National Influenza Surveillance 1996

Margaret Curran and Kim Moser for the National Influenza Surveillance Scheme; National Centre for Disease Control, Department of Health and Family Services, GPO Box 9848, Canberra, ACT 2601

Abstract

In 1996 data from laboratories, general practitioners and a national employer were combined to detect trends in influenza activity in Australia. An epidemic of influenza A (H_3N_2) was recorded. Little influenza B activity was noted throughout the winter months, however the number of laboratory reports of influenza B rose in the last quarter of the year. Influenza activity was reflected in the consultation rates recorded by sentinel general practitioner reporting schemes. Of particular note was the Tropical Influenza Surveillance in the Northern Territory which demonstrated a bimodal epidemic pattern. There was no apparent trend in national absenteeism rates recorded by a national employer. *Comm Dis Intell* 1997;21:101-105.

Introduction

Influenza is a continually emerging disease and remains a major threat to public health worldwide. Due to ongoing antigenic variation these viruses cause epidemics of respiratory disease at local, regional, national and international levels. Those who are particularly at risk of severe disease and death are the elderly and patients with chronic debilitating diseases such as cardiovascular disease.

An effective national surveillance system is an essential component of a program for the control of influenza. The major objectives of such a scheme include:

- early detection of epidemics thus enabling the implementation of public health measures such as the immunisation of at risk groups, and planning for the possible impact on clinical services;
- characterisation of the nature of the epidemic by the collection of morbidity and mortality data and estimation of the impact of the outbreak and of control measures such as vaccination campaigns; and
- isolation and antigenic characterisation of influenza virus for planning for the formulation of the following season's vaccine.

Influenza activity has been recorded in Australia by the

CDI Virology and Serology Laboratory Reporting Scheme, LabVISE, since 1978. While laboratory diagnosis is the most specific marker of influenza activity, the sensitivity of such a scheme is low as laboratory confirmation is only sought in a small proportion of cases. In 1994 national surveillance was expanded to include data from several other sources which provide less specific surveillance information but can be used as surrogate markers of influenza activity.

ISSN 0725-3141
Volume 21
Number 8
17 April 1997

Contents

National Influenza Surveillance 1996 101
Margaret Curran and Kim Moser

National Health and Medical Research Council recommendations on influenza vaccination 105

An outbreak of influenza B among workers on an oil rig 106
Fay Johnston, Vicki Krause, Nan Miller and Lyn Barclay

CDI now on MEDLINE 106

Communicable Diseases Surveillance 107

Overseas Briefs 116

Between May and October 1996, data from several sources were combined and published fortnightly as *National Influenza Surveillance 1996* in *Communicable Diseases Intelligence*.

This is the annual report of *National Influenza Surveillance* for 1996.

Surveillance methods

Three types of surveillance data were included in *National Influenza Surveillance 1996*. These were laboratory surveillance, sentinel general practitioner surveillance and absenteeism surveillance. Some of these were State and Territory based rather that national schemes.

Laboratory surveillance

Laboratory diagnoses of influenza, and in particular influenza virus isolation, constitute the gold standard in influenza diagnosis and surveillance specificity[1]. In 1996 the *CDI* Virology and Serology Laboratory Reporting Scheme's influenza reports were included in *National Influenza Surveillance 1996.* Twenty-one sentinel laboratories from throughout Australia contributed reports to LabVISE in 1996. In addition the World Health Organization (WHO) Collaborating Centre on Influenza Reference and Research contributed reports on the subtypes of influenza viruses isolated during the season in Australia. This provided information on the degree to which circulating viruses were related to current vaccine strains and strains circulating elsewhere in the world.

Sentinel general practitioner surveillance

Four sentinel general practitioner schemes recording influenza-like illness were included in *National Influenza Surveillance 1996.* These included the Australian Sentinel Practice Research Network[2] (ASPREN, a national network), the New South Wales Sentinel General Practice Scheme and the Victorian Sentinel General Practice Scheme. In addition data from Tropical Influenza Surveillance, a sentinel network of general practitioners in the Northern Territory, were included for the first time[3]. This scheme adopted the ASPREN case definition while case definitions varied for the other schemes.

The ASPREN case definition was:

(a) Viral culture or serological evidence of influenza virus infection, or

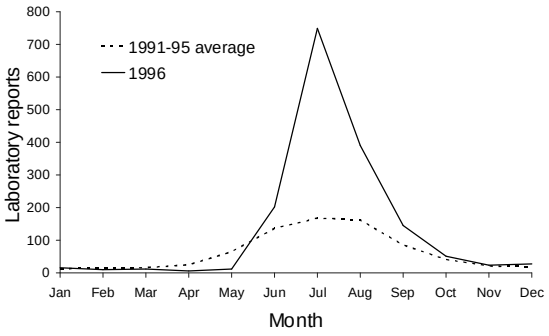
(b) influenza epidemic, plus four of the criteria in (c), or

(c) six of the following:
- (i) sudden onset (within 12 hours)
- (ii) cough
- (iii) rigors or chills
- (iv) fever
- (v) prostration and weakness
- (vi) myalgia, widespread aches and pains
- (vii) no significant respiratory physical signs other than redness of nasal mucous membrane and throat
- (viii) influenza in close contacts.

