Annual report of the Australian Meningococcal Surveillance Programme, 1998

The Australian Meningococcal Surveillance Programme[1]

Abstract

The National Neisseria Network has undertaken meningococcal isolate surveillance by means of a collaborative laboratory-based initiative since 1994. The phenotype (serogroup, serotype and serosubtype) and antibiotic susceptibility of 323 isolates of *Neisseria meningitidis* from invasive cases of meningococcal disease were determined in 1998. Ninety per cent of the invasive isolates were either serogroup B or C. Serogroup B strains predominated in all States and Territories and were isolated from sporadic cases of invasive disease. Serogroup B phenotypes were diverse. Serogroup C isolates were most prominent in New South Wales, especially in adolescents and young adults. C:2a:P1.5 was the most frequently encountered phenotype and C:2b:P1.5,2 strains were also distributed widely. About three-quarters of all isolates showed decreased susceptibility to the penicillin group of antibiotics (MIC 0.06 to 0.5 mg/L). Four isolates showed reduced susceptibility to rifampicin, one to ciprofloxacin and one to chloramphenicol. *Commun Dis Intell* 1999;23:317-323.

Introduction

Invasive meningococcal diseases continued to attract considerable public attention in 1998. The manifestations of meningococcal disease may range from the mild and even subclinical to the rapidly progressive and fatal. Many of the reasons for these different responses remain unknown. However, the host response and outcome of disease in an individual patient and the patterns of the infection within a community may be materially altered by the characteristics of the infecting organism.[1,2] The public health response to a suspected outbreak or cluster of cases is also influenced by certain features of the meningococci concerned, for example vaccines

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are available for some serogroups of meningococci but not for others, and certain phenotypes have been linked to disease outbreaks.

A national programme for the examination of strains of *Neisseria meningitidis* (*N. meningitidis*) from cases of invasive meningococcal disease was commenced in 1994 with the co-operation and participation of reference laboratories in each State and Territory. This laboratory-based activity is designed to supplement data from existing clinical notification schemes by adding information on the phenotype (the serogroup, the serotype and subserotype) and antibiotic susceptibility of invasive isolates to clinical data. In certain instances other laboratory investigations, mainly molecular studies, are undertaken to provide further epidemiological information.

Reports summarising data gathered since the inception of the programme were published in *CDI*.[3-7] The following report deals with the calendar year 1998.

Methods

The National Neisseria Network (NNN) is a collaborative programme for the laboratory surveillance of the pathogenic Neisseria, *N. meningitidis* and *N. gonorrhoeae.*[3-7] A network of reference laboratories in each State and Territory (see acknowledgments) performs meningococcal isolate surveillance. Each case was based upon isolation of a meningococcus from a normally sterile site. Information on the site of infection, the age and sex of the patient and the outcome (survived/died) of the infection was sought. The isolate surveillance programme categorises cases on the basis of site of isolation of the organism. Where an isolate is grown from both blood and CSF cultures in the same patient, the case is classified as one of meningitis. It is recognised that the total number of cases and particularly the number of cases of meningitis, for example, where there was no lumbar puncture or else where lumbar puncture was delayed and culture was sterile, was underestimated. However, the above approach has been used since the beginning of this programme and is continued for comparative purposes.

Phenotyping of invasive isolates of meningococci by serotyping and serosubtyping 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 (RIVM), The Netherlands.

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

Sensitive	MIC ≤ 0.03 mg/L
Less sensitive	MIC 0.06 - 0.5 mg/L
Relatively resistant	MIC ≥ 1 mg/L

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

Results

Number of isolates

A total of 323 invasive isolates of meningococci was examined in 1998. There were 113 isolates from patients whose infections were acquired in New South Wales (35% of all isolates), 81 (25%) from Queensland, 42 (13%) from Western Australia, 40 (12.5%) from Victoria, 24 (7.5%) from South Australia, 13 (4%) from Tasmania, 9 (3%) from the Northern Territory and 1 (0.3%) from the Australian Capital Territory (Table 1).

Seasonality

Thirty-eight (11.7%) of cases occurred between 1 January and 31 March, 79 (24.5%) between 1 April and 30 June, 132 (40.9%) between 1 July and 30 September and 74 (22.9%) between 1 October and 31 December. A winter peak of meningococcal disease is usual.

Age group

The age distribution of patients infected with invasive isolates in each State and Territory is shown in Table 1. Nationally, the peak incidence of meningococcal disease occurred in those 4 years and under. Those aged less than 1 year or in the 1-4 year age group accounted for 11.8% and 30% of cases respectively. A secondary peak

Table 1. *Neisseria meningitidis* isolates, 1998, by State or Territory and age group

	Age group (years)										
	<1	1-4	5-9	10-14	15-19	20-24	25-44	45-64	65+	NS	All
Qld	5	26	7	4	9	6	17	7	6	0	81
NSW	15	32	6	5	25	10	9	6	4	1	113
ACT	0	1	0	0	0	0	0	0	0	0	1
Vic	6	12	3	2	5	4	5	3	1	0	41
Tas	4	5	0	1	1	0	1	0	1	0	13
SA	5	4	1	2	1	2	1	1	2	2	24
WA	1	14	2	0	10	7	4	2	2	0	42
NT	2	3	1	1	0	0	0	1	1	0	9
Total n	38	97	20	15	51	29	30	20	20	3	323
%	11.8	30	6.2	4.6	15.7	9	9.3	6.2	6.2	1	100

NS Not stated

Table 2. *Neisseria meningitidis* isolates, 1998, by State or Territory and serogroup

State/ Territory	Serogroup										Total	
	B		C		A	Y		W135		NG*		
	n	%	n	%		n	%	n	%	n	%	
Qld	56	70.4	12	13.6	0	6	7.5	2	2.5	5	6	81	25
NSW	53	47	50	44	0	6	5.5	4	3.5	0		113	35
ACT	1	100	0		0	0		0		0		1	0.3
Vic	29	72.5	7	17.5	0	4	10	0		0		40	12.5
Tas	9	69	2	15.5	0	0		0		2	15.5	13	4
SA	14	58.3	7	29.1	0	11	4.2	2	8.4	0		24	7.5
WA	36	87	4	8	0	1	2.5	1	2.5	0		42	13
NT	8	89	1	11	0	0		0		0		9	2.5
Total	204	64	81	25	0	18	6	99	3	7	2	323	100

*NG = non-groupable

was noted in the 15-19 year age group when 51 cases accounting for 15.7% of the total were recorded. A further 29 cases (9%) occurred in those aged 20-24 years. Western Australia differed from the national pattern in that the number of cases of invasive disease in those aged 15-24 years was higher than for those aged 4 years or less. In Queensland, South Australia and Victoria, the secondary peak in the young adult group was half or less than in the infant group. New South Wales approximated the national average age distribution of disease.

Serogroup, serotype and serosubtype (phenotype) distribution

The distribution of the isolates by serogroup is shown in Table 2. Nationally, 204 serogroup B isolates represented 64% of all strains, the same proportion as in 1997. The 81 serogroup C strains (25%) were less than the number and proportion detected in 1997. There was an increase in the number (18) and proportion (6%) of serogroup Y strains in 1998. Nine serogroup W135 meningococci were also identified. Seven isolates were not serogroupable. No serogroup A isolates were encountered in 1998.

Table 3. Most frequently isolated serotypes and serosubtypes and phenotypes of *N. meningitidis* of interest, by State and Territory in 1998

State/Territory	Serogroup			
	B		C	
	Serotype:serosubtype		Serotype:serosubtype	
Qld	4:P1.4	4 (3, 6)*	2b:P1.5,2	3 (0, 10)*
	NT:P1.4	3 (9, 4)	2a:P1.5	4 (1, 4)
	15:P1.7	1 (3)	2a:P1.5,2	0 (3, 4)
	2b:P1.10	1 (2)	2b:P1.2	0 (3)
NSW	4:P1.4	5 (17, 11)	2a:P1.5	23 (39, 15)
	NT:NST	8 (13, 9)	2b:P1.5,2	6 (8, 10)
	2b:P1.10	4 (11, 8)	2a:P1.5,2	8 (3, 2)
	15:P1.7	1 (7)	2b:P1.2	0 (2, 0)
Vic	NT:P1.4	11 (8, 13)	2a:P1.5	1 (1)
	15:P1.7	1 (3)	2b:P1.10	2 (1)
	4:P1.4	2 (3, 2)	2b:P1.2	2 (1)
	2b:P1.10	1 (2)		
SA	15:P1.7	3	2b:P1.5,2	2
	4:NST	3		
	4 :P1.4	1		
Tas	2b:nst	2	2b:P1.2	1 (2)
ACT	Single isolate only			
NT	2b:nst	5	2a:nst	1

* The numbers of isolates of each phenotype in 1997 and 1996 are shown in parenthesis

The regional data show some important differences in the distribution of serogroups.

