Measles control in Australia

Report of the Measles Control in Australia Workshop, 5 November 1997.

Convened by the National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases, Royal Alexandra Hospital for Children, PO Box 3515, Parramatta NSW 2124

Jill M. Forrest, Margaret A. Burgess, Timothy C. Heath and Peter B. McIntyre

Abstract

The proceedings of the Measles Control in Australia Workshop held on 5 November 1998 are presented in this report. Prompted by the possibility of a global elimination campaign in the near future the Workshop considered the factors involved in elimination of measles from Australia. Epidemiology, surveillance, laboratory diagnosis methods, mathematical modelling, and the cost and logistics were all addressed. Mass vaccination for all 2-18 year olds, and a routine 2-dose regimen with scheduled doses at 12 months and school entry were recommended. Intensified surveillance, based on a sensitive case definition and laboratory confirmation (measles specific IgM) of suspected cases was identified as a crucial component of the campaign. The continuation of high vaccination coverage for each of the two doses would be essential to maintain elimination once established. *Comm Dis Intell* 1998;22:33-36

Introduction

Recent successes in interrupting the transmission of measles virus in the Americas and the United Kingdom have prompted serious consideration of the feasibility of global measles eradication. It is likely that the World Health Organization will make this a priority once polio eradication has been achieved. Early in 1997, the Minister for Health and Family Services announced, as part of the 'Immunise Australia' program, plans for the Enhanced Measles Control Campaign. The aim is to eliminate measles from Australia. On 5 November 1997, representatives from all States and Territories and from the Commonwealth gathered at the Royal Alexandra Hospital for Children in Sydney, to discuss logistics, funding and surveillance issues, in the light of experience in other parts of the world. The workshop was sponsored by the National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases (NCIRS) and the National Centre for Disease Control (NCDC). Two speakers who have conducted measles campaigns, Dr Ciro de Quadros, Director of the Pan American Health Organization (PAHO)'s Special Programs for Vaccines and Immunizations, and Dr Osman Mansoor, from the New

ISSN 0725-3141
Volume 22
Number 3
19 March 1998

Contents

Zealand Ministry of Health, gave valuable insights.

Measles elimination strategies

Until recently, measles ranked eighth in the global population as a cause of death and disability adjusted life years (DALYs). Although indigenous measles has been virtually eliminated from the Americas, measles is still responsible for the deaths of at least 10% of children under the age of 5 years in the world today, and for 10% of childhood blindness in Africa. An effective vaccine has been available since 1963. Elimination of measles could make it the third infectious disease to be conquered world wide, after smallpox and polio.

Dr de Quadros presented a global overview. The three-part strategy needed to banish measles was described:

1. 'Catch-up', a once-only mass vaccination of all children aged 1-14 years with an additional dose of measles vaccine regardless of previous vaccination or illness;

2. 'Keep-up', the routine vaccination of all children in the second year of life to maintain interruption of transmission; and

3. 'Follow-up' campaigns conducted every four years, targeting all children 1-4 years of age regardless of previous vaccination status. This is considered necessary because, until all the world is free of the virus, there is always the possibility of cases being imported from other countries (1 million people travel each day).

As vaccine efficacy is not 100%, even very high coverage rates do not prevent accumulation of susceptibles due to vaccine failure or missed vaccination. Once the pool of susceptibles reaches one birth cohort in size, outbreaks may recur if follow-up campaigns are not carried out. This explains in part the resurgence of measles in Brazil in 1997. A catch-up campaign was conducted in 1992, but the follow-up campaign due in 1996 was not implemented in the State of Sao Paulo. Measles virus was imported, probably from Europe, into Sao Paulo. Cases spread to other states in Brazil, to the United States of America and to five other Latin American countries. The only effective eradication in the long term must be global.

In New Zealand, where a 2-dose schedule (15 months and 11 years) has been in place since 1992, modelling predicted an epidemic in 1997. A mass campaign, aiming to give an additional dose of vaccine to all children aged 2-10 years old, was planned for July 1997. Measles started to appear in April 1997, prompting an earlier start to the campaign. Preschool children were vaccinated by general practitioners (GPs) after media promotion of the need for the additional dose; older children were vaccinated in schools. The campaign limited the size of the epidemic and prevented 95% of predicted cases. Dr Mansoor noted that, during this campaign, immunisation coverage of all vaccine preventable diseases increased.

