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

MENINGOCOCCAL ISOLATE SURVEILLANCE AUSTRALIA 1994

The National Neisseria Network

A national program for the examination of strains of *Neisseria meningitidis* from cases of invasive meningococcal disease was commenced in 1994 with the cooperation and participation of reference laboratories in each State and Territory. This activity is designed to supplement data from existing notification schemes by adding information on the serogroup of strains (and ultimately the serotype and subserotype) as well as antibiotic sensitivity data. The following report provides information gathered in the first year of the program, 1 January to 31 December 1994.

For each isolate, data was sought on the State or Territory of the patient, age, sex, site of isolation, outcome, serogroup and sensitivities to a range of antibiotics.

State or Territory and serogroup

A total of 216 invasive isolates of meningococci was examined in 1994. There were 60 isolates in New South Wales, 58 in Queensland, 44 in Victoria and 36 in Western Australia with low numbers from South Australia, Tasmania and the Northern and Australian Capital Territories.

The serogroup distribution of the isolates is shown in Table 1 and some differences are obvious between the States. Serogroup C strains predominated in New South Wales but serogroup B meningooccci were more common in Queensland and Victoria and showed a marked preponderance in Western Australia. A single isolate only of serogroup A was reported.

Age group and sex

The age and sex distributions of patients infected with invasive isolates are shown in Table 2 by State and Territory. The largest number of reports was for children aged four years and under. There were 59 cases in the 1 to 4 year age group (28% of those for which age and sex information was available) and another 26 cases (12%) occurred in those aged less than one year (Figure). Approximately 50% of all cases were recorded in those aged nine years or under. A further peak was noted in the 15 to 24 year age group for which 45 cases, accounting for 21% of the total, were noted. A total of 111 cases were males and 104 were females (male:female ratio 1.00:0.94). These findings are a usual distribution for meningococcal disease.

Site of isolation

The isolate surveillance program categorises cases on the basis of the site of isolation of the organism. This is an inadequate differentiation insofar as it probably understimates the meningitic component in cases

Figure. ***Neisseria meningitidis*** **cases, 1994, by age group and sex**

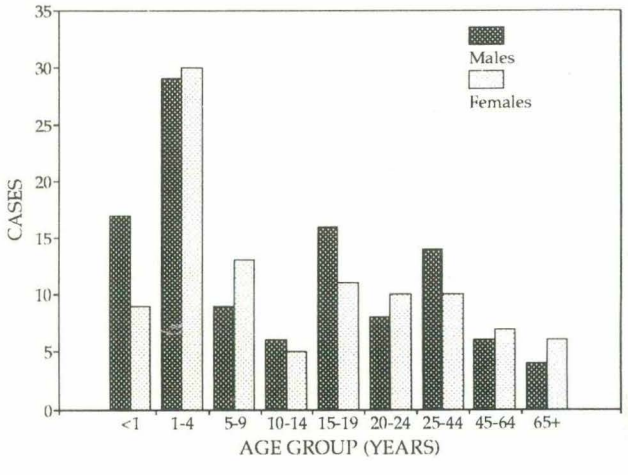


Table 1. ***Neisseria meningitidis*** **isolates, 1994, by State or Territory and serogroup**

State or Territory	Serogroup						Total
	B	C	A	Y	NG[1]	Other2	
Qld	34	22	0	1	1	0	58
NSW	24	34	0	1	1	0	60
ACT	2	2	0	0	0	0	4
Vic	26	16	0	0	1	1	44
Tas	0	2	0	0	0	0	2
SA	2	6	0	0	0	0	8
WA	28	4	1	0	0	3	36
NT	0	4	0	0	0	0	4
Total	116	90	1	2	3	4	216

1. NG non-groupable.
2. Other: 1 group E29 in Victoria, and 2 group W135 and 1 group Z in Western Australia.

Table 2. *Neisseria meningitidis* isolates, 1994, by State or Territory and age group and sex

		Age group (years)										
		<1	1-4	5-9	10-14	15-19	20-24	25-44	45-64	65+	NS[1]	Total
Qld	Male	7	6	1	2	8	1	4	1	1	0	31
	Female	1	8	3	1	4	2	4	1	3	0	27
	Total	8	14	4	3	12	3	8	2	4	0	58
NSW	Male	5	12	1	2	2	3	5	2	0	0	32
	Female	3	7	3	2	3	2	4	2	1	0	27
	Total	8	19	4	4	5	5	9	4	1	1[2]	60
ACT	Male	1	1	0	0	0	0	0	0	0	0	2
	Female	0	0	0	0	0	1	0	1	0	0	2
	Total	1	1	0	0	0	1	0	1	0	0	4
Vic	Male	0	4	2	0	2	4	2	2	2	2	20
	Female	2	6	3	1	4	4	0	1	1	2	24
	Total	2	10	5	1	6	8	2	3	3	4	44
Tas	Male	0	0	2	0	0	0	0	0	0	0	2
	Female	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	2	0	0	0	0	0	0	0	2
SA	Male	0	1	0	0	0	0	0	0	0	0	1
	Female	1	3	2	0	0	1	0	0	0	0	7
	Total	1	4	2	0	0	1	0	0	0	0	8
WA	Male	4	5	2	2	3	0	2	1	1	0	20
	Female	2	6	2	1	0	0	1	2	1	1	16
	Total	6	11	4	3	3	0	3	3	2	1	36
NT	Male	0	0	1	0	1	0	1	0	0	0	3
	Female	0	0	0	0	0	0	1	0	0	0	1
	Total	0	0	1	0	1	0	2	0	0	0	4
Total		26	59	22	11	27	18	24	13	10	6	216

1. NS age not stated.
2. Sex and age of one patient not stated.

Table 3. Blood culture isolates, by age group and sex

	Age group (years)										
	<1	1-4	5-9	10-14	15-19	20-24	25-44	45-64	65+	NS[1]	Total
Male	6	16	6	4	9	3	6	5	4	2	61
Female	4	13	8	3	3	6	2	3	6	1	49
Total	10	29	14	7	12	9	8	8	10	4[1]	111

1. NS age not stated.
2. One isolate was from a patient of unspecified age and sex.

Table 4. CSF isolates, by age group and sex

	Age group (years)										
	<1	1-4	5-9	10-14	15-19	20-24	25-44	45-64	65+	NS[1]	Total
Males	11	13	2	2	6	6	7	2	0	0	49
Females	5	17	6	2	8	4	7	5	0	2	56
Total	16	30	8	4	14	10	14	7	0	2	105

1. NS age not stated.

Table 5. Meningitis cases for which outcome was reported, by serogroup

	Serogroup						
	B	C	Y	W135	A	NG[1]	Total
Survived	33	20	1	2	1	1	58
Died	3	0	0	0	0	0	3
Total	36	20	1	2	1	1	61

1. NG non-groupable.

Table 6. Septicaemia cases for which outcome was reported, by serogroup

	Serogroup				
	B	C	E29	Z	Total
Survived	36	28	1	1	66
Died	2	5	0	0	7
Total	38	33	1	1	73

where these was no lumbar puncture or else where lumbar puncture was delayed and culture was sterile.

While other indicators of meningitis may suggest meningitis in the absence of a positive CSF culture, and indeed have been provided by participants, in the interests of uniformity the above approach has been adopted for the present

Criteria for the case definition will be reviewed in the light of the quality of clinical data received. In some situations however relevant patient details are impossible to obtain from laboratory settings.

Within the limitations noted above, CSF isolates (either alone or with a blood culture isolate) were obtained nearly as frequently as blood culture isolates without cultural evidence of CSF invasion. There were 111 blood culture isolates, for 61 males and 49 females (male:female ratio 1.00:0.80), 35% for persons under the age of five years (Table 3). CSF isolates were reported for 105 patients, 49 males and 56 females (male:female ratio 1.00:1.14), 44% for those under the age of 5 years (Table 4).

Outcome

Information or outcome (survived/died) was available for 134 of the 216 cases. Overall, 5 of 74 cases of group B infection and 5 of 53 cases of group C infection were reported as fatal.

In cases of meningococcal meningitis (CSF isolate), information was available for 61 patients (Table 5). There were 36 patients infected with serogroup B meningococci and the three deaths recorded were all with group B isolates. Twenty isolates were of serogroup C and serogroups A, Y and W135 were also involved in isolated non-fatal cases.

In septicaemic patients where information on outcome was available, seven of 73 patients died (Table 6). Of the 33 patients infected with serogroup C strains, five died and two of 38 cases of serogroup B infection had a fatal outcome.

Survival is generally better in meningitic cases than in septicaemic infections.

Antibiotic susceptibility

Considerable interest has been shown in the decrease in sensitivity of meningococci to penicillin in recent years. Strains with these characteristics have now been found in many parts of the world. Additionally other isolates have been shown to be resistant to other antibiotics currently used either therapeutically or prophylactically in meningococcal disease. This program therefore undertakes routine surveillance of the antibiotic susceptibility of invasive isolates.

Penicillin

In the absence of accurate correlations between clinical response and *in vitro* sensitivity data in meningococcal disease, it is not possible to provide precise definitions of what constitutes a penicillin 'resistant' meningococcus. Further, minimum inhibitory concentration (MIC) data are method dependent and not necessarily directly comparable when different techniques are used.

This program 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 - 0.5mg/L
relatively resistant	MIC ≥ 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.

Using these criteria, 102 of the 216 invasive isolates were sensitive and 112 'less sensitive' to penicillin; none were 'relatively resistant'. The sensitivity of two isolates was not tested.

The MICs ranged from < 0.008 to 0.25 mg/L.

These data indicate that penicillin based treatment regimens remain suitable for use in Australia.

Other antibiotics

All isolates tested were sensitive to ceftriaxone (and by extrapolation to other third generation cephalosporins), rifampicin and ciprofloxacin, the latter two antibiotics being prophylactic, not therapeutic agents. A single isolate from Western Australia was resistant to chloramphenicol.

Sulphonamide testing was not performed. Preliminary data indicated a significant amount of resistance of local isolates to this agent, which is no longer in use for this disease.