Absenteeism surveillance

Absenteeism surveillance provides a non-specific measure of the effects of influenza epidemics. *National Influenza Surveillance 1996* included Australia Post sick leave absenteeism surveillance which had the potential to measure the impact of influenza activity on the adult population on a national scale. Absenteeism was reported as the percentage of total employees absent from work on a single day of the week.

Figure 1. Influenza A laboratory reports, 1991 to 1995 average and 1996, by month of specimen collection



Results

Laboratory surveillance

CDI Virology and Serology Laboratory Reporting Scheme

An epidemic of influenza A (H_3N_2) was recorded by this scheme in 1996. Reports peaked in July, with July and August being the usual peak months for laboratory-diagnosed influenza A in Australia (Figure 1). Overall this was a larger epidemic than those recorded previously by this scheme (Figure 2). There was little variation between the States and Territories with respect to the peak month of reporting (Figure 3), July being the peak month in all jurisdictions. There were 1,642 reports of influenza A received for the year, of which 70 (4%) were identified as being H_3N_2 strains. No reports of H_1N_1 strains were received; the strains of the remainder were unknown. The

Figure 2. Influenza A and B laboratory reports, 1979 to 1996, by year of specimen collection

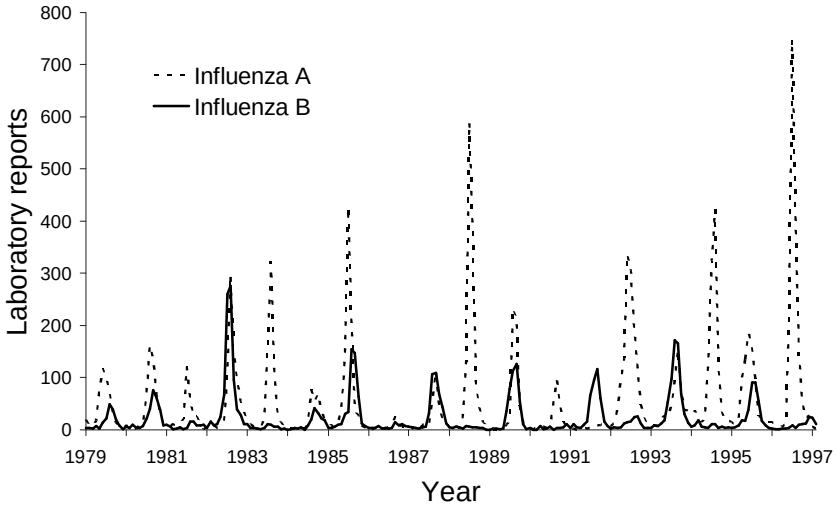


Figure 3. Influenza A laboratory reports, 1996, by State/Territory and month of specimen collection

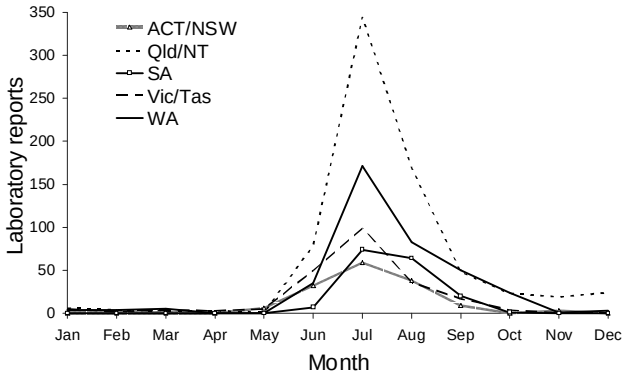
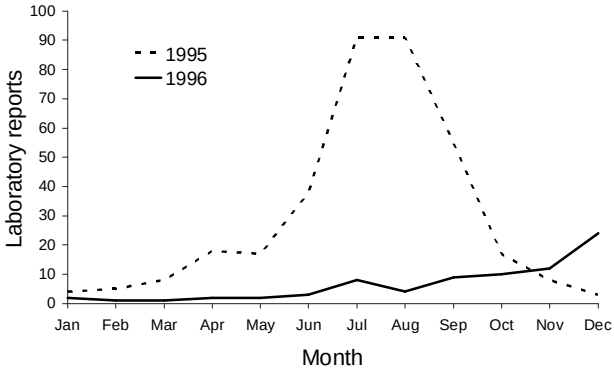


Figure 5. Influenza B laboratory reports, 1995 and 1996, by month of specimen collection



male:female ratio was 1.1:1 and 45% of reports were for children under the age of five years (Figure 4).

There were 78 reports of influenza B received by the LabVISE scheme in 1996. This was average for a non-epidemic year (Figure 2). Reports remained low throughout the winter, but rose during the last three months of the year (Figure 5). The male:female ratio was 1.6:1 and 26% of reports were for preschool-aged children (less than 5 years of age).

WHO Collaborating Centre for Reference and Research on Influenza

During 1996, a total of 693 influenza isolates from Australian laboratories were analysed at the Centre. The great majority of these (677) were influenza A (H_3N_2) strains and the remaining 16 isolates were influenza B. No isolates of influenza A (H_1N_1) were received from Australian laboratories during 1996.