Serogroup B predominated in aggregated national data and especially in Western Australia (87% of isolates), Victoria (72%), the Northern Territory (89%) and Queensland (70%). In contrast, in New South Wales the 53 group B strains accounted for 47% of isolates and in South Australia group B isolates were nearly 60% of the total. Group B disease comprised unlinked and apparently sporadic cases. Serogroup C isolates were again concentrated in New South Wales. Fifty group C meningococci or 62% of all serogroup C strains isolated in Australia were from infections there. Group C meningococci represented 44% of the New South Wales isolates and about 30% of South Australian meningococci. Numbers and proportions of group C strains were much lower in other States and Territories. There was a single group C isolate in the Northern Territory, 2 in Tasmania, 11 (14%) in Queensland, 7 (17%) in Victoria and 4 (8%) in Western Australia. No clusters of serogroup C infection were identified.

The distinct serogroup distribution in New South Wales had an age specific pattern. Serogroup B isolates predominated in the 0-4 year age group (29 of 47) isolates whereas serogroup C strains were most prominent (20 of 35) in the adolescent and young adult age group (15-24 years).

There was considerable phenotypic heterogeneity amongst invasive isolates as determined by serotyping and serosubtyping. The predominant serotypes/ serosubtypes in each State and Territory are shown in Table 3, Western Australia excepted. Serogroup B meningococci are more difficult to characterise by serological methods and a number could not be phenotyped. B:4:P1.4 strains were present in New South Wales, Queensland, Victoria and South Australia, and B:15:P1.7 strains in New South Wales, Queensland, Victoria, and South Australia.

There was less heterogeneity amongst serogroup C meningococci. All isolates were either serotype 2a or 2b and the serosubtypes present were either P1.5 or P1.2 or else a combination of both. There were 28 serogroup C strains of phenotype 2a:P1.5 (54% of all group C strains phenotyped). Twenty-three of these were found in New South Wales. Strains of this phenotype were also isolated in Queensland and Victoria. The phenotype 2b:P1.5,2 was also prominent.

Serogroup Y strains were either serotype 14 or else not serotypeable.

Site of isolation

There were 84 isolates from CSF either alone or with a blood culture isolate and 235 from blood cultures alone. There were four isolates from other sterile sites including synovial fluid and skin lesions.

Outcome data for 1998

Outcome data (survived or died) were available for 202 patients (62.5%). Eighteen deaths were recorded (9%) (Table 4). Outcomes were available in 122 serogroup B infections (59%) and 61 serogroup C infections (74%). There were four deaths in serogroup B infections and 10 in serogroup C infections ($p < 0.002$). Where outcomes were known, there were four deaths in 44 patients (9%) with meningitis. Two patients were infected with serogroup B and two with serogroup C strains. Fourteen deaths were recorded in 157 bacteraemic patients (9 %). There were 86 cases of serogroup B meningococcal bacteraemia with 2 deaths and another 47 cases were caused by serogroup C strains among whom 8 fatalities were recorded. Three of 8 patients with serogroup Y septicaemia died. There was one fatal case of septicaemia with serogroup W135.

Antibiotic susceptibility surveillance of invasive meningococcal isolates

Penicillin

Three-hundred and two isolates of the 323 strains were tested for their susceptibility to penicillin. Using defined criteria, 75 strains (25%) were fully sensitive to penicillin and 227 (75%) less sensitive (MIC 0.06 - 0.5 mg/L). These proportions differ little from 1997 data. The penicillin MICs recorded ranged between 0.015 and 0.5 mg/L. Only four isolates had MICs of 0.5 mg/L.

Other antibiotics

All 302 isolates which were tested for susceptibility to ceftriaxone (and by extrapolation to other third generation cephalosporins), were susceptible to these therapeutic agents. A single isolate had decreased susceptibility to chloramphenicol. Four meningococci had raised MICs to

Table 4. Outcome of meningitic and septicaemic cases of meningococcal infection by serogroup, 1998

Disease type	Outcome	Serogroup					
		B	C	Y	W135	NG*	Total
Meningitis	Survived	34	4	1	1	0	40
	Died	2	2	0	0	0	4
	Total	36	6	1	1	0	44
Septicaemia	Survived	84	47	5	5	2	143
	Died	2	8	3	1	0	14
	Total	86	55	8	6	2	157
All cases**	Total	122	61	10	7	2	202
	Died	4	10	3	1	0	18 (9%)

* Non groupable

** Includes one serogroup Y strain from a joint aspirate from a patient who survived.

rifampicin (MICs of 1 mg/L) and one to ciprofloxacin (MIC 0.25 mg/L) (sulphonamide testing was not performed).

Discussion

The total of 323 isolates examined by NNN laboratories in the Australian Meningococcal Surveillance Programme in 1998 was less than the 343 available in 1997. From 1994 onwards, the number of isolates examined each year by the NNN has increased. This has been in part at least the result of improved surveillance, although increases in disease incidence have also occurred. The decrease in overall numbers in 1998 reverses this trend, but this did not occur in all jurisdictions. The numbers of isolates available in New South Wales and Victoria were between 70% and 75% of the total examined in 1997. In Western Australia and Queensland the numbers of isolates increased, from 23 to 42 and 62 to 81 respectively. Although considerable public attention was focussed on meningococcal disease in South Australia in 1998, the number of cases was essentially unchanged from 1997. The number of isolates available for examination will always be less than the number of clinically notified cases because clinical surveillance case definitions include culture negative cases. A number of clinical cases were confirmed only by non-culture based laboratory examinations. These procedures include nucleic-acid-based amplification assays (NAA) and serological examination. These cases were not included in this year's analysis of isolate-based surveillance. Some of the techniques in use can provide additional data on the serogroup of the isolate. It is anticipated that laboratory confirmation of invasive meningococcal disease by non-culture based methods will continue to increase. NNN laboratories may be contacted for advice regarding these tests.

The ratio of cases of meningitis to bacteraemia was significantly lower in 1998, accentuating a trend noted in 1997 (Figure1). From 1994 to 1996, the ratio of cases of meningitis to bacteraemia was close to 1.0:1 in NNN data. In 1997 this ratio decreased to 0.6:1 and in 1998 further declined to 0.3:1. NNN case definitions, which are based on site of isolation, tend to overestimate the number of bacteraemic cases. This is because those cases of clinical meningitis where only a blood culture was positive were regarded as bacteraemias in NNN data. It has been recognised anecdotally that there is an increasing reluctance on the part of clinicians to perform lumbar puncture early in cases of suspected meningitis or to omit the investigation altogether. However, NNN case definitions have been constant over the past 5 years. Another factor which may impact on this changing picture, is the continuing emphasis on early antibiotic treatment for meningococcal disease. It is more feasible to obtain a blood culture when intravenous antibiotics are administered than to perform a lumbar puncture, so this may also influence data on categorisation. However, it would appear that the reluctance or inability to obtain CSF early in the disease, rather than a shift in disease manifestations, is the principal reason for the change in isolation pattern observed. Again, non-culture based diagnosis may assist in the clarification of disease manifestations.

