4	11	3		12	7	42	57.3	715
Varicella-zoster virus	5	1	13	7	2	28	2	58	33.8	860
Epstein-Barr virus	7	12	17	21		5	10	72	59.2	1,654
Other DNA viruses										
Parvovirus		2	1	5		9		17	5.2	236
Picornavirus family										
Coxsackievirus A9	3							3	0.2	3
Coxsackievirus A16	2							2	0.2	8
Echovirus type 5	1							1	0	5
Echovirus type 9	1							1	0.5	1
Poliovirus type 2 (uncharacterised)				1		1		2	0.3	10
Poliovirus type 3 (uncharacterised)		1						1	0.3	3
Rhinovirus (all types)				1		3		4	29.5	368
Enterovirus not typed/pending			2					2	30.5	372
Ortho/paramyxoviruses										
Influenza A virus	1	43		2		68	8	122	147.2	352
Influenza A virus H3N2							1	1	7.3	2
Influenza B virus	2	7	4	2	1	41	37	94	11.5	353
Influenza virus - typing pending				20				20	0	214
Parainfluenza virus type 1				1				1	12.3	41
Parainfluenza virus type 2				1		2		3	8.3	80
Parainfluenza virus type 3	1	1	1	7		12	8	30	28	466
Parainfluenza virus typing pending				4				4	1.5	185
Respiratory syncytial virus	54	80	19	42	11	294	83	583	525.2	2,094
Paramyxovirus (unspecified)						9		9	0.3	12
Other RNA viruses										
Rotavirus	6	1		9		63	8	87	87.7	608
Norwalk agent						5		5	1	65
Other										
Chlamydia trachomatis not typed	53	10	31	22	6	4	76	202	116.7	3,031
Chlamydia psittaci					1	3		4	2.7	46
Chlamydia species		2						2	0.7	21
Mycoplasma pneumoniae	4	36	20	5		4	4	73	21.8	1,072
Coxiella burnetii (Q fever)		2	1					3	6.5	214
Rickettsia tsutsugamushi						1		1	0.5	17
Bordetella pertussis	2	1	3			10		16	9.7	1,093
Cryptococcus species	1							1	0.2	13
TOTAL	164	211	135	169	21	597	253	1,550	1,301.00	17,913

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.
2. 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 8. Virology and serology laboratory reports by contributing laboratories for the reporting period 3 to 16 July 1997

State or Territory	Laboratory	Reports
Australian Capital Territory	The Canberra Hospital, Canberra	188
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	64
	Royal Prince Alfred Hospital, Camperdown	18
	South West Area Pathology Service, Liverpool	91
Queensland	Queensland Medical Laboratory, West End	146
South Australia	Institute of Medical and Veterinary Science, Adelaide	168
Tasmania	Royal Hobart Hospital, Hobart	19
Victoria	Microbiological Diagnostic Unit, University of Melbourne	2
	Monash Medical Centre, Melbourne	95
	Royal Children's Hospital, Melbourne	315
	Victorian Infectious Diseases Reference Laboratory, Fairfield	190
Western Australia	Princess Margaret Hospital, Perth	162
	Western Diagnostic Pathology	92
TOTAL		1550

Overseas briefs

Source: Public Health Laboratory Sevrice, Communicable Diseases Surveillance Centre, England and Department of Health, New Zealand

Escherichia coli *O157, England*

Outbreak associated with a music festival: Eight cases of *Escherichia coli* O157 phage type 2 infection and one case of haemolytic uraemic syndrome (HUS) were reported from people who attended a music festival in late June in the south-west of England. Seven of the eight isolates were indistinguishable in tests carried out by the Public Health Laboratory Service. Interviews with all patients identified no common source of food or water, and they had not camped close to each other. The festival was held on a working dairy farm. Over 500 cows grazed on the site until a week before the festival. The field was contaminated with cattle faeces, and heavy rain before the festival resulted in the site being wet and muddy. Patients reported getting muddy and being unable to wash before eating. Faecal samples have been collected from cows, and the culture results are not yet available.

Outbreak associated with a farm visit: In the past two months, three children in the south-east of England have developed infection with *Escherichia coli* O157 after visiting an open farm in Hertfordshire. Two subsequently developed haemolytic uraemic syndrome (HUS). *E. coli* O157 was also isolated from goats on the farm. Phage typing and further analysis by the Public Health Laboratory Service showed that all the *E. coli* isolates, from goats and humans, were indistinguishable strains of phage type 21. This is the second most commonly isolated phage type in England and Wales. The farmer has closed the farm voluntarily. Precautionary measures should be taken when organising visits to farms, to reduce the risk of infection.

Measles, New Zealand

A measles epidemic began in February 1997, with community outbreaks in Auckland and Hamilton. Case numbers increased rapidly during April, May and June and spread to affect most geographical regions of New Zealand. To the end of June 1997, there had been 927 notifications of which 422 were confirmed by laboratory testing or by a history of contact with a laboratory confirmed case. Of these cases, 54 were hospitalised. There have been no deaths reported. The Ministry of Health and the regional health authorities have introduced an intensified immunisation programme to control measles. This programme involves identifying local outbreaks of the disease, and coordinating a prompt and intensified local response. This includes vaccination of all 2 - 10 year old children with an early second dose of MMR vaccine, in place of the dose that is usually given at 11 years of age.

CDI is produced fortnightly by the National Centre for Disease Control, Department of Health and Family Services, GPO Box 9848 Canberra ACT 2601; fax: (06) 289 7791, telephone: (06) 289 1555. For subscriptions or change of address please fax (06) 269 1212 or write to PO Box 462, Fyshwick ACT 2609.

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