In the United Kingdom, data from intensive surveillance were used to predict a 1995 epidemic of 150,000 cases with 50 deaths. Dr Tim Heath described the pre-emptive school-based campaign carried out in 1994, in which 92% of children aged 5-16 years of age were given one additional dose of measles-rubella vaccine. The epidemic was averted, but transmission of the virus was not entirely interrupted. This is thought to be because the under 5 year olds were not included in the campaign. In the subsequent 18 months there were 148 confirmed cases of measles (12 imported), with many more in 1997, and rubella remains endemic. A feature of this campaign was the intensive education of doctors and parents which preceded it.

Measles in Australia

Epidemiology

Dr Robert Hall gave a historical overview of measles in Australia since vaccination commenced in 1970. Despite a 2-dose regime (given at 12 months and 10-16 years) since 1992, and coverage of greater than 90% at 2 years of age, major epidemics occurred in a number of States in 1993-1994. Serosurveys in South Australia in 1997 suggested that another is likely in 1998; these surveys are helping to identify the upper age limit of susceptibility.

Surveillance

The important issue of surveillance was outlined by Dr Bronwen Harvey. Currently there is passive surveillance of measles and its consequences, through laboratories, doctors and hospital statistics, and of national vaccination coverage (Australian Bureau of Statistics and Australian Childhood Immunisation Register). However, there are significant differences between States, with under-reporting, inconsistency and lack of laboratory confirmation. If we are to mount an effective control program we must have good surveillance systems in place before we start, so we can evaluate vaccination coverage and disease control. We must be able to identify populations at high risk, to detect and interrupt circulation of the virus, and to identify the origin of imported strains. A uniform and sensitive case definition, with early reporting and rapid laboratory confirmation (measles-specific IgM), is essential. A suitable case definition for reporting to public health authorities could be 'any case considered by a medical practitioner to be measles'. We must also be able to monitor safety and know the vaccination status of reported cases.

Laboratory diagnosis

Laboratory issues were elaborated by Professor Lyn Gilbert, with a description of serosurveys and quality control procedures, both existing and imminent. The various laboratory methods of diagnosing measles were discussed: the culture, polymerase chain reaction (PCR), and the detection of measles-specific IgM in serum and saliva. Standardisation and validation of test methods and the molecular epidemiology of sporadic isolates were also discussed. The Australian Public Health Laboratory Network will be important in ensuring both high quality local diagnostic services and appropriate referral mechanisms.

Mathematical modelling

Professor Niels Becker shared his expertise in dynamic modelling (spread of disease over time) as he described the different options for programs to control measles in Australia. The greatest long-term impact on control is achieved by immunising the largest possible fraction of children as early as possible, on a continuing basis. Achieving uniform immunity (so there are no clusters of non-immune people) with a coverage of at least 90% is likely to lead to eventual elimination. To

Recommendations for measles elimination in Australia

1. Mass vaccination of 2-18 year olds

- preschoolers: general practitioners
- school pupils: vaccination teams

2. Intensified surveillance

- a sensitive case definition
- laboratory confirmation (measles specific IgM)

3. Two-dose routine vaccination schedule

- 12 months of age
- school entry (4-5 years)
- greater than 90% coverage for each dose

4. Monitoring to determine necessity for follow-up campaigns

prevent epidemics sooner, we need to boost immunity in older age groups.

Costs and logistics of measles elimination in Australia

Health economist Professor Jane Hall detailed the way in which, in collaboration with Ms Sue Caleo (Centre for Health Economics, University of Sydney), the components, activities and resources involved in a national school-based catch-up program were defined and costed. They concluded that a national program was feasible, though challenging. The immunising teams, their travel and accommodation, consumables, the vaccine itself with the cold chain maintained, national promotion and coordination, and follow up and evaluation, were all included in the cost analysis. It was estimated that to immunise approximately 3 million primary and secondary school children in all States the cost would be $24 million (this figure included follow-up, adverse event monitoring and advertising, but not the cost of the vaccine itself, which was separately costed[1]).

The logistics and evaluation of a mass campaign in Australia were presented by Ms Sue Campbell-Lloyd, Commonwealth coordinator for the campaign. It is considered viable to vaccinate all 2-18 year olds (including 3 million primary and secondary school children) with measles-mumps-rubella (MMR) vaccine, aiming at 100% coverage. Prompt State and Commonwealth data collection would ensure that results of the campaign were immediately available, so that detailed evaluation could be undertaken.

Representatives from each State and the Royal Australian College of General Practitioners (RACGP) described their approaches for the campaign, noting the special problems of distance, school absenteeism and the fact that Queensland is already seeing a significant cluster of cases, which may herald an epidemic. Overall, all States and Territories were supportive of an appropriate and well planned campaign. Early planning with Departments of Education and other stakeholders will be crucial. Problems of obtaining consent will need to be explored (an opt-out approach was preferred, but was considered unlikely to be acceptable in Australia), as will effective mop-up procedures in high-risk groups with ongoing transmission, such as Pacific Islanders and Aboriginal and Torres Strait Islanders.

