Tuberculosis in Australia: bacteriologically confirmed cases and drug resistance, 1994 and 1995

Report of the Australian Mycobacterium Reference Laboratory Network.

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Abstract

The Australian Mycobacterium Reference Laboratory Network collected and analysed laboratory data on isolates of *Mycobacterium tuberculosis* reported during 1994 and 1995. The total number of confirmed isolates was 708 in 1994 and 705 in 1995. This represents an annual incidence of approximately 4 cases of laboratory confirmed tuberculosis per 100,000 population. These figures are similar to those reported in previous years and confirms that the incidence of tuberculosis in Australia remains stable. The incidence rate varied between States. Overall the male:female ratio fell, and there were signs of a downward shift in the median age. We were unable to assess the impact of HIV infection on the number of isolates reported. Positive microscopy was obtained in 55-60% of patients with pulmonary disease. Approximately 8% of isolates had *in vitro* resistance to at least one of the four standard anti-tuberculosis drugs. Over the two year period seven strains were found to be multi-drug resistant. Overall, the data from 1994 - 1995 gives no indication of a significant change in the drug susceptibility profiles of isolates from Australian patients with tuberculosis.

Introduction

Globally, tuberculosis (TB) remains an unconquered disease. The World Health Organization (WHO) estimates that one-third of the world's population is infected with *Mycobacterium tuberculosis*, and that more than 4 million deaths occur each year[1]. In many developing countries, particularly Africa and Asia, co-infection with HIV and the emergence of drug-resistant strains pose major threats to national TB control programs[2,3]. The annual incidence of TB in Australia is low[4]. However the presence of population sub-groups with comparatively high rates of infection, and migration from neighbouring high incidence countries dictates that we maintain an effective national program.

Surveillance data for TB in Australia is available from two different sources. These are (i) the National Mycobacterial Surveillance System (conducted by the Communicable Diseases Network Australia New Zealand) and (ii) the Australian Tuberculosis Reporting Scheme

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Table 1. MTBC isolates in Australia, 1994 and 1995, by State or Territory

State	1994		1995	
	Isolates	Isolates per 100,000 population	Isolates	Isolates per 100,000 population
New South Wales[1]	278	4.4	305	4.8
Victoria	217	4.8	186	4.1
Queensland	88	2.8	86	2.6
Western Australia	53	3.1	56	3.2
South Australia	41	2.8	33	2.2
Tasmania	10	2.1	2	0
Northern Territory	21	12.3	37	21.3
Total	708	4.0	705	3.9

1 Data for the Australian Capital Territory are included with those from New South Wales.

(part of the Mycobacterium Reference Laboratory Network).The National Mycobacterial Surveillance System is based on clinical notifications[4]. Data from the laboratory network relates to cases confirmed by isolation of the *M. tuberculosis* complex (MTBC). The laboratory network has previously published reports for 1986 to 1993 [5,6,7]. The data for 1994 and 1995 are presented in this report.

Methods

The Australian Tuberculosis Reporting Scheme is a joint project of the Mycobacterium Reference Laboratory Network and the Department of Health and Family Services. The data are based on isolates of MTBC from clinical specimens. Due to the specialised nature of TB bacteriology, it can be assumed that the five laboratories that comprise the Mycobacterium Reference Laboratory Network account for almost all, if not all, of the bacteriological diagnoses in Australia. Comparable bacteriological procedures were used in each of the reference laboratories. Relapse patients, that is, those previously diagnosed, treated and considered cured, were included in these data as laboratories cannot usually differentiate these from new cases. Temporary visitors to Australia are also included.

For each new laboratory diagnosis the following information was collected:

- demographic: patient identifier, age, gender, HIV status and State of residence;
- specimen: type, site of collection, date of collection and microscopy result, and;
- isolate: species of mycobacterium and results of drug susceptibility tests.

Data from contributing laboratories were submitted for each calendar year, collated and analysed. Duplicate entries (as indicated by identical patient identifier and age) were deleted before analysis. Incidence rates were calculated using the mid-year estimates of the population supplied by the Australian Bureau of Statistics.

The nature of the first clinical sample that yielded an isolate of MTBC was used to record the site of disease. Culture-positive specimens taken during the bronchoscopy, as well as

Figure 1. MTBC isolates, 1994 and 1995, by age group and sex

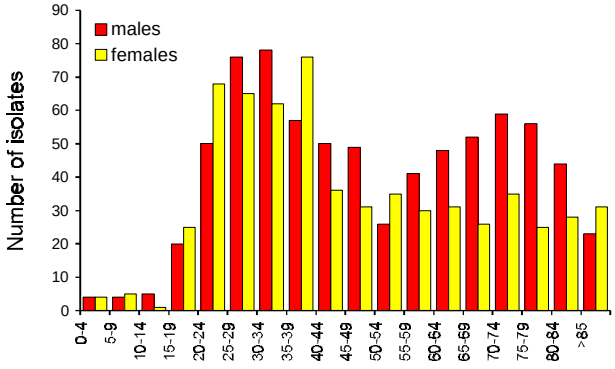

Figure 2. MTBC isolates, 1994 and 1995, by site of disease

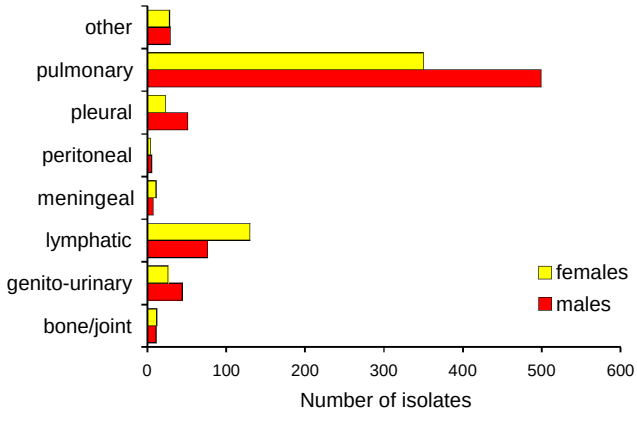

Table 2. Microscopy results for MTBC pulmonary isolates, 1994 and 1995, by State or Territory