Influenza A (H_3N_2) viruses closely related to the A/Wuhan/359/95 variant predominated in all areas sampled, almost totally replacing the A/Johannesburg/33/94-like viruses. A/Wuhan-like viruses had been found in small numbers in the previous northern winter and its replacement of the previous variant was unusually rapid. Approximately 5% of isolates were A/Johannesburg-like and 90% were A/Wuhan-like while the remaining 5% showed some reduction in reactivity with all reference antisera including that to A/Wuhan. These latter isolates displayed some antigenic heterogeneity but, as yet, there is no clear indication of further significant antigenic drift variants emerging which would not be covered by A/Wuhan-containing vaccines.

The influenza B strains analysed were all closely related antigenically to the B/Beijing/184/93 vaccine strain.

Sentinel general practitioner surveillance

Consultation rates for influenza-like illness reported by general practitioners to the ASPREN scheme rose from June through to September as has been the case in previous years (Figure 6). Both the New South Wales and Victorian schemes demonstrated similar patterns of consultation to those recorded by ASPREN (Figure 7). By contrast and of particular note were data from Tropical Influenza Surveillance in the Northern Territory which displayed a bimodal pattern: consultation rates peaked in late March with a larger peak in August and September (Figure 7). Both of these peaks were attributable to influenza A/Wuhan/359/95 (Fay Johnston,

Figure 4. Influenza A laboratory reports, 1996, by age group and sex

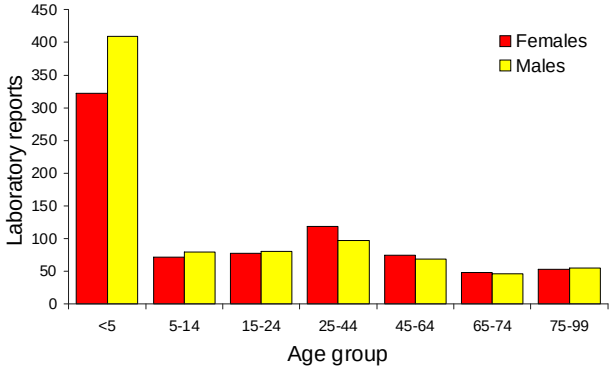


Figure 6. ASPREN consultation rates, 1994 to 1996, by week

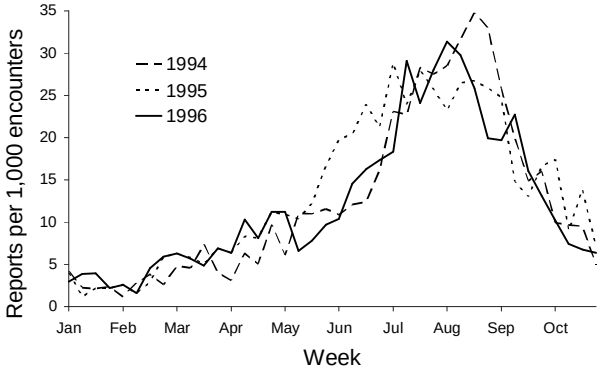


Figure 7. Sentinel general practitioner consultation rates, 1996, by week and scheme

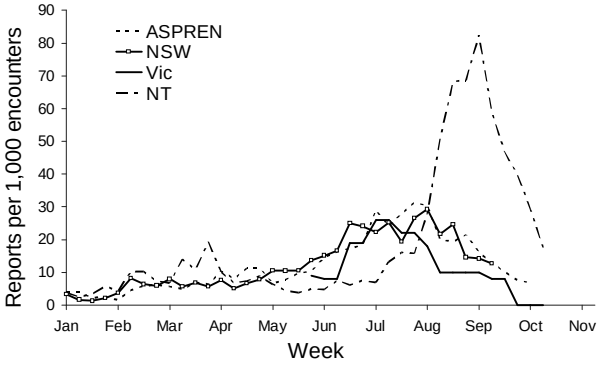
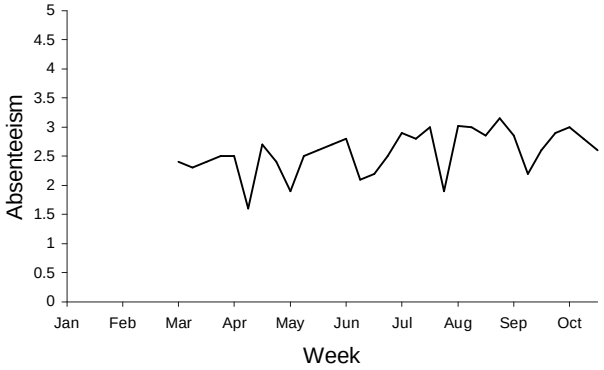


Figure 8. Australia Post absenteeism rates, 1996, by week



Northern Territory Health Services, personal communication).

Absenteeism surveillance

National absenteeism rates reported by Australia Post remained between 2% and 3% throughout the winter months (Figure 8). There was no apparent trend which could be attributed to increased influenza activity.