Conclusions

A wide-ranging discussion, chaired by Dr Cathy Mead, stressed the importance of a sensitive case definition, the level of coverage needed for a successful campaign (greater than 90%, except perhaps in isolated remote areas), and the lessons to be learnt from the United Kingdom's decision not to target children under 5 years old. The speakers and participants agreed that, in Australia, everyone aged 2-18 years should be included in the campaign and that the second scheduled dose should be at school entry (age 4-5 years) rather than at 10-16 years of age.

Summing up, Dr de Quadros stated that we must aim at elimination, not control. National political and technical commitment is needed, because every child must be reached. Children aged 2-4 years are a weak link in the proposed Australian campaign because of the difficulty in targeting this age group. Surveillance is the key to eradication. Laboratories must be ready to test suspected cases, and GPs should be encouraged to advocate laboratory confirmation to parents and patients. Once we have eliminated measles from Australia, we must keep it out with continued high vaccination coverage, using a 2-dose regime (12 months and 4-5 years), until global elimination is a reality. He concluded: 'If Australia fails, the whole world will fail'.

Further Reading

1. de Quadros CA, Olivé JM, Hersh BS, et al. Measles elimination in the Americas: evolving strategies. *JAMA* 1996; 275:224-229.
2. Tobias M, Christie S, Mansoor O. Predicting the next measles epidemic. *NZ Public Health Report* 1997;4:1-3.
3. Mansoor O, Durham G, Tobias M. Can New Zealand eliminate measles? *NZ Med J* 1997; 110:387-388.
4. Cutts FT. Revaccination against measles and rubella (editorial). *BMJ* 1996; 312:589-590.
5. Gay N, Ramsay M, Cohen B, et al. The epidemiology of measles in England and Wales since the 1994 vaccination campaign. *CDR Review* 1997;7:R17-R21.

Workshop speakers and panel members

Professor Niels Becker, School of Statistical Science, La Trobe University

Associate Professor Margaret Burgess, NCIRS, Sydney

Ms Sue Campbell Lloyd, NCDC, Sydney

Dr John Carnie, Department of Human Services, Victoria

Dr Ciro de Quadros, Pan American Health Organization

Ms Yvonne Epping, Australian Capital Territory Health

Professor Lyn Gilbert, Centre for Infectious Diseases and Microbiology, ICPMR, Westmead Hospital, NSW

1. Cost estimated to be $20 million

Professor Jane Hall, Centre for Health Economics, Research and Evaluation, University of Sydney

Dr Robert Hall, South Australian Health Commission

Dr Jeffrey Hanna, Queensland Health Department

Dr Bronwen Harvey, NCDC, Canberra

Dr Tim Heath, NCIRS, Sydney

Dr Brian Kable, Royal Australian College of General Practitioners

Ms Ann Kemp, South Australian Health Commission

Dr Rosemary Lester, Department of Human Services, Victoria

Dr Osman Mansoor, Prevention Policy, New Zealand Ministry of Health

Dr Cathy Mead, NCDC, Canberra

Dr Angela Merianos, Northern Territory Department of Health and Community Services

Dr Avner Misrachi, Department of Community Health Services, Tasmania

Ms Karen Peterson, Queensland Health Department

Dr Aileen Plant, Department of Public Health, University of Western Australia

Dr Tony Watson, Western Australian Health Department

Addendum

Since the Workshop, the Minister for Health and Family Services has confirmed that the first stage of the Enhanced Measles Control Program will take place in 1998-99. An additional dose of measles-mumps-rubella vaccine (MMR) will be offered to all primary school children in Australia in a school-based program between July and October 1998; the second scheduled dose of MMR vaccine will be brought forward and given to children at the age of 4-5 years and the parents of preschool-aged children will be urged to be certain that their children have received at least one dose of MMR vaccine. There will also be an educational program aimed at ensuring that all high school aged children and young people have received two doses of MMR vaccine.

Methodology for measuring Australia's childhood immunisation coverage

Edward D. O'Brien, Greg A. Sam and Cathy Mead

National Centre for Disease Control, Commonwealth Department of Health and Family Services, GPO Box 9848, Australian Capital Territory 2601

The Australian Childhood Immunisation Register (ACIR) commenced operation on 1 January 1996. It is administered by the Health Insurance Commission for the Commonwealth Department of Health and Family Services. The ACIR holds identification and immunisation details for each child under the age of 7 years who is registered for Medicare, and any child who is not yet registered for Medicare but for whom an immunisation has been notified to the ACIR. By the age of 12 months, 98.4% of Australian children have Medicare registration (personal communication, Kathi Williams, HIC). Medicare registration includes the postcode of residence of each child, allowing reports to be prepared for Australia, for each State and Territory and for smaller units such as Local Government Areas and Statistical Divisions defined by the Australian Bureau of Statistics.[1]

Immunisation information may be sent to the ACIR by immunisation providers, including general practitioners, public immunisation clinics and others. The ACIR is still relatively new and not all immunisation providers are yet supplying complete details of the immunisations they carry out. In addition, some data flow problems were identified early in the ACIR's operation. Thus, the ACIR data currently underestimate the true proportion of children who are fully immunised, particularly in Western Australia and the Northern Territory.