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 Human Services and Health.

CDI editorial comment

The National Notifiable Diseases Surveillance System (NNDSS) received a provisional total of 395 notifications of meningococcal disease for 1994, the largest number recorded since national notification of the disease resumed in 1979. The overall peak in onset dates was between June and October, as has been recorded since the NNDSS began to collect onset date information in 1991. Peaks between June and October 1994 were also reported from New South Wales (139 notifications for the year), Queensland (92), Victoria (73) and Western Australia (57). There were too few notifications from the Australian Capital Territory (6 notifications for the year), the Northern Territory (4), South Australia (19) and Tasmania (5) for seasonal patterns to be apparent for these individual areas.

Two hundred notifications in 1994 were for males, 192 for females and three for persons for whom sex was not reported. The peak age group was children under the age of five years (150 notifications), with 60 notifications recorded for infants under the age of one year. A secondary peak of 42 cases occurred in the 15 to 19 year age group.

The National *Neisseria* Network encourages laboratories to refer meningococcal isolates to the participating Meningococcal Reference Laboratories:

Western Australia

Chris Richardson (or in his absence Christina Farrer)
Department of Microbiology
Princess Margaret Hospital for Children
1 Thomas Street
SUBIACO WA 6008
phone (09) 340 8273; fax (09) 340 8117

Queensland

John Bates
Laboratory of Pathology and Microbiology
63 George Street
BRISBANE QLD 4000
phone (07) 224 5556; fax (07) 221 9737

South Australia

David Hansman
Department of Microbiology
Adelaide Children's Hospital
72 King William Road
NORTH ADELAIDE SA 5006
phone (08) 204 7326

Victoria

Julia Griffith
Microbiological Diagnostic Unit
University of Melbourne
PARKVILLE VIC 3052
phone (03) 344 5701

New South Wales

John Tapsall
Microbiology Department
The Prince of Wales Hospital
RANDWICK NSW 2031
phone (02) 399 4084

Rosemary Munro
Microbiology Department
Liverpool Hospital
LIVERPOOL NSW 2170
phone (02) 600 3697

Tasmania

Keith Ott
Department of Microbiology
Royal Hobart Hospital
HOBART TAS 7000
phone (002) 388 410

ACT

Justin Raby
Department of Microbiology
Woden Valley Hospital
PO Box 11
WODEN ACT 2606
phone (06) 244 2425

Northern Territory

Strains are referred from Alice Springs and Royal Darwin Hospitals.

POSSIBLE SUCCESSFUL INTERVENTION IN A LOCALISED PERTUSSIS OUTBREAK

Heath Kelly, Public Health Physician, Albany Public Health Unit; Judy Donelly, Disease Control Coordinator, Bunbury Public Health Unit; David Waycott, General Practitioner; Keith Meadows, General Practitioner, Collie, Western Australia

Introduction

Following the September 1994 adoption of direct notification of diseases for the South-West Region of Western Australia (population approximately 140,000 persons) to the Public Health Unit in Bunbury, it became evident that there was a significant outbreak of pertussis in the timber and coalmining town of Collie, located in the Wellington catchment area within the Region. The outbreak had commenced in July 1994 and continued until a month after an intervention was initiated by local general practitioners and the Public Health Unit. Although there are other possible reasons for a decrease in the incidence of pertussis following the intervention, it seems likely that the measures taken had some useful effect.

In a small community with cooperative general practitioners, it is possible to intervene early in outbreaks. This report details the intervention in the pertussis outbreak in Collie so that a similar intervention can be considered for other small communities, if appropriate.

The outbreak

In Western Australia there were 570 cases of pertussis notified in 1994 (Notifiable Diseases Database, Health Department of Western Australia), equivalent to an incidence of approximately 34.5 per 100,000 persons. However, almost two-thirds of the pertussis cases occurred in the second half of the year with an approximate incidence of 45.3 per 100,000 persons per year (calculated on six months' exposure). During the same period in the town of Collie (population approximately 10,000), there were 80 cases, equivalent to an incidence of 390.2 per 100,000 persons per year (calculated on six months' exposure). The incidence rate in Collie for the second half of 1994 was therefore more than eight times the overall incidence for the State in the same period, although this may have been in part accounted for by greater community awareness of the epidemic and more complete notification by interested general practitioners.

The epidemic curve is shown in Figure 1. Between July 1994 and February 1995 there were 87 notifications of pertussis, 85 of which were laboratory confirmed by the State Health Laboratory Services or the Microbiology Laboratory, Princess Margaret Hospital for Children in Perth, by either culture of *Bordetella pertussis*, detection of specific IgA in a post-nasal aspirate or demonstration of a diagnostic serum IgA titre. The two cases which were not laboratory confirmed were two of the three cases in February. These cases occurred in one family; the mother had a serum IgA titre which confirmed pertussis and the two children, aged three years and five years, had clinical disease.

The age distribution of the 87 cases is shown in Figure 2. The high number of cases in the 5 to 9 year age group, some of whom were fully immunised, is the subject of further investigation.

All patients were treated either at home or at the local hospital and there was no need to transfer any patient out of Collie. Four children were hospitalised for observation and one adult patient suffered a broken rib secondary to the paroxysms of coughing.

Figure 1. Notifications of pertussis in Collie, July 1994 to February 1995, by week of notification

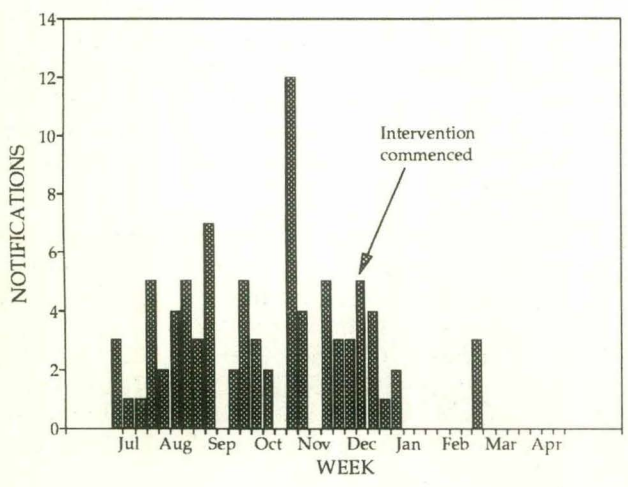
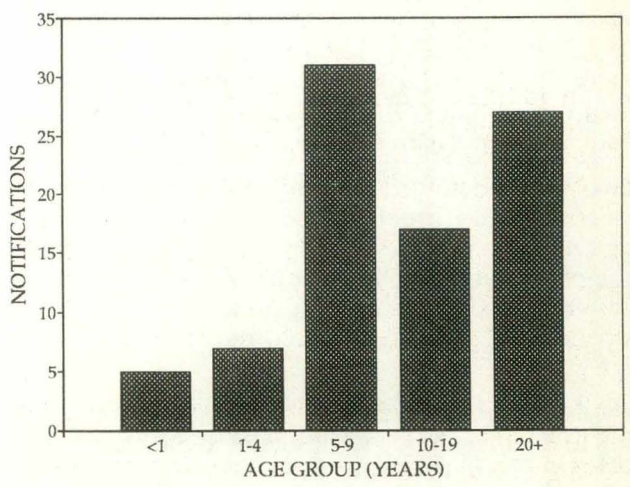


Figure 2. Notifications of pertussis in Collie, July 1994 to February 1995, by age group



The intervention

Because the incidence of pertussis in Collie was so much higher than the background incidence in the rest of the State it was decided to trial an intervention process with the general practitioners in Collie. The town and the surrounding district is serviced by two general practices, one a large group practice employing six full-time and two part-time doctors and the other a solo general practice. All general practitioners in the town agreed to implement the control measures, which were based on measures used in a recent outbreak in Cincinatti[1].

The control measures were commenced early in December as follows:

- Any person suspected (but not necessarily proven) of suffering pertussis was promptly offered erythromycin (or roxithromycin for adults), to be taken for five days before returning to school or work and for ten days in total (standard regimen).

  Although antibiotics have little or no effect on the course of the illness, there is some evidence that antibiotics serve to decrease the period that a person is infective[2].

- If antibiotics had not been prescribed children were excluded from school for fourteen days.

- Household contacts were offered prophylactic erythromycin or roxithromycin (or cotrimoxaxole if macrolides were not tolerated). This was based on the initiatives in the pertussis epidemic in the highly immunised population of children identified through the Children's Hospital Medical Centre in Cincinatti[1].

- Children exposed to pertussis were offered vaccination:

  (a) if the child had had a third diphtheria-tetanus-pertussis (DTP) vaccination more than six months before exposure, an immediate DTP booster was offered (that is, anticipating the 18 month DTP booster),

  (b) if a child had had four DTP vaccinations, a fifth was offered unless the child was more than six years old or the child had had a booster within the previous three years. This anticipated the DTP booster at school entry.

- In addition to these initiatives, local schools were contacted and informed of the approach being taken and the local media was used to advertise both the outbreak and the approach taken to interrupt it.

Monovalent pertussis vaccine was not available at the time of the intervention.

Discussion

Of the 15 cases of pertussis notified after the commencement of the intervention process, only the three cases in February had an onset date after the intervention. (The cases notified in December and January had onset in November and December 1994.) No further cases had been notified by the end of May 1995.

There are a number of possible explanations for the apparent change in incidence after the commencement of the intervention. The first is that the intervention had a useful effect. The second is that there was only a small remaining pool of susceptible people in the town at the end of 1994 and the outbreak naturally tapered off, and the third is that the intervention happened to commence near the time of the school holidays and this break interfered with disease transmission.

The third explanation is likely to account for some change in the pattern of disease but is unlikely to explain all of it since approximately 45% of all cases were either children too young for school, or older adolescents or young adults. Unfortunately, it is not possible to differentiate between the first two explanations for the change in the pattern of the outbreak, since both a successful intervention and a decrease in the pool of susceptible people will have the same result. However, a similar intervention in Cincinatti had an effect on the pattern of the outbreak there.

