

# Communicable Diseases Surveillance

## Measles

Measles has been a major cause of morbidity and mortality in Australia. In the absence of widespread immunisation, measles tends to be endemic in large metropolitan communities, with periodic increases in incidence. In smaller communities, epidemics occur at less frequent intervals.

Measles was not notifiable in most States and Territories of Australia until 1988. Thus Australian outbreaks of measles have not been well documented, except in South Australia, where notifications during the years 1917 to 1948 recorded a number of epidemics. The inter-epidemic period ranged from 2 to 7 years. Over 10,000 cases were reported in each of several epidemic years.

It has been estimated that prior to the introduction of effective vaccines, over 90% of children contracted the disease. During the 1950s and 1960s measles caused about 20 to 25 deaths annually, three-quarters of these being in children under 5 years of age. Most deaths were due to bronchopneumonia or encephalitis. Since 1990, around 5 deaths per annum have been reported, including deaths from subacute sclerosing panencephalitis (SSPE).

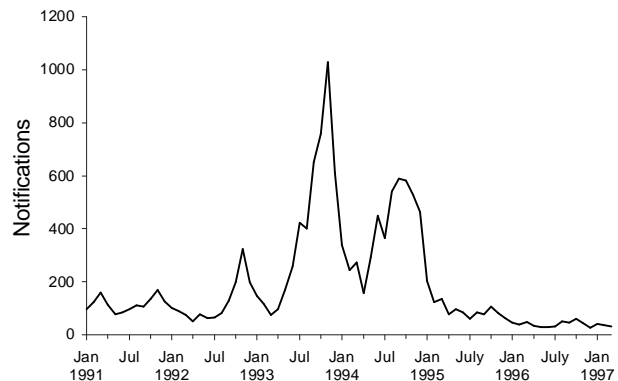
Several attenuated live measles virus vaccines were developed in the United States of America during the 1960s, and the Schwartz strain vaccine was licensed for use in Australia in 1970. In 1975 the NHMRC recommended that the vaccine be included in the Childhood Immunisation Schedule, to be given at about 12 months of age. In 1983, a combined measles/mumps vaccine was introduced; in 1991 this was replaced by measles/mumps/rubella (MMR) vaccine.

From late 1992 to late 1994, a sustained outbreak of measles occurred in Australia (Figure 1). This affected most States and Territories. The largest numbers of cases were reported from New South Wales, Queensland, and Tasmania (Figure 2). Since early 1995, the number of notifications has remained low.

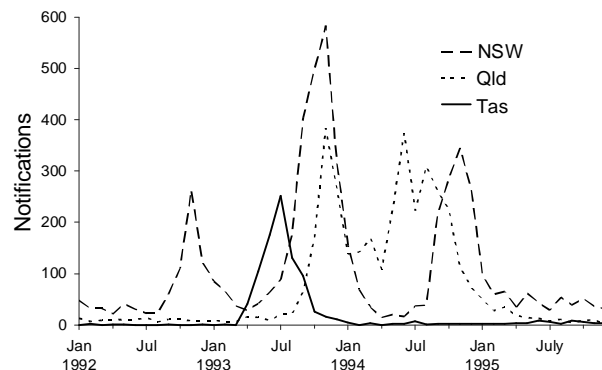
The age of cases notified has changed during the 1990s. From 1991 to 1993, less than one-third of reported cases were under 5 years of age, and less than 20% were under 2 years of age. However, from the beginning of 1996, nearly two-thirds of cases were under 5 years of age and 37% were under 2 years. In the major epidemic years of 1993 and 1994, nearly half of the reported cases were in teenagers, with similar numbers of males and females affected.

In 1994, the NHMRC recommended Childhood Immunisation Schedule was modified to include a second dose of MMR vaccine for all children at age 10 to 16 years. However, unless high vaccination levels at the recommended ages are achieved throughout all sections of the Australian community, further outbreaks of measles can be expected to occur.