To be considered fully immunised a child should have completed the number and type of vaccinations listed in the National Health and Medical Research Council (NHMRC) standard childhood vaccination schedule.[2] Thus, at 1 year of age, a child should have completed the primary series with three vaccinations against diphtheria, tetanus and pertussis (DTP or CDT plus monovalent pertussis), three poliomyelitis (OPV or IPV) and either two or three Hib vaccinations (if the vaccine used was PedvaxHIB or HibTITER respectively). At 2 years of age a child should have completed the primary series as well as MMR (due at 12 months), Hib (PedvaxHIB at 12 months or HibTITER at 18 months) and DTP (due at 18 months).

The calculation of the proportions of children who are fully immunised was based upon birth cohorts of three months in width. The first cohort comprised children who were born in the first quarter of 1996 (date of birth between 1 January 1996 and 31 March 1996). At the assessment date of 31 March 1997, the range of ages for the cohort was 12 months to less than 15 months. The second cohort of children (date of birth between 1 April 1996 and 30 June 1996) were examined using 30 June 1997 as the assessment date.

Only immunisations given on or before a child's first birthday were considered. If a child's records indicated that the child had received the last vaccine due in each sequence then it was assumed that earlier vaccinations in the sequence had been given (thus, for example, a record of a child having had DTP3 was interpreted to mean that the child had received DTP1, DTP2 and DTP3). Only children who were registered for Medicare were included in the calculations. The proportion of children designated as fully immunised was calculated using the count of those Medicare-registered children who had

Table 1. Proportion of children immunised at 1 year of age, preliminary results by disease and State, for the birth cohort 1 January 1996 to 31 March 1996; assessment date 31 March 1997

	Number	DTP (%)	Polio (%)	Hib (%)	Fully immunised (%)
New South Wales	21,724	74.8	74.5	74.3	71.9
Victoria	15,644	82.7	82.7	82.4	80.8
Queensland	12,197	80.7	80.6	81.3	78.2
South Australia	4,843	79.1	79.0	79.2	77.3
Western Australia	6,384	66.5	66.8	65.6	63.9
Tasmania	1,631	77.6	78.1	77.1	75.1
Australian Capital Territory	1,062	80.3	79.8	76.6	75.8
Northern Territory	923	64.8	65.0	69.0	61.4
Australia	64,408	77.4	77.2	77.2	74.9

Table 2. Proportion of children immunised at 1 year of age, preliminary results by disease and State for the birth cohort 1 April 1996 to 30 June 1996; assessment date 30 June 1997

	Number	DTP (%)	Polio (%)	Hib (%)	Fully immunised (%)	Change in fully immunised since last quarter (%)
New South Wales	21,975	76.2	76.1	75.7	73.2	+1.3
Victoria	15,353	82.0	82.2	82.1	80.1	-0.7
Queensland	12,300	82.8	83.0	83.9	80.6	+2.4
South Australia	4,721	79.2	79.0	78.8	77.0	-0.3
Western Australia	6,570	69.3	69.6	69.2	66.9	+3.0
Tasmania	1,582	78.3	78.5	78.4	76.0	+0.9
Australian Capital Territory	1,076	81.1	80.9	78.5	77.4	+1.6
Northern Territory	854	65.5	65.9	71.0	61.7	+0.3
Australia	64,431	78.3	78.4	78.4	75.9	+1.0

completed the primary schedule as the numerator and the total number of children who were registered for Medicare as the denominator.

In addition to the proportion of children who completed the schedule, those completing vaccination for individual diseases or groups of diseases were also calculated. The proportions of children fully immunised were lower than the proportions immunised against individual diseases or groups, because children who have missed vaccination against some diseases are not necessarily those who have missed vaccination against the other diseases.

The data presented in Tables 1 and 2 are preliminary estimates of the proportion of children who are fully immunised by State and by vaccine type for the first two cohorts of children with complete immunisation histories on the ACIR. In approximately 6 months time it will be possible to report on the status of the first cohort as they pass their second birthdays.