State of Residence	1994[1]			1995[2]		
	Positive	Negative	Unknown	Positive	Negative	Unknown
New South Wales	3	1	162	13	16	150
Victoria	59	55	5	61	42	0
Queensland	32	26	0	41	25	1
Western Australia	19	15	0	25	14	1
South Australia	13	1	13	9	11	1
Tasmania	0	0	6	0	0	1
Northern Territory	5	9	1	18	11	0
Total	131	107	187	167	120	154

1 A total of 425 cases of pulmonary disease were recorded in 1994

2 A total of 444 cases of pulmonary disease were recorded in 1995

gastric washings, were taken to identify cases of pulmonary disease. In most cases of multi-site disease, sputum yields the first positive sample. These cases were therefore included among those listed as having pulmonary disease; the most significant category for public health purposes. Although many patients were known to have isolates from more than one body site, such data are of doubtful value for the laboratory-based report, and were not presented. Similarly, it is not always possible to categorise cases of miliary and disseminated disease from data available to laboratories.

Results

Total reports

In 1994 and 1995 there were 708 and 705 laboratory isolates of MTBC respectively. These figures represent an annual incidence of approximately 4.0 cases of laboratory confirmed tuberculosis per 100,000 population. The rate varied markedly between States and Territories (Table 1).

The overall male:female ratio was 1.3:1 in 1994 and 1.2:1 in 1995. In both years the median age group for males was 45-49 years. For females it was 40-44 years in 1994 and 35-39 years in 1995 (Figure 1). There was a low rate of reporting for children less than 10 years of age. Of the seven isolates from this age group in 1994 and 10 in 1995, the majority were pulmonary infections. Laboratories identified only one case of meningeal disease in a young child.

Five diagnoses in 1994 and one in 1995 were associated with HIV infection.

Site of disease

Pulmonary sites accounted for approximately 60% of all cases diagnosed (Figure 2), with lymphatic disease in approximately 15% of all cases. During the period reviewed, 22.3% of females with tuberculosis presented with lymphatic disease.

Smear-positivity in pulmonary disease

Microscopy results were available for the majority of cases of pulmonary disease in all States except for New South Wales. Future reports from the Australian Tuberculosis Reporting Scheme are expected to include more complete data for New South Wales. Positive microscopy was obtained for 55-60% of patients for whom a result was available (Table 2).

Causative organism

The majority of TB-related isolates during 1994 and 1995 were *M. tuberculosis*. In both of the years studied, four isolates from adults were identified as *M. bovis*.

In vitro drug susceptibility

The standard drugs for the treatment of TB are isoniazid (H), rifampicin (R), ethambutol (E) and pyrazinamide (Z). In 1994, 658 of 707 isolates (93%) tested were fully susceptible to each drug in the E+H+R+Z drug regimen. Six hundred and thirty nine of 705 isolates (91%) tested in 1995 were fully sensitive (Table 3). In 1994, 47 strains (6.6%) were resistant to only one of these compounds, whereas the corresponding figure for 1995 was 60 (8.5%). Resistance to H alone was recorded for 5-6% of isolates. Resistance to R alone was found in two isolates in 1994 and three in 1995. Ten isolates identified as *M. tuberculosis* were found to be resistant to Z alone. All but one of these was reported from the New South Wales reference laboratory. Multi-resistant profiles (Table 4) indicate that two patients diagnosed in 1994, and five patients in 1995, were infected with strains resistant to both H and R. Such strains are referred to as being multi-drug-resistant (MDR). One case of MDR-TB was diagnosed from bronchial washings which were microscopy-positive. Isolates from all but one of the six patients known to be HIV positive were found to be fully-susceptible.

Discussion

The number of isolates reported for 1994 and 1995 are similar to those recorded for 1993[7]. It can be concluded that the incidence of laboratory confirmed TB in Australia is stable. The same conclusion was reached in the most recent analysis of clinical notifications[4]. It is expected that case totals from clinical

Table 3. MTBC isolate drug resistance, 1994 and 1995, by drug

	1994			1995		
Drug	Total isolates	Resistant	% resistant[1]	Total isolates	Resistant	% resistant[1]
Isoniazid (H)	707	43	6.1	705	53	7.5
Rifampicin (R)	707	4	0.6	705	8	1.1
Ethambutol (E)	707	0	0.0	705	2	0.3
Pyrazinamide[2](Z)	429	4	0.9	648	13	2.0
Streptomycin (S)	359	43	12.0	191	12	6.3

1 Percentage of strains tested which were resistant to drug alone or in combination with others

2 All strains of *M bovis* are resistant to pyrazinamide.

notifications will exceed those from laboratory sources. In 1994, 960 cases were recorded by the National Mycobacterial Surveillance System, indicating that only around 75 per cent of reported clinical cases were supported by definitive laboratory diagnoses.

Overall, these findings parallel those presented in previous laboratory reports[6,7], and are in general agreement with those from clinical notifications. Differences in rates between States is probably due to varying distributions of persons in high risk categories, including migrants from South East Asian communities and Aboriginal Australians. Differences in rates within States for the two periods under review must be interpreted with caution, particularly for the less populous States, and no conclusion should be drawn.