**Figure 1. Measles notifications, 1991 to 1997, by month of onset**



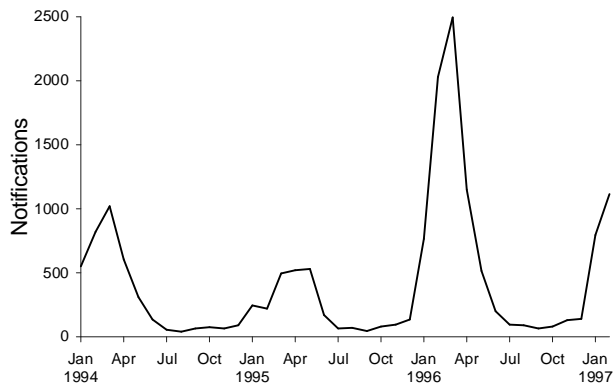
**Figure 2. Measles notifications, 1992 to 1995, by month of onset, selected States**



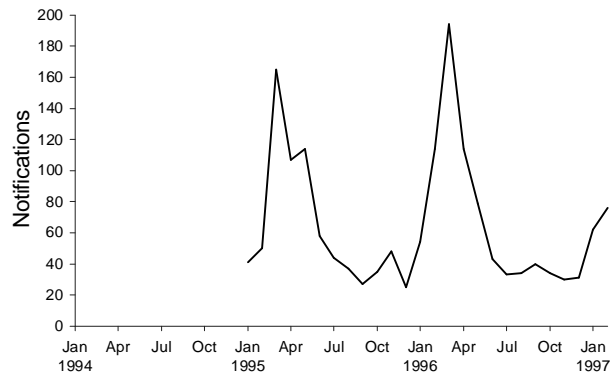
## Reports of Ross River virus and Barmah Forest virus infections increasing

Reports of Ross River virus infection to both the National Notifiable Diseases Surveillance System (NNDSS) and the Virology and Serology Laboratory Reporting Scheme (LabVISE) continued to increase during February and are expected to peak in March (Figures 3 and 4). There were 580 reports received by the NNDSS this period (Table 2). Of these, 66% were aged from 30 - 59 years; the male:female ratio was 1:1. To date there have been 470 notifications with onset in March, with the largest number of notifications from the Queensland Statistical Divisions of Northern (45) and Far North (41), the Northern Territory (27) and the Victorian Mallee (19).

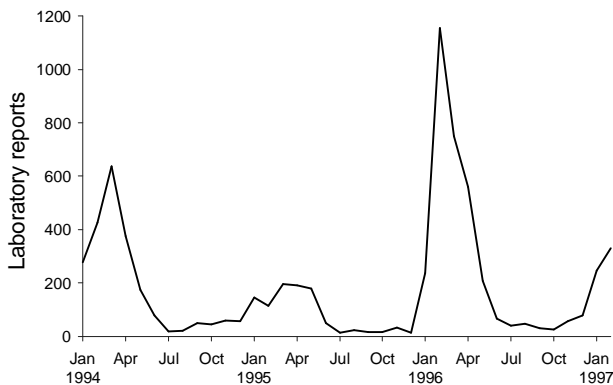
**Figure 3. Ross River virus infection notifications to the NNDSS, 1994 to 1997, by month of onset**



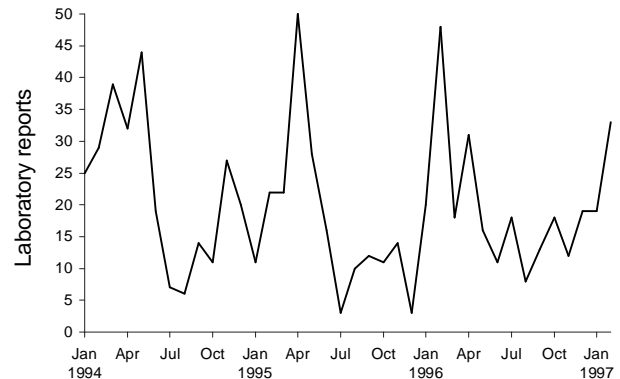
**Figure 5. Barmah Forest virus infection notifications to the NNDSS, 1994 to 1997, by month of onset**



**Figure 4. Ross River virus infection laboratory reports to LabVISE, 1994 to 1997, by month of specimen collection**



**Figure 6. Barmah Forest virus infection laboratory reports to LabVISE, 1994 to 1997, by month of specimen collection**



Reports of Barmah Forest virus infection to the NNDSS and LabVISE are also increasing. Barmah Forest virus infection was first reported separately to the NNDSS in 1995. The LabVISE reports show a similar trend, indicating reports may peak between March and May (Figures 5 and 6). There were 30 reports received by the NNDSS this period (Table 2). Of these, 63% were aged from 25 - 59 years; there were 19 males and 11 females.

