National Influenza Surveillance 1997

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Abstract

In 1997 information from several sources was combined to detect trends in influenza activity in Australia. Data was included from laboratories, general practitioners and a national employer. Laboratory surveillance documented two consecutive outbreaks, influenza B in July followed by influenza A (H_3N_2) in August. Some of the influenza A (H_3N_2) viruses isolated, represented by the A/Sydney/5/97 strain, showed significant antigenic drift from the A/Wuhan/359/95 vaccine strain. Influenza activity was also reflected in the consultation rates recorded by sentinel general practitioner reporting schemes. The peak consultation rate recorded by the Australian Sentinel Practice Research Network was higher and later than in recent years, occurring in early August. Tropical Influenza Surveillance in the Northern Territory demonstrated an early outbreak in March followed by a second rise later in the year. There was no rise in absenteeism rates recorded by a national employer.

Introduction

Influenza is a continually emerging disease and remains a major threat to public health worldwide. The ongoing antigenic variation of the influenza viruses results in outbreaks of respiratory disease throughout the world. These are usually experienced during the winter months in temperate climates but may occur throughout the year in tropical regions. Influenza epidemics lead to high rates of morbidity, excess mortality, social disruption and economic loss. 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

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and of control measures such as vaccination campaigns; and

- isolation and antigenic characterisation of influenza virus for the formulation of the following season's vaccine.

Data from Australian laboratories has been recorded by the *CDI* Virology and Serology Laboratory Reporting Scheme, LabVISE, since 1978. Laboratory diagnosis, particularly virus isolation, constitutes the gold standard in influenza diagnosis and surveillance specificity[1]. However a laboratory diagnosis is only sought in a small proportion of cases. National surveillance also requires a quantitative measure of influenza activity[2] . In order to meet this need national surveillance was expanded in 1994 to include data from several other sources. These include consultation rates from sentinel general practitioners and absenteeism data from a national employer. The data from these sources lacks the specificity of laboratory data but are useful as surrogate markers of influenza activity.

Between May and October 1997, data from several sources were combined and published fortnightly as *National Influenza Surveillance 1997* in *Communicable Diseases Intelligence*.

This is the annual report for 1997.

Surveillance methods

Laboratory surveillance

In 1997 the *CDI* Virology and Serology Reporting Scheme's influenza reports were included in *National Influenza Surveillance.* Twenty-one sentinel laboratories throughout Australia contributed reports to LabVISE[3]. Criteria for a positive laboratory report included direct antigen detection, virus isolation or serological evidence of infection. However the method of diagnosis was not available to this scheme.

In addition the World Health Organization (WHO) Collaborating Centre for Reference and Research on Influenza contributed reports on the subtypes and antigenic analysis 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 1997.* These were the Australian Sentinel Practice Research Network[4] (ASPREN) which is a national network, the New South Wales Sentinel General Practice Scheme, the Victorian Sentinel General Practice Scheme and Tropical Influenza Surveillance from the Northern Territory[5].

ASPREN, Tropical Influenza Surveillance and the Victorian Scheme used the same case definition:

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

or

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

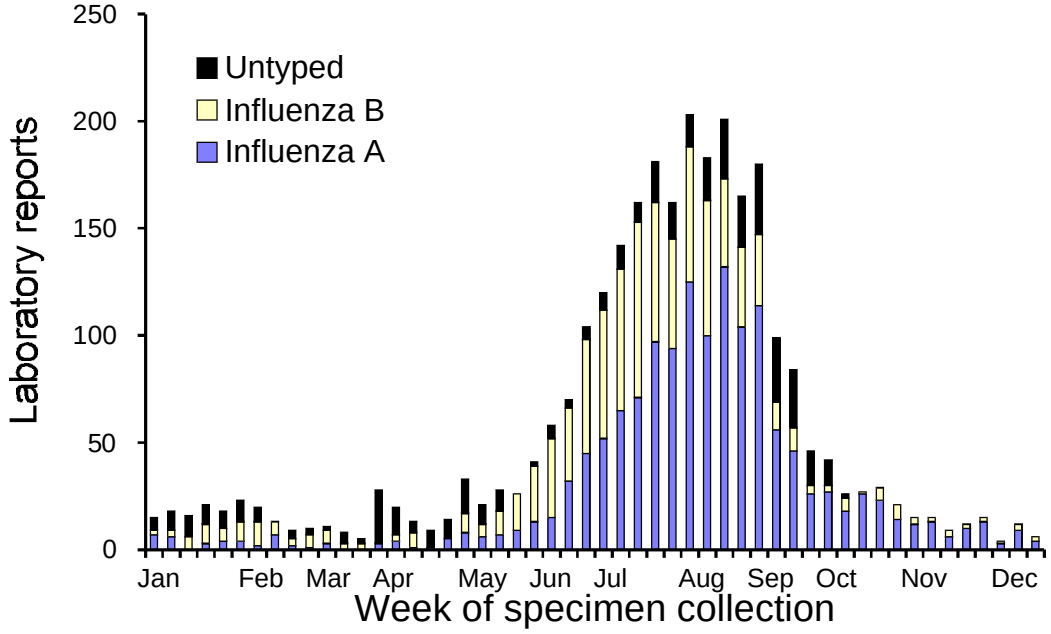
or

(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.

The case definition used by the New South Wales Scheme was all of the following:

Figure 1. Influenza laboratory reports, 1997, by virus type and week of specimen collection



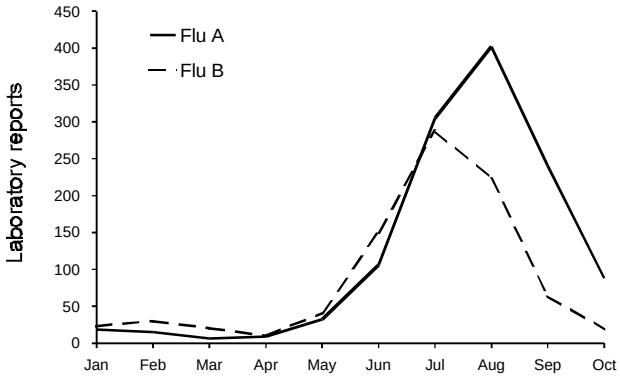
(a) Cough
(b) myalgia
(c) no abnormal respiratory physical signs other than inflammation of nasal mucous membranes and throat
(d) two of the following:
  (i) sudden onset (less than 12 hours)
  (ii) rigors, chills or fever
  (iii) prostration or weakness
  (iv influenza in close contacts.

There was a delay of approximately two weeks between the end of the reporting period and the publication of data.

Absenteeism surveillance

In 1997 Australia Post provided sick leave absenteeism data to *National Influenza Surveillance.* Absenteeism was reported as the percentage of total employees absent from work on a single day of the week.

Figure 2. Influenza A and B laboratory reports, 1997, by month of specimen collection



Results

Laboratory surveillance

***CDI* Virology and Serology Laboratory Reporting Scheme**

The LabVISE scheme reported a total of 2,797 diagnoses of influenza in 1997. Seventeen percent of reports were for untyped virus. Of those reports for which the virus type was known 61% (1,436) were influenza A and 39% (906) influenza B (Figure 1). The sub-type was known for 97 of the influenza A reports, most (96) being of the H_3N_2 sub-type. Only one report of influenza A H_1N_1 virus was recorded.

This scheme recorded two distinct peaks in influenza virus activity, an early rise in influenza B followed by a second peak due to influenza A, (Figure 2).

The number of influenza B reports peaked in July at a higher level than previously recorded by the LabVISE scheme (Figure 3). Reports peaked in July in Victoria, New South Wales and Western Australia and later, in August, in Queensland and South Australia (Figure 4). The male:female ratio was 1.1:1 and 41% of reports were for children under the age of five years (Figure 5).

Overall Influenza A laboratory reports peaked in August. However the peak month of activity varied in the States and Territories. This occurred in July in New South Wales, followed by Queensland, South

Figure 3. Influenza A and B laboratory reports, 1979 to 1997, by year of specimen collection

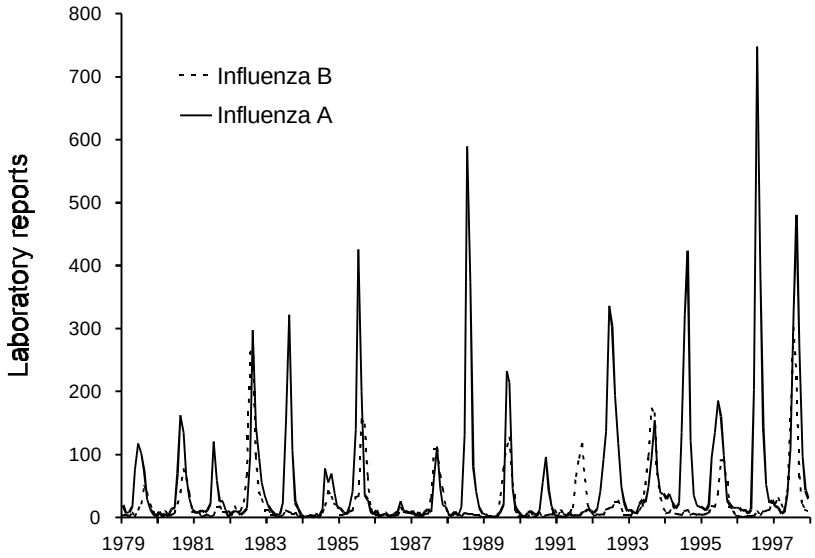


Figure 4. Influenza B laboratory reports, 1997, by State/Territory and month of specimen collection

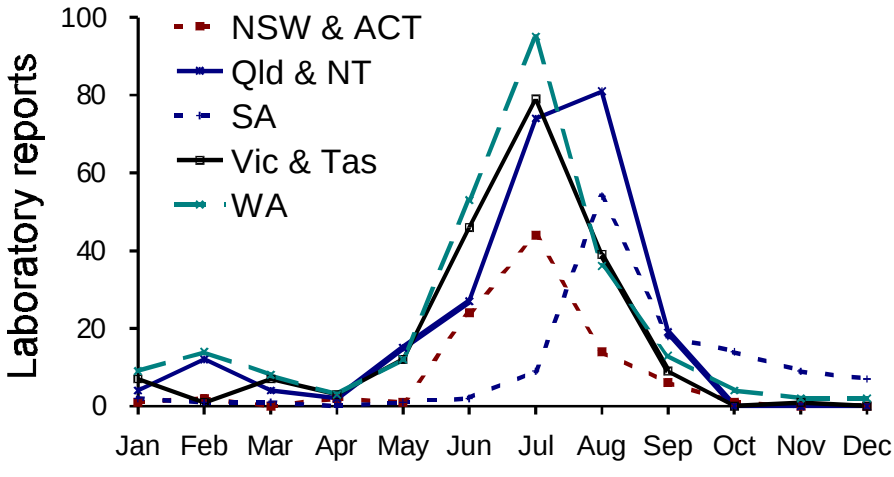
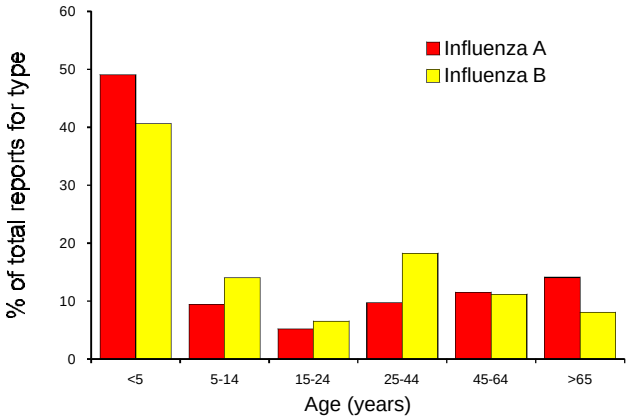


Figure 5. Influenza A and B laboratory reports, 1997, by age group



Australia and Victoria in August (Figure 6). Reports from Western Australia did not peak until September. Slightly more reports were received for males, male:female ratio 1.1:1. Forty nine per cent of patients were less than five years of age and 14% were in the over 65 years age group (Figure 5).