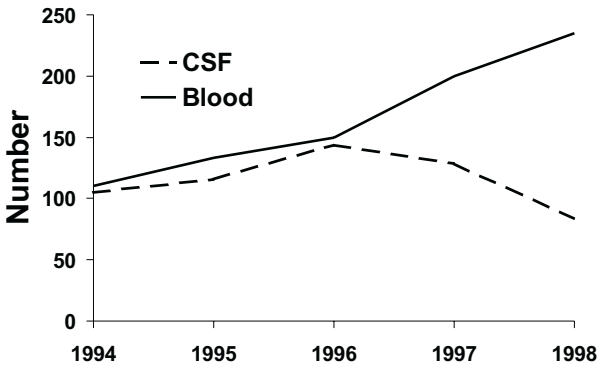
The predominant disease pattern observed was one of sporadic infection with serogroup B meningococci. The proportion of serogroup C cases was less in 1998 than in 1997, which has relevance to decisions regarding the use of conjugate group C vaccines.[9] Serogroup C cases were also sporadic in nature in 1998. Serogroup C disease was most often encountered in New South Wales, but infrequently in other States and Territories. No serogroup A meningococci were isolated in 1998. Also of interest was the increased number and proportion of cases of serogroup Y infection. Although distributed in low numbers in a number of States, they represented about 5% of all infections. Serogroup Y infections have increased in some parts of the United States of America in recent years.[10]

Children aged 4 years or less were the group most frequently infected. A secondary incidence peak was noted in young adults and adolescents, especially in Western Australia and New South Wales. Serogroup C disease occurred more often in the young adult age group. This picture of serogroup B and C disease occurring as sporadic cases is typical of the pattern of meningococcal disease in developed countries. Clusters of cases of serogroup C infection have been present in recent years but were not seen in 1998.[5,6]

Phenotyping data obtained on the basis of serotyping and serosubtyping was again available from all but one centre in 1998. The heterogeneity of serogroup B isolates present in Australia was confirmed. Of interest amongst the group B strains were phenotypes B:4:P1.4 and B:15:P1.7 associated with hyperendemic disease in New Zealand and Europe respectively. B:4:P1.4 strains were encountered in low numbers in a number of States.

Of some interest in the reports from 1996 and 1997[5,6] was the appearance and spread of the phenotypes C:2a:P1.5 and C:2a:P1.5,2. These phenotypes have been implicated in hyperendemic meningococcal disease in Canada for a number of years[8] and have also been reported in Europe. They were responsible for clusters of cases in Western Sydney in 1996 and 1997. The C:2a:P1.5 phenotype was responsible for 23 cases of invasive disease in New South Wales in 1998, but no case clusters were recognised. This phenotype was also present in Queensland and Victoria in 1998.

Figure 1. Numbers of meningococcal isolates from CSF and blood culture, 1994 to 1998



Overall, the mortality recorded in assessable cases was 9%, higher than the 6% observed in previous years. A higher mortality rate was observed with serogroup C and serogroup Y infections than with serogroup B cases, but outcome data was incomplete. Although serogroup C strains have been associated with increased mortality overseas, other factors for which data were not available may explain this difference, such as age and time from onset to presentation and treatment. The increase in mortality was observed in a number of States.

Continuing interest has been shown in the decrease in susceptibility of meningococci to penicillin in many parts of the world. Further, other isolates have occasionally been shown to be resistant to other antibiotics which are used currently for either therapeutic or prophylactic purposes in meningococcal disease. This programme therefore includes routine examination of the antibiotic susceptibility of invasive isolates as part of its surveillance. Trend data indicates that since 1994 there has been an increase in the proportion of invasive meningococci showing some decrease in penicillin susceptibility. In 1994, 52% of strains were in the 'less sensitive' range (MIC 0.06 - 0.5 mg/L). In 1995, 155 (63%) of 247 strains tested were 'less sensitive'. The proportion of less sensitive isolates increased further to 74% of 297 isolates in 1996. This proportion remained unchanged in 1997 (73%) and no further change was recorded in 1998. The isolation of a meningococcus with an MIC in the less sensitive range does not mean that therapeutic failure will occur, but the increase in the number and proportion of strains in this category is rather an epidemiological marker of the slow progression to 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 more. There were four isolates with rifampicin MICs of 1 mg/L or more in 1998. One isolate was chloramphenicol resistant and another had decreased susceptibility to ciprofloxacin.

The programme has examined a total of more than 1,400 strains from all States and Territories since 1994 and has assisted in clarifying and expanding information on invasive meningococcal isolates in Australia. The nature and high public recognition of meningococcal disease suggests that these efforts should continue. For further details the relevant NNN member should be contacted (see acknowledgments for contact numbers).

Acknowledgments

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.

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Changes to the Editorial team

The production team for *CDI* has recently farewelled the Editor Eddie O'Brien, and welcomed our new Editor, Jenny Thomson. Eddie's valuable input, skills and expertise, as well as his cheerful interaction as a team member will be missed. We wish Eddie well in his new position and thank him for his contribution to *CDI*. Jenny Thomson comes to us with qualifications and experience that will greatly benefit *CDI*. We welcome Jenny to the team and look forward to her ongoing input to the quality and development of the publication.

Australian recommendations for the influenza vaccine composition for the year 2000 season

The meeting of the Australian Influenza Vaccine Committee (AIVC) was convened on 7 October 1999 and reconvened on 9 November.

Having considered the information on international surveillance by the WHO, and recent epidemiological data and strain characterisation presented at both AIVC meetings, the Committee decided that the composition of vaccines for the year 2000 season should be as follows:

- **A (H3N2)**: a A/Sydney/5/97 (H3N2) - like strain, 15 µg HA per dose
- **A (H1N1):** a A/New Caledonia/20/99 (H1N1) - like strain, 15 µg HA per dose
- **B:** a B/Beijing/184/93 - like strain, 15 µg HA per dose

It was also determined that the following viruses are suitable vaccine strains:

- A/Sydney/5/97(IVR-108 and RESVIR-13) are A/Sydney/5/97 (H3N2)-like strains
- A/New Caledonia/20/99 (IVR-116) is an A/New Caledonia/20/99 (H1N1)-like strain
- B/Yamanashi/166/98 is a B/Beijing/184/93-like strain

Report of the Australian National Polio Reference Laboratory

1 January 1999 to 30 June 1999

Towards WHO certification as wild poliovirus-free: laboratory surveillance in Australia

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Abstract

Since 1994 the Australian National Polio Reference Laboratory at the Victorian Infectious Diseases Reference Laboratory has been responsible for virological confirmation of the eradication of poliomyelitis in Australia. The laboratory is also a World Health Organization Western Pacific regional polio reference laboratory and the national polio laboratory for the Pacific Island countries and for Brunei Darussalam. It is now over two years since the last case of poliomyelitis was detected in the Western Pacific region of the World Health Organization. The co-operation of staff in all laboratories where polioviruses are handled and where samples from acute flaccid paralysis (AFP) patients are submitted is required until Australia and the region can be declared wild poliovirus-free. The characterisation of all polioviruses isolated in Australia in this reporting period led to the apparent detection of a non Sabin vaccine-like poliovirus in an environmental sample. The virus was found to be identical to a laboratory control isolate by sequencing. The environmental virus is therefore characterised as a contaminant, not a wild isolate. The investigation is outlined in this article, as well as the results of investigation and characterisation of all referred polioviruses. *Commun Dis Intell* 1999;23:324-327.

Introduction

Australia is working towards being certified as wild poliovirus-free. This requires that Australia meet criteria set by the World Health Organization (WHO) Regional Commission for the Certification of Poliomyelitis Eradication in the Western Pacific. Specifically, there must be no cases of poliomyelitis detected through a high quality acute flaccid paralysis (AFP) surveillance scheme.

Acute flaccid paralysis surveillance includes the collection and testing of two faecal samples from at least 80% of AFP cases at least 24 hours apart and within 14 days of onset.[1] The samples must be cultured for enteroviruses in a WHO accredited laboratory; the National Polio Reference Laboratory (NPRL) at the Victorian Infectious Diseases Reference Laboratory (VIDRL). In addition, staff in all laboratories that handle enteroviruses must transport all polio and untyped enteroviruses to the WHO accredited laboratory at VIDRL for identification and characterisation as wild or Sabin vaccine-like polioviruses. These processes have been in place since 1996.

This report describes the laboratory results from AFP surveillance and the identification and characterisation of polioviruses referred to VIDRL in the period from 1 January to 30 June 1999. Regular reports from the NPRL commenced in *CDI* in May 1999.[2] This is the second report from the National Polio Reference Laboratory. Further investigation of a non Sabin-like poliovirus is also described.