## National Notifiable Diseases Surveillance System

*The NNDSS is conducted under the auspices of the Communicable Diseases Network Australia New Zealand. The system coordinates the national surveillance of more than 40 communicable diseases or disease groups endorsed by the National Health and Medical Research Council (NHMRC). Notifications of these diseases are made to State and Territory health authorities under the provisions of their respective public health legislations. De-identified core unit data are supplied fortnightly for collation, analysis and dissemination. For further information, see CDI 1997;21:5.*

### Reporting period 19 March to 1 April 1997

There were 2,852 notifications received for this two-week period (Tables 1, 2 and 3). The numbers of reports for selected diseases have been compared with average data for corresponding periods in the previous three years (Figure 7).

Hepatitis A infection notifications remain high in 1997, reflecting the outbreak in New South Wales. However the peak of notifications was in February, with substantially fewer received for March (Figure 8).

Notifications of salmonellosis for 1997 are slightly higher than for the same period in 1996. The pattern of notifications remains similar to previous years, showing a summer peak (Figure 9). In 1997, 37% of cases have been in the 0 - 4 years age group. The largest numbers of cases have been reported from Queensland (562), New South Wales (423) and Victoria (413).

There have been 22 cases of listeriosis reported with onset in 1997, 12 in females and 9 in males (one sex not reported). Notifications have come from New South Wales (6), Victoria (6), Western Australia (6), Queensland (3) and South Australia (1).

**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 19 March to 1 April 1997**

Disease <sup>1,2</sup>	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0
<i>Haemophilus influenzae</i> type B	0	0	0	1	0	0	0	0	1	4	18	17
Measles	0	6	0	2	1	2	3	1	15	18	121	137
Mumps	0	8	0	NN	2	0	3	1	14	3	46	33
Pertussis	4	65	1	29	46	6	70	17	238	131	2291	939
Rubella	1	3	1	14	1	0	9	1	30	109	437	870
Tetanus	0	0	0	0	0	0	1	0	1	0	2	1

NN Not Notifiable.

1. No notifications of poliomyelitis have been reported since 1986.

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

**Table 2. Notifications of other diseases received by State and Territory health authorities in the period 19 March to 1 April 1997**

Disease <sup>1,2</sup>	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
Arbovirus Infection (NEC) <sup>3,4</sup>	0	3	2	1	0	0	6	3	15	8	84	43
Barmah Forest virus infection	0	6	0	23	0	0	1	-	30	94	200	299
Campylobacteriosis <sup>5</sup>	8	-	12	146	55	9	125	27	382	500	3059	3203
Chlamydial infection (NEC) <sup>6</sup>	2	NN	19	180	0	12	79	33	325	271	2055	1809
Dengue	0	1	1	0	1	-	0	0	3	2	99	16
Donovanosis	0	NN	2	1	NN	0	0	1	4	0	6	17
Gonococcal infection <sup>7</sup>	0	19	58	45	0	0	12	44	178	146	1010	927
Hepatitis A	1	27	3	32	0	1	26	2	92	99	1176	711
Hepatitis B incident	0	3	3	1	0	0	1	5	13	6	79	60
Hepatitis C incident	0	1	0	-	0	0	-	-	1	1	2	11
Hepatitis C unspecified	5	NN	13	148	NN	5	67	16	254	361	2077	2372
Hepatitis (NEC)	0	0	0	0	0	0	0	NN	0	1	5	8
Legionellosis	0	0	0	1	0	0	2	0	3	7	40	51
Leptospirosis	0	0	0	3	0	0	0	0	3	9	31	62
Listeriosis	0	1	0	0	0	0	0	0	1	2	27	13
Malaria	0	4	1	6	1	0	2	0	14	19	160	185
Meningococcal infection	0	2	0	0	1	0	1	0	4	6	67	64
Ornithosis	0	NN	0	0	0	0	3	0	3	2	22	19
Q Fever	0	3	0	16	1	0	0	0	20	20	136	121
Ross River virus infection	0	59	27	225	137	1	110	21	580	1380	2786	4543
Salmonellosis (NEC)	5	65	15	122	27	6	97	24	361	285	2306	1929
Shigellosis <sup>5</sup>	0	-	6	11	1	0	2	3	23	26	256	189
Syphilis	1	17	5	9	0	1	0	2	35	94	307	379
Tuberculosis	0	7	2	9	0	0	14	3	35	54	240	312
Typhoid <sup>8</sup>	0	0	0	0	0	0	4	0	4	3	22	41
Yersiniosis (NEC) <sup>5</sup>	0	-	0	9	6	0	3	0	18	6	102	84