Discussion

In 1996 in Australia an epidemic of influenza A (H_3N_2) was documented. There was little influenza B activity. While in the past annual winter epidemics of influenza A have been observed, influenza B outbreaks have been recorded in alternate years. As the last epidemic of influenza B was recorded in 1995[4], we expect an outbreak of this virus in 1997. An early indication may be the rise in the number of laboratory reports in late 1996, this probably being due to the outbreak on an oil rig off the coast of Darwin[5].

Although LabVISE is a sentinel scheme, seasonal trends in influenza activity are reflected in the data produced by this system. As in previous years, laboratory reports provided the most specific information on influenza activity in Australia in 1996. Laboratory surveillance remains the best available indicator for influenza surveillance. However it is difficult to ascertain the extent and severity of the influenza epidemic from the data presented here. While the laboratory data demonstrated an unusually high peak, this was not reflected in consultation rates for influenza-like illness recorded by sentinel general practitioners, which were similar to previous years.

As the LabVISE scheme recorded only H_3N_2 and no H_1N_1 sub-types it can be deduced that H_3N_2 was the epidemic sub-type in 1996. This was confirmed by data from the WHO Collaborating Centre for Reference and Research on Influenza which also reported no H_1N_1 isolates in 1996. The last epidemic year for H_3N_2 in Australia was 1994. In the 1996-1997 northern winter, epidemics of this sub-type were recorded in Western Europe and North America. However, many countries also experienced a second epidemic wave due to influenza B. (WHO World Wide Web site. Influenza Global Situation, 26 February 1997). Recent outbreaks of influenza B have been recorded in the United Kingdom and Canada. Outbreaks in Asia (China, Iran and Israel) have more commonly involved influenza B while the epidemic in Japan was due to influenza A (H_3N_2)[6,7].

The predominant strains of influenza virus isolated in 1996 were closely related to A/Wuhan/359/95. This virus was included in the Australian vaccine for 1997[8]. The influenza B strains analysed were also antigenically closely related to the B/Beijing/184/93 vaccine strain.

The sentinel general practitioner schemes provided timely information on reports of influenza-like illness in Australia. A similar seasonal pattern was observed in the ASPREN, New South Wales and Victorian data. However the Northern Territory demonstrated a markedly different pattern of consultation for influenza-like illness. In 1996 the Northern Territory experienced two outbreaks of influenza, an early small peak which preceded the winter epidemic elsewhere in Australia, followed by a much larger peak later in the year. This is consistent with data from other tropical regions which also recorded a bimodal pattern of disease[9].

National absenteeism rates reported by Australia Post remained between 2% and 3% throughout the winter months, similar to the previous year[4]. This is an insensitive measure of influenza activity in Australia. It is not clear whether a major epidemic would be reflected in the data collected by this scheme.

National Influenza Surveillance will continue in the winter of 1997. While laboratory data continue to form the cornerstone of the scheme, data on influenza-like illness reported by sentinel general practitioners provide a reliable non-specific indicator of influenza activity in the Australian community. Data from the Northern Territory may be of particular importance in heralding an outbreak of influenza elsewhere in the country.

Acknowledgements

We would like to thank all contributors for the time they have invested in the collection of these data. They include: the Australian Sentinel Practice Research Network; *Communicable Diseases Intelligence* Virology and Serology Laboratory Reporting Scheme contributing laboratories; New South Wales Department of Health; Australia Post; Victorian Department of Health and Community Services and the World Health Organization Collaborating Centre for Reference and Research on Influenza.

References

1. Dab W, Quenel P, Cohen JM, Hannoun C. A new influenza surveillance system in France: the Ile de France "GROG". 2. Validity of the indicators (1984-1989). *Eur J Epidemiol* 1991;7:579-587.
2. Curran M, Herceg A. Surveillance data in *CDI*. *Comm Dis Intell* 1997;21:6.
3. Johnston F. Tropical Influenza Surveillance. *Comm Dis Intell* 1996;20:282-283.
4. Curran M. National Influenza Surveillance 1995. *Comm Dis Intell* 1996;20:140-145.
5. Johnston F, Krause V, Miller N, Barclay L. An outbreak of Influenza B among workers on an oil rig. *Comm Dis Intell* 1997;21:106.
6. Influenza. *WHO Wkly Epidemiol Rec* 1997;72:71-72.
7. Influenza update: influenza B now predominates in England and Wales. *Comm Dis Rep* 1997;7:65.
8. Composition of Australian influenza vaccine for the 1997 winter. *Comm Dis Intell* 1996;20:465-466.
9. Ling AE. Singapore (tropical climate). In: Brown LE, Hampson AW, Webster RG, editors. Options for the Control of Influenza III. Proceedings of the third International Conference on Options for the Control of Influenza; 1996 May 4-9; Cairns. Amsterdam: Elsevier; 1996.

National Health and Medical Research Council recommendations on influenza vaccination

The National Health and Medical Research Council (NHMRC) recommends routine annual influenza vaccination for all individuals over the age of 65 years[1]. It is also recommended for Aboriginal and Torres Strait Islander adults over 50 years of age.

The NHMRC also advises vaccination for those in the following groups:

- adults with chronic debilitating diseases, especially those with chronic cardiac, pulmonary, renal and metabolic disorders;
- children with cyanotic congenital heart disease;
- adults and children receiving immunosuppresive therapy;
- residents of nursing homes and other chronic care facilities.