The male:female ratios for 1994 and 1995 were lower than those recorded by this scheme in previous years[5]. Earlier reports identified the significant skew to males in older age-groups, and the variation of the male:female ratio with site-of-disease. For example, in cases of lymphatic disease, the male:female ratio has been found to be around 1:2, whereas for pleural disease it is greater than 3:1. Increasing numbers of females, particularly in the middle age-groups, with lymphatic disease, and from South East Asian countries, are probably contributing to this change.

In both years the median age group for males was 45 - 49 years. For females it was 40 - 44 years in 1994 and 35 - 39 years in 1995. The corresponding ages for the period 1989-1992 were 50 - 54 years (male) and 40 - 44 years (female) [6]. This apparent shift towards the younger age groups, if true, is probably attributable to the increasing proportion of migrants from South East Asian countries, who are generally younger than the Australian population as a whole. A downward shift in age group distribution could also be explained by increasing numbers of TB linked to HIV infection; this however has not been determined. There are, in Australia at present, relatively small numbers of such cases[4].

As expected, the site of disease reported by this scheme is similar to reports based on clinical notifications[4]. The frequent occurrence of lymph node infections in females is, again, a striking feature. During the period reviewed, 22% of females with tuberculosis presented with lymphatic disease. The corresponding figure in 1989-1992 was 18%[6], while in 1986-1988, it was 14%[5]. The most likely explanation for this change is that the number of females from South East Asia in the middle age groups is increasing. The proportion of females with pulmonary disease fell from 67% in 1986-1988 to just below 60% in 1994-1995.

Information regarding HIV status is not always available to laboratories; therefore the number of isolates reported in association with HIV infection must be viewed as an underestimate of the true number. Notification data show that in 1995 there were at least six cases of TB in patients with HIV[4].

When interpreting the microscopy results it must be noted that around one-quarter of all pulmonary diagnoses were made from bronchoscopy collections, rather than from sputum. Positive microscopy in a bronchoscopy collection should not be taken as proof that a patient was infectious. Given that the sputum microscopy result is a major criterion for contact-tracing, physicians should where practicable, arrange sputum testing prior to bronchoscopy being carried out.

Patients with 'smear-positive' pulmonary tuberculosis are regarded as more likely to transmit infection than others. A positive acid-fast microscopy result in a case of suspected tuberculosis is a valuable finding, providing a basis for prompt intervention, and initiation of case-finding activities. In order to provide information on this, in 1994 the laboratory database was expanded to include microscopy results.

Differentiation of the subspecies within the MTBC can be useful in contact-tracing, and for identifying occupationally-acquired disease due to *M. bovis*. In almost every case of TB diagnosed in the Australian laboratories, appropriate tests are performed in order to differentiate *M. tuberculosis*, *M. bovis* and *M. africanum*. Isolates of BCG strain are not included in the laboratory database. In keeping with earlier reports, the majority of isolates were *M. tuberculosis*.

Although rarely used in Australia, streptomycin (S) is frequently listed as a 'first-line' drug for the treatment of TB[8]. Since susceptibility testing for S is no longer carried out in the reference laboratories in New South Wales and Victoria (the States with the highest numbers of patients from countries where resistance to S is most prevalent), the data shown for S in Table 3 may not reflect the situation across Australia as a whole. In 1993, 20% of 443 isolates tested were resistant to S[7]. Clinicians should note

Table 4. MTBC isolate drug resistance, 1994 and 1995, by drug combination

Multi-resistance pattern[1]	Number of Isolates	
	1994	1995
H + R + E + S[2]	0	1
H + R + Z[2]	0	1
H + R + S[2]	0	2
H + R[2]	2	1
H + E	0	1
H + S	4	6

1 H = isoniazid; R = rifampicin; E = ethambutol; Z = pyrazinamide; S = streptomycin

2 Strains resistant to H and R in combination are considered 'multi-drug-resistant'

that resistance to H is frequently associated with resistance to S.

The finding that 10 isolates of *M. tuberculosis* were resistant to Z alone may suggest that resistance to Z in *M. tuberculosis* might be more common than is generally appreciated; alternatively these results could reflect the technical difficulty in performing susceptibility tests for Z.

The drug susceptibility tests for the period reviewed show no notable changes in the prevalence of drug-resistant strains in the Australian population. During the five years, 1989 - 1993, 31 isolates were found to be resistant to H+R[6,7]. The current data show that the prevalence of such strains among cases of active TB in Australia is not increasing. It must be stressed however, that around one in every 15 patients is infected with a strain resistant to either H or R, or to H+R. For therapy to be optimally effective, such patients should be promptly identified and treated on an individual basis by experienced clinical personnel. Routine drug susceptibility tests, carried out in competent laboratories and with due regard to rapid testing and reporting mechanisms, are indispensable components of Australia's tuberculosis program.

Acknowledgements

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Communicable Diseases Surveillance

Tuberculosis in Australia

Three programs currently monitor the occurrence of tuberculosis in Australia: the National Notifiable Diseases Surveillance System (NNDSS); the National Mycobacterial Surveillance System (NMSS); and the Australian Tuberculosis Reporting Scheme (ATRS). This issue of *CDI* is the first in a series which will contain reports on tuberculosis in Australia. In this issue, there is a report of the ATRS for the years 1994 and 1995. The following issue will feature a report of the 1995 data from the NMSS. A subsequent issue will present the 1996 Annual Report of the NNDSS, which will include data on a range of diseases including tuberculosis.

Tuberculosis has been a notifiable disease in Australia since early this century, with aggregate national data being available since 1917. The notification data has lacked historical consistency and should be interpreted with caution, particularly for the years prior to 1948, when separate collation of tuberculosis data commenced under the National Tuberculosis Campaign (NTBC). Data on aboriginality, country of birth and HIV status, in particular, have been incomplete and require caution in interpretation.