References

1. McLennan, W. Statistical Geography Volume 1. Australian Standard Geographical Classification (ASGC). Canberra, Australian Bureau of Statistics, 1996.
2. NHMRC. The Australian Immunisation Handbook 6th Edition. Canberra, Australian Government Publishing Service, 1997.

Acknowledgment

These figures were provided by the Health Insurance Commission (HIC), to specifications provided by the Commonwealth Department of Health and Family Services. For further information on these figures or data on the Register, please contact the Immunisation Section (HIC), on telephone 02 62036185.

Editorial note

The above report provides the first of what will be regular, quarterly reports on the immunisation coverage data obtained from the ACIR.

This report presents data showing the proportion of children fully immunised at age 12 months for two 3-month cohorts. Future reports will provide data for subsequent cohorts. As the cohorts reach their second birthdays, reports will be extended to include coverage at age 24 months (2 years). These reports will appear in the Communicable Diseases Surveillance section.

Current issues in immunisation

This is the first of an occasional series in Communicable Diseases Intelligence providing commentary on topical immunisation issues from the National Centre for Immunisation Research and Surveillance of Vaccine Preventive Diseases (NCIRS).

The NCIRS, which is based at the Royal Alexandra Hospital for Children, Westmead, New South Wales, was established in 1997 by the National Centre for Disease Control of the Commonwealth Department of Health and Family Services. The Centre analyses, interprets and evaluates national surveillance data on immunisation coverage and vaccine preventable diseases. It also identifies research priorities and initiates and coordinates research on immunisation issues and the epidemiology of vaccine preventable diseases in Australia.

Immunisation and asthma

Peter B. McIntyre[1],
Edward D. O'Brien[2], Timothy C. Heath[1]

Two recent studies have addressed the issue of whether immunisation contributes to the development of atopy, but they have differed in their conclusions[1,2]. The publication of a third study by a New Zealand group[3] in November 1997 has unfortunately not provided a definitive answer to this question.

The study examined infant immunisation history as a risk factor for the subsequent development of allergic disease in a birth cohort of 1,265 children, established in Christchurch in 1977 and followed to the age of 16 years. Information on immunisations and asthma (and other allergic diseases such as eczema, rhinitis, food allergies and urticaria) was collected from mothers, and vague or inconsistent responses were cross checked with the family doctor.

Children were assessed at ages 5, 10 and 16 years and were categorised as having consultations (reported medical contacts) or episodes (consultations plus reported episodes not medically seen). If any consultation for, or episode of, an allergic condition was reported, the child was considered positive for that condition. Children were considered to be nonimmunised only if they had received neither of the two scheduled doses of DTP due at 3 and 5 months of age.

Of the 1,207 children allocated an immunisation category, only 23 were nonimmunised. Of the 17 nonimmunised children for whom data were collected to age 16 years, none reported asthma by age 10 years and 2 reported asthma by age 16 years. This compares with reported asthma consultations for 227 (23%) of the 1,009 immunised children for whom data were collected at age 10 years, and 297 (32%) of the 938 immunised children for whom data were collected at age 16 years. The study found a statistically significant association (RR = ∞, CI_{95} = 1.03 to ∞) between receipt of one DTP immunisation prior to age 15 months and at least one consultation for asthma by the age 10 years. However, by the age 16 years, the association had become non-significant (RR = 2.7, CI_{95} = 0.7 to 22.3). The authors reported no association of asthma with measles immunisation or disease.

The findings of this study should be treated with caution. Statistical significance was very vulnerable to misclassification; if only one nonimmunised child had developed asthma, statistical significance would have been lost. In this context, the lack of data for 6 (26%) of the 23 nonimmunised children, and 246 (21%) of the immunised children is extremely important. It is also notable that the nonimmunised group differed markedly from the immunised children in ethnicity, socio-economic status and parental smoking history. The authors argue that this did not influence the result, but the effect of these potential confounders was difficult to examine because of the small numbers in the nonimmunised group.

Thus, there remains insufficient evidence to establish a causal link, or even a clear association, between pertussis immunisation in infancy and the later development of asthma. By contrast, the risks of omitting pertussis immunisation are very evident to all health professionals. The findings of this article should not influence pertussis recommendations and practices in any way. Health professionals should continue to emphasise that the benefits of immunisation against pertussis greatly exceed the risks.

1. Odent MR, Culpin EE, Kimmel T. Pertussis vaccination and asthma: is there a link? *JAMA* 1994; 272:592-593
2. Nilsson L, Kjellman NI, Storsaeter J, et al. Lack of association between pertussis vaccination and symptoms of asthma and allergy. *JAMA* 1996; 275:760
3. Kemp T, Pearce N, Fitzharris P, et al. Is infant immunisation a risk factor for childhood asthma or allergy? *Epidemiology* 1997;8:678-80.