Annual vaccination should also be considered for those in the following groups:

- staff who care for immunocompromised patients;
- staff of nursing homes and other chronic care facilities.

It is recommended that vaccination take place in the autumn in anticipation of winter outbreaks. The formulation of the vaccine is reviewed annually to take account of the antigenic variation of the virus. The composition of the 1997 Austalian vaccine has been published previously[2].

1. National Health and Medical Research Council *The Australian Immunisation Handbook*. 6th Edition. Canberra: Australian Government Publishing Service;1997.
2. Composition of the Australian influenza vaccine for the 1997 winter. *Comm Dis Intell* 1996;20:465-466.

An outbreak of influenza B among workers on an oil rig

Fay Johnston, Vicki Krause, Nan Miller and Lyn Barclay, Centre for Disease Control, PO Box 40596 Casuarina Northern Territory 0810

An outbreak of influenza B occurred in December 1996 on an oil rig in Darwin Harbour. The outbreak affected 56% of the workers on the rig. An outbreak in December is outside the usual Australian influenza season of June to September, but is consistent with other tropical regions, where outbreaks can occur throughout the year. Influenza vaccination could prevent similar outbreaks in confined workplaces. *Comm Dis Intell* 1997;21:106.

On 9 December 1996, a contract worker on an oil rig in Darwin Harbour was admitted to Royal Darwin Hospital with a diagnosis of pneumonia. He told his treating doctors that many other workers had been unwell with influenza-like illness and several had been evacuated from the rig. The Darwin Centre for Disease Control (CDC) was notified and contacted the doctor on the oil rig. He estimated that over half of the 77 resident workers had presented to the sick bay with symptoms of influenza in the preceding week and invited CDC to investigate.

A medical officer and two nurses visited the rig on 12 December 1996 to examine any workers who had been unwell in the previous week. The workers completed a questionnaire which collected demographic information, influenza vaccination history, clinical symptoms and date of onset of illness. This was followed by a clinical examination, collection of diagnostic specimens and, where necessary, treatment of their illness.

There were 95 workers on the rig. Seventy-seven (81%) were resident and 18 were day workers. All were male. According to the medical records, 53 men (56%) had presented with influenza-like illness over the preceding two weeks.

Twenty-five workers presented for examination. All reported symptoms consistent with influenza. Serum samples were collected from all workers. In addition, throat swabs and washings for viral culture were collected from seven workers who were still in the acute phase of their illness.

Influenza B was isolated from five of the seven (71%) specimens collected for culture. Seven of the 25 serum samples (28%) had a high titre of antibodies to influenza B (titre 1:32 or greater, Queensland Medical Laboratories, Brisbane). The serum from the men with positive viral cultures was probably collected too early in the course of their illness to show a rise in the antibody titre. In total 12 of the 25 men tested (48%) had diagnostic tests positive for influenza B virus. Tests for other respiratory viral pathogens including influenza A, parainfluenza, respiratory syncytial virus and adenovirus were all negative.

This outbreak of influenza B occurred in December, outside the usual Australian influenza season of June to September. The workers on the rig came from most States of Australia and many parts of the world, including North America and Europe where the winter influenza season had already commenced. It is likely that there are workers arriving on oil rigs directly from areas experiencing high levels of influenza activity throughout the year. It is recognised that in tropical regions, outbreaks of influenza can occur throughout the year[1]. Workers arrive at and depart from the rig every two weeks. They live in confined conditions and are at high risk of contracting infectious respiratory illnesses which may be introduced to the rig. The economic and health benefits of vaccinating healthy workers against influenza has been demonstrated, and are likely to be even more pronounced in this particular situation[2]. This outbreak occurred while the rig was in Darwin Harbour for maintenance. Should a similar outbreak occur during off-shore operations it is likely that production would have to be stopped or curtailed, and medical treatment, including possible evacuation, would be more costly and difficult.

References

1. Benenson AS, editor. *Control of communicable diseases manual,* 16th edition. Washington: American Public Health Association, 1995.
2. Nichol KL, Lind A, Margolis L *et al*. The effectiveness of vaccination against influenza in healthy working adults. *N Engl J Med* 1995;333:889-893.

CDI now on MEDLINE

Communicable Diseases Intelligence has been selected to be indexed in *Index Medicus* and MEDLINE on the MEDLARS system of the National Library of Medicine in the United States of America. Databases in the MEDLARS system are available throughout the world. The abstracts of all articles published in *CDI* from 1997 onwards will be included in the databases.