The general practitioners most involved in the recognition and intervention associated with this outbreak feel that a similar approach would be very useful in other small communities. Earlier intervention of the type outlined here may have averted many of the cases of pertussis in this outbreak.

References

1. Christie CDC, Marx ML, Marchant CD, Reising SF. The 1993 epidemic of pertussis in Cincinatti. Resurgence of disease in a highly immunized population of children. *New Eng J Med* 1994;**331**:16-21.

2. Benenson AS. *Control of comunicable diseases in man.* 15th ed. Washington: American Public Health Association, 1990.

CDI editorial comment

Notifications of pertussis have been received by the National Notifiable Diseases Surveillance System (NNDSS) from all States and Territories over the last 12 months, with a broad peak in onset dates between August and December. Peaks were recorded in September-October in New South Wales and South Australia, September to November in Queensland, October to December in Victoria and from November to January in the Northern Territory, Tasmania and Western Australia.

A provisional total of 5684 notifications was reported in 1994, and there were 1615 between 1 January and 13 May this year. The largest number of cases has been reported for children in the five to nine year age group (405) this year, as in 1994, followed by children in the under five year age group (307) and in the 10 to 14 year age group (232). A second peak in notifications has been in the 30 to 45 year age group (258), as also occurred in 1994.

The median age for pertussis notifications increased during the epidemic period in 1993-1994. It was nine years in 1991, 10 years in 1992, 13 years in 1993 and 16 years in 1994, but has been 11 years for notifications so far this year. The increase reflected the larger number of adults who have been notified with pertussis in recent years, and may have reflected different diagnostic and/or reporting habits during the epidemic period.

INVASIVE GROUP A STREPTOCOCCAL DISEASE - A 14 MONTH REVIEW

R Norton, Division of Clinical Microbiology, Institute of Medical and Veterinary Science, Adelaide, South Australia

Invasive group A streptococcal disease is characterised by a variety of clinical presentations which include bacteraemia, necrotising fasciitis, myositis, scarlet fever and streptococcal toxic shock syndrome. Recent literature suggests that there has been a worldwide increase in the reported incidence of this condition[1] and the significant morbidity and mortality associated with this disease has led to an increased interest in possible pathogenic mechanisms. Australian data from the sentinel LabDOSS surveillance scheme between January 1992 and May 1994 suggested that the proportion of reports of invasive group A streptococcal disease remained stable over this period[2] in Australia.

A local clustering of cases seen over a six month period at the Royal Adelaide Hospital prompted a retrospective review of all patients admitted with invasive group A streptococcal disease between November 1993 and January 1995. A case was defined as one where group A *Streptococcus* was isolated from blood and/or other normally sterile fluids or tissue. All isolates were M and T typed.

A total of eleven patients was identified. There were four males and seven females, age range 35 years to 72 years. Clinical details and results of M/T typing are summarised in the Table.

There were six cases of necrotising fascitis/myositis and five of these were typed as M1 T1. Of the remaining five cases, there were two cases of septic arthritis, and one each of meningitis, cellulitis of the neck, and a surgical wound infection. Three patients died, a female aged 55 years and males aged 61 and 72 years.

Table. Clinical summary of cases of invasive group A streptococcal disease

Case	Clinical details	Features of streptococcal toxic shock syndrome	Outcome	Site of infection	M/T type
1	Necrotising fasciitis of face, neck, chest	Shock, ARDS[1], renal failure	Died	Blood, tissue	M1 T1
2	Necrotising fasciitis, Shock ARDS, renal failure post hysterectomy	Survived	Blood	M1 T1	
3	Necrotising fasciitis of leg, diabetic	Renal failure	Died	Blood, tissue	M53 T11/27
4	Necrotising fasciitis/myositis of arm	Shock, renal failure	Survived	Blood, tissue	M1 T1
5	Necrotising fasciitis/myositis, Shock, ARDS, renal failure of arm	Survived	Blood, tissue	M1 T1	
6	Post-operative vascular surgery, cellulitis	None	Survived	Blood	MNT[2]/T5/11/27
7	Nectrotising fasciitis/myositis ischaemic leg	Shock, renal failure	Died	Blood	M1 T1
8	Mastoiditis, meningitis	None	Survived	CSF	M1 T1
9	Cellulitis of neck	None	Survived	Blood	M63 T4
10	Septic arthritis	None	Survived	Blood, synovial fluid	M1 T1

Five of the eleven cases fulfilled the case definition criteria for streptococcal toxic shock syndrome (STSS)[3] and two of these patients died.

Seven of the eleven cases occurred during the six month period between August 1994 and January 1995 (Figure). Four of these were of the M1 T1 serotype.

Discussion

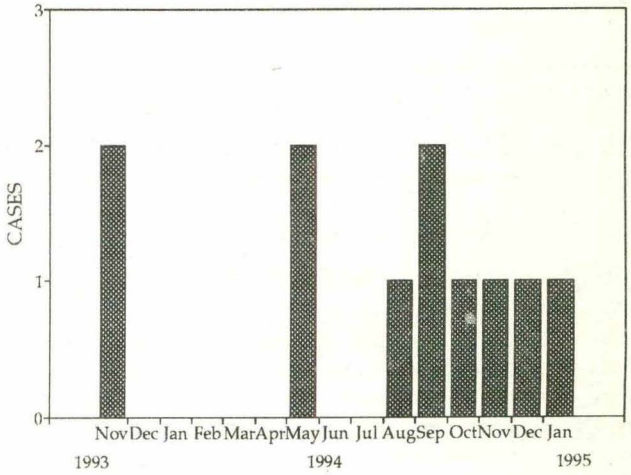
Because of the absence of data on GAS infection prior to 1992, direct comparisons cannot be made between the number of cases in this 14 month period and numbers of cases previously detected at this hospital. At a local level however, there was a clear clustering of cases in the latter half of 1994; there have been no new cases since January 1995. The relative predominance of the M1 T1 serotype in invasive disease has been noted worldwide[4].

Most of the recently described patients with severe GAS disease have required ventilation for acute respiratory distress syndrome and have features of STSS. Certain M-types of GAS viz 1 and 3 are associated with STSS but whether this is directly related to virulence or is merely a marker, is unclear[3].

There have been apparent changes in the virulence of group A streptococci. The decrease in serious infections (mainly scarlet fever) was noted around the turn of the century, prior to the introduction of antibiotics, but in recent years more aggressive and usually fulminant group A streptococcal (GAS) infections have occurred in relatively healthy hosts. The nature of these infections and the speed with which the organisms spread in the body and produce multiorgan failure is virtually unmatched by any other infectious organism.

Possible reasons for this change in virulence remain unclear. If this were simply due to enhanced virulence factors of the organism, significant outbreaks of GAS invasive infections would have occurred as was seen with scarlet fever in the past. This has not been the case and therefore there is likely to be some variation in human host susceptibility. This has been postulated to be due to a lack of specific humoral immunity to streptococcal pyrogenic exotoxins A, B and C (SPE A, B, C)[3]. In particular, it has been shown that low levels of antibody to SPE B are more likely to be found in patients with bacteraemias and patients who die[3,4]. Multilocus enzyme electrophoretic profiles and pulsed field gel electrophoresis restriction fragment length polymorphisms have shown that most invasive disease episodes are caused by two distinct subclones which are distributed worldwide[4]. The isolates from this series are being futher characterised to determine whether they are associated with these subclones.

Figure. Invasive group A streptococcal disease cases, November 1993 to January 1995, by month



Acknowledgement

I would like to thank Dr Diana Martin of the Institute of Environmental Science and Research, Porirua, New Zealand, for typing the isolates.

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4. Musser JM, Dapur V, Szeto J, Xi Pan, Swanson DS, Martin DR. Genetic diversity and relations among *Streptococcus pyogenes* strains expressing serotype M1 protein: recent intercontinental spread of a subclone causing episodes of invasive disease. *Infect Immun* 1995;**63**:994-1003.

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization (WHO) and the Program for Monitoring Emerging Diseases.

Ebola virus outbreak in Zaire

The WHO has declared that the the acute phase of the Ebola haemorrhagic fever epidemic in Zaire is over. At the beginning of June, the number of cases detected was still slowly increasing but almost exclusively due to the

retrospective identification of cases which occurred between January and March.

The totals at 8 June were 247 confirmed or suspected cases, with 201 deaths (case fatality rate of 81%). All cases without exception were in the Province of Bandandu and rumours of cases elsewhere, including in Kinshasa, have proved unfounded. About 85% of the cases were in Kikwit, with the remaining cases in Mosango, Bulungu, Gungu, Imbongo and Mukala in the sub-region of Kwilu, within Bandandu region. Convalescent cases and members of their households are continuing to be monitored but transmission seemed to have been halted by the beginning of June.

Priority is now being given to strengthening the health facilities and to research activities, including studies of possible animal reservoirs of the virus.

Influenza in New Zealand

Influenza B virus was isolated from two sporadic cases in adults in Dunedin in early April and Aukland on 1 May.

Cholera update

An outbreak of cholera has been reported from the regions of Mopti, Segou and Tombouctou in Mali, with about 600 cases and 60 deaths reported for May and June. Mexico reported 1560 cases with 31 deaths between 14 March and 18 May, Kenya reported 1543 cases (38 fatal) for the period 1 January to 12 April, and Peru reported 7097 cases (8 fatal) for the period 1 January to 15 March 1995.

Cholera cases have been reported since the beginning of the year from Angola, Argentina, Belize, Bolivia, Brazil, Cambodia, Cameroon, Cape Verde, Colombia, Costa Rica, El Salvador, Ghana, Guinea, Guinea Bissau, Honduras, India, Kenya, Laos, Mali, Mexico, Nicaragua, Peru, Philippines, Singapore, Somalia, Togo and in Rwandan refugee camps in Tanzania and Zaire.