For the first half of this century, there was a steady decline in the rate of notifications of tuberculosis from about 90 cases per 100,000 population in 1917 to about 50 cases per 100,000 in 1947 (Figure 1). From the mid 1950s, the steady decline accelerated and continued until the mid 1980s. Over the past 10 years there has been a stabilisation of rates, which have fluctuated between 5 and 6 cases per 100,000 population per annum.

There are considerable differences in the rates of tuberculosis within subgroups of the Australian population. The incidence in the non-indigenous Australian born population has been declining and has been under 2.0 notifications per 100,000 population for several years. In 1995, it was 1.3 per 100,000. In contrast, the incidence in the indigenous Australian population in 1995 was 15.5 per 100,000 population. The crude incidence rate in the non-Australian born population for the same year was 17.3 per 100,000, but rates varied from a low of 1.7 per 100,000 in persons born in the United Kingdom to a high of 113.9 per 100,000 in persons born in Vietnam.

Tuberculosis in Australia is increasingly becoming a disease of the overseas-born. Over the past 10 years, as the incidence has declined in the Australian-born population, the proportion of cases occurring in overseas-born persons has risen from 60.3% in 1986 to 75.4% in 1995.

The current age-sex distribution of tuberculosis notifications can be illustrated by the data for 1995 (Figure 2). There is a bimodal distribution in age-specific incidence rates, with a peak in early to mid-adulthood (ages 20 -39 years) and a steady rise from the age of 55 years onwards. In the younger age groups, the rates are similar for males and females. However, males predominate in the older age groups. The highest rates of tuberculosis (33 per 100,000 population) are seen in males aged 85 years or more.

Two factors affecting tuberculosis rates in other countries, multi-drug resistance and HIV infection, do not appear to be having a significant effect at present on rates in Australia. Reliable data are available on drug susceptibility of tuberculosis organism isolates in Australia. The data confirm that the rate of multi-drug resistance continues to be low. Although HIV status of tuberculosis notifications is poorly reported, the rate of TB-HIV co-infection is considered to be low.

Tuberculosis has increased around the world in recent years. In 1993, the World Health Organization took the unprecedented step of declaring a global emergency in relation to the disease. Australia is fortunate in having one of the lowest rates of tuberculosis infection in the world. We must continue to undertake appropriate national tuberculosis control activities and contribute to control efforts in the region and globally.

Figure 1. Tuberculosis notifications per 100,000 population, 1917 to 1995, by year of report

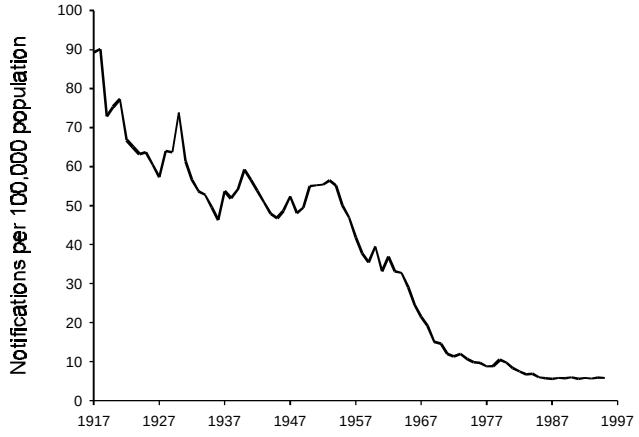
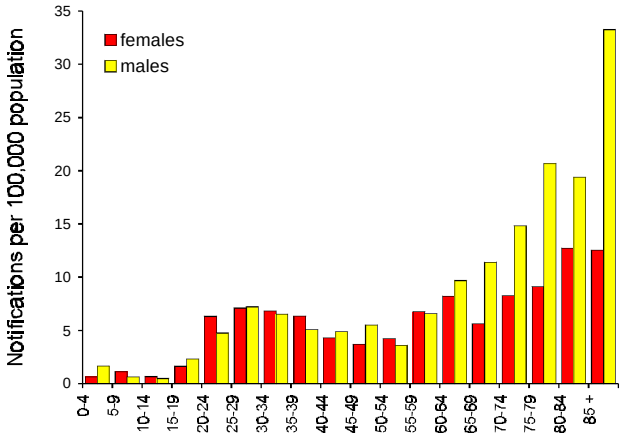


Figure 2. Tuberculosis notifications per 100,000 population, 1995, by age group and sex



National Notifiable Diseases Surveillance System

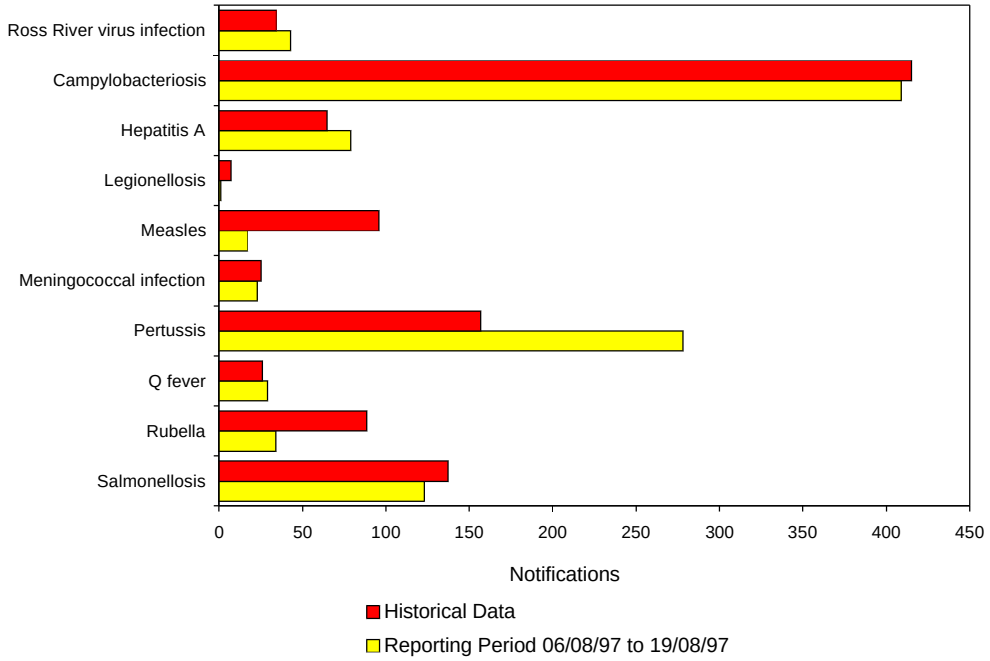
The NNDSS is conducted under the auspices of the Communicable Diseases Network Australia New Zealand. The system coordinates the national surveillance of more than 40 communicable diseases or disease groups endorsed by the National Health and Medical Research Council (NHMRC). Notifications of these diseases 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 6 to 19 August 1997