Methods and Results

AFP surveillance: samples from patients with acute flaccid paralysis

During the first 6 months in 1999, specimens were received from 10 patients with acute flaccid paralysis (AFP). There were 4 patients in Western Australia, 2 in Victoria, 2 in Queensland and 1 each in New South Wales and South Australia. Eighteen samples were received from the 10 patients. This represents twice as many specimens as received for the same period in 1998. The date of onset was available for only 5 patients. Specimens were collected from 3 of these patients within the recommended 14 days while those from the other 2 patients for whom date of onset was available were collected and referred 1 month and 3 months after onset. No samples yielded polioviruses. Two faecal specimens from 1 patient in Western Australia were positive for enterovirus type 71 (EV71), and 15 samples did not yield any virus (Table 1). There were duplicate stool samples from 4 children with AFP in Western Australia between March and June 1999 but only those from 2 patients were collected within 14 days of onset. An outbreak of EV71 occurred in Western Australia from March to June 1999.[3]

Neutralisation tests to detect poliovirus antibodies were performed on a serum sample from a 2 year old patient from Thursday Island with suspected paralysis. Elevated antibody levels to poliovirus type 1, 2 and 3 suggestive of past immunisation were detected.

Identification and characterisation of referred and stored entero/polio viruses

One poliovirus isolate from South Australia and one from Victoria were received for characterisation. Both were confirmed as Sabin-like by nucleic acid probe hybridisation (NAPH).

Table 1. Enterovirus culture results from 10 Australian acute flaccid paralysis cases, 1 January to 30 June 1999, by district

State	District/City	Specimen type and date	Result
Qld	Miami	F* 16-12-98	Negative
SA	Adelaide	F 04-03-99	Negative
		F 05-03-99	
NSW	Sydney	F 22-03-99	Negative
Qld	Cairns	F 24-03-99	Negative
WA	Perth	F 1 8-04-99	Negative
		F 19-04-99	Negative
WA	Perth	F 16-04-99	Enterovirus 71
		F 19-04-99	Enterovirus 71
		PNA# 21-04-99	Negative
Vic	Melbourne	F 12-05-99	Negative
		F 15-05-99	Negative
Vic	Melbourne	F 27/8-05-1999	Negative
		F 29-05-99	Negative
WA	Hamilton Hill	F 08-06-99	Negative
		F 10-06-99	Negative
WA	Yangebup	F 16-06-99	Negative
		F 17-06-99	Negative

* F = faeces
\# PNA = post nasal aspirate

All stored polioviruses isolated in Australia since January 1995 are required to be tested at the NPRL to enable WHO certification. In March 1999, the NPRL received 137 retrospective poliovirus isolates that had been identified and stored at the State reference laboratory in New South Wales between late 1994 and early 1999. Of these 131 were Sabin vaccine-like, 5 were non–polio enteroviruses (no cytopathic effects seen in polio selective L20B cells) and 1 was non Sabin-like poliovirus type 2.

The polio type 2 isolate was originally from an environmental specimen and was further investigated. It did not react in an NAPH test with Sabin-specific probes on three occasions, which suggested it was non Sabin-like. Enzyme immunoassay (EIA) tests at VIDRL and sequencing of the viral protein 1 (VP1) region at the Centers for Disease Control and Prevention, Atlanta, USA (CDC) also confirmed that the virus was non Sabin-like (Table 2). As wild poliovirus has not been isolated in Australia for over 20 years, it was considered that the isolate of non Sabin-like type 2 might have been a laboratory contaminant. Control viruses used at both the environmental and New South Wales State reference laboratories were therefore referred to the NPRL for characterisation.

The results of testing at NPRL and later at CDC are summarised in Table 2. The State reference laboratory control strains were Sabin vaccine-like. The two attenuated control polioviruses types 1 and 2 from the environmental laboratory were non Sabin vaccine-like (by NAPH and EIA at NPRL and sequencing at CDC). The environmental isolate of poliovirus type 2 was identical to the laboratory's control attenuated type 2 when the sequences of their VP1 regions were compared. It is therefore characterised as a contaminant.

Polioviruses isolated in the Fairfield Hospital Virology Laboratory from the early 1950s to 1991 are being recovered from storage and tested by NAPH. Forty strains

Table 2. Intratypic differentiation testing on isolates and control viruses referred to NPRL for characterisation by State reference and environmental laboratories in New South Wales

Isolate/control	Source laboratory	Test	Poliovirus type	Testing laboratory
Polio 2 NSW "isolate"	EL	NAPH,	Non Sabin 2,	
		EIA	Polio 2 indeterminate	VIDRL
		Sequence VP1	Non Sabin 2♦	CDC
Polio 2 "Atten" control	EL	NAPH,	Non Sabin 2,	
		EIA	Polio 2 indeterminate	VIDRL
		Sequence VP1	Non Sabin 2♦	CDC
Polio 1 Sabin control	VIDRL ex WHO	NAPH#, EIA	Sabin1	VIDRL
Polio 1 Wild control	VIDRL ex WHO	NAPH, EIA	Non Sabin 1	VIDRL
Polio 2 Sabin control	VIDRL ex WHO	NAPH, EIA	Sabin2	VIDRL
Polio 2 Wild control	VIDRL ex WHO	NAPH, EIA	Non Sabin 2	VIDRL
Polio 1 "Sabin" control	RL*	NAPH, EIA	Sabin1	VIDRL
Polio 2 "Sabin" control	RL	NAPH, EIA	Sabin2	VIDRL
Polio 1 "Atten" control	EL Ψ	NAPH, EIA	Non Sabin 1	VIDRL
		Sequence VP1θ	Non Sabin 1	CDC

"Atten" attenuated
*Reference Laboratory
Ψ EL Environmental Laboratory
♦ Indentical sequence
NAPH Nucleic acid probe hybridisation
EIA Enzyme Immuno Assay
θ VP1 Viral Protein 1

Table 3. Chronological summary of identification of enteroviruses and intratypic differentiation of polioviruses from Australian laboratories, 1995 to 30 June 1999 , by State

State	Year	Polio Sabin-like	Polio non Sabin-like	Non Polio Enterovirus	Non Enterovirus/ Negative	Total
Vic	1995	9				9
	1996	17				17
	1997	5				6
	1998	7				7
	1999	1				1
Qld	1995	41		5	8	54
	1996	99		4	9	112
	1997	41				41
	1998	8		15	2	25
WA	1995/ 6	126		359	5	490
	1997	9		33		42
	1998					0*
Tas	1995	1				1
	1996	3				3
	1997	4				4
	1998	4				4
NSW	1994	4				4
	1995	74		5		79
	1996	24				24
	1997	10				10
	1998	19	1[#]			20
SA	1997	3				3
	1998	3				3
	1999	1				1
Total	1995-June 1999	514		421	24	960

*PCR has replaced culture for enteroviruses, so isolates are no longer available.

of poliovirus type 1 have been tested to date. The stored viruses isolated prior to 1963 have been identified as non Sabin-like. All those recovered after this date have been identified as Sabin-like.

The chronological results of testing on entero and polioviruses submitted from all States are summarised in Table 3. Since 1994, 960 virus isolates have been transported to VIDRL from laboratories in five Australian States. Five hundred and fourteen (53%) were confirmed as Sabin vaccine-like polioviruses, 421 (44%) were non polio enteroviruses and 24 (3%) yielded no virus or viruses other than an enterovirus and one was non Sabin-like poliovirus type 2.

Containment of wild poliovirus

A letter and flyer containing information about the containment of wild polioviruses and potentially infectious materials was distributed by the Department of Health and Aged Care to over 600 staff in Australian hospitals and research institutions. The flyer was included, with an article on polio eradication, in the May issue of *Microbiology Australia*.[4] One year after the last case of poliomyelitis is detected in the world, all such viruses and materials must be destroyed or transported to a designated 'Physical Containment Level 3' laboratory.[5] The NPRL welcomes queries concerning the status of stored materials and appropriate action to be taken.

Other activities

The NPRL provided support services to other laboratories. Cell cultures of RD and L20B cells were supplied to laboratories in New South Wales and Western Australia to assist in the identification of polio and non polio enteroviruses. An aliquot of rabbit anti-enterovirus type 71 serum was supplied to a Western Australian laboratory for the identification of enterovirus isolates during the outbreak in early 1999.