CDI NOTICE TO READERS

Environmental Health from Coast to Core

The Australian Institute of Environmental Health is holding its 22nd National Conference from 30 October to 3 November 1995 at Burswood Resort, Perth, Western Australia. Entitled *Environmental Health from Coast to Core*, the conference will focus on the importance of public health for all Australians, irrespective of race, culture or location within this vast country.

The conference program will provide an array of intersting and informative topics, including:

- management practices in local government
- Aboriginal and Torres Strait Islander community health
- environmental and waste management
- emergency management
- food science and technology
- public health and lifestyle issues.

The technical tour encompasses a full day trip to Rottnest Island (which is undergoing tremendous change to cope with the tourism boom), and will include discussion on environmental management planning, with on site visits to freshwater treatment and waste disposal facilities.

Full registration is $525 for members and $650 for non-members; daily registration is $150 for members and $165 for non-members.

For further details, contact

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PO Box 186
VICTORIA PARK WA 6100

Phone (09) 361 3112
Fax (09) 361 2198

COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1791 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 9, 10 and 11).

- Twelve reports of **measles** were received this period for 7 males and 4 females including 5 children in the one to 4 year age group. The number of reports received for the month of April is the lowest since May 1992. Diagnosis was by IgM detection (10) and single high titre (2).
- **Rubella** was reported for 15 patients this fortnight including 3 females in the 15 to 44 year age group, one of whom was pregnant. Diagnosis was by IgM

detection (14) and fourfold rise in titre (one). The number of reports received has continued to decline in recent months.

- Twenty-six reports of **hepatitis A** were received this period. Included were 17 males and 9 females and 10 patients were in the 15 to 24 year age group.
- Positive **hepatitis B** serology was reported for 85 patients this fortnight, 35 males and 44 females (6 sex not stated). Forty-five patients were in the 25 to 44 year age group, and 27 in the 15 to 24 year age group. Included were 2 pregnant females and one injecting drug user.
- One hundred and fifty-two reports of positive **hepatitis C** serology were received this period. Included were 85 males and 66 females (one sex not stated). One hundred and fifteen reports were for the 25 to 44 year age group. Included were 13 injecting drug users, one pregnant female and the index case in a needlestick injury.
- **Ross River virus** was reported for 241 patients this fortnight, from New South Wales (7), the Northern Territory (2), Queensland (228) and South Australia (4). Five reports, all from Queensland were confirmed (one each from Marsden, Eatons Hall, Emerald, Lindum, and Tin Can Bay). All remaining diagnoses were presumptive (IgM detected). Included were 104 males and 137 females and 122 patients were in the 25 to 44 year age group. Specimen collection dates ranged from late March to late May.
- Forty-six reports of **Barmah Forest virus** were received this period. Included were 3 clusters in single postcode regions of the north and south coasts of New South Wales. Specimen collection dates ranged from early April to mid-May. A total of 27 females and 19 males were included, 27 patients being in the 25 to 44 year age group. All diagnoses were presumptive (IgM detected). The number of reports received for April is the highest for any month since February 1992 (Figure 1).
- Positive **Japanese encephalitis virus** serology was reported for 5 patients this period, 3 of whom had encephalitis (*Comm Dis Intell* 1995;**19**:206-208), the remaining 2 being asymptomatic. All were males aged 6 to 44 years.
- **Flavivirus** (unspecified) was reported for 6 patients this period, 4 males and 2 females all in the 19 to 44 year age range.
- Thirty-nine reports of **adenovirus** were received this fortnight diagnosed by virus isolation (26), antigen detection (11) and serology (2). Included were adenovirus **types 2** (one), **4** (one), **8** (4) and **11** (2).
- **Herpes simplex virus type 1** was reported for 169 patients this fortnight. Diagnosis was by virus isolation (166) and antigen detection (3).
- One hundred and ninety-two reports of **herpes simplex virus type 2** were received, diagnosed by virus isolation (188) and antigen detection (4).
- **Varicella-zoster virus** was reported for 33 patients this period. Method of diagnosis included virus isolation (10), antigen detection (22) and fourfold rise in titre (one).
- Twenty-three reports of **rhinovirus** were received this period, 15 for children under 4 years of age.
- **Echovirus type 3** was isolated from the nasopharynx of a 15 month old child with a neuroblastoma who died (adenovirus type 2 also isolated).
- **Influenza A** was reported for 66 patients this fortnight from the Australian Capital Territory (one), the Northern Territory (6), Queensland (6), South Australia (5), Victoria (40) and Western Australia (8). Included were 18 of subtype H_1N_1 and one of subtype H_3N_2. Thirty-seven reports were for patients under the age of 4 years. Method of diagnosis included virus isolation (42 specimen collection dates early April to late May), antigen detection (11, specimens collected mid to late May), fourfold rise in titre (3), single high titre (8) and IgM detection (one). Included was a 38 year old female with myocarditis and profound muscle weakness, a 44 year old female with encephalitis and a 18 year old male for whom influenza B was also diagnosed. A total of 133 reports has been received so far this year for 76 males and 55 females (2 sex not stated). Fifty-six reports were for children under the age of 4 years. The number of reports received remains high for the time of year.
- Twelve reports of **influenza B** were received this period from New South Wales (4), the Northern Territory (one), Queensland (6) and Victoria (one). Included were 6 males and 6 females. Diagnosis was by virus isolation (2, specimen collection dates in mid-May), fourfold rise in titre (3) and single

Figure 1. Barmah Forest virus laboratory reports, 1992 to 1995, by month of specimen collection

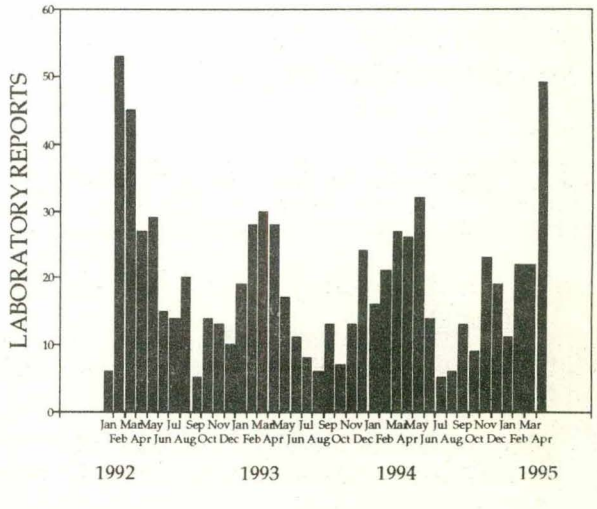


Figure 2. Rotavirus laboratory reports, 1990 to 1994 average and 1995, by month of specimen collection

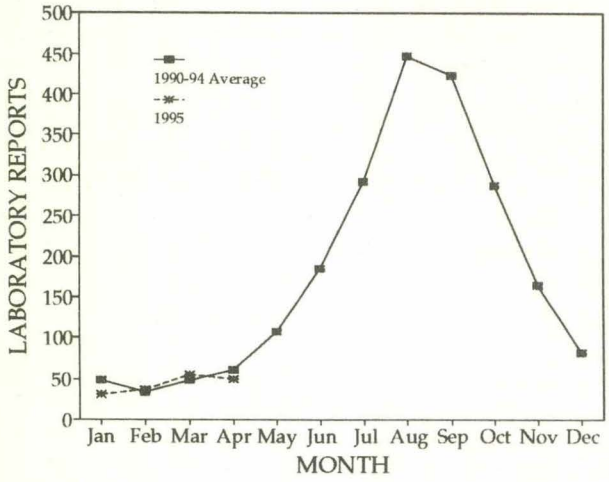
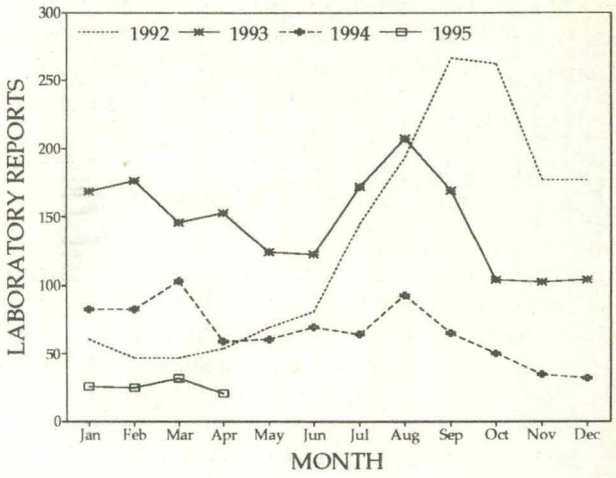


Figure 3. *Mycoplasma pneumoniae* laboratory reports, 1992 to 1995 , by month and year of specimen collection



high titre (7). A total of 34 reports has been received so far this year, 15 for patients in the 25 to 44 year age group.

- Thirteen reports of **parainfluenza virus type 2** were received this period 11 of which were for children under the age of 4 years. Method of diagnosis included virus isolation (5), antigen detection (7) and single high titre (one). Fifty reports were received for the month of April, more than for any month since June 1986.
- **Parainfluenza virus type 3** was reported for 14 patients this fortnight, all 4 years of age or under. Diagnosis was by virus isolation (4) and antigen detection (10). The number of reports continues to decline.
- One hundred and forty-nine reports of **respiratory syncytial virus (RSV)** were received this fortnight, 100 for patients under one year of age and 45 in the one to 4 year age group. Method of diagnosis included virus isolation (12) and antigen detection (137). The number of reports remains average for the time of year.
- **Rotavirus** was reported for 49 patients this period including 26 males and 21 females (2 sex not stated). Forty-seven cases were 4 years of age or under. The number of reports is average for the time of year (Figure 2).
- One hundred and forty-three reports of ***Chlamydia trachomatis*** were received this fortnight for 63 males and 80 females. Eighty-eight patients were in the 15 to 24 year age group and 53 in the 25 to 44 year age group. Diagnosis was by isolation (25), antigen detection (69), nucleic acid detection (48) and single high titre (one).
- ***Mycoplasma pneumoniae*** was reported for 15 patients this period including 7 males and 8 females, age range one to 74 years. The number of reports is the lowest for the time of year since 1992 (Figure 3).