There were 2,057 notifications received for this two week period (Tables 1, 2 and 3). The numbers of reports for selected diseases have been compared with historical data for corresponding periods in the previous three years (Figure 3).

A total of 2,053 notifications of hepatitis A with onset in 1997 have been received this year (Figure 4). This is higher than for any 8-month period since the inception of the scheme in 1991. The majority of notifications this year were reported from New South Wales (48%), Queensland (27%) and Victoria (13%). Following the peak in incidence in February 1997, more than 200 notifications have been received each month; these levels are substantially higher than those seen

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



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

Figure 4. Hepatitis A notifications, 1991 to 1997, by month of onset

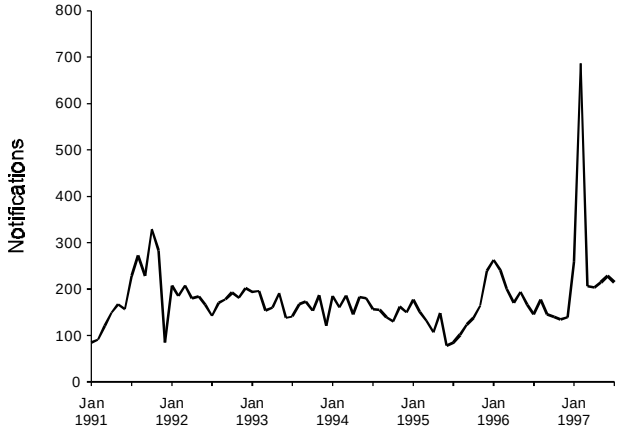


Figure 5. Ross River virus infection notifications, 1991 to 1997, by month of onset

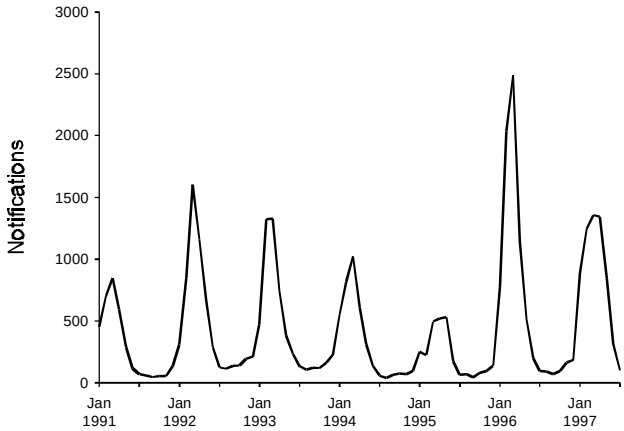


Table 1. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 6 to 19 August 1997

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	0	0	0	0	0	0	2	33	39
Measles	4	1	0	5	1	1	1	4	17	17	364	289
Mumps	0	0	1	NN	1	0	2	0	4	5	119	73
Pertussis	6	51	1	78	79	0	33	30	278	129	4689	1937
Rubella	0	0	1	15	5	0	11	2	34	67	803	1632
Tetanus	0	0	0	0	0	0	0	0	0	0	7	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 6 to 19 August 1997

Disease[1,2]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
Arbovirus Infection (NEC)[3]	0	0	1	0	0	0	0	0	1	1	109	41
Barmah Forest virus infection	0	1	-	15	0	0	1	0	17	16	514	684
Campylobacteriosis[4]	8	-	6	144	70	13	128	40	409	466	7238	7531
Chlamydial infection (NEC)[5]	5	NN	42	148	0	10	91	56	352	288	5216	5316
Dengue	0	0	0	0	0	-	0	0	0	1	194	27
Donovanosis	0	NN	0	0	NN	0	0	0	0	0	23	32
Gonococcal infection[6]	1	16	50	37	0	0	17	46	167	159	3160	2649
Hepatitis A	1	21	1	44	2	0	4	6	79	100	2159	1566
Hepatitis B incident	0	1	2	1	0	1	2	0	7	4	147	147
Hepatitis C incident	0	0	0	-	0	0	-	-	0	3	9	35
Hepatitis C unspecified	6	NN	18	119	NN	12	181	16	352	387	6002	6316
Hepatitis (NEC)	0	0	0	0	0	0	0	NN	0	1	12	13
Legionellosis	0	0	0	0	0	0	1	0	1	6	102	123
Leptospirosis	0	0	0	1	0	0	0	1	2	0	80	155
Listeriosis	0	0	0	2	0	0	0	0	2	2	55	37
Malaria	1	2	0	18	1	0	3	0	25	20	526	549
Meningococcal infection	0	5	2	8	1	2	5	0	23	26	278	239
Ornithosis	0	NN	0	0	0	0	0	0	0	4	37	59
Q Fever	0	17	0	10	2	0	0	0	29	40	390	361
Ross River virus infection	0	1	4	31	0	0	0	7	43	39	6271	7391
Salmonellosis (NEC)	0	18	13	34	10	2	34	12	123	127	4855	3963
Shigellosis[4]	0	-	3	16	1	0	2	3	25	19	560	448
Syphilis	0	7	15	6	0	0	0	7	35	60	774	1004
Tuberculosis	1	1	1	2	1	0	10	3	19	34	616	682
Typhoid[7]	0	1	0	0	0	0	1	0	2	4	48	63
Yersiniosis (NEC)[4]	0	-	0	5	2	0	1	0	8	9	180	165

1. For HIV and AIDS, see *CDI* 1997;21:182. For rarely notified diseases, see Table 3.
2. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
3. NT: includes Barmah Forest virus.
4. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
5. WA: genital only.
6. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
7. NSW, Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified

- Elsewhere Classified.