1. For HIV and AIDS, see *CDI* 1997;21:97. For rarely notified diseases, see Table 3.

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

3. Tas: includes Ross River virus and dengue.

4. NT, Vic and WA: includes Barmah Forest virus.

5. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.

6. WA: genital only.

7. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.

8. NSW, Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

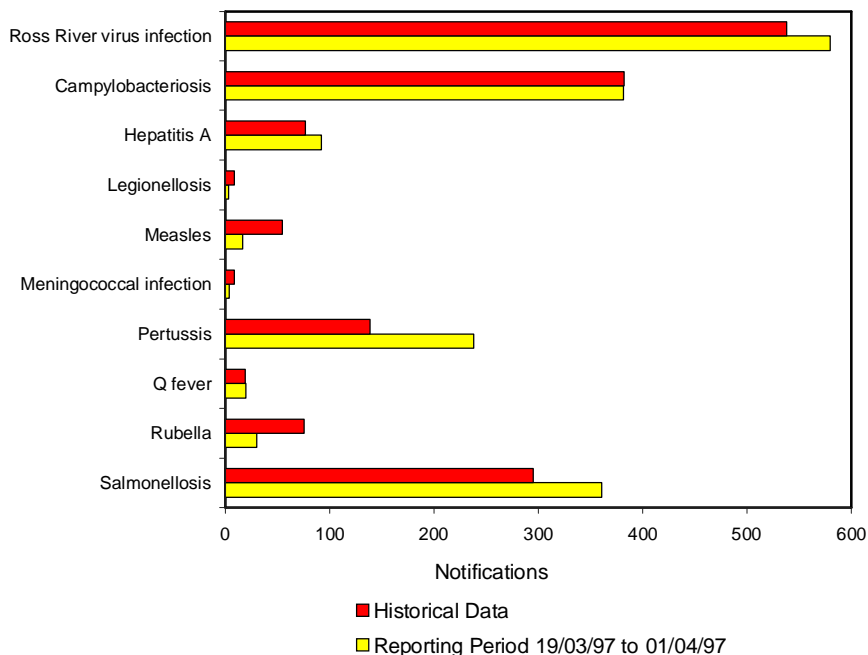
- Elsewhere Classified.

**Table 3. Notifications of rare<sup>1</sup> diseases received by State and Territory health authorities in the period 19 March to 1 April 1997**

Disease <sup>2</sup>	Total this period	Reporting States or Territories	Total notifications 1997
Brucellosis	1	NSW	12
Chancroid			1
Cholera			1
Hydatid infection	1	Qld	6
Leprosy			4

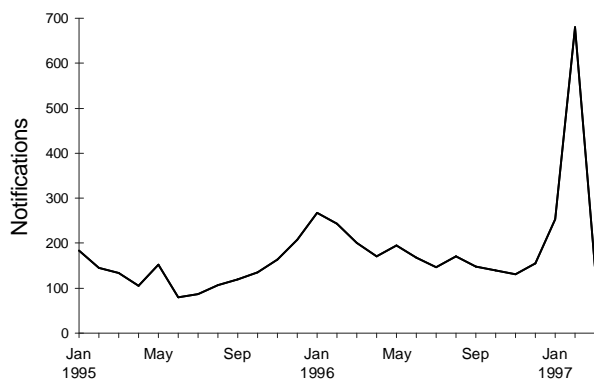
1. Fewer than 60 cases of each of these diseases were notified each year during the period 1988 to 1996.
2. No notifications have been received during 1997 for the following rare diseases: botulism, lymphogranuloma venereum, plague, rabies, yellow fever, or other viral haemorrhagic fevers.