Australian Sentinel Practice Research Network

Data for week 20 (ending 21 May) and week 21 (ending 28 May) are included in this issue of *CDI* (Table 1). There were 8138 consultations reported for week 20 and 6888 for week 21. The influenza reporting rate increased this fortnight, with marked increases in South Australia, New South Wales, Victoria and Western Australia. The rate of influenza reporting from the Northern Territory has declined to the level reported prior to their recent outbreaks. Reports of measles continue to be rare, as has been the case all this year.

Table 1. Australian Sentinel Practice Research Network, weeks 20 and 21, 1995

Condition	Week 20, to 21 May 1995		Week 21, to 28 May 1995	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	136	16.7	141	20.5
Rubella	1	0.1	0	0
Measles	0	0	0	0
Chickenpox	16	2.0	8	1.2
Pertussis	5	0.6	2	0.3
Gastroenteritis	105	12.9	83	12.0

HIV/AIDS surveillance

Methodological note

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 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) 332 4648 Facsimile: (02) 332 1837.

HIV and AIDS diagnoses and deaths following AIDS reported for December 1994, as reported to 31 March 1995, are included in this issue of *CDI* (Tables 2 and 3).

Table 2. New diagnoses of HIV infection, new diagnoses of AIDS and deaths following AIDS occurring in the period 1 to 31 December 1994, by sex and State or Territory of diagnosis

										TOTALS FOR AUSTRALIA			
		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1994	This period 1993	Year to date 1994	Year to date 1993
HIV diagnoses	Female	1	3	0	0	1	0	2	2	9	5	83	73
	Male	2	18	1	12	3	1	18	7	62	77	888	969
	Sex not reported	0	0	0	0	0	0	0	0	0	0	11	13
	Total[1]	3	21	1	12	4	1	20	9	71	82	982	1059
AIDS diagnoses	Female	0	0	0	0	0	0	1	0	1	0	28	36
	Male	2	24	0	3	1	0	10	4	44	36	749	602
	Total[1]	2	24	0	3	1	0	11	4	45	36	780	641
AIDS deaths	Female	0	0	0	0	0	0	1	0	1	2	31	24
	Male	0	25	1	5	2	0	9	0	42	60	631	622
	Total[1]	0	25	1	5	2	0	10	0	43	62	667	649

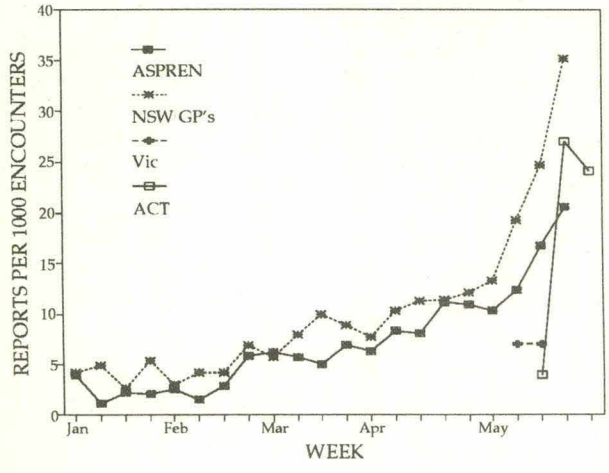
1. Persons whose sex was reported as transsexual are included in the totals.

Table 3. Cumulative diagnoses of HIV infection, AIDS and deaths following AIDS since the introduction of HIV antibody testing to 31 December 1994, by sex and State or Territory

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	AUSTRALIA
HIV diagnoses	Female	13	520	4	85	43	4	154	58	881
	Male	152	9621	78	1463	528	69	3173	696	15780
	Sex not reported	0	2045	0	0	0	0	43	0	2088
	Total[1]	165	12194	82	1552	571	73	3377	755	18769
AIDS diagnoses	Female	3	113	0	23	14	2	37	12	204
	Male	64	3254	23	520	235	31	1155	228	5510
	Total[1]	67	3377	23	545	249	33	1198	240	5732
AIDS deaths	Female	2	74	0	17	10	2	19	7	131
	Male	46	2263	17	357	148	21	879	164	3895
	Total[1]	48	2343	17	376	158	23	904	171	4040

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

Figure 4. Sentinel general practitioner influenza reports per 1000 encounters, 1995, by week and scheme



National Influenza Surveillance 1995

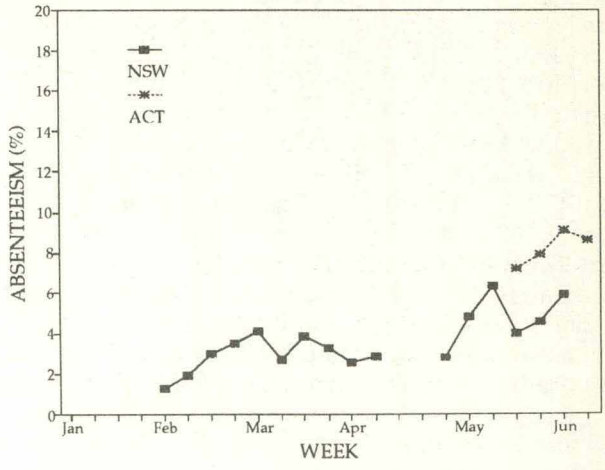
Australian Capital Territory Department of Health; Australian Sentinel Practice Research Network; Communicable Diseases Intelligence Virology and Serology Reporting Scheme Contributing Laboratories; New South Wales Department of Health; Victorian Department of Health and Community Services; South Australian Health Commision; World Health Organization (WHO) Collaborating Centre for Influenza Reference and Research, Melbourne

Overall the rate of influenza reporting has continued to rise in the last fortnight, with rises reported by ASPREN and the New South Wales and Australian Capital Territory sentinel general practitioner reporting schemes, and increases in influenza A laboratory reports.

Sentinel general practitioner surveillance (Figure 4)

- The **Australian Sentinel Practice Research Network** reported data for week 20 (ending 21 May - 16.7 reports per 1000 encounters) and week 21 (ending 28 May - 20.5 reports per 1000 encounters). The influenza reporting rate increased this fortnight, with marked increases in South Australia, New South Wales, Victoria and Western Australia. The rate of influenza reporting from the Northern Territory has declined to the level reported prior to their recent outbreaks, and rates reported from the Australian Capital Territory, Queensland and Tasmania have remained low.
- **New South Wales** sentinel general practitioners reported rates of 24.6 and 35.2 per 1000 consultations for the weeks ending 21 and 28 May respectively. The consultation rate has risen markedly over the last few weeks.
- **The Australian Capital Territory Sentinel General Practitioner Sheme** reported a consultation rate for influenza like illness of 27 per 1000 encounters for the week ending 28 May and 24 per 1000 encounters for the week ending 4 June.

Figure 5. Absenteeism reports, 1995, by week and scheme



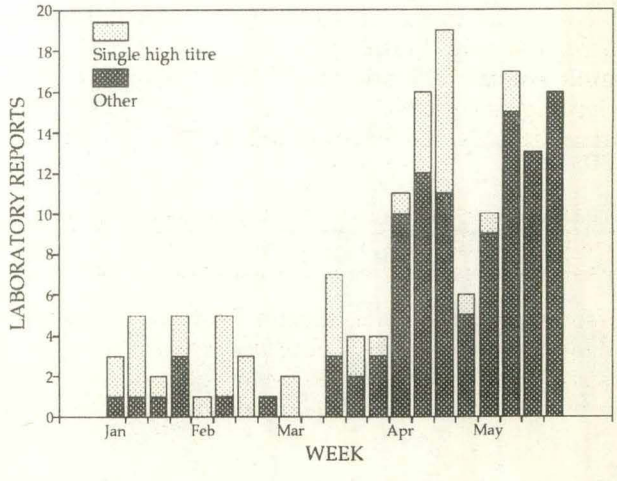
Absenteeism surveillance (Figure 5)

- **New South Wales Schools Absenteeism Surveillance** reported absenteeism rates of 4.6% and 5.9% respectively for the last two weeks, slightly higher than in previous fortnights.
- The **Australian Capital Territory Schools Absenteeism Surveillance** reported absenteeism rates of 9.1% on 30 May and 8.6% on 6 June.

Laboratory surveillance

- The *CDI* **Virology and Serology Reporting Scheme** has received 133 reports of **influenza A** so far this year (Figure 6). This fortnight, **influenza A** was reported for 66 patients, from the Australian Capital Territory (one), the Northern Territory (6), Queensland (6), South Australia (5), Victoria (40) and Western Australia (8). Included were 18 of

Figure 6. Influenza A laboratory reports, 1995, by method of diagnosis and week of specimen collection



subtype H_1N_1 and one of subtype H_3N_2. Thirty-seven reports were for patients under the age of 4 years. Method of diagnosis included virus isolation (42, specimen collection dates early April to late May), antigen detection (11, specimens collected mid- to late May), fourfold rise in titre (3), single high titre (8) and IgM detection (one). Included was a 38 year old female with myocarditis and profound muscle weakness, a 44 year old female with encephalitis and a 18 year old male for whom influenza B was also diagnosed. The number of reports received remains high for the time of year.

- Twelve reports of **influenza B** were received this period (Figure 7) from New South Wales (4), the Northern Territory (one), Queensland (6) and Victoria (one). Included were 6 males and 6 females. Diagnosis was by virus isolation (2, specimen collection dates in mid-May), fourfold rise in titre (3) and single high titre (7). A total of 34 reports has been received so far this year, 15 for patients in the 25 to 44 year age group.

Other surveillance

- **Victorian total deaths surveillance** reported 1374 deaths for the fortnight 8 to 21 May 1995, a death rate of 3.0 per 10,000 population.
- **Victorian hospital admissions surveillance** reported 9 admissions for influenza and/or pneumonia from participating hospitals for the fortnight 8 to 21 May 1995, an admission rate of 0.5 per 100 patients admitted.