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

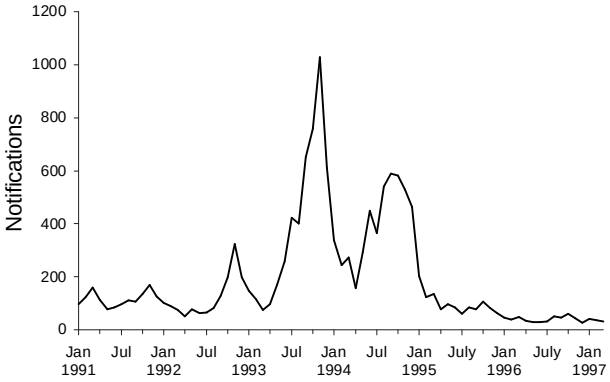
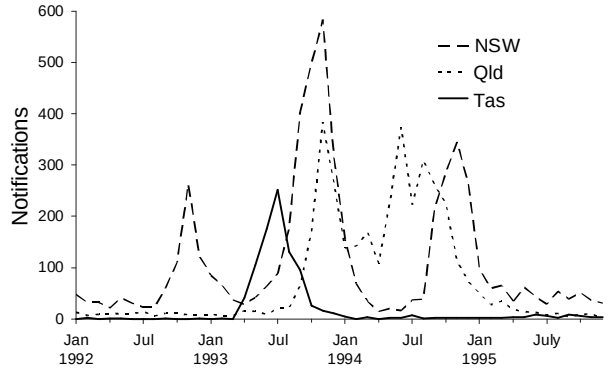


Figure 2. Measles notifications, 1992 to 1995, by month of onset, selected States



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

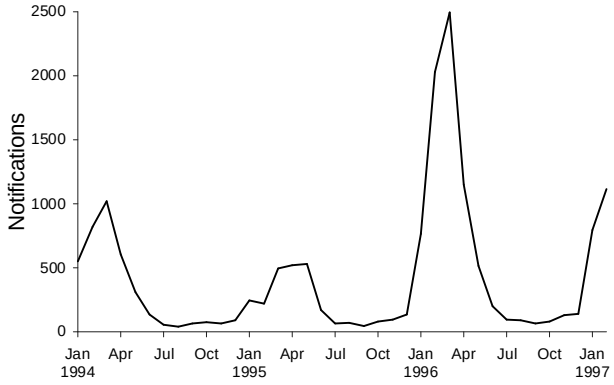


Figure 4. Ross River virus infection laboratory reports to LabVISE, 1994 to 1997, by month of specimen collection

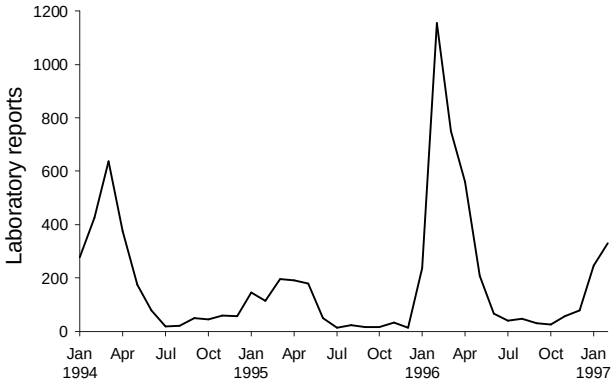


Figure 5. Barmah Forest virus infection notifications to the NNDSS, 1994 to 1997, by month of onset

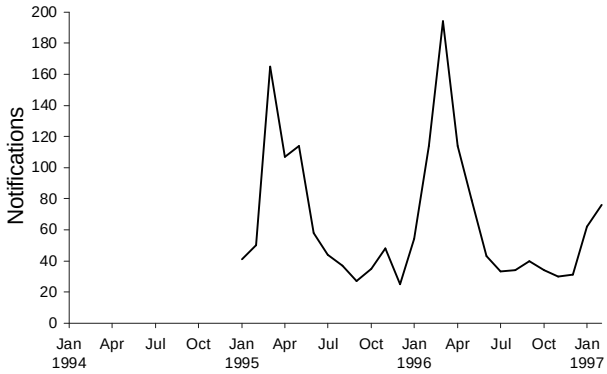
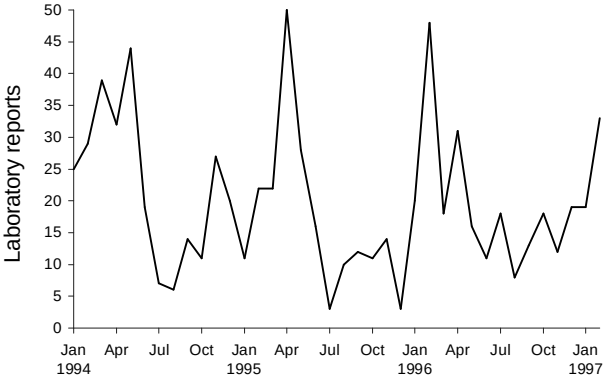


Figure 6. Barmah Forest virus infection laboratory reports to LabVISE, 1994 to 1997, by month of specimen collection



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[1,2]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0
Haemophilus influenzae 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[1,2]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
Arbovirus Infection (NEC)[3,4]	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[5]	8	-	12	146	55	9	125	27	382	500	3059	3203
Chlamydial infection (NEC)[6]	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[7]	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[5]	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[8]	0	0	0	0	0	0	4	0	4	3	22	41
Yersiniosis (NEC)[5]	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.