The laboratory was designated as one of three WHO Western Pacific regional polio reference laboratories in 1990 and serves as the national polio laboratory for the Pacific Island countries and for Brunei Darussalam. Activities include intratypic differentiation of polioviruses referred from national laboratories, administration of the quality assurance program for the region, accreditation of laboratories, provision of assistance to the regional office, training of personnel in the region and the banking and distribution of cell cultures and of reagents. Virus isolation is performed on samples from AFP cases for countries without virus laboratories.

Discussion

Surveillance and investigation of acute flaccid paralysis

None of the samples from 10 patients with AFP in the first 6 months of 1999 yielded poliovirus. However, the number of patients who had samples for testing in this period was inadequate to meet WHO requirements. The target number for this period was 20 (there should be at least 40 children less than 15 years of age diagnosed with AFP in Australia each year[6]). Nonetheless, compared with 1998 there has been an improvement in the number of patients reported. Awareness of the need for surveillance and testing has been raised by the AFP Study Group of the Australian Paediatric Surveillance Unit, communications in *CDI*[6] and the Australian Poliovirus Laboratory Newsletter.[2]

Identification and characterisation of referred enteroviruses

Apart from the role of determining the vaccine-like status of polio isolates, the value of this AFP surveillance and the reference laboratory was illustrated in the first 6 months of 1999 by the identification of enterovirus type 71 associated with acute flaccid paralysis in an outbreak in Western Australia. As well as the four AFP patients, children were diagnosed with aseptic meningitis and hand-foot and mouth disease.[3] This virus has also been associated with fatal central nervous system disease in Japan, Taiwan, Malaysia and Hong Kong in the last 2 years.[7] As wild poliovirus is eradicated from the world, surveillance leads to the recognition of non-poliovirus causes of acute flaccid paralysis.

Characterisation of polioviruses

One isolate that had been stored in New South Wales and was originally identified in an environmental sample was characterised as not vaccine-like (non Sabin). This isolate is considered to be a laboratory contaminant. The detection of this non Sabin-like poliovirus type 2 highlights the necessity for State laboratories to transport all polioviruses to VIDRL for characterisation in a timely manner. The non Sabin-like virus was originally detected in July 1998, transported to NPRL at VIDRL in March 1999 and first sequenced in May 1999. As part of its certification process, Australia is committed to carry out a rapid outbreak response if wild poliovirus is detected. Had this been a confirmed wild poliovirus isolated from a patient or environmental sample a rapid outbreak investigation would not have been possible given the reported timeline.

The last wild poliovirus in Australia

In early 1998, stored polioviruses isolated from Victorian and some interstate patients and contacts between 1954 and 1966 were transported to CDC. All were presumed to be wild polioviruses as Sabin vaccine was first administered to Australians in 1966. The VP1 region of these viruses was sequenced and compared with viruses from other countries and periods. There is some evidence that circulation of wild poliovirus type 1 may have ceased in Victoria by 1963 (personal communication, Olen Kew CDC). These confirmed wild polioviruses are now archived in the global strain bank located at CDC. NPRL is now recovering and characterising other stored polioviruses with the view to identifying the last wild poliovirus detected in Australia.[8] This testing is offered to all Australian laboratories.

Containment of wild poliovirus

WHO recommends that laboratories prepare inventories of their historic collections of wild poliovirus isolates (including prototypes) with a view to destruction or transfer to a designated laboratory. Since Victoria's historically important polioviruses have now been transferred to the global strain bank at CDC, it is planned that NPRC will destroy all its remaining stored wild polioviruses one year after the last case is detected globally.

There are still reservoirs of polio endemicity in the Indian subcontinent and sub-Saharan Africa. However the strategies to achieve and maintain high routine vaccine coverage, national immunisation days, improved surveillance systems and mopping-up vaccination activities have been accelerated in most of the major reservoir countries to achieve the year 2000 goal.[9]

Acknowledgements

We would like to thank the staff in Australian hospitals and reference laboratories for their continued cooperation in this effort to certify Australia as wild poliovirus-free. We also thank the staff of the Enterovirus and Molecular Virology Laboratories, Division of Viral Diseases, CDC, Atlanta, USA for their assistance in sequencing referred viruses.

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Communicable Diseases Surveillance

Highlights

Communicable Diseases Surveillance consists of data from various sources. The National Notifiable Diseases Surveillance System (NNDSS) is conducted under the auspices of the Communicable Diseases Network Australia New Zealand. The *CDI* Virology and Serology Laboratory Reporting Scheme (LabVISE) is a sentinel surveillance scheme. The Australian Sentinel Practice Research Network (ASPREN) is a general practitioner-based sentinel surveillance scheme. In this report, data from the NNDSS are referred to as 'notifications' or 'cases', whereas those from ASPREN are referred to as 'consultations' or 'encounters' while data from the LabVISE scheme are referred to as 'laboratory reports'.

Vaccine preventable diseases

A total of 466 notifications for vaccine preventable diseases was received during this reporting period, similar to the last period (440) and again lower than the same period in 1998 (498). The total number of notifications for the year to date for 1999 (4,323) was reduced by 37% compared with 1998 (6,896), primarily due to a decrease in pertussis and rubella notifications (Table 1). The number of measles notifications decreased from 37 cases in the last reporting period to 17 cases in this period, mostly reflecting a decrease in notifications from Victoria. Overall the number of year to date cases of measles for 1999 (274) was similar to 1998 (280).

The number of notifications of *Haemophilus influenzae* type b for this period increased from 1 case in the previous reporting period to 4 cases. Overall, the number of year to date cases of *Haemophilus influenzae* type b was higher in 1999 (46) than for the same period in 1998 (29). This was mainly due to an early outbreak in June 1999 in New South Wales in which 12 cases were notified. The ratio of males to females for *Haemophilus influenzae* type b so far this year was the same as the ratio for cases in 1998, 1:1.3 (*CDI* 1999;23:11).

The total number of pertussis notifications to date in 1999 was 3,499 cases, a 39% decrease from the same period in 1998 (5,721) (Figure 1). The number of cases notified in this reporting period decreased in all States (Figure 2), including Tasmania where an outbreak was recently reported. There were more notifications for females than males (male to female ratio 1:1.4), especially for females aged 25 to 69 years old (Figure 3). The number of notifications peaked in the 10-14 year age group (616; 18%).

Figure 1. Notifications of pertussis, Australia, 1998 and 1999, by month of onset

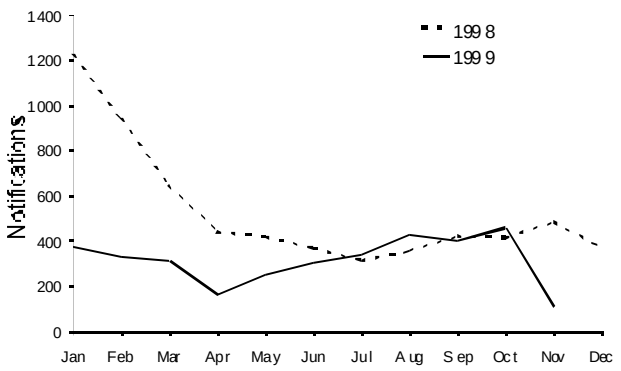


Figure 2. Notifications of pertussis, Australia, 1999, by State and month of onset

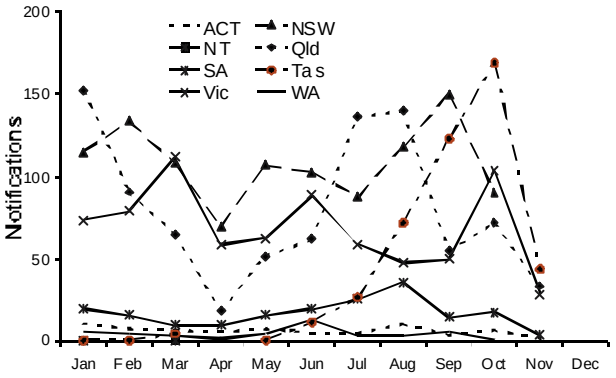
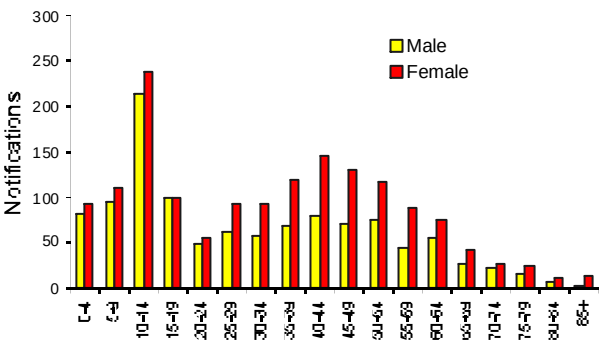