Table 3. Notifications of rare[1] diseases received by State and Territory health authorities in the period 6 to 19 August 1997

Disease[2]	Total this period	Reporting States or Territories	Total notifications 1997
Brucellosis	1	Qld	21
Chancroid			1
Cholera			2
Hydatid infection	1	Qld	25
Leprosy	1	Qld	8

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.

during the previous 4 years. The male:female ratio of cases with onset in 1997 is 1.5:1, somewhat lower than the ratios seen in cases with onset in 1996 (1.9:1) and 1995 (1.8:1).

The 278 notifications of pertussis received for the current period is the highest two-week total since early March this year; 53% of cases were aged between 5 and 14 years old.

The number of notifications of Ross River virus infection received in this and the previous two 2-week periods (61 and 41 cases respectively) are the lowest for any reporting periods this year. The seasonal pattern of summer peaks in incidence has been similar since 1991 (Figure 5). The number of cases notified so far with onset in 1997 is 6,092. The total for the year is unlikely to reach the 1996 total of 7,848 cases.

National Influenza Surveillance, 1997

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

Overall influenza activity rose sharply from late July to early August. Laboratory reports for this period were mainly for influenza A; with reports of influenza B declining.

Laboratory Surveillance

A total of 292 reports of influenza virus were recorded by the LabVISE scheme this fortnight. Of these, 162 were for influenza A, 87 for influenza B and 43 were untyped. The epidemic of influenza B this season has reached its peak and is declining. The number of influenza A and influenza B reports received during July were 250 and 248 respectively. Prior to this, during 1997 so far there has been a greater number of influenza B reports recorded each month. For August so far, influenza A reports have been approximately double those of influenza B (Figure 6).

Figure 6. Laboratory reports of influenza, 1997, by type and week of specimen collection

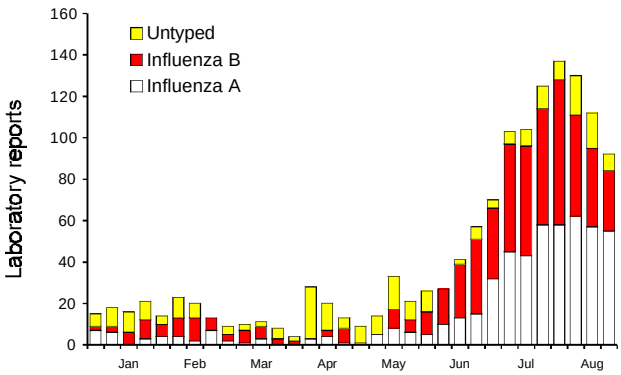


Figure 7. Sentinel general practitioner influenza consultation rates, 1997, by week and scheme

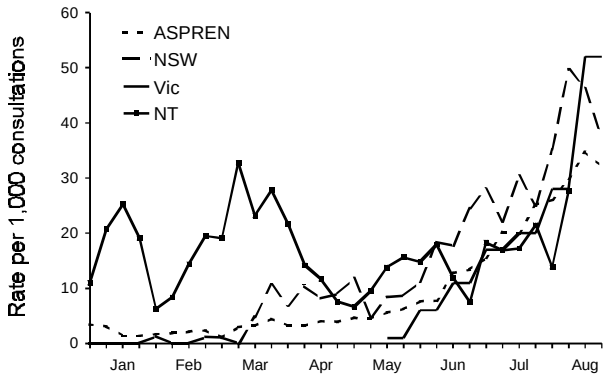


Table 4. Australian Sentinel Practice Research Network reports, weeks 32 and 33, 1997

Condition	*Week 32 , to 10 August 1997*		*Week 33, to 17 August 1997*	
	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters
Chickenpox	8	1.4	11	1.7
Gastroenteritis	64	10.9	42	6.4
HIV testing (doctor initiated)	5	0.9	14	2.1
HIV testing (patient initiated)	10	1.7	8	1.2
Influenza	188	32.0	173	26.3
Measles	0	0.0	0	0.0
Pertussis	1	0.2	1	0.2
Ross River virus infection	3	0.5	1	0.2
Rubella	1	0.2	0	0.0

Sentinel General Practitioner Surveillance

Reports of consultation rates for influenza-like illness from the New South Wales scheme continued to increase through July and reached a rate of 50 consultations per 1,000 encounters in the last week of July (Figure 7). The Department of Human Services Victoria also recorded a high rate, 52 consultations per 1,000 encounters, for the last week of July and the first week of August. The ASPREN scheme consultation rate continued to rise throughout July, and reached a peak of 35 consultations per 1,000 encounters in the first week of August. This is similar to the peak consultation rate recorded by ASPREN in recent years. The Northern Territory data indicate increased influenza activity for the latter part of July.

Absenteeism Surveillance

Australia Post recorded a national absenteeism rate of 3.0%. Nationally this has remained stable throughout the season, although higher rates were recorded for New South Wales during early July (3.3%) and for Victoria during late July to early August (3.6%).