**Figure 7. Selected National Notifiable Diseases Surveillance System reports, and historical data<sup>1</sup>**

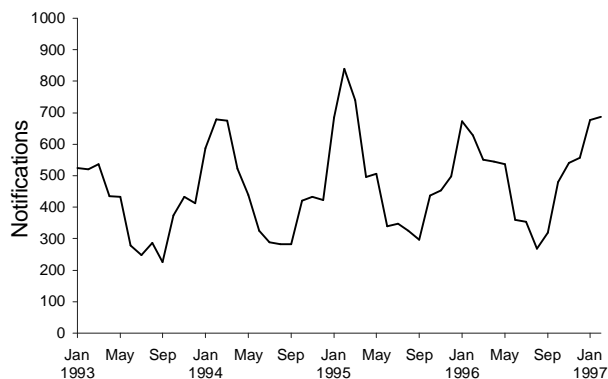


1. The historical data are the averages of the number of notifications in 9 previous 2-week reporting periods: the corresponding periods of the last 3 years and the periods immediately preceding and following those.

**Figure 8. Notifications of hepatitis A infection, 1995 to 1997, by month of onset**



**Figure 9. Notifications of salmonellosis, 1993 to 1997, by month of onset**



**Table 4. Australian Sentinel Practice Research Network reports, weeks 11, 12, and 13, 1997**

Condition	Week 11, to 16 March 1997		Week 12, to 13 March 1997		Week 13, to 30 March 1997	
	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters
Chickenpox	12	1.6	9	1.2	5	0.8
Gastroenteritis	84	11.5	83	11.0	59	9.9
HIV testing (doctor initiated)	8	1.1	7	0.9	7	1.2
HIV testing (patient initiated)	16	2.2	11	1.5	8	1.3
Influenza	23	3.2	34	4.5	18	3.0
Measles	1	0.1	0	0.0	0	0.0
Pertussis	1	0.1	2	0.3	0	0.0
Ross River virus infection	6	0.8	5	0.7	5	0.8
Rubella	2	0.3	1	0.1	1	0.2

## Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network (ASPREN) comprises 99 sentinel general practitioners from throughout the country. Approximately 9,000 consultations are recorded each week for 12 conditions. Of these, CDI reports the consultation rates for chickenpox, HIV testing (doctor initiated), HIV testing (patient initiated), influenza, measles, pertussis, Ross River virus infection, rubella and gastroenteritis. For further information including case definitions see CDI 1997;21:6.

Data for weeks 11, 12 and 13 ending 16 March, 23 March and 30 March 1997 respectively are included in this issue of CDI (Table 4). The consultation rate for chickenpox during the three weeks of this reporting period was lower than in previous weeks. The consultation rate for influenza-like illness increased in the current reporting period compared with the previous three weeks. The consultation rates for gastroenteritis, measles and pertussis have not changed significantly. The rate for Ross River virus infection has shown a slight increase during the most recent weeks. Rates for HIV testing, both doctor-initiated and patient-initiated, are similar to previous weeks.

## Sentinel Chicken Surveillance Programme

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Sentinel chicken flocks are used to monitor flavivirus activity in Australia. The main viruses of concern are Murray Valley encephalitis (MVE) and Kunjin which cause the potentially fatal disease Australian encephalitis in humans. Currently 23 flocks are maintained in the north of Western Australia, ten in the Northern Territory, ten in New South Wales and ten in Victoria. The flocks in

Western Australia and the Northern Territory are tested all year round but those in Victoria are tested only from November to March, during the main MVE risk season.

Results are coordinated by the Arbovirus Laboratory in Perth and reported bimonthly. For more information see CDI 1997;21:6-7.

Sentinel chicken serology was carried out for all 23 flocks in Western Australia in January and February 1997. There were no seroconversions to flaviviruses during this period.

Six flocks of sentinel chickens from the Northern Territory were tested in January and February. During this period there were no seroconversions to flaviviruses.

The sentinel chicken flocks in New South Wales and Victoria were bled and tested in January and February. There were no seroconversions to flaviviruses during this period.

## Murray Valley encephalitis virus activity in Western Australia in March 1997

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This is a brief report to notify readers that there has been Murray Valley encephalitis (MVE) and Kunjin virus activity in the Kimberley and Pilbara regions of Western Australia. MVE virus causes the potentially fatal disease Australian encephalitis in humans.