Figure 3. Notifications of pertussis, Australia, 1999, by age group and sex



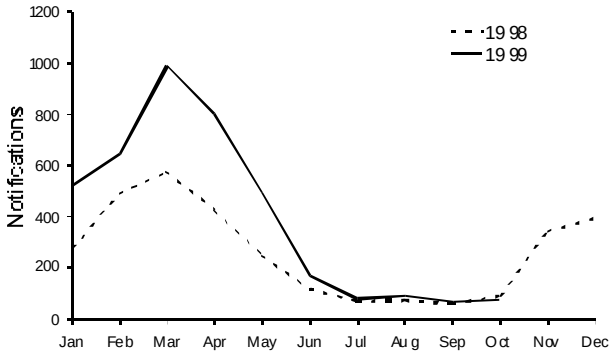
Meningococcal infection

The number of meningococcal infection notifications fell in this reporting period to 33 from 66 in the previous period, representing a reverse in the trend for increasing numbers of notifications in the previous three reporting periods. The reduction in the number of meningococcal infection notifications occurred in all States and Territories, except the Northern Territory and South Australia. The overall number of meningococcal infection notifications for the year to date in 1999 (498) was higher than for the corresponding year to date in 1998 (394). The highest number of notified cases occurred in New South Wales (208; 41%), followed by Victoria (118; 24%) and Queensland (71; 14%). The male to female ratio was 1.4:1. Notifications were highest in the 0-4 (183; 37%) and 15-19 (84; 17%) year age groups.

Vectorborne disease

Notifications of Ross River virus infection remained steady in this period (72) and were similar to the previous two reporting periods (66 and 67 respectively) and the same period in 1998 (79). Most notifications (73%) were received from Queensland. Overall, the number of year to date cases for 1999 (4,188) increased by 65% compared with the number of year to date cases for 1998 (2,534). This was the result of higher numbers in the months of January to May (Figure 4). The laboratory reports for Ross River virus were also mostly received from Queensland (78%) and reflected the seasonal trend for onset of disease. This showed a similar pattern to previous years.

Figure 4. Notifications of Ross River virus infection, Australia, 1998 and 1999, by month of onset



Other

The number of notified cases of tuberculosis (TB) in this period (46) increased compared with the previous period (29), but decreased compared with the same period in 1998 (73). Most cases were from the Northern Territory (9) and New South Wales (21). Those cases from the Northern Territory represented an increase due to a backlog of reports caused by the diversion of resources during the East Timorese crisis. None of these notifications were from the East Timorese as these data have been stored separately and not included in the NNDSS data to date. Overall, the number of year to date cases of TB has decreased in 1999 (793) compared with 1998 (829).

Foodborne diseases

The number of listeriosis notifications has returned to normal level with 5 notifications in this period.

The decrease was seen in those States with the most reports in the previous period, that is, New South Wales and Western Australia.

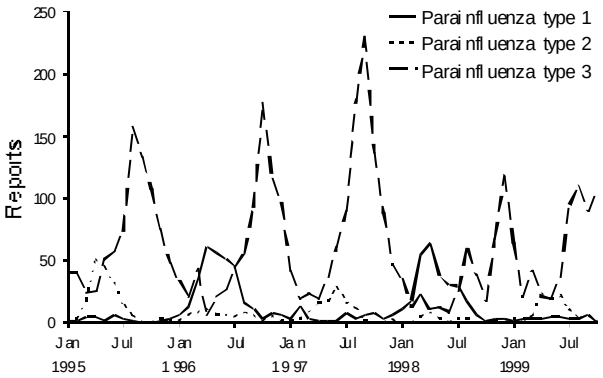
Laboratory reports

Parainfluenza virus type 3 laboratory reports were high in this period. Australia records a peak of parainfluenza type 3 activity in the latter months of each year (Figure 5).

LabVISE received 18 reports of measles from Western Australia, however, only 3 cases were detected during this reporting period.

The large number of reports of Varicella-zoster virus, Group A *Streptococcus* and *Trepenoma pallidium* (Table 3) represent presentation of the data by the date reported to *CDI*. They do not indicate an increase in recent cases, but are results from the previous months that were reported in this period. The date of collection of the specimen, indicating as close as possible the date of illness, is available in LabVISE data, and from January 2000 the presentation of LabVISE data will be by date of specimen collection.

Figure 5. Laboratory reports of parainfluenza, Australia, 1995-1999, by type and month of specimen collection



Tables

There were 5,110 notifications to the National Notifiable Diseases Surveillance System (NNDSS) in the four week period, 13 October to 9 November 1999 (Tables 1 and 2). The number of reports for selected diseases have been compared with historical data for corresponding periods in the previous three years (Figure 6).

There were 4,610 reports received by the *CDI* Virology and Serology Laboratory Reporting Scheme (LabVISE) in the four week period, 7 October to 3 November 1999 (Tables 3 and 4).

The Australian Sentinel Practice Research Network (ASPREN) data for weeks 41 to 44, ending 7 November 1999, are included in this issue of *CDI* (Table 5).

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 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 1999;23:55.

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 13 October to 9 November 1999

Disease[1]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1999	This period 1998	Year to date 1999[2]	Year to date 1998
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0
H. influenzae type b infection	1	2	0	1	0	0	0	0	4	3	46	29
Measles	0	1	1	2	1	0	10	2	17	11	274	280
Mumps	0	2	0	0	0	1	10	2	15	4	160	151
Pertussis	6	53	0	84	19	145	94	0	401	432	3,499	5,721
Rubella[3]	0	2	0	15	0	2	9	1	29	55	341	709
Tetanus	0	0	0	0	0	0	0	0	0	1	3	6

1. No notification of poliomyelitis has been received since 1978.
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. Includes congenital rubella.

Table 2. Notifications of diseases received by State and Territory health authorities in the period 13 October to 9 November 1999

Disease[1,2,3]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1999	This period 1998	Year to date 1999[4]	Year to date 1998
Arbovirus infection (NEC)	0	0	0	1	0	0	0	0	1	1	71	58
Barmah Forest virus infection	0	5	0	10	0	0	0	0	15	23	560	490
Brucellosis	0	0	0	8	0	0	1	0	9	6	45	39
Campylobacteriosis[5]	12	-	10	209	160	37	282	99	809	1,379	10,672	10,797
Chancroid	0	0	0	0	0	0	0	0	0	0	0	1
Chlamydial infection (NEC)[6,7]	19	76	77	398	67	21	203	83	944	1,020	11,956	9,587
Cholera	0	0	0	0	0	0	0	0	0	0	3	4
Dengue	0	0	1	0	0	0	0	0	1	37	169	432
Donovanosis[7]	0	0	1	0	NN	0	0	1	2	1	17	30
Gonococcal infection[8]	0	32	75	102	23	0	57	40	329	401	4,789	4,535
Haemolytic uraemic syndrome[9]	NN	2	0	0	0	0	NN	0	2	2	15	12
Hepatitis A	1	13	10	24	11	0	34	12	105	134	1,425	2,323
Hepatitis B incident	0	1	0	5	1	0	3	1	11	18	247	228
Hepatitis B unspecified[10]	6	118	0	68	0	1	152	10	355	608	6,169	5,637
Hepatitis C incident	2	2	0	-	4	0	0	2	10	44	255	280
Hepatitis C unspecified[10]	28	351	16	271	50	37	436	51	1,240	1,392	17,419	16,484
Hepatitis (NEC)[11]	0	2	0	2	0	0	0	NN	4	0	34	15
Hydatid infection	0	NN	0	0	0	1	2	0	3	2	27	37
Legionellosis	0	1	0	3	2	0	1	2	9	39	224	225
Leprosy	0	0	0	0	0	0	1	0	1	0	6	2
Leptospirosis	0	6	0	3	0	0	0	1	10	24	306	158
Listeriosis	0	2	0	0	0	0	2	1	5	4	56	48
Malaria	1	3	1	15	3	1	8	1	33	38	667	627
Meningococcal infection	0	11	1	2	1	0	14	4	33	32	498	394
Ornithosis	0	NN	0	NN	1	0	2	1	4	6	69	33
Q Fever	0	5	0	34	1	0	1	1	42	44	481	487
Ross River virus infection	1	11	1	51	0	0	5	3	72	79	4,188	2,534
Salmonellosis (NEC)	6	39	24	145	32	11	84	27	368	595	6,626	6,714
Shigellosis[5]	1	-	4	7	9	0	10	4	35	58	497	533
SLTEC, VTEC[12]	NN	0	0	NN	3	0	NN	NN	3	0	23	9
Syphilis[13]	0	16	11	100	6	0	0	1	134	138	1,733	1,376
TTP[14]	0	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	1	21	9	9	1	0	0	5	46	73	793	829
Typhoid[15]	0	2	0	0	0	0	0	0	2	6	68	63
Yersiniosis (NEC)[5]	0	-	0	4	2	0	1	0	7	10	133	186