Sterile Sites Surveillance (LabDOSS)

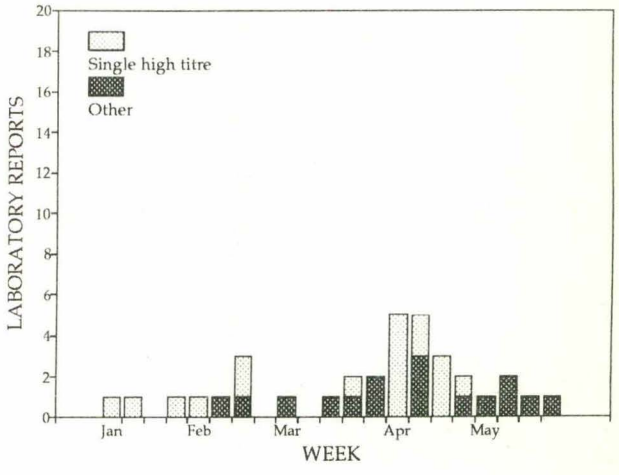
Data for this four weekly period have been provided by 14 laboratories. There were 643 reports of significant sepsis:

New South Wales: Hunter Area Pathology Service 72; South West Area Pathology Service, Liverpool 85; Royal Prince Alfred Hospital 31; Royal North Shore Hospital 103.
Tasmania: Royal Hobart Hospital 31; Northern Tasmanian Pathology Service 9.
Western Australia: Princess Margaret Hospital for Children 4; Sir Charles Gairdner Hospital 28.
Queensland: Ipswich General Hospital 13; Nambour Hospital 10; Royal Brisbane Hospital 50; Sullivan, Nicholaides and Partners 71.
South Australia: Institute of Medical and Veterinary Science, Adelaide 63.
Australian Capital Territory: Woden Valley Hospital 73.

Organisms reported 5 or more times from blood are detailed in Table 4. Other blood isolates not included in Table 4 were:

Gram positive: 4 *Bacillus* species, 2 *Enterococcus faecium*, 2 *Enterococcus* species, 1 *Erysipelothrix rhusiopathiae*, 1 *Listeria monocytogenes* (44 year old immunocompromised female), 1 *Rothia dentocariosa*, 4 *Streptococcus* Group A, 1 *Streptococcus* Group D, 2 *Streptococcus* Group G, 2 *Streptococcus* 'milleri', *Strepotococcus sanguis*.

Figure 7. Influenza B laboratory reports, 1995, by method of diagnosis and week of specimen collection



Gram negative: 1 *Aeromonas hydrophila*, 1 *Bacteroides distasonis*, 1 *Campylobacter jejuni*, 1 *Campylobacter* species, 1 *Chyceomonas luteola*, 1 *Citrobacter diversus*, 1 *Citrobacter freundii*, 1 *Enterobacter agglomerans*, 3 *Enterobacter* species, 1 *Haemophilus influenzae* (80 year old male with pneumonia and a previous history of tuberculosis, died) 3 *Klebsiella* species, 2 *Morganella morganii*, 2 *Neisseria meningitidis* (18 year old female, serogroup C and 43 year old diabetic female serogroup Y), 4 *Proteus mirabilis*, 1 *Proteus vulgaris*, 2 *Providencia* species, 1 *Pseudomonas cepacia*, 1 *Salmonella* Group D, 4 *Salmonella* species, 1 *Salmonella* Typhi, 3 *Xanthomonas maltophilia* (all immunocompromised males over the age of 55 years).

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

Fungi: 6 *Candida albicans*, 1 *Candida parapsilosis*, 7 *Candida* species, 1 *Rhodotorula rubra*.

There were 270 blood isolates reported for patients over the age of 65 years (Figure 4).

Hospital acquired blood isolates

A total of 173 isolates were reported as being hospital acquired. The most commonly reported organisms were *Staphylococcus aureus* (40, including 10 MRSA), *Staphylococcus* coagulase negative (20), *Pseudomonas aeruginsa* (13) and *Staphylococcus epidermidis* (10).

Meningitis and/or CSF isolate reports

There were 13 reports of meningitis and/or CSF isolates. Included was 1 *Cryptococcus neoformans* (67 year old female), 1 *Enterococcus faecalis* (64 year old diabetic female following surgery), 1 *Escherichia coli* (70 year old male), 1 *Klebsiella pneumoniae* (39 year old male following neurosurgery), 1 *Neisseria meningitidis* (34 year old female), 1 *Pseudomonas aeruginsa* (59 year old female

Table 4. LabDOSS reports of blood isolates, by organism and clinical information

Organism	Clinical information						Risk factors				Total[1]
	Bone/joint	Lower respiratory	Endocarditis	Gastrointestinal	Urinary tract	Skin	Surgery	Immunosuppressed	IV line	Neonatal	
Enterococcus faecalis		1		3	1	2	1	12	1		14
Staphylococcus aureus	6	6	5	3	3	33	10	21	17		127[2]
Staphylococcus epidermidis		2	1			6	1	5	4	2	28
Staphylococcus coagulase negative	1			1		4	3	16	5		57
Streptococcus Group B			1			3		1	1	1	10
Streptococcus pneumoniae		17						1			27
Streptococcus viridans			2	3				8			10
Streptococcus sanguis			2					1			6
Escherichia coli		2		17	43	1	4	20	1		100
Acinetobacter species					1	2	2	1	2		8
Enterobacter aerogenes			1	3	1		1		1		9
Enterobacter cloacae			1	1		1	4	1	1		7
Bacteroides fragilis				1		2		1			8
Klebsiella pneumoniae		2		6	7	2	3	6	1		31
Klebsiella oxytoca				2	1			2			7
Pseudomonas aeruginosa		1		3	6	6	3	11	4		27
Candida albicans			1	1		1		2	2		6
Candida species						3		4	2		7

1. Only organisms with 5 or more reports are included in this table.
2. MRSA 12

Table 5. LabDOSS reports of meningitis and/or CSF isolates, by organism and age group

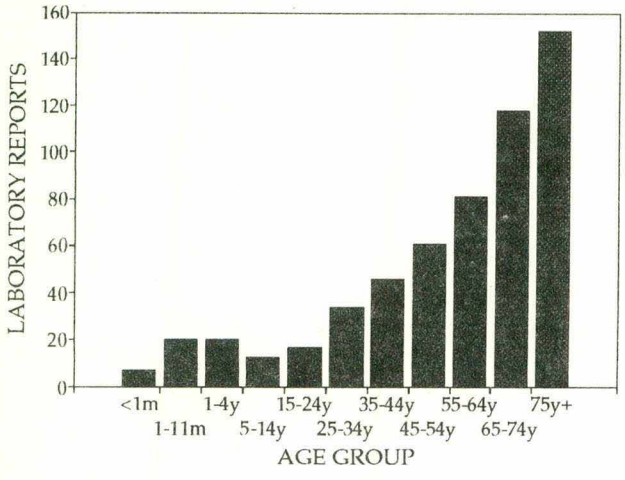
	< 1 months	1-11 months	5-14 years	15-24 years	25-34 years	35-44 years	45-64 years	65-74 year	75+ years	Total
Enterococcus faecalis							1			1
Staphylococcus aureus			1						1	2
Steptococcus Group B				1						1
Streptococcus pneumoniae	1	1		1		1				4
Escherichia coli									1	1
Cryptococcus neoformans								1		1
Klebsiella pneumoniae						1				1
Neisseria meningitidis					1					1
Pseudomonas aeruginosa							1			1

following neurosurgery), 2 *Staphylococcus aureus* (76 year old male and 13 year old female both with ventricular shunts), 1 *Streptococcus* Group B (19 year old female) and 4 *Streptococcus pneumoniae* (2 infants under the age of 11 months, a 24 year old male and a 40 year old female).

Isolates from sites other than blood or CSF

Joint fluid: Seventeen reports were received this period including 1 *Enterobacter cloacae*, 1 *Proteus mirabilis*, 1 *Pseudomonas aeruginosa*, 12 *Staphylococcus aureus* (11 males and 1 female, age range 4 to 66 years), 2 *Staphylococcus* coagulase negative.

Figure 8. LabDOSS reports of blood isolates, by age group



Peritoneal dialysate: A total of 7 reports was received for 6 females and 1 male, age range 37 to 70 years. Included was 1 *Enterobacter aerogenes*, 1 *Escherichia coli*, 2 *Staphylococcus aureus*, 1 *Staphylococcus saprophyticus*, and 2 *Staphylococcus* coagulase negative.

Pleural fluid: Five reports of organisms isolated from pleural fluid were received this period for 4 females and 1 male, age range 5 to 82 years. Included was 1 *Aerococcus viridans*, 1 *Escherichia coli*, 2 *Streptococcus* species and 1 *Streptococcus* 'milleri'.

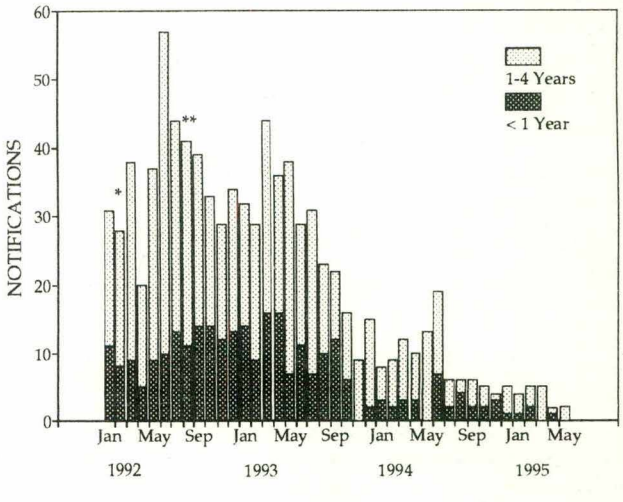
Other: 1 *Acinetobacter* species, 1 *Candida albicans*, 1 *Enterobacter* species, 3 *Escherichia coli*, 1 *Klebsiella pneumoniae*, 1 *Proteus mirabilis*, 1 *Pseudomonas aeruginosa*, 1 *Pseudomonas* species, 5 *Staphylococcus aureus*, 4 *Staphylococcus* coagulase negative, 4 *Staphylococcus epidermidis*, 1 *Streptococcus* Group B, 1 *Streptococcus* Group D, 1 *Streptococcus* species and 1 *Yersinia enterocolitica*.