WHO Collaborating Centre for Influenza Reference and Research

In 1997 the Centre analysed 1,178 Australian influenza isolates of which 701 (60%) were influenza A and 477(40%) influenza B. All of the Australian influenza A viruses were subtyped as H_3N_2.

While sequence analysis of the influenza B isolates showed some evidence of genetic drift in the haemagglutinin antigen, antigenically they were uniformly similar to the B/Beijing/184/93 vaccine reference strain.

The influenza A (H_3N_2) isolates fell into two groups both genetically and antigenically. The majority of isolates (74%) for the year were antigenically similar to the A/Wuhan/359/95 vaccine reference strain but with some evidence of genetic drift. The remaining 26% of isolates, characterized by the A/Sydney/5/97 strain, were antigenically and genetically distinct and represent a significant new H_3N_2 variant. A/Sydney-like viruses were unequally distributed throughout the country and occurred in highest proportion in isolates received from New South Wales and the Australian Capital Territory. The number of A/Sydney-like isolates increased as the season progressed and isolates from Northern Australia reported late in the year were A/Sydney-like. Antibody studies conducted with post-vaccination sera from recipients of vaccines containing an A/Wuhan/359/95 (H_3N_2) component showed significantly reduced responses against A/Sydney/5/97.

Figure 6. Influenza A laboratory reports, 1997, by State/Territory and month of specimen collection

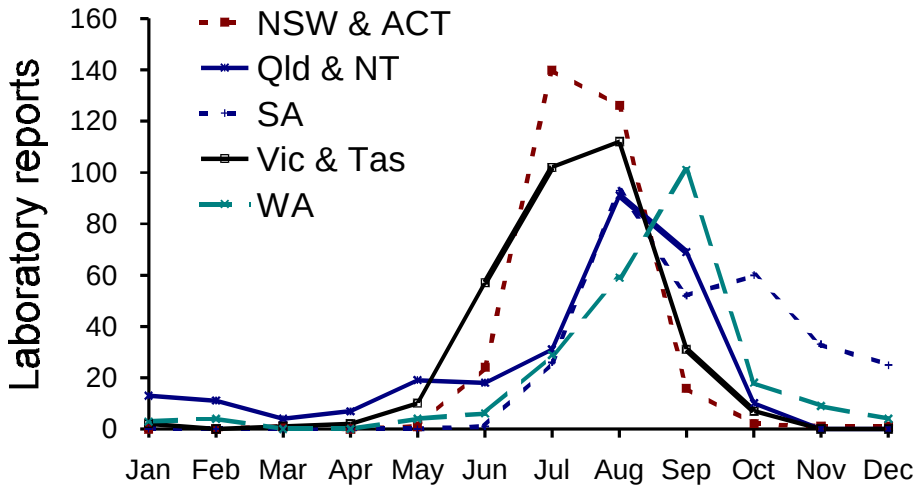
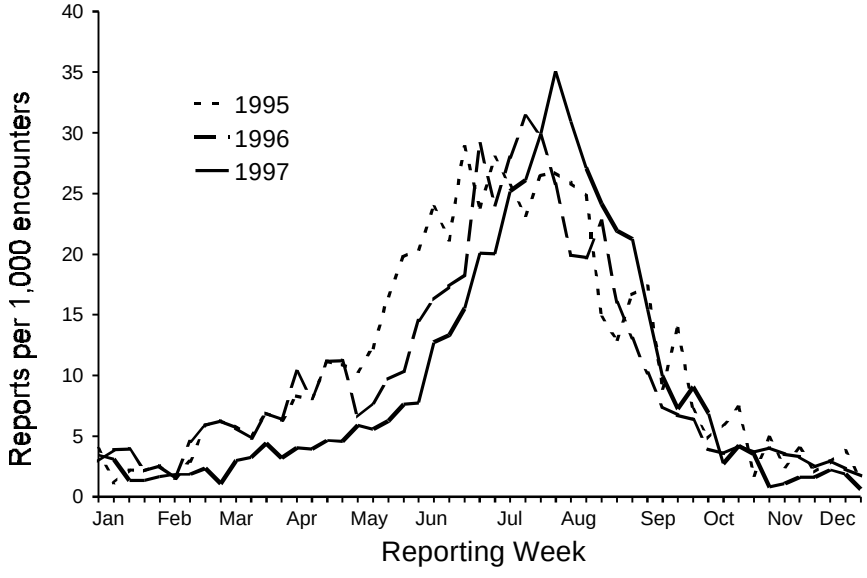


Figure 7. ASPREN consultation rates, 1995 to 1997, by week

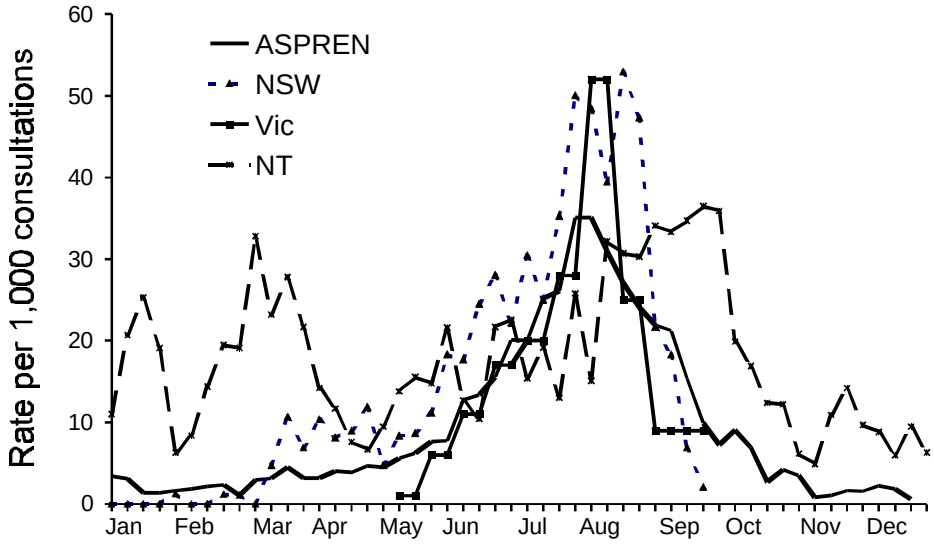


Sentinel general practitioner surveillance

The consultation rate for influenza-like illness reported to the ASPREN scheme rose throughout the winter months of 1997, peaking at 35 consultations per 1,000 encounters in early August (Figure 7). This rate was higher than that recorded in recent years and occurred later, coinciding with the

weekly peak in total laboratory reports in late July/early August (Figure 1). The Victorian scheme showed a similar seasonal distribution to the ASPREN scheme but peaked at a higher rate of approximately 50 consultations per 1,000 encounters (Figure 8). The New South Wales scheme showed a similarly high rate but with two distinct peaks several weeks apart. Tropical Influenza Surveillance from the Northern Territory demonstrated an early peak in March, followed by a second rise in August and September.

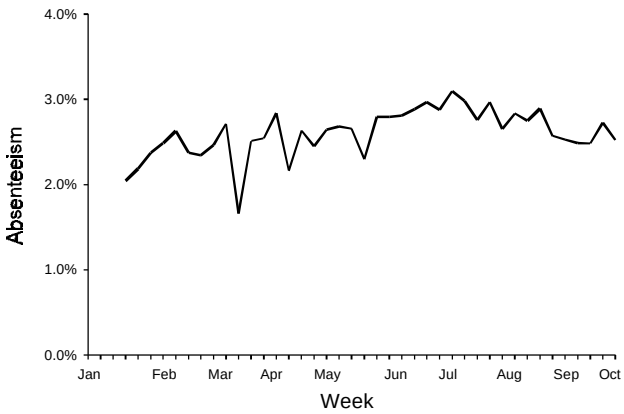
Figure 8. Sentinel general practitioner consultation rates 1997, by week and scheme



Absenteeism surveillance

National absenteeism rates reported by Australia Post showed little variation throughout the winter months (Figure 9). There was no apparent trend which could be attributed to increased influenza activity.

Figure 9. Australia Post absenteeism rates, by week



Discussion

In Australia two sequential epidemics of influenza were documented in 1997. Following sporadic influenza B activity in the preceding summer, particularly in the North, there was an early outbreak of influenza B throughout the country. This was followed by a second outbreak due to influenza A (H_3N_2).

Outbreaks of influenza B in Australia have been recorded in alternate years, the most recent previous epidemic year being 1995[6]. Whilst the number of laboratory reports of influenza B was higher than previously recorded it is uncertain whether this was due to the severity of the epidemic attributable to this virus type or whether increased laboratory surveillance may have contributed.

Whilst the number of laboratory reports of influenza A in Australia was markedly lower than in 1996, they remained high compared to other years. The predominating sub-type was H_3N_2, as was the case in 1994 and 1996[8]. This sub-type has also been reported in large numbers in the United States in the 1997-98 winter period[9]. Influenza H_3N_2 also caused widespread influenza in Japan recently. However in other parts of the Northern Hemisphere, notably Europe, influenza outbreaks were small and scattered and attributed to both H_3N_2 and H_1N_1 strains although there have been some late outbreaks in a number of European countries[10]. Only a single isolate of H_1N_1 was recorded in Australia in 1997. The last major outbreak due to this virus was in 1995[6].

New Zealand also recorded a late peak in influenza activity in 1997, this being due to an outbreak of influenza B followed by a second outbreak of influenza A (H_3N_2)[7]. However 62% of isolates were influenza B and only 38% influenza A which is in contrast to Australia were most laboratory reports were for the type A virus. A further difference is that the sentinel general practitioner consultation rate recorded in New Zealand was lower than recorded in 1996, whilst those recorded in Australia were higher than usual. The epidemiology of influenza frequently differs between Australia and New Zealand. In 1996 New Zealand experienced one of its most severe epidemics in recent years due to A/Wuhan/359/95 and this may have contributed a substantial population immunity to H_3N_2 viruses. The great majority (86%) of 1997 H_3N_2 isolates examined from New Zealand were A/Sydney/5/97-like.