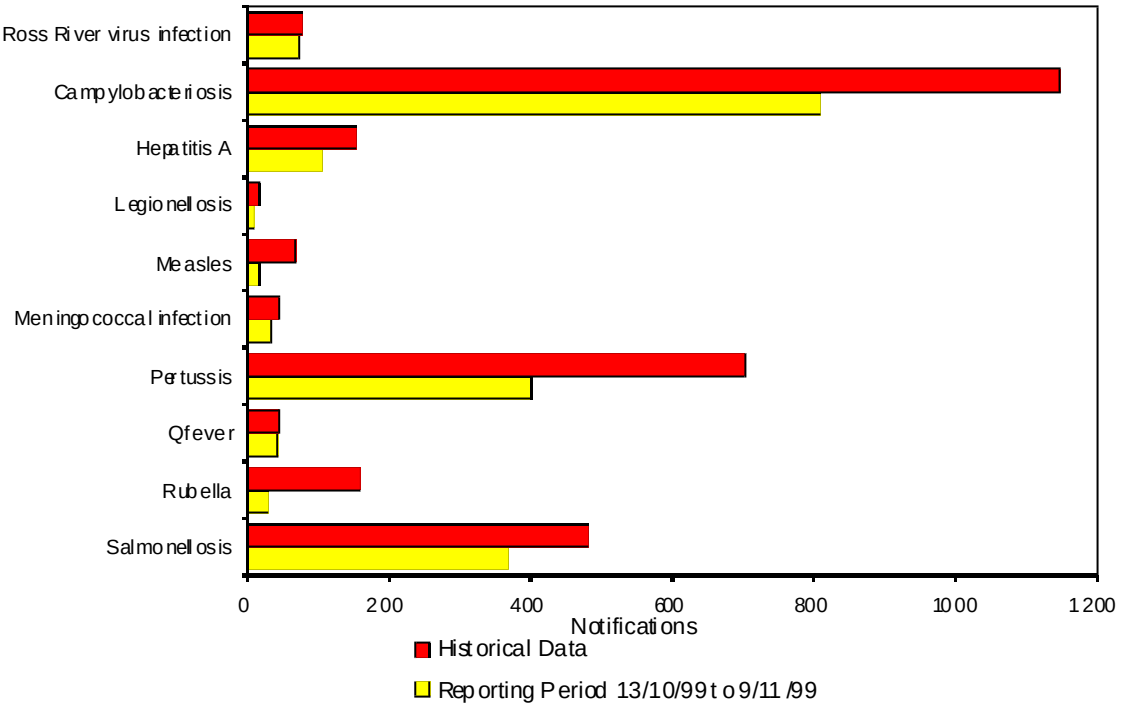
1. Diseases preventable by routine childhood immunisation are presented in Table 1.
2. No HIV and AIDS Tables this issue.
3. No notifications have been received during 1999 for the following rare diseases: lymphogranuloma venereum, plague, rabies, yellow fever, or other viral haemorrhagic fevers.
4. 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.
5. Not reported for NSW because it is only notifiable as 'foodborne disease' or 'gastroenteritis in an institution'.
6. WA: genital only.
7. Notifications from NSW have been received since September 1998, and were first reported in *CDI* in Issue 23(9).
8. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
9. Nationally reportable from August 1998.
10. Unspecified numbers should be interpreted with some caution as the magnitude may be a reflection of the numbers of testings being carried out.
11. Includes hepatitis D and E.
12. Infections with *Shiga*-like toxin (verotoxin) producing *E. Coli* (SLTEC/VTEC) became nationally reportable in August 1998.
13. Includes congenital syphilis.
14. Thrombotic thrombocytopaenic purpura became nationally reportable in August 1998.
15. NSW, Qld: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

- Elsewhere Classified.

Figure 6. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]



1. The historical data are the averages of the number of notifications in the corresponding 4 week periods of the last 3 years and the 2 week periods immediately preceding and following those.

Table 3. Virology and serology laboratory reports by State or Territory[1] for the reporting period 7 October to 3 November 1999, and total reports for the year

	State or Territory[1]									
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Total this period	Total reported in 1999[2,3]
Measles, mumps, rubella										
Measles virus							5	18	23	177
Mumps virus								5	5	51
Rubella virus		3		58		1		1	63	131
Hepatitis viruses										
Hepatitis A virus			18	23			1	14	56	346
Hepatitis D virus				1					1	5
Hepatitis E virus				1					1	1
Arboviruses										
Ross River virus		8	13	129		1		15	166	1,303
Barmah Forest virus		2		21				3	26	149
Dengue not typed			3					5	8	52
Flavivirus (unspecified)			1	6					7	23
Adenoviruses										
Adenovirus type 2							1		1	15
Adenovirus type 3							1		1	30
Adenovirus type 4							1		1	15
Adenovirus type 7							1		1	3
Adenovirus type 40								4	4	67
Adenovirus not typed/pending		15		13			21	56	105	1,082

Table 3. Virology and serology laboratory reports by State or Territory[1] for the reporting period 7 October to 3 November 1999, and total reports for the year (continued)

	State or Territory[1]								Total this period	Total reported in 1999[2,3]
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA		
Herpes viruses										
Herpes virus type 6								1	1	11
Cytomegalovirus		28		67			27	14	136	1,008
Varicella-zostervirus		15	12	208	2		28	56	321	1,493
Epstein-Barr virus		21	8	378		2	5	35	449	2,003
Other DNA viruses										
Parvovirus		1		37			6	17	61	409
Picorna virus family										
Coxsackievirus A9		1	1						2	8
Coxsackievirus B2							1		1	2
Echovirus type 9		3							3	47
Echovirus type 11		19	1						20	151
Poliovirus type 1 (uncharacterised)		1							1	22
Rhinovirus (all types)		40					8	11	59	417
Enterovirus not typed/pending		3	4	11			2	55	75	732
Ortho/paramyxoviruses										
Influenza A virus		10	1	149			17	70	247	1,777
Influenza A virus H3N2							4		4	33
Influenza B virus		8		12			13	7	40	250
Parainfluenza virus type 1		2		1				1	4	43
Parainfluenza virus type 2								2	2	103
Parainfluenza virus type 3		15		33			24	88	160	779
Respiratory syncytial virus		38	2	187		1	60	94	382	2,956
Other RNA viruses										
HTLV-1								2	2	12
Rotavirus		62	1				66	90	219	1,966
Norwalk agent		1					1		2	68
Other										
Chlamydia trachomatis not typed		55	105	510			5	104	779	2,805
Chlamydia psittaci								2	2	78
Chlamydia species		3		4					7	18
Mycoplasma pneumoniae		7	2	170			37	6	222	1,039
Mycoplasma hominis		1							1	6
Coxiella burnetii (Q fever)		9	1	61			2	7	80	191
*Rickettsia*spp - other								2	2	13
Streptococcus group A		6	32	157					195	241
Yersinia enterocolitica				1					1	10
*Brucella*species				4					4	6
Bordetella pertussis		5		185		1	22	5	218	630
Legionella pneumophila								1	1	20
Legionella longbeachae								8	8	40
Leptospira species		2		17			1	4	24	39
Treponema pallidum		18	235	147				1	401	507
Entamoeba histolytica				2					2	4
Toxoplasma gondii							1		1	6
Echinococcus granulosus								2	2	2
Total		402	440	2,593	2	6	361	806	4,610	23,395

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.
2. In 1999, data from the Institute of Clinical Pathology & Clinical Research, Westmead were under reported up to September.
3. Totals comprise data from all laboratories. 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.