National Notifiable Diseases Surveillance System, 14 to 27 May 1995

There were 1992 notifications received for the period (Figure 10 and Tables 6, 7 and 8).

- There were 270 notifications of **Ross River virus infection**; 123 cases were male, 145 cases were female, and the sex of 2 cases was not recorded. The cases were aged between the 0-4 and the 75-79 years age groups. Onset dates were in February (one), March (49), April (100), and May (120).
- Five cases of **dengue** were reported. All cases were females and recorded ages were aged between the 10-14 and the 50-54 years age groups. Three cases were resident in the Statistical Division of Far North Queensland. Recorded onset dates were April (4) and May (one).
- Three notifications of **brucellosis** were reported. All cases were male and recorded ages were between the 30-34 and the 45-49 years age groups.
- There were 362 notifications of **campylobacteriosis**; 190 cases were male, 168 cases were female, and the sex of 4 cases was not recorded. The cases were aged between the 0-4 and the 80-84 years age groups with 34% of cases aged less than 5 years.
- Eighty-six notifications of **gonococcal infection** were received; 59 cases were male and 27 cases were female. Recorded ages were between the 0-4 and the 65-69 years age group. A single case was reported in a child aged less than one year.
- A single case of ***Haemophilus influenzae* type b infection** was reported for a female in the 20-24 years age group (Figure 9).
- Thirty-five cases of **hepatitis A** were reported; 23 cases were male and 12 cases were female. The cases were aged between the 0-4 and the 80-84 years age groups with 80% of cases aged less than 40 years.
- Seven incident cases of **hepatitis B** were reported; 2 cases were male and 5 cases were female. The cases were aged between the 0-4 and the 40-44 years age groups.
- Two incident cases of **hepatitis C** were reported, for males aged 24 years and 37 years.
- There were 3 cases of **hydatid infection** reported; one case was male and one case was female. The cases were in the 25-29 and the 45-49 years age groups.
- Four notifications of **legionellosis** were received. All cases were male and recorded ages were between the 50-54 and the 75-79 years age groups.
- Eight cases of **leptospiriosis** were reported; 7 cases were male and one case was female. Recorded ages were between the 15-19 and the 65-69 years age

Figure 9. *Haemophilus influenzae* type b infection notifications, January 1992 to May 1995, by age group and month of onset

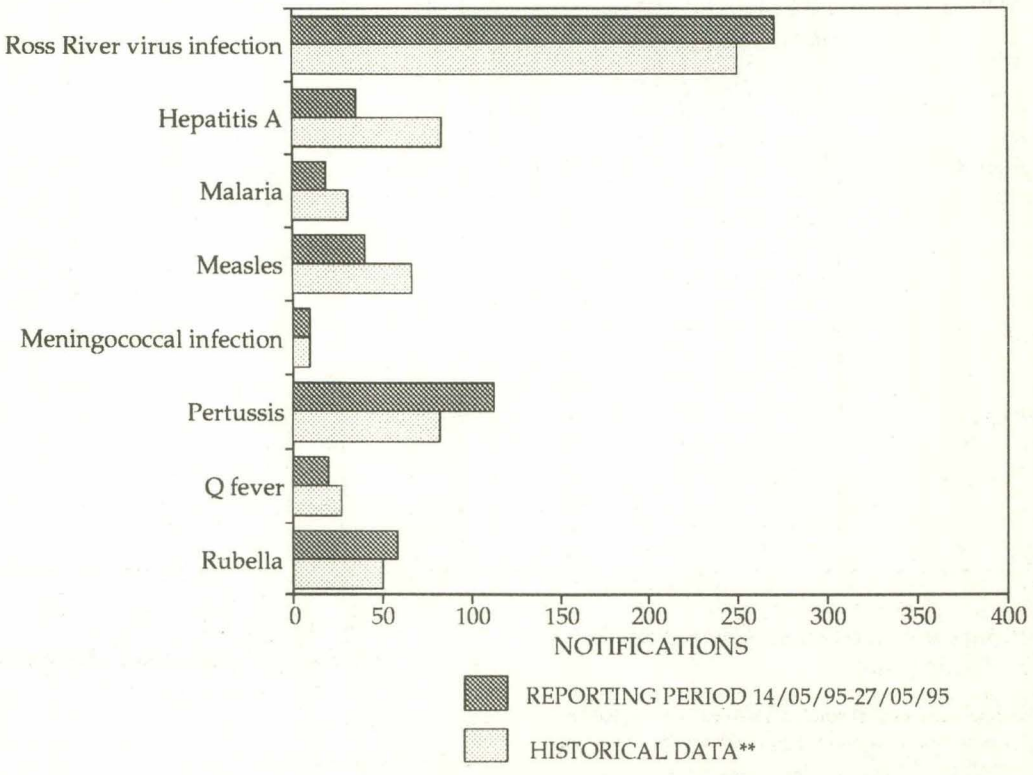


* PRP-D approved in February 1992.
** Infant vaccine approved in September 1992.

groups. All cases were reported for residents of rural Statistical Divisions.

- There were 19 notifications of **malaria** received; 12 cases were male and 7 cases were female. Recorded ages were between the 15-19 and the 80-84 years age groups. Onset dates were in February (one), March (2), April (12), and May (5).
- Forty-one cases of **measles** were reported; 15 cases were male and 16 cases were female. The cases were aged between 0-4 and the 80-84 years age groups with 6 cases reported for children aged less than one year. There were 3 apparent clusters of between 2 and 6 cases each in the same postcode areas. Apparent clusters were in Victoria (one) and Queensland (2).
- There were 9 cases of **meningococcal infection** reported; 4 cases were male and 5 cases were female. The cases were aged between the 0-4 and the 40-44 years age groups. There were no apparent clusters.
- There were 113 notifications of **pertussis;** 48 cases were male and 65 cases were female. Recorded ages were between the 0-4 and the 80-84 years age groups with 9 cases aged less than one year. There were 8 apparent clusters of between 2 and 6 cases each in the same postcode area. Apparent clusters were in New South Wales (2) and Queensland (6).
- Twenty notifications of **Q fever** were received; 18 cases were male and 2 cases were female. Recorded ages were between the 15-19 and the 70-74 years age groups.
- There were 58 cases of **rubella** reported; 37 cases were male and 21 cases were female. Recorded ages were between the 0-4 and the 55-59 years age groups. Ten cases were reported for females in the 15-44 years age group.
- There were 187 cases of **salmonellosis** reported; 96 cases were male, 87 cases were female, and the sex of 4 cases was not reported. The cases were aged between the 0-4 and the 90-94 years age group with 45% of cases aged less than 5 years.
- Seventy-six cases of **syphilis** were reported; 32 cases were male, 35 cases were female, and the sex of 9 cases was not reported. The cases were aged between the 0-4 and the 75-79 years age groups with a single case reported for a child aged less than one year.
- There were 26 cases of **tuberculosis** reported; 11 cases were male and 15 cases were female. The cases were aged between the 10-14 and the 85-89 years age groups.
- Nine cases of **yersiniosis** were reported; 5 cases were male and 4 cases were female. The cases were aged between the 0-4 and the 45-49 years age groups.

Figure 10. 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 periods of the last 3 years and the periods immediately preceding and following those.

Table 5. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 14 to 27 May 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[1]			
									This period 1995	This period 1994	Year to date 1995	Year to date 1994
Diphtheria	0	0	0	0	0	0	0	0	0	3	1	23
Haemophilus influenzae b infection	0	0	0	0	0	0	1	0	1	7	32	82
Measles	0	15	7	12	0	1	6	0	41	107	569	1290
Mumps	1	0	NN	NN	1	0	0	0	2	1	19	8
Pertussis	2	27	17	45	8	2	7	5	113	199	1204	2440
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella	6	1	1	22	9	1	17	1	58	57	337	686
Tetanus	0	0	0	0	0	0	0	0	0	1	2	7

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

NN Not Notifiable.

Table 6. Notifications of other diseases[1] received by State and Territory health authorities in the period 14 to 27 May 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2]			
									This period 1995	This period 1994	Year to date 1995	Year to date 1994
Arbovirus infection												
Ross River virus infection	0	5	9	224	0	-	4	28	270	291	828	3271
Dengue	0	2	0	3	0	-	0	0	5	0	11	11
NEC[3]	0	14	1	16	0	5	1	0	37	56	302	351
Campylobacteriosis[4]	12	-	21	56	101	12	123	37	362	422	3457	3885
Chlamydial infection (NEC)[5]	4	NN	63	57	8	14	96	17	259	276	1595	2622
Donovanosis	0	NN	2	0	NN	0	0	0	2	4	26	48
Gonococcal infection[6]	1	8	44	17	4	1	0	11	86	110	914	1270
Hepatitis A	0	11	3	13	0	1	7	0	35	105	539	822
Hepatitis B incident	0	0	0	2	0	1	4	0	7	21	112	144
Hepatitis C incident	-	2	0	-	0	-	-	-	2	0	36	6
Hepatitis C unspecified	17			80		2	121	50	270	373	2101	3527
Hepatitis (NEC)	0	0	0	1	0	0	2	NN	3	2	13	19
Legionellosis	0	0	0	2	0	0	1	1	4	14	79	99
Leptospirosis	0	0	0	4	1	1	2	0	8	7	31	82
Listeriosis	0	0	0	0	0	0	0	0	0	0	30	12
Malaria	0	3	0	7	1	0	8	0	19	54	130	334
Meningococcal infection	1	1	0	3	0	0	3	1	9	9	87	110
Ornithosis	0	NN	0	1	0	0	2	0	3	6	57	43
Q fever	0	4	0	11	1	0	4	0	20	38	115	271
Salmonellosis (NEC)	3	23	12	59	27	8	31	24	187	234	2471	2941
Shigellosis[4]	0	-	14	8	1	0	4	4	31	31	274	384
Syphilis	2	20	30	3	1	0	16	4	76	60	721	936
Tuberculosis	1	6	2	1	0	1	13	2	26	40	378	444
Typhoid[7]	0	0	0	0	0	0	0	0	0	2	20	21
Yersiniosis (NEC)[4]	0	-	0	6	2	0	1	0	9	10	84	209