A/Sydney-like viruses predominated during the Northern hemisphere winter and accounted for over 80% of isolates in the United States of America. Outbreak investigations conducted in the United States of America suggested that the A/Wuhan/359/95-like vaccine strain afforded low protection against infection with A/Sydney-like viruses but appeared to reduce death rates[11].

Data from sentinel general practitioners is a sensitive and timely but non-specific indicator of influenza activity[12]. Overall, other than for the Northern Territory, the

consultation rates were higher than recorded in previous years, indicating that the impact of influenza on morbidity was more severe in 1997 than in previous recent years [6,7,13]. This is supported by the laboratory data. The late peak in activity recorded by the ASPREN scheme was probably associated with illness due to both the type A and the type B virus. In the absence of laboratory confirmation it is not possible to accurately estimate the true extent to which consultations were for influenza, and not other respiratory viruses, and to determine the impact of each virus type.

The consultation rates recorded by the different sentinel general practitioner schemes are usually similar[6,7,13], other than for the Northern Territory where the epidemiology of influenza is known to be different[5]. The higher rates of consultation recorded by the New South Wales and Victorian schemes this year, compared to ASPREN, probably reflects large localised outbreaks.

The Northern Territory documented two outbreaks of influenza, an early small peak which preceded the winter epidemic elsewhere in Australia, followed by a second larger peak later in the year. This is similar to 1996[7] and is consistent with data from other tropical regions which also record a bimodal pattern of disease[14]. The initial peak was due to influenza B whereas the later peak was caused by A/Sydney-like H_3N_2 viruses.

In Western Australia the influenza B outbreak occurred in July and influenza A much later in September. By contrast other States and Territories experienced concurrent peaks in the laboratory diagnoses of the two virus types. Western Australia, Queensland and the Northern Territory demonstrated a slight rise in influenza B diagnoses in February. This may have been due to the continuing circulation of this virus following the outbreak of influenza B reported on an oil rig off the coast of the Northern Territory in December 1996[15].

At its meeting in October 1997 the Australian Influenza Vaccine Committee recommended the inclusion of an A/Sydney/5/97-like virus in the Australian vaccine for 1998[16]. At that time viruses of this type had been found in few locations and in relatively small numbers. In the intervening 6 months A/Sydney-like viruses have become widespread and the predominant H_3N_2 variant. This rapid evolution of viruses of the H_3N_2 subtype, their association with severe disease and excess mortality, and the US experience of low protection by vaccines containing the preceding variant serve to emphasise the value of surveillance and regular updating of influenza vaccines.

National absenteeism rates reported by Australia Post remained between 2% and 3% throughout the winter months. In order to improve the sensitivity of this source of data in 1998, absenteeism data will be recorded in cases of 3 or more consecutive days of absence rather than for a single day as previously.

National Influenza Surveillance will continue in the winter of 1998. Laboratory data will remain as the qualitative measure of activity whilst sentinel general practitioner data and absenteeism data will be recorded to provide a quantitative measure.

Acknowledgements

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National Health and Medical Research Council (NHMRC) recommendations on influenza vaccination

The 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 advise 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 1998 Austalian vaccine has been published previously[2].

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2. Composition of the Australian influenza vaccine for the 1998 winter. *Comm Dis Intell* 1997;21:332.

Pertussis in South Australia 1893 to 1996

Wendy Scheil[1 2 3], Scott Cameron[3], Christine Roberts[2], and Robert Hall[3]

Abstract

This study describes trends in reports of pertussis in South Australia. Data were analysed from three sources: mortality data since 1893 from South Australian yearbooks, notification data from 1917, and hospitalisation data for pertussis or related complications since July 1985. Crude and age-specific rates of mortality, notifications and hospitalisation were compared. Pertussis peaked in 3 to 5 yearly cycles. The mortality and notification rates have generally declined over time. However, since 1993 the notification rate has remained high. The median age for pertussis notifications increased from 4 years in 1984 to 15 years in 1996. Serological testing for pertussis was included in 15% of notifications in 1985 and 90% in 1996. The age specific hospitalisation rate for pertussis was highest in infants ≤ 6 months. Since the turn of the century, mortality and notification rates due to pertussis have declined. Over the past decade the major burden of severe disease resulting in hospitalisation has been borne by infants ≤ 6 months. These infants are too young to be afforded protection from three primary immunisations against pertussis. Despite no substantial increase in mortality nor hospitalisation for pertussis in South Australia, the notification rate has remained high since 1993. This increase may be attributable to the use of more sensitive tests for pertussis, such as serology.

Introduction

Concurrent with the introduction of mass vaccination programmes for pertussis in the 1950s[1] all Australian states, with the exception of South Australia, discontinued surveillance of pertussis. As a result South Australia is believed to be the only source of continuous surveillance data for pertussis.

This study reviews secular trends in mortality, notifications and hospitalisations for pertussis from three sources:

- the Australian Bureau of Statistics (ABS) mortality data available since 1893;
- the South Australian Health Commission's notifiable diseases register medical practitioner notifications since 1909, and laboratory based notifications since 1969; and
- the Inpatient Separations Information System hospital discharge data collected since July 1985.

Methods

Data sources

Numbers of deaths attributed to pertussis from 1893 to 1996 were obtained from South Australian ABS yearbooks.

Pertussis notification data were obtained from records kept at the Communicable Disease Control Branch (CDCB) of the South Australian Health Commission (SAHC). Total numbers of notifications in all council regions were available from 1917 onwards. In 1983 a standard 'notification form' was introduced and records of the age and notification date of cases were available from 1984. Since 1989 modifications to the notification form allowed details to be collected of date of birth, date of disease onset and diagnostic method. Since 1990 the following surveillance case definition for pertussis has been used:

- isolation of *Bordetella pertussis* from a clinical specimen and/or
- elevated *B. pertussis*-specific IgA in serum in the presence of clinically compatible illness and/or
- an illness lasting longer than two weeks with one of the following:
  - paroxysms of coughing
  - inspiratory 'whoop' without other apparent cause
  - post-tussive vomiting and/or
- an illness characterised by a cough lasting at least two weeks in a patient who is epidemiologically related to a laboratory confirmed case.

This definition differs from the recommended national surveillance case definition[2] by excluding '*B. pertussis* in nasopharyngeal specimens using immunofluorescence'.

Notification forms held by the CDCB were retrospectively reviewed to ascertain the laboratory diagnostic method used for cases notified in 1985, 1986, 1991, 1992 and 1996. We selected these years to span the period since serological testing was introduced in 1985.

Hospital discharge data were obtained from the Inpatient Separations Information System (ISIS) database of the Health Information Services Unit, SAHC. This collection started in July 1985 with all public and private hospitals in South Australia being required to code diagnoses of

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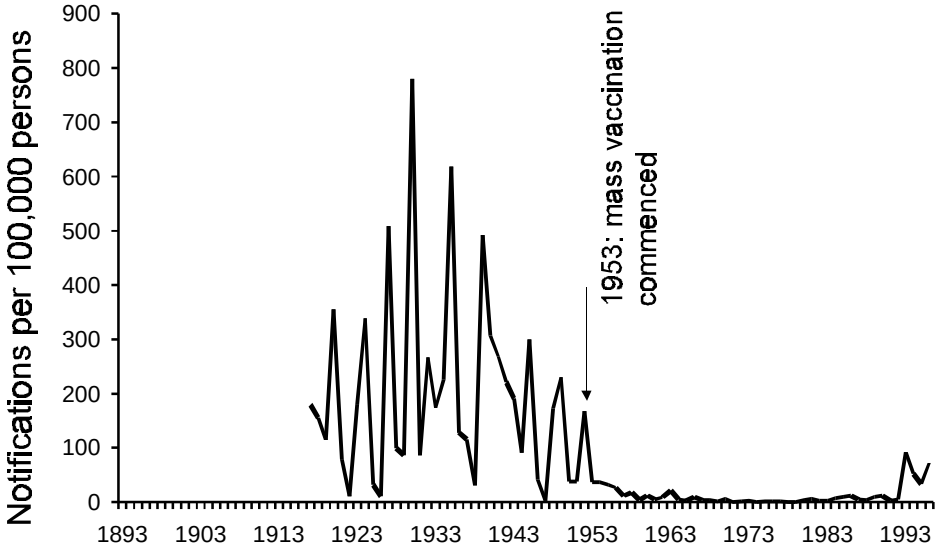
discharged hospital patients according to international disease codes (ICD-9)[3]. The primary diagnosis is recorded with up to 20 secondary diagnoses.

Figure 2. Notification rate for pertussis in South Australia, 1893 to 1996



Analysis

Crude and age-specific rates for mortality, notifications and hospitalisations were calculated using ABS population estimates. Between 1893 and 1970 midyear estimates were used where available, otherwise end of year estimates were used. Between 1971 and 1996 only mid-year population estimates were used.

Pertussis mortality rates per 100,000 population were calculated for each year. We examined the number and rate of persons notified with pertussis between 1917 and 1996. We described the age-specific notification rates of persons with pertussis between 1984 and 1996. We examined the age-specific hospitalisation rates of persons with pertussis recorded as a primary or secondary diagnosis between 1985 and 1996. Only the discharge diagnoses from the final treating hospital were used.

Analysis was conducted using Epi-Info 6.02[4].

Results

Pertussis mortality

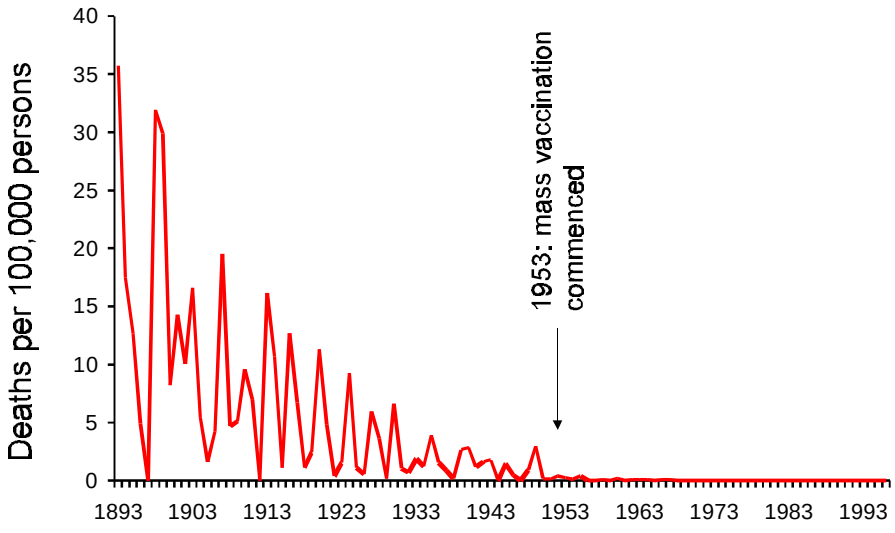
In South Australia between 1893 and 1996 the mortality rate due to pertussis declined (Figure 1). During this time there were 1,504 deaths ascribed to pertussis. The highest number of deaths was recorded in 1893 with 121 (crude rate of 36 deaths per 100,000 population). Until 1949 peaks in mortality occurred every three to five years. The magnitude of these peaks generally decreased, and since 1967 no deaths due to pertussis have been reported in South Australia.