There was early heavy rain in the East Kimberley and record rainfall recorded from the West Kimberley in January this year. This resulted in extensive flooding throughout the West Kimberley, and increased mosquito breeding in a number of areas. Cyclonic rainfall in the Pilbara, particularly in the Ashburton River catchment area, has also led to increased mosquito numbers.

In the Kimberley region in March there were three seroconversions in the Derby chicken flock (two to MVE and Kunjin and one to Kunjin), three seroconversions at Kununurra (two to MVE and Kunjin and one to MVE), and three in Broome (two to MVE and one to MVE and Kunjin).

In the Pilbara region, there were three seroconversions at Ophthalmia Dam near Newman, one to Kunjin and two to MVE.

Public health warnings were issued in February and March by the Health Department of Western Australia to warn of the increased risk of Australian encephalitis in the north of Western Australia.

## Gonococcal surveillance

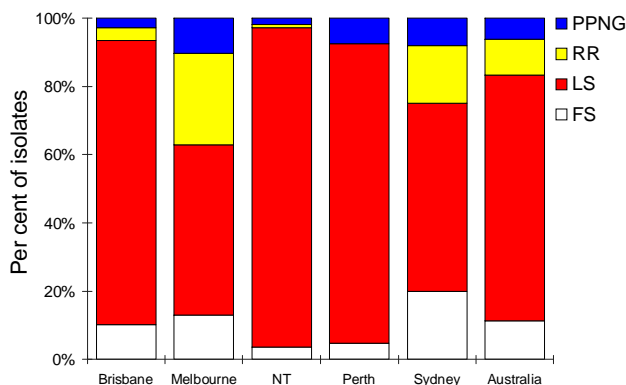
*John Tapsall, The Prince of Wales Hospital, High Street Randwick, NSW, 2031 for the Australian Gonococcal Surveillance Programme*

*The Australian Gonococcal Surveillance Programme (AGSP) reference laboratories in the various States and Territories report data on sensitivity to an agreed 'core' group of antimicrobial agents quarterly. The antibiotics which are currently routinely surveyed are the penicillins, ceftriaxone, ciprofloxacin and spectinomycin, all of which are administered as single dose regimens. When in vitro resistance to a recommended agent is demonstrated in 5% or more of isolates, it is usual to reconsider the inclusion of that agent in current treatment schedules. Additional data are also provided on other antibiotics from time to time. At present all laboratories also test isolates for the presence of high level resistance to the tetracyclines. Tetracyclines are however not a recommended therapy for gonorrhoea. Comparability of data is achieved by means of a standardised system of testing and a program-specific quality assurance process. Because of the substantial geographic differences in susceptibility patterns in Australia, regional as well as aggregated data are presented.*

### Reporting period 1 July to 30 September 1996

The AGSP laboratories examined 619 isolates of *Neisseria gonorrhoeae* for sensitivity to the penicillins, ceftriaxone, quinolones and spectinomycin and for high level resistance to the tetracyclines in the September quarter of 1996.

**Figure 10. Penicillin resistance of gonococcal isolates for Australia and by region, 1 July to 30 September 1996**



FS Fully sensitive to penicillin, MIC  $\leq 0.03 \text{ mg/L}$   
 LS Less sensitive to penicillin, MIC 0.06 - 0.5 mg/L  
 RR Relatively resistant to penicillin, MIC  $\geq 1 \text{ mg/L}$   
 PPNG Penicillinase producing *Neisseria gonorrhoeae*

## Penicillins

This group of antibiotics (penicillin, ampicillin and amoxycillin) was least effective in Sydney and Melbourne where between a quarter and a third of all isolates were resistant by one or more mechanisms. In Brisbane and Perth the proportion of penicillin-resistant strains was substantially less (6.5% and 7.5% respectively). Figure 10 shows the proportion of isolates fully sensitive, less sensitive or relatively resistant to the penicillins by chromosomal mechanisms and the proportion of penicillinase-producing gonococci (PPNG) in different regions and as aggregated data for Australia. PPNG and relatively resistant isolates usually fail to respond to therapy with the penicillins. Those in the fully sensitive and less sensitive categories (minimal inhibitory concentration - MIC  $\leq 0.5 \text{ mg/L}$ ) usually respond to a regimen of standard treatment with the above penicillins.