1. For HIV and AIDS, see Tables 2 and 3 *CDI* 1994;18:409-410. For rarely notified diseases, see Table 6.
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. Tas: includes Ross River virus and dengue.
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 7. Notifications of rare[1] diseases received by State and Territory health authorities in the period 14 to 27 May 1995

DISEASES	Total this period	Reporting States or Territories	Year to date 1995
Botulism	0		0
Brucellosis	3	Qld	6
Chancroid	0		2
Cholera	0		0
Hydatid infection	2	Qld 1, Vic 1	9
Leprosy	0		2
Lymphogranuloma venereum	0		1
Plague	0		0
Rabies	0		0
Yellow fever	0		0
Other viral haemorrhagic fevers	0		0

1. Fewer than 50 cases of each of these diseases were notified each year during the period 1988 to 1993.

Table 8. Virology and serology laboratory reports by State or Territory[1] for the reporting period 18 to 31 May 1995, historical data[2], and total reports for the year

	State or Territory [1]								Total this fortnight	Historical data [2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
MEASLES, MUMPS, RUBELLA											
Measles virus	1	1		9			1		12	10.8	248
Mumps virus		2		7			3		12	3.0	41
Rubella virus		4		11					15	14.3	492
HEPATITIS VIRUSES											
Hepatitis A virus		1	2	18	1		4		26	17.8	225
Hepatitis B virus	2	31	3	28	3		18		85	91.2	1,005
Hepatitis C virus	7	4	2	62	51	14	12		152	190.3	2,518
Hepatitis D virus		2					1		3	1.3	8
ARBOVIRUSES											
Ross River virus		7	2	228	4				241	87.7	847
Barmah Forest virus		34		11			1		46	10.2	156
Japanese encephalitis virus				5					5	.0	5
Flavivirus (unspecified)	2	3					1		6	2.0	26
ADENOVIRUSES											
Adenovirus type 2		1							1	2.7	14
Adenovirus type 4							1		1	.8	2
Adenovirus type 8							4		4	1.5	13
Adenovirus type 11							2		2	.0	2
Adenovirus not typed/pending		8		5	9		5	4	31	37.2	396
HERPES VIRUSES											
Herpes simplex virus type 1		45	1	50	29	1	43		169	140.7	2,173
Herpes simplex virus type 2		61	2	79	16	1	30	3	192	170.7	2,174
Herpes simplex not typed/pending	4	16		6				3	29	25.3	241
Cytomegalovirus	1	14	1	13	4	3	11	3	50	57.5	680
Varicella-zoster virus		12		11	3		5	2	33	33.3	517
Epstein-Barr virus		12	1	22	15	2	5		57	42.7	953
OTHER DNA VIRUSES											
Parvovirus				1			1		2	1.3	56

Table 8. Virology and serology laboratory reports by State or Territory[1] for the reporting period 18 to 31 May 1995, historical data[2], and total reports for the year, continued

	State or Territory [1]								Total this fortnight	Historical data [2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
PICORNA VIRUS FAMILY											
Echovirus type 6							1		1	3.0	31
Echovirus type 9		1					1		2	.5	3
Echovirus type 14		1							1	.8	1
Echovirus type 30				1					1	8.3	34
Poliovirus type 3 (uncharacterised)		1							1	.2	4
Rhinovirus (all types)		2		1	1		19		23	30.8	299
Enterovirus type 71 (BCR)							3		3	.2	12
Enterovirus not typed/pending		9		4			4		17	39.2	415
ORTHO/PARAMYXOVIRUSES											
Influenza A virus	1		3	6	5		24	8	47	7.5	158
Influenza A virus H_1N_1			3				15		18	.0	18
Influenza A virus H_3N_2							1		1	.0	1
Influenza B virus		4	1	6			1		12	4.5	39
Parainfluenza virus type 1				1			1		2	31.3	15
Parainfluenza virus type 2		3		2	1		7		13	7.3	89
Parainfluenza virus type 3	1	3					4	6	14	13.7	252
Respiratory syncytial virus	5	83		11	2	1	45	2	149	147.7	471
OTHER RNA VIRUSES											
HIV-1				5		1			6	2.3	38
Rotavirus	3	1		1	8	4	3	29	49	49.2	399
OTHER											
Chlamydia trachomatis not typed	4	18	6	97	8	1	9		143	95.0	1,115
Chlamydia psittaci				4			2		6	2.5	80
Chlamydia species		8							8	.7	34
Mycoplasma pneumoniae		2		11	1	1			15	39.2	161
Coxiella burnetii (Q fever)		2		8	1		2		13	13.7	113
Rickettsia australis		1		1					2	.0	2
Streptococcus group A		2	1	13					16	7.7	204
Yersinia enterocolitica		6							6	.8	25
Brucella species				1					1	.2	6
Bordetella pertussis		1					4		5	17.5	323
Bordetella species			2	3					5	2.8	75
Legionella longbeachae				1					1	.0	3
Cryptococcus species				2					2	.5	16
Leptospira hardjo				4					4	.3	9
Leptospira australis				1					1	.3	3
Leptospira species				1					1	.7	14
Treponema pallidum			8	3			1		12	25.5	287
Entamoeba histolytica		1							1	.0	8
Toxoplasma gondii		6		2			1		9	4.5	69
Strongyloides stercoralis			2						2	.0	3
Echinococcus granulosus		1		2					3	.8	13
TOTAL	31	415	40	758	162	29	296	60	1,791	1,501.5	17,641

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 9. Virology and serology laboratory reports by clinical information for the reporting period 18 to 31 May 1995

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA													
Measles virus	1		1					5				5	12
Mumps virus		1			3							8	12
Rubella virus								7		2		6	15
HEPATITIS VIRUSES													
Hepatitis A virus					1		17					8	26
Hepatitis B virus							30				1	54	85
Hepatitis C virus							52			1	1	98	152
Hepatitis D virus												3	3
ARBOVIRUSES													
Ross River virus								10		71		160	241
Barmah Forest virus								1		2		43	46
Japanese encephalitis virus	3											2	5
Flavivirus (unspecified)												6	6
ADENOVIRUSES													
Adenovirus type 2												1	1
Adenovirus type 4					1								1
Adenovirus type 8								1	3				4
Adenovirus type 11					1							1	2
Adenovirus not typed/pending					11	10			1	1	1	7	31
HERPES VIRUSES													
Herpes simplex virus type 1					4			55	7		53	50	169
Herpes simplex virus type 2								13			129	50	192
Herpes simplex not typed/pending					1			6			7	15	29
Cytomegalovirus				2	6	1	2		1	1		37	50
Varicella-zoster virus								21				12	33
Epstein-Barr virus					1		1	1				54	57
OTHER DNA VIRUSES													
Parvovirus												2	2
PICORNA VIRUS FAMILY													
Echovirus type 6		1											1
Echovirus type 9			1									1	2
Echovirus type 14						1							1
Echovirus type 30												1	1
Poliovirus type 3 (uncharacterised)						1							1
Rhinovirus (all types)					18							5	23
Enterovirus type 71 (BCR)								2				1	3
Enterovirus not typed/pending		1			2	2		4			1	7	17

Table 9. Virology and serology laboratory reports by clinical information for the reporting period 18 to 31 May 1995, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ORTHO/PARAMYXOVIRUSES													
Influenza A virus					32	2						13	47
Influenza A virus H_1N_1					18								18
Influenza A virus H_3N_2												1	1
Influenza B virus					6							6	12
Parainfluenza virus type 1					1							1	2
Parainfluenza virus type 2					8							5	13
Parainfluenza virus type 3					12							2	14
Respiratory syncytial virus					109			1				39	149
OTHER RNA VIRUSES													
HIV-1												6	6
Rotavirus	1				1	45						2	49
OTHER													
Chlamydia trachomatis not typed							1	1	2		117	22	143
Chlamydia psittaci					3			1				2	6
Chlamydia species												8	8
Mycoplasma pneumoniae					7							8	15
Coxiella burnetii (Q fever)						1						12	13
Rickettsia australis												2	2
Streptococcus group A					4			1		2		9	16
Yersinia enterocolitica												6	6
Brucella species												1	1
Bordetella pertussis					4							1	5
Bordetella species					3							2	5
Legionella longbeachae												1	1
Cryptococcus species		1										1	2
Leptospira hardjo												4	4
Leptospira australis												1	1
Leptospira species												1	1
Treponema pallidum												12	12
Entamoeba histolytica												1	1
Toxoplasma gondii												9	9
Strongyloides stercoralis												2	2
Echinococcus granulosus												3	3
TOTAL	6	4	2	2	257	63	103	131	14	80	310	819	1791

Table 10. Virology and serology laboratory reports by contributing laboratories for the reporting period 18 to 31 May 1995

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	28
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	232
	Prince Henry/Prince of Wales Hospitals, Sydney	89
	Royal Alexandra Hospital for Children, Camperdown	32
	Royal Prince Alfred Hospital, Camperdown	18
	South West Area Pathology Service, Liverpool	30
Queensland	Nambour Hospital	3
	Queensland Medical Laboratory, West End	565
	State Health Laboratory, Brisbane	245
South Australia	Institute of Medical and Veterinary Science, Adelaide	162
Tasmania	Northern Tasmanian Pathology Service, Launceston	4
	Royal Hobart Hospital, Hobart	19
Victoria	Commonwealth Serum Laboratories, Melbourne	24
	Microbiological Diagnostic Unit, University of Melbourne	8
	Monash Medical Centre, Melbourne	38
	Royal Children's Hospital, Melbourne	84
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	151
Western Australia	Princess Margaret Hospital, Perth	59
TOTAL		1791