1. National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases (NCIRS), Royal Alexandra Hospital for Children, Westmead, New South Wales.
2. National Centre for Disease Control, GPO Box 9848, Canberra, Australian Capital Territory 2601

Melioidosis in north Queensland

The Tropical Public Health Unit, Queensland Health has received reports of 11 cases of melioidosis in north Queensland from 1 January to 13 March, 1998. This is about twice as many cases as would be expected based on reports from previous years. Three of the cases have been fatal. Four of the 11 cases were in individuals aged less than 30 years (range 15 to 73 years). Two cases did not have any recognised risk factors for infection.

Geographically, cases have been reported in the area extending from Charters Towers in the south up to the Torres Strait.

Many areas of north Queensland have experienced heavy rainfall in the first few months of 1998. Flooding has occurred in several regions. This has most likely contributed to the observed increase in the number of cases of melioidosis so far this year.

Gonococcal conjunctivitis outbreak

As of 17th March 1998, 13 confirmed cases of non-sexually transmitted gonococcal conjuntivitis in the Northern Territory and Western Australia have been notified to the Centre for Disease Control, Darwin and the Public Health Unit, Boulder, Western Australia. Twelve cases occurred in the Katherine district of the Northern Territory and one in the central Australian region of Western Australia. Katherine communities were affected in January and the central Australian case occurred in February. The gonococcal conjunctivis management protocal was instigated as a matter of urgency in both areas. No further cases have been identified since the alerts were issued.

Notice to readers

First announcement of conference

Call for abstracts

Control of Communicable Diseases in Australia

under the auspices of the Communicable Diseases Network of Australia New Zealand (CDNANZ)

10 November 1998, Canberra

Control of communicable diseases continues to be one of the highest public health priorities both nationally and internationally. Emerging and re-emerging microbial threats and drug resistance pose an ever increasing challenge for public health practitioners. Added to this challenge are high public expectations of protection from public health hazards, increasing scrutiny from the media, lawyers, and politicians.

This conference will study public health communicable disease control issues and examine investigations of recent disease outbreaks in Australia.

This conference is for anyone working in the field of public health or communicable diseases: officers of local, State/Territory and Commonwealth health departments; health practitioners involved in communicable diseases and infection control; epidemiologists; microbiologists; infectious disease physicians; environmental health officers and public health officers.

For abstract submission, registration forms and further information please contact:

Miss Alison Milton
National Centre for Disease Control, MDP 6
Department of Health and Family Services
GPO Box 9848
Canberra ACT 2601

Phone (02) 62898245
Fax (02) 62897791
email ccd.conf@health.gov.au

Communicable Diseases Surveillance

Communicable Diseases Surveillance consists of data from various 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 Sentinal Practice Research Network (ASPREN) is a general practitioner-based sentinel surveillance scheme. In this report, data from the NNDSS and ASPREN are referred to as 'notifications' while data from the LabVISE scheme are referred to as 'laboratory reports'.

Vaccine preventable diseases

The number of notifications of *Haemophilus influenzae* type b (Hib) infection is lower than for the same period last year, with 4 cases reported for the year to date compared to 13 cases in the same period in 1997. Three of the 4 cases were children under the age of 5 years. The low rate of Hib notifications continues the trend which has been seen since the introduction of the conjugated Hib vaccine to the standard childhood vaccination schedule in April 1993 (Figure 1).

The epidemic of pertussis in Australia continues with 2,018 notifications for the year to date compared with 1,632 in the same period in 1997. There were over 10,000 notifications in 1997; the highest yearly number recorded since the inception of the current NNDSS in 1991, and two and a half times the number reported in 1996 (Figure 2). The highest numbers of cases for this period were from New South Wales (330) and Queensland (198). The majority of reports for this year have been for those aged 5-9 years (21% of total reports), 10-14 years (16%) and 0-4 years (13%).

The number of pertussis laboratory reports also peaked in November 1997 and has since declined (Figure 3). A similar trend has been observed in the ASPREN scheme. However, a large number of reports continues to be received.

The ASPREN consultation rates for vaccination of older children and adults with tetanus/diphtheria (Td) vaccine, and of children with pertussis-containing vaccine (included this year for the first time) have continued at a steady rate. Consultation rates for other conditions, including rubella and measles, have remained low or steady.

Vectorborne diseases

A total of 386 notifications of Ross River virus infection with onset in 1998 has been received so far. Of these 227 were for January and 153 for February, which is markedly lower than for the same period last year. The male:female ratio was 1.1:1 and 69% of reports were for those in the 25-54 years age group. Sixty-six laboratory reports of Ross River virus infection were received this four week period. The number of laboratory reports rose in January but remained low for the time of year. ASPREN has also not yet recorded any rise in consultation rates for Ross River virus infection.