There were 38 PPNG identified in this reporting period (6.1% of all isolates). These were found in all centres except Adelaide, with 13 PPNG reported from Sydney, 12 from Melbourne, eight from Perth, three from Brisbane and two from the Northern Territory. Infections with PPNG were acquired locally but more frequently in South East Asian countries often visited by Australians. Sixty-five (10.5%) of all isolates were resistant to the penicillins by separate chromosomal mechanisms, and these so-called CMRNG were present in all centres except Adelaide and Perth. They were most often seen in Melbourne (31 isolates, 26.7%) and were also prominent in Sydney (29 isolates, 17%).

### Ceftriaxone and spectinomycin.

All isolates from all parts of Australia were sensitive to these injectable agents.

### Quinolone antibiotics

Twenty-three isolates (3.7%) throughout Australia had altered resistance to this group of antibiotics (ciprofloxacin, norfloxacin and enoxacin) with one-third of these showing high level resistance. Eleven quinolone-resistant gonococci (QRNG) (9.5%) were detected in Melbourne, eight in Sydney (4.8%), three in Perth, two in Adelaide and one in Brisbane. Most infections with QRNG were acquired overseas.

### High level tetracycline resistance

Thirty-three tetracycline-resistant *Neisseria gonorrhoeae* (TRNG) were detected throughout Australia (5.3% of all isolates) with isolates of this type again present in most centres. The highest proportion of TRNG was found in Perth where the 10 TRNG represented 9.3% of all isolates. TRNG were also prominent in Sydney (10 isolates, 6%) and Melbourne (7 isolates, 6%). There were four TRNG isolated in Brisbane and two in Darwin. Indonesia was the overseas sources of acquisition most often identified. Local acquisition was also recorded.

# LabVISE

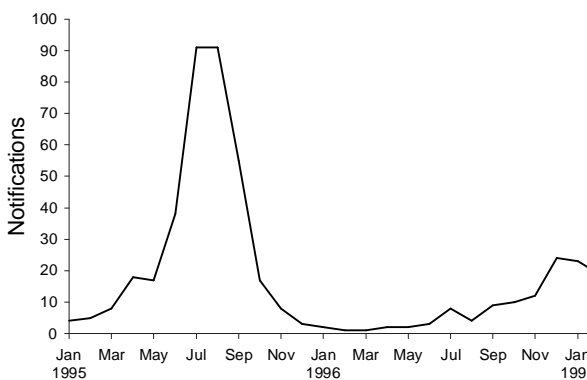
The Virology and Serology Laboratory Reporting Scheme, LabVISE, is a sentinel reporting scheme. Twenty-one laboratories contribute data on the laboratory identification of viruses and other organisms. Data are collated and published in *Communicable Diseases Intelligence* each fortnight. These data should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

There were 911 reports received in the *CDI* Virology and Serology Laboratory Reporting Scheme this period (Tables 5 and 6).

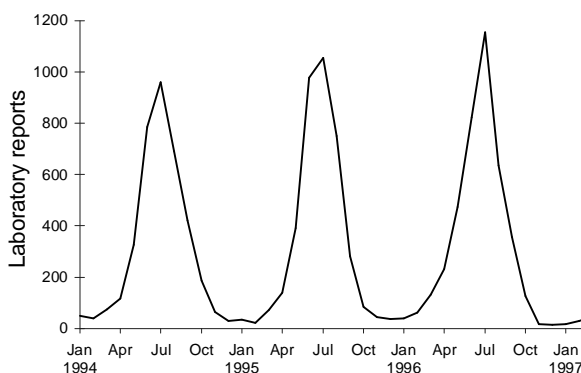
Laboratory reports of influenza B have declined since December but remain well above the numbers received for the corresponding periods in the two previous years (Figure 11). Reports are expected to increase over winter. In the last fortnight, 11 reports were received with diagnosis by single high titre (8) and virus isolation (3).

There were 31 reports of respiratory syncytial virus received this fortnight, with diagnosis by virus isolation (20), antigen detection (7), single high titre (3) and four-fold rise in titre (1). Laboratory reports usually increase markedly in April and peak around July (Figure 12).