Table 4. Virology and serology laboratory reports by contributing laboratories for the reporting period 7 October to 3 November 1999

State or Territory	Laboratory	Reports
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	86
	New Children's Hospital, Westmead	93
	Royal Prince Alfred Hospital, Camperdown	38
	South West Area Pathology Service, Liverpool	56
Queensland	Queensland Medical Laboratory, West End	3,158
	Townsville General Hospital	11
Victoria	Monash Medical Centre, Melbourne	61
	Royal Children's Hospital, Melbourne	184
	Victorian Infectious Diseases Reference Laboratory, Fairfield	105
Western Australia	PathCentre Virology, Perth	666
	Princess Margaret Hospital, Perth	152
TOTAL		4,610

Table 5. Australian Sentinel Practice Research Network reports, weeks 41 to 44, 1999

Week number	41		42		43		44	
Week ending on	17 October 1999		24 October 1999		31 October 1999		7 November 1999	
Doctors reporting	48		51		49		50	
Total encounters	6,548		6,019		5,915		5,673	
Condition	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters
Influenza	28	4.3	14	2.3	20	3.4	25	4.4
Rubella	0	0.0	1	0.2	1	0.2	1	0.2
Measles	1	0.2	0	0.0	0	0.0	0	0.0
Chickenpox	10	1.5	12	2.0	13	2.2	13	2.3
New diagnosis of asthma	7	1.1	12	2.0	9	1.5	9	1.6
Post operative wound sepsis	10	1.5	8	1.3	11	1.9	10	1.8
Gastroenteritis	66	10.1	63	10.5	69	11.7	62	10.9

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 every four weeks. 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 1999;23:58.

ASPREN currently comprises about 100 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 in 1999. CDI reports the consultation rates for seven of these. For further information, including case definitions, see CDI 1999;23:55-56.

There are no additional reports in this issue of *CDI*.

Bulletin Board

Australasian Society for HIV Medicine Inc
11th Annual Conference
9-11 December 1999
Perth, Western Australia
Contact: ASHM Conference Secretariat
C/- ICMS Australasia Pty Ltd, GPO Box 2609,
Sydney, NSW, 2001
Phone: 02 9241 1478
Fax: 02 9251 3552

Advance notice

The First Pacific Rim Biomedical Seminar
Transportation of Infectious and Diagnostic Substances
3 March 2000
Sheraton on the Park
Sydney, NSW
Contact: Christine Sherwood
Phone: 1800 023 560; or
Sydney: 9693 2988
Email: sherwood@worldcourier.com.au

International Society of Travel Medicine/WHO/CDC
2nd European Conference of Travel Medicine
29-31 March 2000
Venice, Italy
Contact: Dr Walter Pasini, Italy
Phone: 390-541-24301
Fax: 390-541-25748
Email: wpasini@rimini.com

Australian Society for Infectious Diseases Meeting
April 16-19, 2000
Fairmont Resort Leura
Organisers: Dart Associates:
Phone: 02 94189396
For scientific content: Contact Tom Gottlieb,
Concord Hospital
Phone: 02-97677533
Fax; 02-97677868 or
Email: Tom@micr.crg.cs.nsw.gov.au

Australian Infection Control Association
First Biennial Conference
Infection Control Beyond 2000
3-5 May 2000
Hilton Adelaide International, South Australia
Contact: AICA 2000 Secretariat
PO Box 1280 , Milton, Queensland 4064
Phone: 07 3369 0477
Fax: 07 3369 1512
Email: aica2000@im.com.au
Website: http://www.aica.org.au/aica2000.htm

Australian School of Environmental Studies
Arbovirus Research in Australia
3-7 July 2000
Couran Cove Nature Resort, Gold Coast, Queensland
Contact Dr Michael Brown, Queensland Institute of
Medical Research, PO Box Royal Brisbane Hospital,
Herston, Queensland, 4029
Website: http://www.mcaa.org.au

Royal North Shore Hospital
Outpatient Parenteral Therapy - beyond 2000
17-22 September 2000
Fairmont Resort
Leura, New South Wales
Phone: 02 9956 8333
Fax: 02 0056 5154
Email: confact@conferenceaction.com.au

The Australasian Society for HIV Medicine
12th Annual Conference
16-19 November 2000
The Carlton Crest, Melbourne, Victoria
Phone: 02 9382 1656
Fax: 02 9382 3699
Email: B.Pearlman@unsw.edu.au

The CDI Bulletin Board is provided as a service to readers. Every effort has been made to provide accurate information, but readers are advised to contact the relevant organisation for confirmation of details. Information about the availability of resources is included when space allows. Inclusion of a resource on the Bulletin Board does not imply endorsement of the resource by either the Communicable Diseases Network Australia New Zealand or the Commonwealth Department of Health and Aged Care.

Contributions to the Bulletin Board are invited from those organisations with forthcoming events relevant to communicable disease control.

Overseas briefs

Source: World Health Organization (WHO)
This material has been condensed from information on the WHO Internet site. A link to this site can be found under 'Other Australian and international communicable diseases sites' on the CDI homepage.

Meningitis in Rwanda

An outbreak of suspected cerebrospinal meningitis has been reported in the areas of Kayenzi, Nyabikenke and Rutobwe (Gitarama and Kigali Rural prefectures). Health centres recorded 29 cases between 1 September and 6 October, and 11 deaths. In addition to these, 33 suspect deaths which did not occur in health centres have been reported in the affected areas. *Neisseria meningitidis* sensitive to chloramphenicol and ampicillin has been isolated in 2 samples.

An estimated population of around 40,000 is considered to be at risk, and the Ministry of Health has organised an immunisation campaign with the support of WHO, as well as providing health centres with supplies of oily chloramphenicol and ampicillin sufficient to treat all cases. New supplies of drugs and vaccines are being procured with the help of WHO and UNICEF. The situation is currently under control, and the numbers of cases and deaths are decreasing.

Meningococcal disease in Angola

During August-September 1999, an outbreak of meningococcal disease was reported in Yambala, a settlement difficult to access in the municipality of Cubal, province of Benguela. *Neisseria meningitidis* serogroup A was detected by latex test.

Due to the current security situation, an assessment team which visited the area in mid-October was not able to examine patients or collect samples for laboratory diagnosis. However, according to information sources considered to be reliable, clinical features observed by witnesses were compatible with cerebrospinal meningitis. The majority of cases occurred in the age group 18-25 years, with no sex distinction. Reports refer to 253 cases with 147 deaths. It should be noted that 92% of the cases reported had no access to municipal health.

Cholera in Zambia

Following reports of an outbreak of acute diarrhoeal syndrome in Chibombo District, North Central Province, a team from the Ministry of Health visited the district on 13 October 1999 to assess the situation. The outbreak had been laboratory confirmed as cholera on 7 October. The first case identified at the end of September was a person who had travelled to one of the many fishing camps in the area which are located along the Lukanga swamps. The person had become ill while returning to his home village. Further cases were identified who had also travelled to the swamp area.

A rapid response team was activated and requests for assistance and supplies were made. A health education campaign was also initiated in the areas affected. At the time of the visit there had been 9 cases including 3 deaths at health centres and another 3 cases, all fatal, in the community.

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Website

http://www.health.gov.au/pubhlth/cdi/cdihtml.htm

Contributions

Contributions covering any aspects of communicable diseases are invited. All contributions are subject to the normal refereering process. Instructions to authors can be found in *CDI* 1999;23:59.

Contacts other than subscriptions

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