Pertussis notifications

Between 1917 and 1996 there were 48,311 notified cases of pertussis in South Australia. The highest number of notifications (4,466) was recorded in 1930, the lowest (5) in 1974.

Between 1917 and 1996 there were several major shifts in the pattern of notifications of pertussis (Figure 2). Between 1917 and 1952, increased notification rates occurred every three to five years. Each increase was two to sixteen times higher than the average of the two preceding years. After 1930 there was a general decrease in reported cases in each successive epidemic. After the 1952 epidemic the baseline level of notifications was very low until 1993, when there were 1,351 notifications, seven times higher than any of the previous 20 years.

Figure 1. Mortality rate for pertussis in South Australia, 1893 to 1996



Between 1984 and 1992 the age-specific notification rates followed a cyclical pattern (Figure 3). In general, the highest notification rates occurred for infants ≤ 6 months. However, in 1993 the notification rate in the 5 to 14 year age group (223 per 100,000) exceeded the rate for infants ≤ 6 months. From 1993 onward all age groups have maintained a higher notification rate. Over this period, the median age for pertussis notifications increased from 4 years in 1986 to 15 years in 1996. Accordingly, the proportion of notifications for persons ≥ 15

Figure 3. Notification rate for pertussis, 1984 to 1996, by age group and year

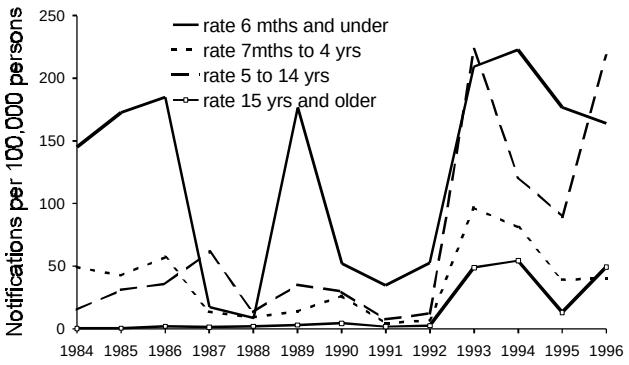
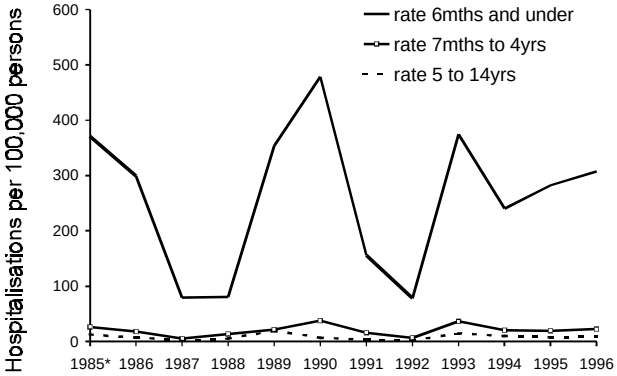


Figure 4. Hospitalisation rate for pertussis, 1985 to 1996, by age group and year



* includes hospital discharges July to December 1985

years gradually increased, such that since 1993 over half of the notifications were for persons ≥ 15 years of age.

Laboratory diagnosis for pertussis

Laboratory testing was performed for more than 67% of notified cases in the years reviewed, and the type of test was stated for 96% (Table 1). In 1985 71% (97)of notified cases had *B. pertussis* cultured from a specimen, decreasing to 2% (21) of cases notified in 1996. In contrast, serological testing for pertussis increased from 15% (20) in 1985 to 90% (955) in 1996.

Table 1. Laboratory confirmed cases of pertussis, by selected years

Year	1985 n (%)	1986 n (%)	1991 n (%)	1992 n (%)	1996 n (%)
Total notifications	136 (100)	164 (100)	46 (100)	66 (100)	1060 (100)
Laboratory tests performed	117 (86)	110 (67)	37 (80)	64 (97)	1028 (97)
Laboratory test results reported	11 (86)	110 (67)	32 (69)	47 (71)	1000 (95)
Type of test					
culture	97 (71)	95 (58)	3 (7)	5 (8)	21 (2)
serology	20 (15)	15 (9)	29 (63)	42 (64)	955[1] (90)
PCR[2]	N/A[3]	N/A[3]	N/A[3]	N/A[3]	24 (2)

1. Includes 170 notifications based on positive IgM result
2. Polymerase chain reaction
3. Not available

Hospital admissions for pertussis

From July 1985 to 1996 there were 878 persons hospitalised for treatment of pertussis or related complications. The highest number of pertussis related hospitalisations was 133 in 1993, and the lowest was 22 in 1992.

Between July 1985 and December 1996, age-specific hospitalisations for pertussis showed cyclical trends (Figure 4). The highest rates of hospital admissions for pertussis occurred in the ≤ 6 months age group. The highest number of admissions in this age group occurred in 1990 with 55 admissions (479 per 100,000). In 1993 the rate of hospital admissions in children under the age of 15 years was 5 to 10 times higher than in 1992. Following this, hospitalisation rates did not return to the previous baseline level.

Discussion

Patterns in pertussis mortality and notifications describe the changing epidemiology of the disease throughout the past century in South Australia. During the first part of this century the three to five yearly cycles of high mortality and notifications due to pertussis gradually decreased, until the 1950s when a dramatic decrease occurred. That era coincided with the introduction of mass public vaccination in South Australia from 1953 onward, and the discovery of antibiotics used for the treatment of pertussis and related complications. Thereafter, both mortality and notification rates remained low until 1993. In 1993, despite the availability of vaccines and prophylactic treatments, an unprecedented rise in notifications occurred.

The characteristics of this epidemic, which began in 1993 in South Australia, can be described by data from the three sources. In particular, no deaths occurred, nor was hospitalisation substantially increased compared with previous levels. The age specific hospitalisation rate was similar to levels recorded in 1985, 1989 and 1990. The most marked change was the 12 fold increase in the rate

of persons ≥ 15 years with pertussis notified to the Health Commission compared to the highest level recorded in the previous eight years. Also, for the first time since age was recorded (1983), the rate of notifications in the 5 to 14 year age group was greater than the age group ≤ 6 months. Thus, only the notifiable diseases register identified 1993 as significantly different compared with previous years of high activity in the past decade.

Notification data are sensitive to changes in diagnostic and reporting practices. During the past decade two diagnostic tests to detect pertussis infections were introduced into South Australia, in 1985 serological tests[5], and in 1994 polymerase chain reaction (PCR). In 1985 the proportion of notified cases supported by serology was 15%. By 1996 this had increased to 90%. Serological testing is a more sensitive test to detect pertussis in older age groups than culture of *B. pertussis* from nasopharyngeal aspiration.[5,6,7] Prior to this date diagnosis of pertussis was unusual in adults as they do not often present with classical symptoms and *B. Pertussis* was rarely cultured from nasopharyngeal aspiration.[8,9,10,11] The use of serology to diagnose pertussis resulted in increased detection and reporting of disease in older age groups. However, it is unclear whether this reflects recognition of previously undetected disease or a true increase in incidence. Unlike adults, infants under one year of age do not mount a marked serological response to pertussis infection.[12] None of the infants with pertussis aged ≤ 6 months were confirmed by serological testing. However, in 1996 the diagnosis in one third of infants notified in this age group as confirmed by a positive PCR result.

Despite a substantial increase in notifications in older age groups, the major burden of severe disease resulting in hospitalisation continues to be borne by infants. Although the age specific hospitalisation rate for pertussis or complications of pertussis fluctuated, the highest admission rate was in the ≤ 6 months age group for all years since 1985. Admission rates in the next most commonly hospitalised group, the 7 month to 4 years age group, were consistently ten fold lower, and may be due to reduced severity of symptoms due to vaccination.

As expected, the age specific notification rates in the 7 month to 4 year age group are also considerably less than the ≤ 6 months age group. Population based estimates of vaccination indicate this may be due to vaccination. Estimates by the ABS in 1989 and 1994 indicated that 55% and 86% respectively of children one year of age had been vaccinated with 3 doses of pertussis vaccine.[13]

All three data sources have limitations, and these must be considered when interpreting these data. Under reporting is evident in the notification data. Comparison of notification data with hospital discharge data between 1984 and 1996 indicates that fewer infants aged ≤ 6 months were notified with pertussis to the health authorities than were hospitalised. We would expect persons hospitalised to represent a smaller proportion of persons with disease in that age group in the community.[14,15]

There may also be misclassification of acute disease in adults. Since the introduction of the case definition in 1990, treating medical practitioners who identified infected persons by a positive serological report were obliged to notify. Laboratories reported both IgA and IgM positive results. However, irrespective of whether a notification was received from the treating practitioner, the person remained as a case on the data base.

Additionally, we are unaware of the accuracy of coding procedures in the ISIS database prior to the first audit conducted in 1994. This audit followed an intensive period of retraining for the data-coders.

Together, with the cyclical nature of pertussis disease, these limitations make the interpretation of only a few years of data complex. There is a suggestion that Australia may be experiencing a sustained Australia wide epidemic since 1993.[16] South Australian data supports this with continued high levels of hospitalisation and notifications of infants ≤ 6 months since 1993. However alternatively, given the limitations of these data sets we may be setting a new baseline of disease prevalence, as a result of more sensitive tests for pertussis, such as serology and PCR testing.

The epidemiology of pertussis in South Australia has undergone several major changes. Mortality has been reduced. There has been an upward shift in the age distribution of notified cases. The use of more sensitive diagnostic tests may have contributed to increased detection and reporting of disease in older age groups. Nonetheless, the major impacts on disease remain despite modern medical treatment and vaccination.

Acknowledgments

We thank the staff of the Communicable Disease Control Branch and Health Information Services Unit of the South Australian Health Commission, and the staff of the Australian Bureau of Statistics for their assistance. Sue Seldon's contribution of archival notification data is particularly appreciated.

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Japanese encephalitis on the Australian mainland

Japanese encephalitis was diagnosed in an adult male in Queensland in March 1998. Several sentinel pigs were also found to have been infected. The man who recovered and was discharged from hospital is believed to have acquired the virus while working on a boat on the west coast of Cape York Peninsula. This is the first case of Japanese encephalitis to be diagnosed on the Australian mainland. In 1995 three cases, including two deaths, were reported in the outer Torres Strait islands. A further case was reported in the Torres Strait in March 1998.