Figure 1. Notifications of *Haemophilus influenzae* type b, 1991 to 1998, by month of onset and age group

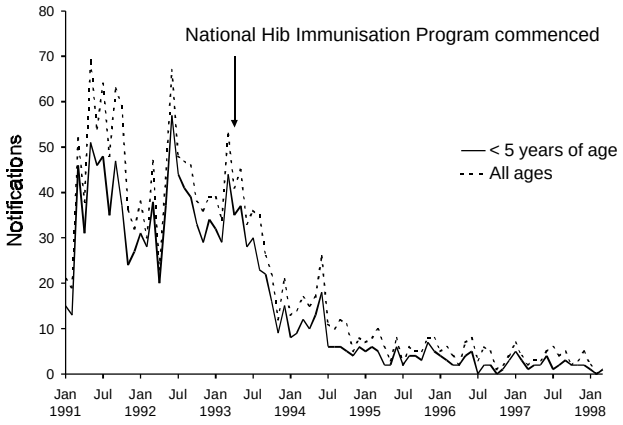


Figure 2. Notifications of pertussis, 1992 to 1998, by month of onset

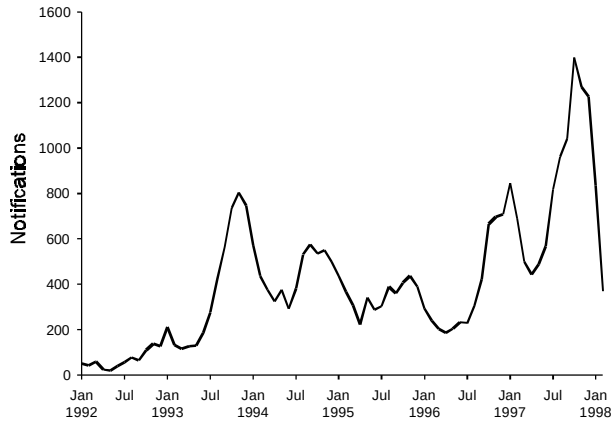


Figure 3. Laboratory reports of *Bordetella pertussis*, 1992 to 1998, by month of specimen collection

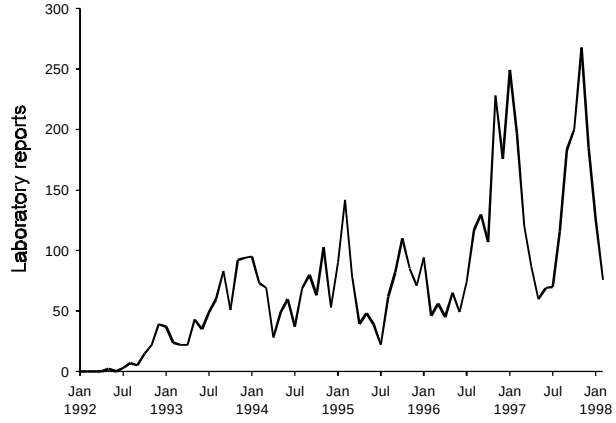


Figure 4. Notifications of meningococcal infection, 1995 to 1998, by month of onset

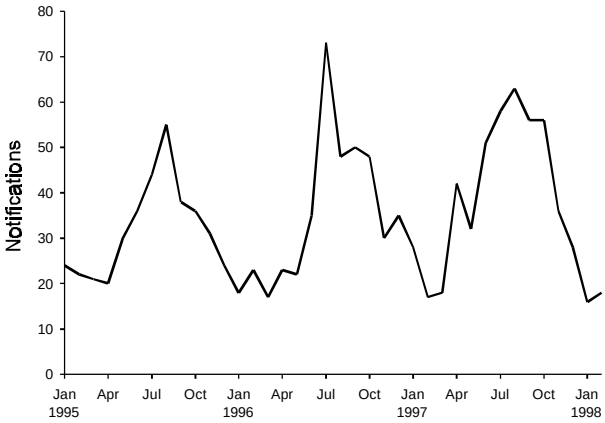
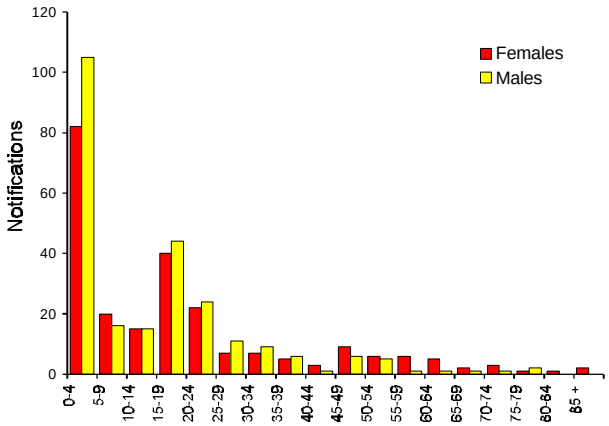