Australian Sentinel Practice Research Network

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

Data for weeks 32 and 33 ending 10 and 17 August respectively are included in this issue of *CDI* (Table 4). The consultation rate for gastroenteritis has remained at a low level since the beginning of June. For the current reporting weeks, the consultation rate for chickenpox has remained slightly higher than the rate for July. The consultation rate for measles, pertussis and rubella has remained low for several months. The consultation rate associated with HIV testing has remained a moderate level throughout the year.

LabVISE

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

There were 1,188 reports received in the *CDI* Virology and Serology Laboratory Reporting Scheme this period (Tables 5 and 6).

Eighty-one reports were received for parainfluenza virus this period. These included parainfluenza virus type 2 (8) and type 3 (62). Parainfluenza virus type 2 reports are expected to peak this year as outbreaks tend to occur in alternate years in Australia. By contrast, peaks in parainfluenza virus type 3 are characteristically recorded each year during September and October (Figure 8).

Laboratory reports of *Mycoplasma pneumoniae* have continued to rise since 1996 (Figure 9). There were 80 reports received in the last fortnight. The male:female ratio was 1:1.6, with 80% in the less than 25 years age group.

Figure 8. Parainfluenza virus type 2 and type 3 laboratory reports, 1995 to 1997, by month of specimen collection

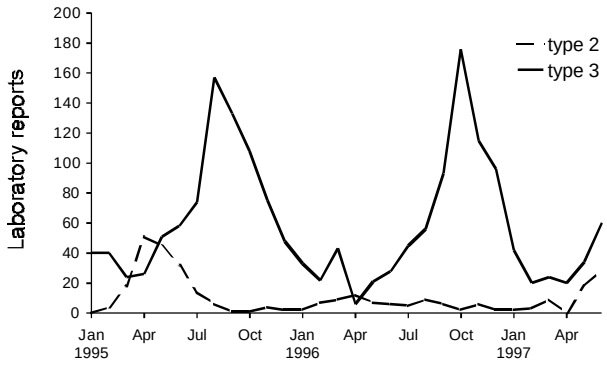


Figure 9. ***Mycoplasma pneumoniae*** **laboratory reports, 1992 to 1997, by month of specimen collection**

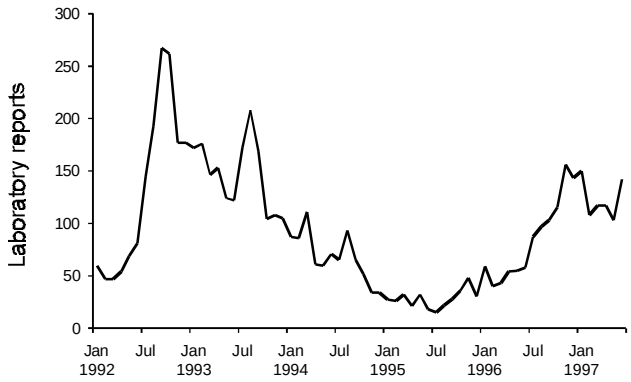
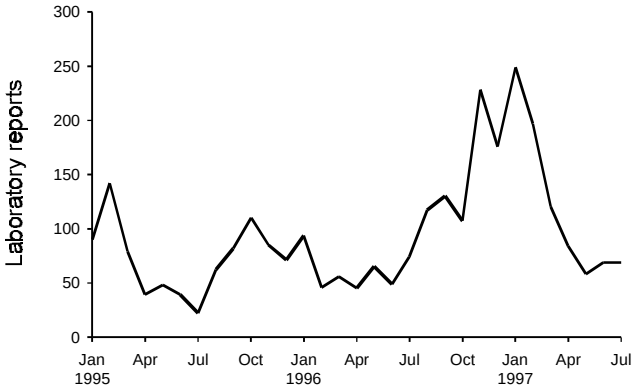


Figure 10. ***B. pertussis*** **laboratory reports, 1995 to 1997, by month of specimen collection**



Forty-two reports of pertussis were received this fortnight. The male: female ratio was 1:1 with 22 (52%) reports for children under 14 years of age. The number of reports has declined in recent months after peaking in January, when 249 reports were received. This was the highest number of reports recorded in the history of this scheme (Figure 10).

Table 5. Virology and serology laboratory reports by State or Territory[1] for the reporting period 31 July to 13 August 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	Vic	WA			
Measles, mumps, rubella										
Measles virus		1			1			2	1.8	42
Mumps virus					1			1	1.5	29
Rubella virus				2	3			5	18	417
Hepatitis viruses										
Hepatitis A virus		1		4	2			7	12.8	548
Arboviruses										
Ross River virus			1	3	3			7	15.8	2,012
Barmah Forest virus				1				1	5.5	194
Adenoviruses										
Adenovirus type 1					1			1	1.8	20
Adenovirus type 2					1			1	1	25
Adenovirus type 40						1		1	0.5	11
Adenovirus not typed/pending		5		4	16		5	30	44.7	658
Herpes viruses										
Cytomegalovirus		20		12	6	2	5	45	55.3	833
Varicella-zoster virus		2	1	9	3	1	1	17	48.3	953
Epstein-Barr virus		11		7	25	5		48	69.5	1,796
Other DNA viruses										
Parvovirus				3	3			6	9.3	258
Picornavirus family										
Poliovirus type 1 (uncharacterised)		1						1	1	5
Rhinovirus (all types)		4		15	3			22	30	436
Enterovirus not typed/pending				12				12	28.3	442
Ortho/paramyxoviruses										
Influenza A virus		98		16	25	10	9	158	164.2	635
Influenza A virus H3N2				4				4	7.3	11
Influenza B virus		21		50	6	4	6	87	24.2	617
Influenza virus - typing pending					40		3	43	0.3	273
Parainfluenza virus type 1		1			3			4	8.3	46
Parainfluenza virus type 2		1		3	3	1		8	3.2	101
Parainfluenza virus type 3		18		13	9		22	62	30.2	565
Parainfluenza virus typing pending					7			7	2	196
Respiratory syncytial virus	2	109		99	73	25	66	374	372.2	3,165
Other RNA viruses										
Rotavirus		15			15	1	14	45	135.2	757
Other										
Chlamydia trachomatis not typed		4	1	24	21		4	54	115.5	3,329
Chlamydia pneumoniae				1				1	0	2
Chlamydia species		1						1	0.8	23
Mycoplasma pneumoniae		33		29	6	12		80	27.5	1,220
Coxiella burnetii (Q fever)		3	1	3				7	6.8	239
Bordetella pertussis		2	1	8		31		42	14.2	1,176
Legionella pneumophila				1				1	0.7	17
Cryptococcus species		2						2	0.3	16
TOTAL	2	353	5	323	276	93	135	1,188	1,258.30	21,070