**Figure 11. Influenza B laboratory reports, 1995 to 1997, by month of specimen collection**



**Figure 12. Respiratory syncytial virus laboratory reports, 1994 to 1997, by month of specimen collection**



**Table 5. Virology and serology laboratory reports by State or Territory<sup>1</sup> for the reporting period 13 to 26 March 1997, historical data<sup>2</sup>, and total reports for the year**

	State or Territory <sup>1</sup>								Total this fortnight	Historical data <sup>2</sup>	Total reported in CDI in 1997
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
<b>Measles, mumps, rubella</b>											
Measles virus					1			3	4	3.3	24
Mumps virus								2	2	1.3	12
Rubella virus				2	1			2	5	12.7	332
<b>Hepatitis viruses</b>											
Hepatitis A virus				10			1	5	16	12.3	330
Hepatitis D virus				1					1	0.5	10
<b>Arboviruses</b>											
Ross River virus		7	4	23	112		1	138	285	200.8	987
Barmah Forest virus				2				12	14	9.0	99
Dengue not typed					1			2	3	0.7	36
Kunjin virus								1	1	0.3	2
<b>Adenoviruses</b>											
Adenovirus type 1					1				1	0.5	13
Adenovirus not typed/pending				3	7		7	4	21	40.0	307
<b>Herpes viruses</b>											
Herpes virus type 6								1	1	0.0	2
Cytomegalovirus		2		13	5	1	6	3	30	58.2	392
Varicella-zoster virus		3		19	8		2	18	50	37.2	514
Epstein-Barr virus	1	6		24	20		1	20	72	59.2	1,042
<b>Other DNA viruses</b>											
Parvovirus							1		1	1.0	134
<b>Picornavirus family</b>											
Poliovirus type 3 (uncharacterised)		1							1	0.2	1
Rhinovirus (all types)		6		5				14	25	26.2	220
Enterovirus not typed/pending		2		9			2	18	31	39.5	231
<b>Ortho/paramyxoviruses</b>											
Influenza A virus							1	3	4	6.7	136
Influenza B virus			3				1	7	11	1.8	93
Influenza virus - typing pending					9				9	0.0	83
Parainfluenza virus type 1								4	4	6.5	34
Parainfluenza virus type 2		1					2		3	6.5	19
Parainfluenza virus type 3		1						8	9	16.8	322
Parainfluenza virus typing pending					17				17	1.2	109
Respiratory syncytial virus		11		7	4	2	3	4	31	42.0	254
<b>Other RNA viruses</b>											
HTLV-1			1						1	0.2	7
Rotavirus						1	4		5	16.3	280
<b>Other</b>											
<i>Chlamydia trachomatis</i> - L1-L3								1	1	0.0	1
<i>Chlamydia trachomatis</i> not typed		6	3	35	22	3	16	66	151	91.5	1,624
<i>Chlamydia pneumoniae</i>							1		1	0.2	1
<i>Chlamydia</i> species		1							1	2.2	11
<i>Mycoplasma pneumoniae</i>		16	5	9	6	2	2	12	52	13.8	608
<i>Coxiella burnetii</i> (Q fever)		6		4				1	11	4.3	95
<i>Bordetella pertussis</i>		1		2		1	2	25	31	25.8	803
<i>Legionella pneumophila</i>							1	1	2	0.5	2
<i>Legionella</i> species				2					2	0.5	5
<i>Leptospira hardjo</i>								1	1	.8	8
<b>TOTAL</b>	<b>1</b>	<b>70</b>	<b>16</b>	<b>170</b>	<b>214</b>	<b>10</b>	<b>54</b>	<b>376</b>	<b>911</b>	<b>740.5</b>	<b>9,183</b>

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 6. Virology and serology laboratory reports by contributing laboratories for the reporting period  
13 to 26 March 1997**

State or Territory	Laboratory	Reports
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	33
	The New Children's Hospital, Westmead	20
	Royal Prince Alfred Hospital, Camperdown	6
Queensland	Queensland Medical Laboratory, West End	168
	State Health Laboratory, Brisbane	25
South Australia	Institute of Medical and Veterinary Science, Adelaide	211
Tasmania	Northern Tasmanian Pathology Service, Launceston	9
Victoria	Microbiological Diagnostic Unit, University of Melbourne	16
	Monash Medical Centre, Melbourne	22
	Royal Children's Hospital, Melbourne	16
Western Australia	PathCentre Virology, Perth	385
TOTAL		911