Following the detection of the disease on the mainland, blood samples were taken from over 450 people in two Cape York communities. Test results from these two communities showed no evidence of Japanese encephalitis infection and health authorities have ruled out the need for vaccination at this stage.

Queensland Tropical Public Health Unit and Queensland Department of Primary Industries will continue to monitor the human and animal populations to determine the extent of Japanese encephalitis activity in the area. Relevant State and Commonwealth human and animal health authorities are continuing to work together to co-ordinate this process and develop appropriate response strategies for the next wet season (November-April). The possibility of a future vaccination program cannot be ruled out.

Haemolytic Uraemic Syndrome in South Australia

The South Australian Health Commission is investigating possible links between three cases of Haemolytic Uraemic Syndrome (HUS) which were recently notified this month. The cases, all children, are recovering in hospital. Further investigations are underway. South Australian health authorities will continue to monitor the situation and will inform the public of any further developments.

Notice to readers

CDI Internet address

The *Communicable Diseases Intelligence* homepage is now located at:

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

Information from two additional surveillance schemes is now available on our web-site. These are National Influenza Surveillance and the *CDI* Virology and Serology Reporting Scheme (LabVISE).

Communicable Diseases Surveillance

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

Vaccine preventable diseases

Rubella notifications remain low, with the number of cases having onset date in the first 3 months of 1998 being the lowest since 1992. Most cases for 1998 have been in the 0 to 4 years (23%), 15 to 19 years (16%) and 20 to 24 years (18%) age groups. The male to female ratio was 1.2:1.

The number of notifications of pertussis continues to decline. A seasonal decrease in the number of cases is expected at this time of year. Most recent cases were notified for children aged under 15 years. Included were 15% in the 0 to 4 years age group, 21% aged 5 to 9 years and 16% aged 10 to 14 years.

Arboviruses

(see also *Sentinel Chicken Surveillance Programme*)

The number of new notifications of dengue has declined over the last month, 44 cases being recorded for the current reporting period, to bring the total for the year so far to 226. Only 4 of the current notifications had a recorded date of onset in April (Figure 3).

The number of new notifications for Barmah Forest virus infection and Ross River virus infection has also declined markedly in the last month (Figures 4 & 5). Small numbers of cases have been notified this year compared to previous years.

Figure 1. Notifications of rubella, 1991 to 1998, by month of onset

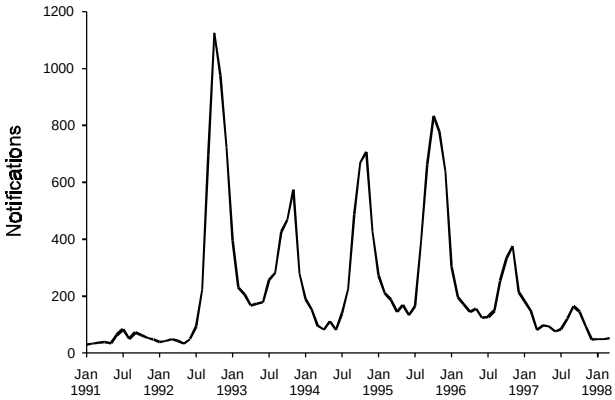


Figure 2. Notifications of pertussis, 1992 to 1998, by month of onset

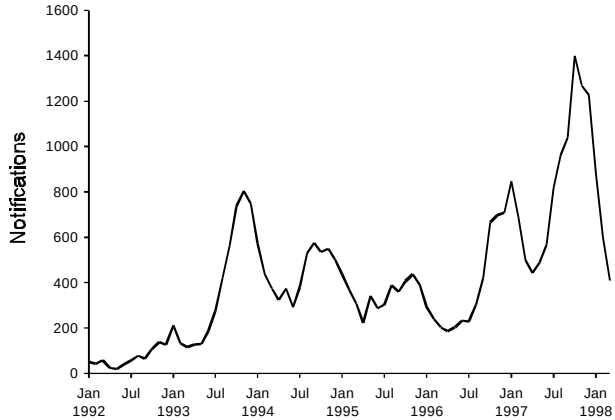


Figure 3. Notifications of dengue, 1991 to 1998, by month of onset

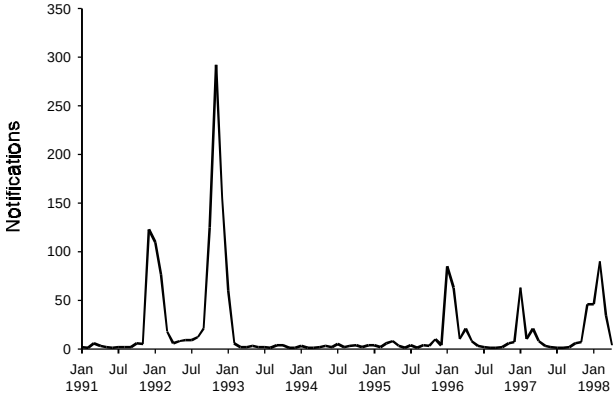


Figure 4. Notifications of Barmah Forest virus infection, 1995 to 1998, by month of onset

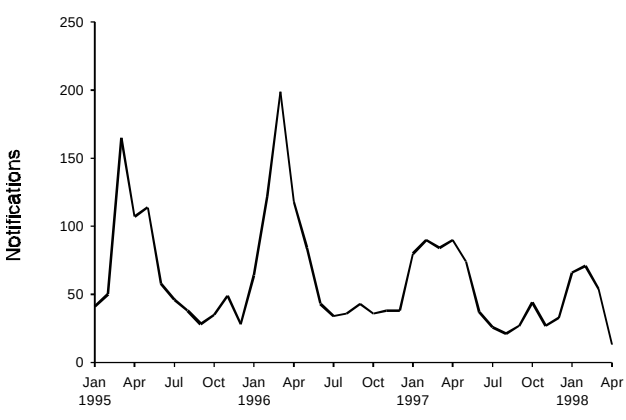
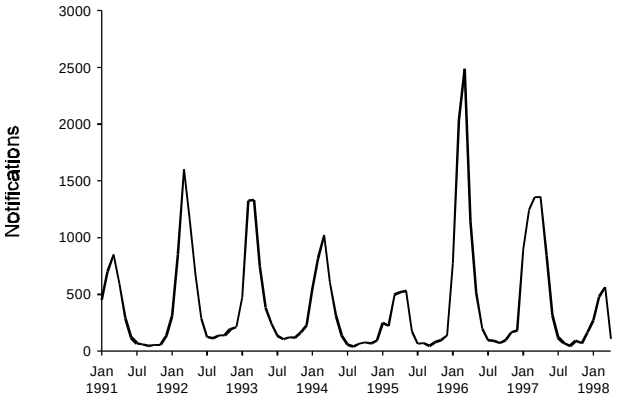


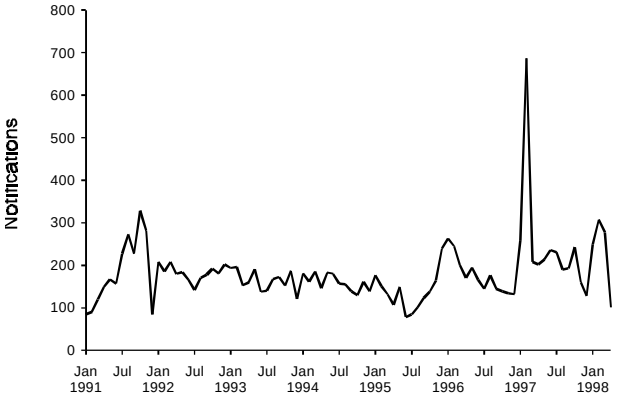
Figure 5. Notifications of Ross River virus infection, 1991 to 1998, by month of onset



Hepatitis A

The numbers of notifications for hepatitis A is remains above average (Figure 6); 71 of the 99 cases reported in the current period were males, including 50 males (50% of total) in the 20 to 44 years age range.

Figure 6. Notifications of hepatitis A, 1991 to 1998, by month of onset



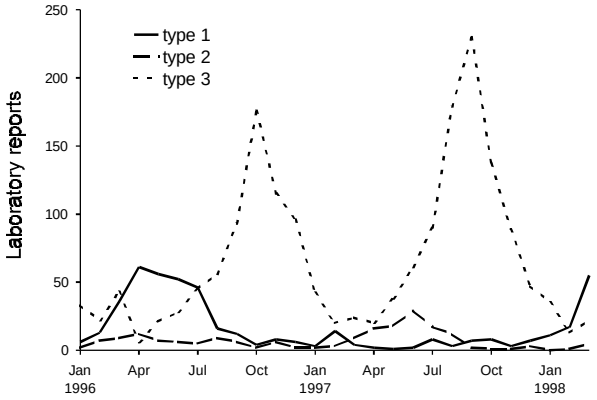
Respiratory diseases

(see also *National Influenza Surveillance*)

The number of laboratory reports of parainfluenza virus type 1 rose in March (Figure 7). Of the 71 reports received this period 27 (38%) were for infants under the age of one year, a total of 64 (90%) being for the under 5 years age group. We can expect more reports in the coming months as epidemics of this virus tend to occur in alternate years, the last outbreak being recorded in the winter of 1996. By contrast the number of reports of parainfluenza virus type 3 has continued to fall in recent months following the outbreak late last year.

The number of reports of respiratory syncytial virus remain low which is usual for the time of year. However a rise can be expected in the winter months. Laboratory reports for

Figure 7. Laboratory reports of parainfluenza virus types 1, 2 and 3, 1996 to 1998, by month of specimen collection



this virus usually peak in July each year. Reports of *Mycoplasma pneumoniae* have remained at a sustained high level since late 1996.

There were 4,014 notifications to the National Notifiable Diseases Surveillance System (NNDSS) for this four week period, 1 April to 28 April 1998 (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 11). 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 1998;22:4-5.

There were 1,551 reports received in the CDI Virology and Serology Laboratory Reporting Scheme (LabVISE) this four week period, 26 March to 22 April 1998 (Tables 4 and 5). LabVISE is a sentinel reporting scheme. Twenty-one laboratories contribute data on the laboratory identification

Table 1. Notifications of rare[1] diseases received by State and Territory health authorities in the period 1 to 28 April 1998

Disease[2]	Total this period	Reporting States or Territories	Total notifications 1998
Brucellosis	2	Qld	15
Cholera			2
Hydatid infection	2	Qld, Tas	11
Leprosy			1

1. Fewer than 60 cases of each of these diseases were notified each year during the period 1988 to 1998.
2. No notifications have been received during 1998 for the following rare diseases: botulism, lymphogranuloma venereum, plague, rabies, yellow fever, or other viral haemorrhagic fevers.

of viruses and other organisms. Data are collated and published in Communicable Diseases Intelligence every four weeks. These data should be interpreted with caution as the number and type of reports received is subject to a number of biases. For further information, see CDI 1998;22:8.