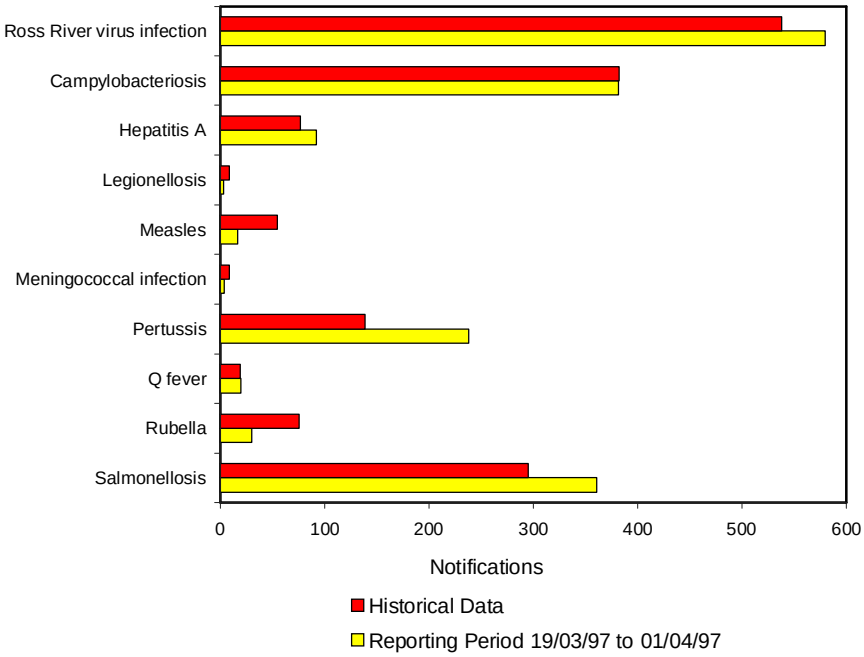
- Elsewhere Classified.

Table 3. Notifications of rare[1] diseases received by State and Territory health authorities in the period 19 March to 1 April 1997

Disease[2]	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[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.

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

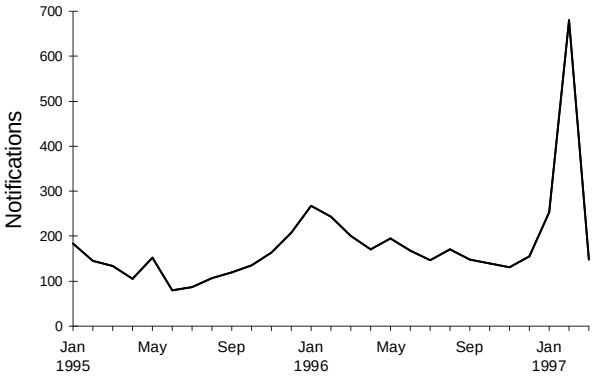


Figure 9. Notifications of salmonellosis, 1993 to 1997, by month of onset

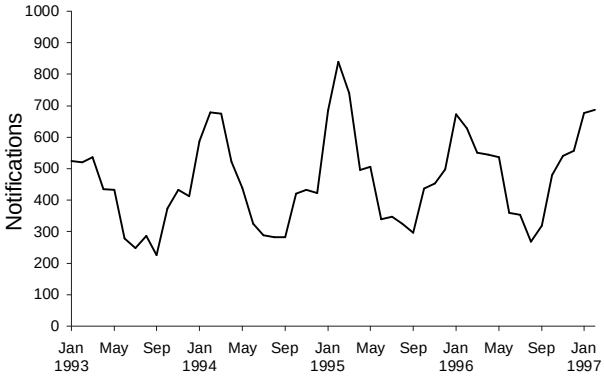


Table 4. Australian Sentinel Practice Research Network reports, weeks 11, 12, and 13, 1997

Condition	*Week 11, to 16 March 1997* Reports	Rate per 1,000 encounters	*Week 12, to 13 March 1997* Reports	Rate per 1,000 encounters	*Week 13, to 30 March 1997* 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

AK Broom[1], J Azuolas[2], L Hueston[3], JS Mackenzie[4], L Melville[5], DW Smith[6] and PI Whelan[7]

1. Department of Microbiology, The University of Western Australia
2. Veterinary Research Institute, Victoria
3. Virology Department, Westmead Hospital, New South Wales
4. Department of Microbiology, The University of Queensland
5. Berrimah Agricultural Research Centre, Darwin
6. PathCentre, Perth
7. Department of Health and Community Services, Darwin

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

Annette Broom and Brenda Van Heuston,Department of Microbiology, The University of Western Australia, Nedlands WA 6009

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

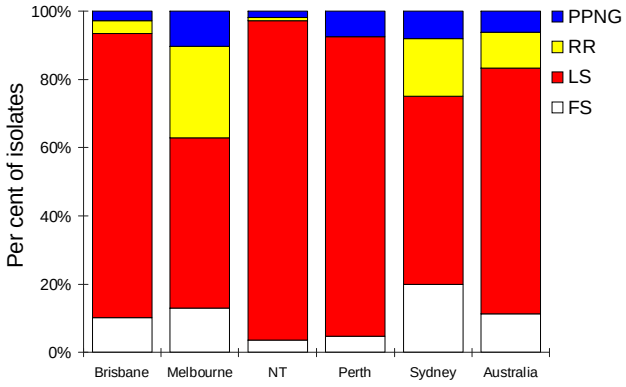
John Tapsall, The Prince of Wales Hospital, High Street Randwick, NSW, 2031 for the Australian Gonococcal Surveillance Programme