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 laboratory for the reporting period 31 July to 13 August 1997

State or Territory	Laboratory	Reports
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	59
	New Children's Hospital, Westmead	148
	South West Area Pathology Service, Liverpool	143
Queensland	Queensland Medical Laboratory,	133
	West End State Health Laboratory, Brisbane	200
South Australia	Institute of Medical and Veterinary Science, Adelaide	276
Victoria	Monash Medical Centre, Melbourne	48
	Royal Children's Hospital, Melbourne	47
Western Australia	Princess Margaret Hospital, Perth	133
TOTAL		1187

CDI Instructions for authors

Communicable Diseases Intelligence *(CDI*) is a fortnightly publication of the National Centre for Disease Control, Commonwealth Department of Health and Family Services and the Communicable Diseases Network Australia. Its aim is to provide timely information about communicable diseases in Australia to those with responsibility for their control. *CDI* has a particular emphasis on public health issues.

CDI invites contributions dealing with any aspect of communicable disease incidence, risk factors, surveillance or control in Australia. Submissions can be in the form of original articles, short reports, surveillance summaries, reviews or correspondence.

On receipt of an article, *CDI* sends a brief acknowledgment indicating that it will be considered for publication. The article will then undergo a review process which may include peer review by two experts in the topic area. Articles may be rejected without peer review. Occasionally reports of urgent public health importance may be published immediately, at the discretion of the Editor. Authors may be asked to revise articles as a result of the review process and the final decision about publication is made by the Editor.

CDI is published on alternate Thursdays except for the fortnight of Christmas-New Year. It is finalised for printing on the Monday prior to the publication date. Very topical brief contributions (for example reports of current outbreaks) may be published in the fortnight of receipt, by arrangement with the editorial staff.

Submission procedure

A single copy of the contribution should be submitted to The Editor, Communicable Diseases Intelligence, at the address below. A covering letter should identify the corresponding author and be signed by all authors agreeing to possible publication.

The contribution should be provided in hard copy and on diskette (3 inch disks preferred). WordPerfect text format is ideal, although most IBM-compatible word processing formats can be converted. Short contributions may also be sent by email.

Authors

Authors of articles should be identified by their first name, last name, institution and address, with phone and fax contacts for the corresponding author. Each author should have participated sufficiently to take public responsibility for the article. Others contributing to the work should be recognised in the acknowledgments.

Articles and short reports

The text of articles should be structured to contain abstract, introduction, methods, results, discussion, acknowledgments and references, as far as is possible. Short contributions may need fewer subsections. There is no strict word limit for articles but manuscripts of 2,000 words or less are preferred. A word count should be included with the contribution.

Tables and figures

All tables and figures should be referred to within the results section and should not duplicate information in the text. If graphs are to be included, the numerical data on which these are based should also be provided to enable production in house style. Black and white illustrations or photographs can be included if required.

References

References should be identified consecutively in the text by the use of superscript numbers. The Vancouver reference style is used by *CDI* (see International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals. *Ann Intern Med* 1997;1126:36-47). All unpublished material should be referred to within the text (instead of the reference list) as personal communication or unpublished observation. The only exception is material which has been accepted for publication (in press).

Protection of patients' rights to privacy

Identifying details about patients should be omitted if they are not essential, but data should never be altered or falsified in an attempt to attain anonymity. Complete anonymity may be difficult to achieve, and written informed consent should be obtained if there is any doubt. Informed consent for this purpose requires that the patient be shown the manuscript to be published.

When informed consent has been obtained it should be included in the article.

Contact details

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Overseas briefs

Source: World Health Organization (WHO)

New influenza virus strain, Hong Kong

A type A influenza virus (H_5N_1) known previously only to infect birds has been isolated from a 3 year-old boy in Hong Kong. The child died of Reye's syndrome last May following an acute respiratory illness. This is the only human case to have been detected so far. "There is no indication at present that this strain has spread from person to person. There is consequently no need for special measures to be taken, as of today," confirmed Dr Daniel Lavanchy of the WHO's Division of Emerging and other Communicable Diseases Surveillance and Control (EMC). The WHO is monitoring developments, working in close collaboration with the Influenza Centre and the Department of Health in Hong Kong, and the four WHO Collaborating Centres for Reference and Research on Influenza. Although no more instances of type A(H_5N_1) virus have been reported in humans, efforts are being made to determine whether other persons in Hong Kong, or other parts of southern China have been infected with this strain. A team of scientists from the WHO Collaborating Centre in the United States of America arrived in Hong Kong on 20 August. They are to conduct an extensive investigation with the WHO Collaborating Centre from the National Institute of Infectious Diseases, Japan, and the Influenza Centre and Department of Health in Hong Kong, to assess the significance of this discovery and its impact on public health.

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