The Australian Sentinel Practice Research Network (ASPREN) data for weeks 13 to 16 ending 26 April 1998 are included in this issue of CDI (Table 6). ASPREN currently comprises about 100 general practitioners from throughout the country. Up to 9,000 consultations are reported each week, with special attention to 12 conditions chosen for sentinel surveillance. CDI reports the consultation rates for all of these. For further information, including case definitions, see CDI 1998;22:5-6.

Correction: In recent issues of *CDI* (*CDI* 1998; 22 :pages 28, 46 and 67) the ASPREN table included a column headed 'Rate per 1,000 population'. This should have read 'Rate per 1,000 encounters'.

National Influenza Surveillance, 1998

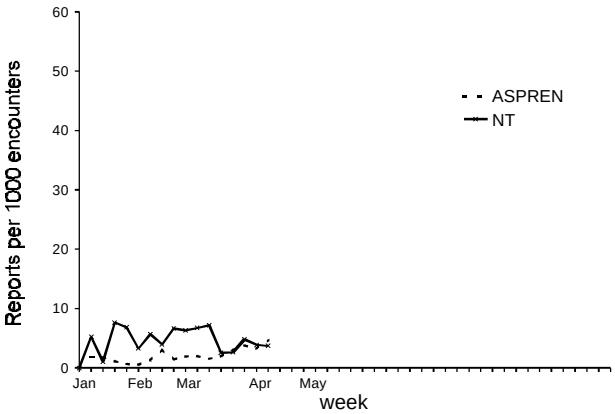
Three types of data are included in National Influenza Surveillance, 1998. These include Sentinel General Practitioner Surveillance, Laboratory Surveillance and Absenteeism Surveillance. These are described below.

Sentinel General Practitioner Surveillance

Data will be included from four sources this season: ASPREN (the Australian Sentinel Practice Research Network); the Department of Health and Community Services, Victoria; the Department of Health, New South Wales; and Tropical Influenza Surveillance of the Department of Health and Community Services, Northern Territory.

Consultation rates for influenza like illness recorded by ASPREN have remained below 5 per 1,000 encounters for the year to date (Figure 8) , which is usual for the time of year. The rates recorded by Tropical Influenza Surveillance also remain low. This is in contrast to previous years when an early peak in activity has been seen in the Northern Territory in February and March. The New South Wales Scheme also recorded a low consultation rate of 6.6 per 1,000 encounters (week ending May 2) as did the Victorian Scheme which recorded a rate of 1.8 per 1,000 encounters in April.

Figure 8. Sentinel general practitioner influenza consultation rates, 1998, by scheme and week



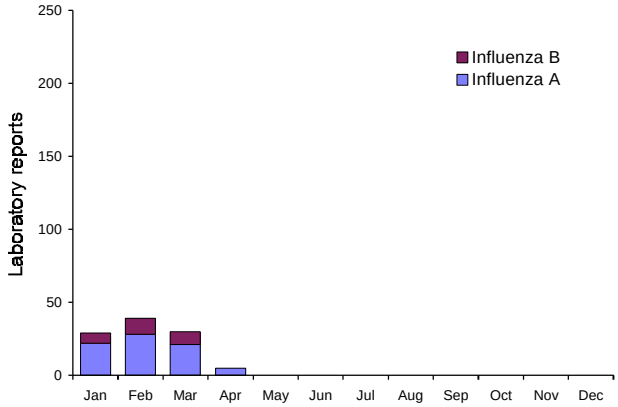
Laboratory Surveillance

Laboratory surveillance data from the Communicable Diseases Intelligence Virology and Serology Laboratory Reporting Scheme will be included in National Influenza Surveillance, 1997. The World Health Organization Collaborating Centre for Influenza Reference and Research will also contribute information on strains isolated.

A total of 103 laboratory reports of influenza have been received by the LabVISE scheme so far for 1998. Of these 76 (74%) were influenza A and 27 (26%) influenza B. Thirty one reports (30%) were for patients over the age 65 years.

For the year to date the WHO Collaborating Centre for Influenza Reference and Research has received only a small number of Australian influenza isolates. These have been mainly influenza A viruses which have all been characterised as A/Sydney/5/97-like. Two recent isolates of influenza B received from South Australia are yet to be analysed. A/Sydney-like viruses have also been received from New Zealand, Thailand and Singapore.

Figure 9. Laboratory reports of influenza, 1998, by type and month of specimen collection



Absenteeism Surveillance

National absenteeism data will continue to be supplied by Australia Post and included in National Influenza Surveillance, 1997.

No absenteesim data is available this period.

HIV and AIDS Surveillance

National surveillance for HIV disease is coordinated by the National Centre in HIV Epidemiology and Clinical Research (NCHECR), in collaboration with State and Territory health authorities and the Commonwealth of Australia. Cases of HIV infection are notified to the National HIV Database on the first occasion of diagnosis in Australia, by either the diagnosing laboratory (ACT, New South Wales, Tasmania, Victoria) or by a combination of

laboratory and doctor sources (Northern Territory, Queensland, South Australia, Western Australia). Cases of AIDS are notified through the State and Territory health authorities to the National AIDS Registry. Diagnoses of both HIV infection and AIDS are notified with the person's date of birth and name code, to minimise duplicate notifications while maintaining confidentiality.

Tabulations of diagnoses of HIV infection and AIDS are based on data available three months after the end of the reporting interval indicated, to allow for reporting delay and to incorporate newly available information. More detailed information on diagnoses of HIV infection and AIDS is published in the quarterly Australian HIV Surveillance Report, available from the National Centre in HIV Epidemiology and Clinical Research, 376 Victoria Street, Darlinghurst NSW 2010. Telephone: (02) 9332 4648 Facsimile: (02) 9332 1837.

HIV and AIDS diagnoses and deaths following AIDS reported for November 1997, as reported to 28 February 1998, are included in this issue of CDI (Tables 7 and 8).

Gonococcal surveillance

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

The Australian Gonococcal Surveillance Programme (AGSP) reference laboratories in the States and Territories report data on sensitivity to an agreed 'core' group of antimicrobial agents quarterly. The antibiotics which are currently routinely included 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 programme-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 1997

The Australian Gonococcal Surveillance Programme (AGSP) laboratories examined 702 isolates of *Neisseria gonorrhoeae* for sensitivity to the penicillins, ceftriaxone, quinolones and spectinomycin and for high level resistance to the tetracyclines in the third quarter of 1997.

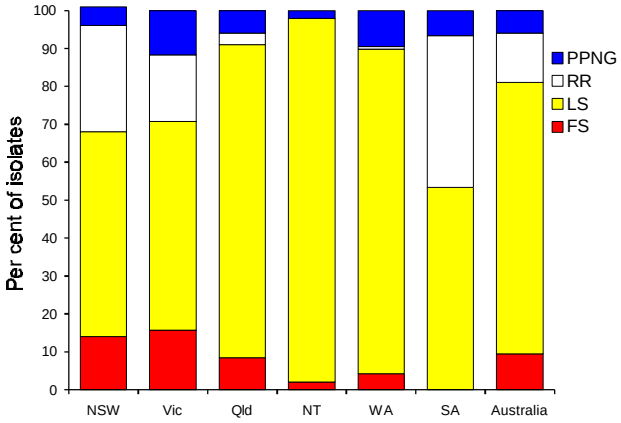
Penicillins

Resistance to this group of antibiotics (penicillin, ampicillin, amoxycillin) was present in a high proportion of isolates examined in Adelaide (46%) Sydney (33%) and Melbourne (29%) (Figure 10). In Brisbane and Perth the proportion of penicillin-resistant strains was 9% and 10% respectively. 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 penicillins.

There were 42 PPNG identified this reporting period (6% of all isolates). These were distributed widely with 6 PPNG reported from Melbourne, 12 from Sydney, 11 from Perth, 10 from Brisbane, 2 from the Northern Territory and a single PPNG from Adelaide. Some infections with PPNG were acquired locally but most were acquired in the Philippines, Papua New Guinea, Thailand, Malaysia, Borneo, Mauritius, Indonesia, Singapore and China.

Ninety one (13%) of all isolates were resistant to the penicillins by separate chromosomal mechanisms. These chromosomally mediated resistant *N. gonorrhoeae* (CMRNG) were most often reported in Sydney (69 strains, 28%), Melbourne (9 strains, 17.6%) and Adelaide (6 strains, 40%). No relatively resistant isolates were seen in the Northern Territory.

Figure 10. Penicillin resistance of *N. gonorrhoeae*, Australia, 1 July to 30 September 1997, by region



PPNG Penicillinase producing *Neisseria gonorrhoeae*

RR Relatively resistant to penicillin, MIC ≥ 1 mg/L

LS Less sensitive to penicillin, MIC 0.06 - 0.5 mg/L

FS Fully sensitive to penicillin, MIC ≤ 0.03 mg/L

Ceftriaxone and spectinomycin.

Although all isolates were sensitive to these injectable agents, a small number showed some decreased sensitivity to ceftriaxone.

Quinolone antibiotics

This group of antibiotics includes ciprofloxacin, norfloxacin and enoxacin. Fifty seven isolates (8%) from throughout Australia had altered resistance to this group of antibiotics, 51 showing high level resistance. Forty six quinolone resistant *N. gonorrhoeae* (QRNG) (18%) were detected in Sydney and 5 (4%) in Perth, with one or two QRNG in the other centres.

An increase in rates of isolation of QRNG was noted in AGSP reports in 1997. The occurrence of QRNG in locally acquired infections especially in Sydney and Melbourne is of particular note. This high rate of locally acquired resistance continued in Sydney in the third quarter of 1997. Local acquisition of QRNG was also noted in Perth

and Brisbane. Patients infected with QRNG overseas acquired infection in Japan, Taiwan, the United States of America, China, Thailand, Malaysia, Singapore and the Philippines.

In the corresponding period of 1996, QRNG comprised 4% of all Australian isolates and the infections were acquired overseas. The quinolone agents are the oral agents most often used in centres where penicillins are ineffective. If resistance to the quinolones continues to increase, options for successful treatment will be substantially reduced.

High level tetracycline resistance

Thirty two tetracycline resistant *N. gonorrhoeae* (TRNG) were detected throughout Australia (5% of all strains) 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% of all isolates. TRNG were also prominent in Brisbane (11 isolates, 7%) but lower numbers were present in Sydney (6 isolates), Melbourne (1), Adelaide (2) and the Northern Territory (2). Indonesia was the most common place of acquisition, but TRNG were also acquired in Papua New Guinea, Mauritius, Thailand, Malaysia and Borneo. Local acquisition was also recorded.