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 ≤0.03mg/L
LS Less sensitive to penicillin, MIC 0.06 - 0.5 mg/L
RR Relatively resistant to penicillin, MIC ≥1 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 ≤0.5 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 quinoline-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

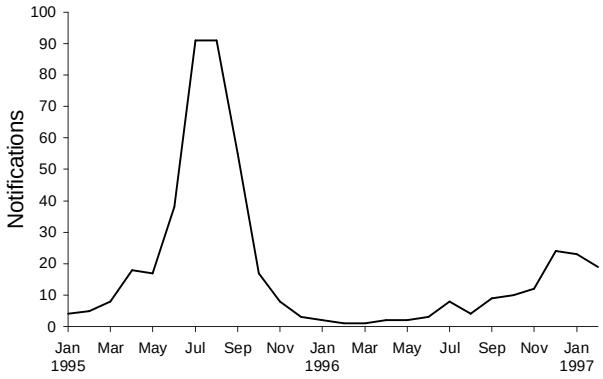


Figure 12. Respiratory syncytial virus laboratory reports, 1994 to 1997, by month of specimen collection

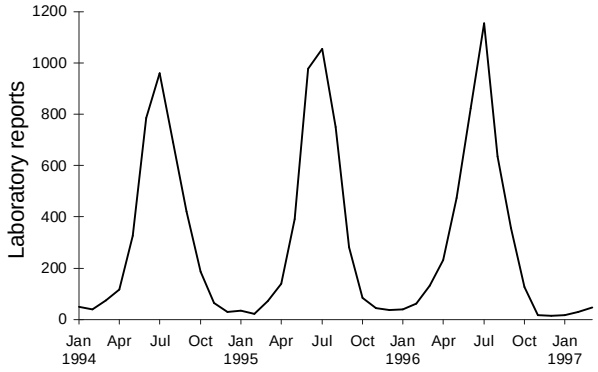


Table 5. Virology and serology laboratory reports by State or Territory[1] for the reporting period 13 to 26 March 1997, historical data[2], and total reports for the year

	State or Territory[1]								Total this fortnight	Historical data[2]	Total reported in *CDI* in 1997
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
Measles, mumps, rubella											
Measles virus					1			3	4	3.3	24
Mumps virus								2	2	1.3	12
Rubella virus				2	1			2	5	12.7	332
Hepatitis viruses											
Hepatitis A virus				10			1	5	16	12.3	330
Hepatitis D virus				1					1	0.5	10
Arboviruses											
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
Adenoviruses											
Adenovirus type 1					1				1	0.5	13
Adenovirus not typed/pending				3	7		7	4	21	40.0	307
Herpes viruses											
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
Other DNA viruses											
Parvovirus							1		1	1.0	134
Picornavirus family											
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
Ortho/paramyxoviruses											
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
Other RNA viruses											
HTLV-1			1						1	0.2	7
Rotavirus						1	4		5	16.3	280
Other											
Chlamydia trachomatis - L1-L3								1	1	0.0	1
Chlamydia trachomatis not typed		6	3	35	22	3	16	66	151	91.5	1,624
Chlamydia pneumoniae							1		1	0.2	1
Chlamydia species		1							1	2.2	11
Mycoplasma pneumoniae		16	5	9	6	2	2	12	52	13.8	608
Coxiella burnetii (Q fever)		6		4				1	11	4.3	95
Bordetella pertussis		1		2		1	2	25	31	25.8	803
Legionella pneumophila							1	1	2	0.5	2
Legionella species				2					2	0.5	5
Leptospira hardjo								1	1	.8	8
TOTAL	1	70	16	170	214	10	54	376	911	740.5	9,183

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

Overseas briefs

Source: World Health Organization (WHO)

Meningitis in West Africa

As at 11 April, a total of 41,699 cases of meningitis with 4,498 deaths had been reported in Africa. These were mainly from countries in West Africa where epidemics have continued to occur. Burkina Faso, with 16,775 cases and 1,953 deaths accounted for 40% of the cases reported this year. Ghana, with 13,063 and 1,191 deaths accounted for 31% and Mali (6,119 cases and 587 deaths) for 15%. Cases were also reported in Benin (273 cases, 47 deaths), Gambia (856 cases, 119 deaths), Niger (1,813 cases, 587 deaths), Rwanda (13 cases, 4 deaths), Senegal (13 cases, 4 deaths), and Togo (2,619 cases, 360 deaths). Gambia, Ghana and Togo were less affected during the 1996 epidemics when Burkina Faso, Mali, Niger and Nigeria reported widespread outbreaks. Burkina Faso reported 42,129 cases, Mali 7,254 and Niger 16,145 cases in 1996. Nigeria, which reported 77,089 cases in 1996, has not yet reported cases during 1997.

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

CDI is available on the *CDI* Bulletin Board System on (06) 281 6695, and via Internet on 'ftp://ftp.health.gov.au' in directory /pub/CDI and on 'http://www.health.gov.au' in /hfs/pubs/cdi/cdihtml.htm.