Sentinel Chicken Surveillance Programme

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5. Berrimah Agricultural Research Centre, Northern Territory
6. PathCentre, Western Australia
7. Department of Health and Community Services, Northern Territory

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 26 flocks are maintained in the north of Western Australia, seven in the Northern Territory, nine in New South Wales and ten in Victoria. The flocks in Western Australia and the Northern Territory are tested year round but those in New South Wales and Victoria are tested only from November to March, during the main risk season.

Results are coordinated by the Arbovirus Laboratory in Perth and reported bimonthly. For more information see CDI 1998;22:7

Sentinel chicken serology was carried out for 26 of the 28 flocks in Western Australia in March 1998. There were three seroconversions in the Wyndham flock in early March and all three chickens had antibodies to MVE virus. There were no seroconversions in the Kununurra flock. However, a human case from Kununurra was confirmed in late February, caused by Kunjin virus. A confirmed case of encephalitis caused by MVE virus was reported in a young boy from the Wyndham area in March. The child is presently recovering in hospital.

Six flocks of sentinel chickens from the Northern Territory were also tested in our laboratory in March 1998. There was one new seroconversion to MVE virus in the Katherine flock, which was confirmed at a later bleed.

There have been no seroconversions to flaviviruses in March 1998 from the sentinel chicken flocks located in New South Wales, and the testing programme has now finished for this season. There were two seroconversions to Kunjin virus in chickens from the Mildura flock in Victoria in late March. These are the first flavivirus seroconversions in Victoria since 1991. The sentinel chicken surveillance programme will be continued in Victoria at least until the end of April 1998.

Serious Adverse Events Following Vaccination Surveillance Scheme

The Serious Adverse Events Following Vaccination Surveillance Scheme is a national surveillance scheme which monitors the serious adverse events that occur rarely following vaccination. More details of the scheme were published in CDI 1997:21;8.

Acceptance of a report does not imply a causal relationship between administration of the vaccine and the medical outcome, or that the report has been verified as to the accuracy of its contents.

It is estimated that 250,000 doses of vaccines are administered every month to Australian children under the age of six years.

Results for the reporting period 16 December, 1997 to 27 April, 1998.

There were 115 reports of serious adverse events following vaccination for this reporting period. Onset dates were from 1996 to 1998 the majority (68%) being in 1997. Reports were received from the Australian Capital Territory (8), the Northern Territory (9), Queensland (50), South Australia (20) and Victoria (28). No reports were available from New South Wales for this period.

The most frequently reported events following vaccination were of persistent screaming (42 cases, 37%), other events (25 cases, 22%) and hypotonic/hyporesponsive episodes (18 cases, 16%). The type of adverse event was not specified in two cases. There was also incomplete information on follow-up of two cases. All of the other cases had recovered at the time of reporting. Twenty of the 115 cases were hospitalized.

Ninety-three adverse events (81%) were associated with DTP either alone or in combination with other vaccines. Of these, 47 reports were associated with the first dose of DTP and 26 with the second dose.

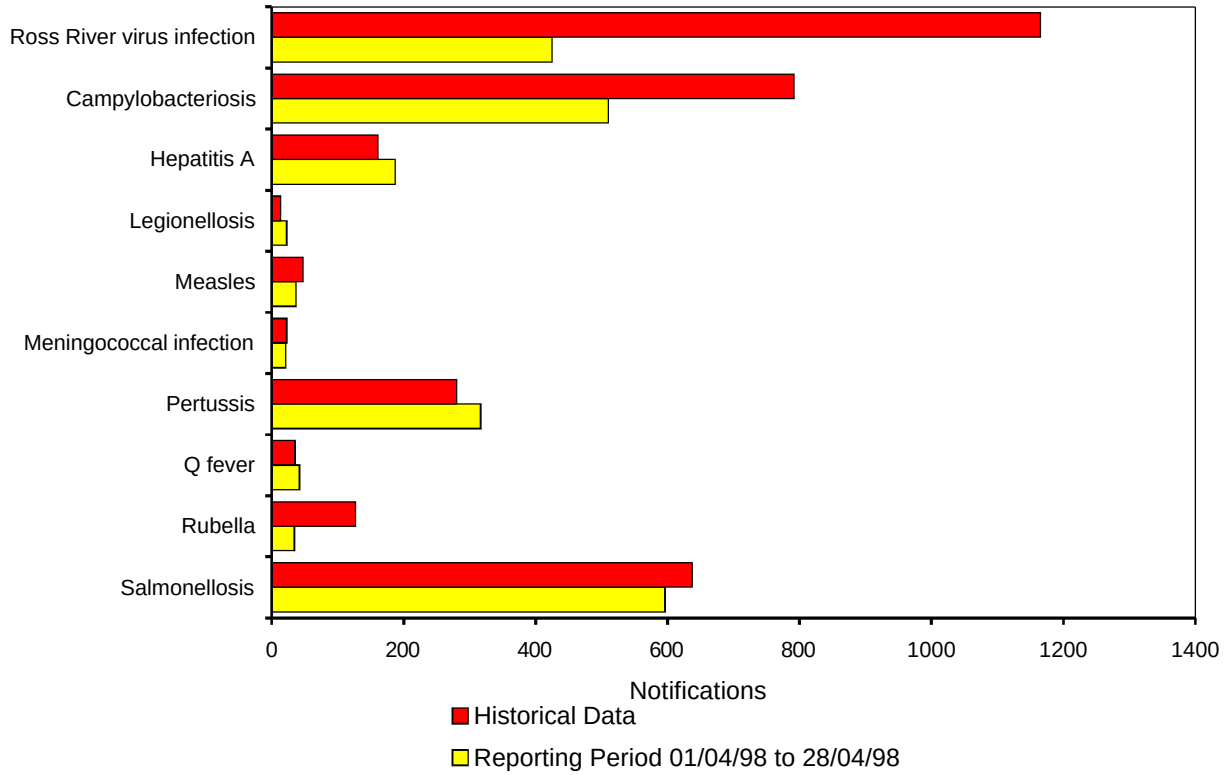
A cluster of side effects associated with BCG vaccine was observed in South Australia. During this reporting period, of the 22 cases for which the adverse event was categorised as “other”, 8 had lymphadenitis associated with BCG immunisation. Since March 1995, there have been 15 cases that have had adverse events related to BCG vaccine. Of the 15 cases, 14 were reported from South Australia and one from Northern Territory. Of the 14 cases from South Australia, 12 had lymphadenitis and two

had an unspecified event. The case from Northern Territory was reported to have had drowsiness.

This clustering of cases in South Australia raises the possibility of increased incidence of lymphadenitis associated with the change in the formulation of BCG vaccine introduced in 1996. While the clustering of cases in South Australia could be associated with a particular batch of BCG vaccine, the absence of data from other States and Territories and incomplete information on batch numbers from South Australia does not allow any conclusions to be drawn. South Australia has had active surveillance for this side effect associated with BCG vaccination since they first became aware of this. This may explain the high number of cases identified in South Australia . We encourage doctors and State health authorities to report any serious adverse events associated with BCG vaccine.

This cluster of adverse events is under investigation by Therapeutic Goods Administration (TGA) and the sponsor and a full report will be published in *CDI*.

Figure 11. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]



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

Table 2. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 1 to 28 April 1998

Disease[1,2]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1998	This period 1997	Year to date 1998	Year to date 1997
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0
H. Influenzae type b infection	0	0	0	0	0	0	0	0	0	0	6	15
Measles	0	11	0	3	0	2	17	4	37	26	162	145
Mumps	0	1	0	6	0	0	4	2	13	17	59	63
Pertussis	6	136	3	72	54	3	29	14	317	428	2,492	2,689
Rubella[3]	4	0	0	19	2	1	5	3	34	87	189	540
Tetanus	0	0	0	0	0	0	0	0	0	1	0	3

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.
3. Includes congenital rubella

Table 3. Notifications of other diseases received by State and Territory health authorities in the period 1 to 28 April 1998

Disease[1,2]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1998	This period 1997	Year to date 1998	Year to date 1997
Arbovirus infection (NEC)[3]	0	0	4	8	0	0	1	0	13	22	38	78
Barmah Forest virus infection	0	5	-	45	0	0	2	1	53	89	228	326
Campylobacteriosis[4]	44	-	9	258	77	12	17	93	510	834	2,721	3,817
Chlamydial infection (NEC)[5]	24	NN	78	313	0	16	107	105	643	674	2,880	2,680
Dengue	0	3	1	35	0	0	0	5	44	76	226	177
Donovanosis	0	NN	1	0	NN	0	0	0	1	2	14	10
Gonococcal infection[6]	0	34	107	135	0	0	81	63	420	397	1,652	1,246
Hepatitis A	9	56	2	91	7	2	10	10	187	175	986	1,334
Hepatitis B incident	0	2	0	11	0	1	0	0	14	19	54	77
Hepatitis C incident[7]	0	0	0	-	0	1	-	-	1	2	15	4
Hepatitis C unspecified	13	NN	19	302	NN	13	3	50	400	677	1,729	2,780
Hepatitis (NEC)	0	0	0	0	0	0	1	NN	1	3	7	10
Legionellosis	0	2	0	7	3	0	9	2	23	18	78	56
Leptospirosis	0	1	0	4	0	0	0	0	5	12	45	42
Listeriosis	0	1	0	0	0	1	1	0	3	14	21	38
Malaria	5	7	0	0	0	0	14	2	28	70	186	234
Meningococcal infection	0	9	1	3	0	1	3	4	21	41	70	104
Ornithosis	0	NN	0	0	0	0	3	0	3	0	8	22
Q Fever	0	16	0	25	1	0	0	0	42	34	156	172
Ross River virus infection	0	23	10	373	3	0	2	14	425	1,364	1,544	4,213
Salmonellosis (NEC)	8	83	39	249	75	5	88	49	596	1,176	2,967	3,347
Shigellosis[4]	2	-	10	11	4	0	5	6	38	79	231	335
Syphilis[8]	2	21	15	29	0	1	0	2	70	85	370	423
Tuberculosis	2	16	0	4	2	1	18	4	47	78	268	342
Typhoid[9]	0	2	0	0	1	0	2	0	5	9	34	36
Yersiniosis (NEC)[4]	0	-	1	12	2	0	1	0	16	15	100	114

1. For HIV and AIDS, see Tables 6 and 7. For rarely notified diseases, see Table 1.
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. Not reported for NSW because it is only notifiable as 'foodborne disease' or 'gastroenteritis in an institution'.
5. WA: genital only.
6. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
7. Qld, Vic and WA incident cases of Hepatitis C are not separately reported.
8. Includes congenital syphilis
9. NSW, Qld, Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified

\- Elsewhere Classified.

Table 4. Virology and serology laboratory reports by State or Territory[1] for the reporting period 26 March to 22 April 1998, and total reports for the year

	NSW	NT	Qld	SA	Tas	Vic	WA	Total this period	Total reported in *CDI* in 1998
Measles, mumps, rubella									
Measles virus			1			2		3	33
Mumps virus							1	1	10
Rubella virus	2	2	11			1	3	19	54
Hepatitis viruses									
Hepatitis A virus	4	1	34	5	1	1	12	58	173
Arboviruses									
Ross River virus	3	3	90	2			24	122	470
Barmah Forest virus		1					4	5	15
Dengue not typed							7	7	13
Murray Valley encephalitis virus							1	1	1
Kunjin virus							1	1	2
Flavivirus (unspecified)			4			7		11	34
Adenoviruses									
Adenovirus type 2				1				1	8
Adenovirus type 3				4				4	12
Adenovirus type 5				1				1	2
Adenovirus type 6				1				1	1
Adenovirus type 7				3				3	7
Adenovirus type 40							2	2	3
Adenovirus not typed/pending	12		1	42		1	16	72	235
Herpes viruses									
Cytomegalovirus	9	2	26	10		4	9	60	326
Varicella-zoster virus	10		21	18		12	45	106	466
Epstein-Barr virus	16	1	22	57		5	47	148	642
Other DNA viruses									
Molluscum contagiosum							1	1	1
Parvovirus			1	3		7	6	17	59
Picorna virus family									
Coxsackievirus A9	2							2	3
Coxsackievirus B1	1							1	1
Coxsackievirus B4				1				1	3
Coxsackievirus B5	1							1	1
Echovirus type 1				1				1	1
Echovirus type 4	1							1	1
Echovirus type 11	2							2	10
Echovirus type 22	1							1	2
Poliovirus type 1 (uncharacterised)			1					1	3
Rhinovirus (all types)	3			6		1	11	21	157
Enterovirus not typed/pending	7	1	9				43	60	155
Ortho/paramyxoviruses									
Influenza A virus	1		2	10		2	10	25	146
Influenza B virus				8			1	9	54
Parainfluenza virus type 1	16			2		3	50	71	124
Parainfluenza virus type 2	1						7	8	14
Parainfluenza virus type 3				1		1	18	20	174
Respiratory syncytial virus	17	2	9	3			16	47	264

Table 4. Virology and serology laboratory reports by State or Territory[1] for the reporting period 26 March to 22 April 1998, and total reports for the year

	NSW	NT	Qld	SA	Tas	Vic	WA	Total this period	Total reported in *CDI* in 1998
Other RNA viruses									
HTLV-1							1	1	9
Rotavirus	7			3	2		23	35	125
Norwalk agent						4		4	21
Other									
Chlamydia trachomatis not typed	10	53	70	64	4		169	370	1,400
Chlamydia psittaci						1	1	2	18
Chlamydia species	8							8	17
Mycoplasma pneumoniae	18	2	45	26	1	15	5	112	582
Coxiella burnetii (Q fever)	4		4			1	5	14	39
Bordetella pertussis	3		25			35	17	80	589
Legionella pneumophila				2				2	3
Legionella longbeachae				1			2	3	16
TOTAL	159	68	376	275	8	104	561	1,551	6,504

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.

Table 5. Virology and serology laboratory reports by contributing laboratory for the reporting period 26 March to 22 April 1998

State or Territory	Laboratory	Reports
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	54
	New Children's Hospital, Westmead	8
	South West Area Pathology Service, Liverpool	79
Queensland	Queensland Medical Laboratory, West End	402
South Australia	Institute of Medical and Veterinary Science, Adelaide	275
Tasmania	Northern Tasmanian Pathology Service, Launceston	8
Victoria	Royal Children's Hospital, Melbourne	46
	Victorian Infectious Diseases Reference Laboratory, Fairfield	56
Western Australia	PathCentre Virology, Perth	397
	Princess Margaret Hospital, Perth	109
	Western Diagnostic Pathology	117
TOTAL		1,551

Table 6. Australian Sentinel Practice Research Network reports, weeks 13 to 16, 1998

Week number	13		14		15		16	
Week ending on	5 April 1998		12 April 1998		19 April 1998		26 April 1998	
Doctors reporting	50		47		48		52	
Total consultations	7,098		5,792		5,532		6,756	
Condition	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters
Influenza	21	3.0	22	3.8	18	3.3	32	4.7
Rubella	0	0.0	1	0.2	0	0.0	0	0.0
Measles	0	0.0	0	0.0	0	0.0	1	0.1
Chickenpox	8	1.1	8	1.4	7	1.3	16	2.4
Pertussis	5	0.7	1	0.2	2	0.4	2	0.3
HIV testing (patient initiated)	14	2.0	8	1.4	6	1.1	9	1.3
HIV testing (doctor initiated)	5	0.7	2	0.3	5	0.9	5	0.7
Td (ADT) vaccine	43	6.1	32	5.5	56	10.1	46	6.8
Pertussis vaccination	29	4.1	35	6.0	30	5.4	38	5.6
Reaction to pertussis vaccine	0	0.0	0	0.0	3	0.5	5	0.7
Ross River virus infection	0	0.0	2	0.3	0	0.0	0	0.0
Gastroenteritis	78	11.0	60	10.4	77	13.9	76	11.2

Table 7. New diagnoses of HIV infection, new diagnoses of AIDS and deaths following AIDS occurring in the period 1 to 30 November 1997, by sex and State or Territory of diagnosis

									Totals for Australia			
		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1997	This period 1996	Year to date 1997	Year to date 1996
HIV diagnoses	Female	0	4	1	2	0	0	0	1	8	4	72	63
	Male	0	27	1	4	4	0	12	2	50	59	641	730
	Sex not reported	0	0	0	0	0	0	0	0	0	0	14	5
	Total[1]	0	31	2	6	4	0	12	3	58	63	728	799
AIDS diagnoses	Female	0	0	0	0	0	0	0	0	0	3	22	29
	Male	0	9	0	4	0	0	6	1	20	30	268	572
	Total[1]	0	9	0	4	0	0	6	1	20	33	290	601
AIDS deaths	Female	0	0	0	1	0	0	0	1	2	1	13	16
	Male	0	2	0	0	0	0	5	1	8	40	197	453
	Total[1]	0	2	0	1	0	0	5	2	10	41	211	469

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

Table 8. Cumulative diagnoses of HIV infection, AIDS and deaths following AIDS since the introduction of HIV antibody testing to 30 November 1997, by sex and State or Territory

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia
HIV diagnoses	Female	21	493	8	113	46	4	186	79	950
	Male	180	10,472	92	1,776	623	78	3,593	828	17,642
	Sex not reported	0	2,057	0	1	0	0	28	1	2,087
	Total[1]	201	13,035	100	1,895	669	82	3,816	911	20,709
AIDS diagnoses	Female	7	157	0	42	19	2	61	23	311
	Male	80	4,311	30	749	318	41	1,512	334	7,375
	Total[1]	87	4,479	30	793	337	43	1,580	359	7,708
AIDS deaths	Female	2	112	0	28	14	2	43	15	216
	Male	52	3,027	23	522	214	26	1,196	241	5,301
	Total[1]	54	3,146	23	552	228	28	1,245	257	5,533

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

Table 9. Adverse events following vaccination for the period16 December 1997 to 27 April 1998

	Vaccines											
Event	DTP	DTP/Hib	DTP/OPV/Hib	Hib	DTP/OPV	DTP/Hib/Other	MMR	OPV/Other	Hep B	Other[1]	Reporting States or Territories	Total reports for this period
Persistent screaming	27		11		1	2				1	ACT, NT, Qld, SA, Vic	42
Hypotonic/hyporesponsive episode	5		7		2	2		1	1		Qld, SA, Vic	18
Temperature of 40.5°C or more	8		6			1					ACT, NT, Qld, Vic	15
Convulsions	2	1	2	1			1		2	1	NT, Qld, SA, Vic	10
Anaphylaxis	1		1								Qld, Vic	2
Shock										1	Vic	1
Death												0
Other	5	1	5	1	2		3			8	NT, Qld, SA,Vic	25
TOTAL	48	2	32	2	5	5	4	1	3	11		113[2]

1. Includes influenza vaccination, DTPa, CDT, hepatitis B vaccine, pneumococcal vaccination, BCG, ADT and rabies immunoglobulin (HRIG)
2. 2 cases had unspecified events

Overseas briefs

Source: World Health Organization (WHO)

Dengue and Dengue Haemorrhagic Fever in Malaysia

Malaysia recorded 19,544 dengue cases in 1997, 37% higher than the number reported in 1996 and the highest recorded since the disease was made notifiable in 1973. Included were 806 cases of dengue haemorrhagic fever with 50 deaths. Cases were reported throughout the year but peaked in July. Although all states were affected, most cases were reported in urban areas with high population density. Of the 5,433 specimens submitted to the WHO Collaborating Centre for Arbovirus Reference and Research in Kuala Lumpur for laboratory confirmation 57% were positive serologically. The male:female ratio was 1.3:1 and the 21 to 25 years age group was the most affected. Of the 100 virus strains isolated, 64 were dengue 1, 33 were dengue 2 and 3 were dengue 3. The WHO Centre is intensifying its surveillance in 1998.

Diarrhoea in Cameroon

Shigella dysenteriae type 1 (Sd1) has been confirmed as the organism responsible for the outbreak of bloody diarrhoea which started in Cameroon in November 1997. Since then 237 cases with 60 deaths have been reported. A team from the Ministry of Health has assessed the situation in collaboration with WHO. Stool samples were collected and analyzed at the Pasteur Institutes in Cameroon and Paris, France. Blood samples were negative in tests for haemorrhagic fevers, including Ebola haemorrhagic fever. Antibiotic susceptibility testing showed the Sd1 strains were sensitive to quinolones and cephalosporins but resistant to antibiotics commonly recommended for treatment of shigella. *Shigella dysenteriae* type 1, also known as Shiga bacillus, is the most virulent of the four serogroups of Shigella and the only cause of epidemic dysentery. In Africa epidemic dysentery due to Sd1 appeared in eastern Democratic Republic of the Congo (former Zaire) in 1979 and has regularly affected more than 15 countries on the continent.

Meningitis in Chad

During 1996 and 1997 many countries in the African meningitis belt experienced severe epidemics of meningococcal meningitis with 188,341 cases reported from Africa in 1996 and 69,518 case in 1997. So far 7,595 cases have been reported from the WHO African Region in 1998. However not all countries are experiencing this generally reduced level of activity. In recent weeks there has been a large outbreak in Chad. From 29 December 1997 to 22 March 1998 there were 2,835 cases and 239 deaths reported from Chad. This is more than twice the annual total number of cases reported in Chad in 1996 (1,079 cases) and 1997 (1,123 cases). Vaccination campaigns have been carried out in districts where the weekly attack rate has exceeded 5 cases per 100,000 population. The threat of epidemics of meningitis during the hot dry season from late December to early May means that the countries of the “African meningitis belt” must continue to strengthen surveillance, reporting systems and rapid laboratory confirmation. Early detection is crucial to the ability to mount a response to control epidemics.

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