Figure 5. Notifications of meningococcal infection, 1997 by age group and sex



The number of cases of Barmah Forest virus infection reported to the NNDSS rose in January and February with 47 and 36 cases with onset in those months respectively. These numbers are low compared to previous recent years.

Eighty cases of dengue were notified this four week period, bringing the total reported this year so far to 95. Of these 77 cases (81%) were reported from Queensland, including 48 cases in persons resident in the Statistical Division of Far North. Thirty-nine of the 95 cases (41%) had a date of onset in December, 29 (31%) in January and 22 (23%) in February. The male:female ratio was 1.3:1; 56 (59%) of cases were in the age range 25-54 years.

Notifications of malaria have been received from all jurisdictions except South Australia during the current period, 33 (49%) of the 68 reports being from Queensland, mostly from the Statistical Divisions of Far North (15 cases; 22%) and Brisbane (11 cases; 16%). The male:female ratio was 2.2:1; 31 cases (46%) were in the age range 15-30 years.

Meningococcal disease

Thirty-four notifications of meningococcal disease have been received with onset in 1998. This is average for the time of year. A total of 486 notifications was received with onset in 1997, slightly more than the previous year. A peak in the number of reports was observed in August (Figure 4). The male:female ratio was 1.1:1 and most cases were in the 0-4 (39% of total) and 15-19 (17%) years age groups (Figure 5).

Enteroviruses

Twenty-five laboratory reports of enterovirus were received this period of which 13 were untyped. Three reports of coxsackie virus type B3 were received from New South Wales, Tasmania and Victoria. Also included were two reports each of coxsackie virus types A16 and B2, all from Victoria. Enterovirus reports usually peak in the summer months. However no single virus type seems to have predominated this season.

Respiratory viruses

The LabVISE scheme has received 63 laboratory reports of influenza with specimen collection dates in 1998. Of these 48 were influenza A and 15 influenza B. This is average for the time of year.

Twenty-four laboratory reports of parainfluenza virus type 1 have been received for the year to date. Outbreaks of this virus have been documented by the LabVISE scheme in alternate years, peaking in April and May. The last epidemic year was 1996, so we can expect more reports in the coming months. The number of parainfluenza virus type 3 laboratory reports has continued to decline after peaking in September last year. Reports of respiratory syncytial virus are also at their usual low level for the time of year.

There were 4,893 notifications to the National Notifiable Diseases Surveillance System (NNDSS) for this four week period, 4 February to 3 March 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 6). 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 988 reports received in the CDI Virology and Serology Laboratory Reporting Scheme (LabVISE) this four week period, 29 January to 25 February (Tables 4 and 5). 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 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 5 to 8, ending 8, 15, 22 February and 1 March 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.

Table 1. Notifications of rare[1] diseases received by State and Territory health authorities in the period 4 February to 3 March 1998

Disease[2]	Total this period	Reporting States or Territories	Total notifications 1998
Brucellosis	2	Qld	11
Cholera	1	NSW	1
Hydatid infection	1	SA	8
Leprosy	1	WA	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.

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 4 February to 3 March 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	2	0	0	0	0	2	5	4	13
Measles	4	8	0	8	0	3	14	6	43	40	89	78
Mumps	0	5	1	2	1	0	4	2	15	4	24	24
Pertussis	3	330	1	198	95	11	21	75	734	823	2018	1632
Rubella[3]	3	2	0	21	2	1	13	10	52	152	108	379
Tetanus	0	0	0	0	0	0	0	0	0	0	1	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.
3. Includes congenital rubella

Table 3. Notifications of other diseases received by State and Territory health authorities in the period 4 February to 3 March 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	2	2	2	0	0	0	1	7	20	12	41
Barmah Forest virus infection	0	18	-	23	1	0	6	6	54	74	111	152
Campylobacteriosis[4]	70	-	13	405	125	26	13	115	767	976	1621	2205
Chlamydial infection (NEC)[5]	22	NN	65	312	0	10	185	125	719	670	1457	1341
Dengue	2	5	1	69	0	0	0	3	80	34	95	90
Donovanosis	0	NN	1	0	NN	0	0	0	1	0	10	1
Gonococcal infection[6]	5	76	73	71	0	1	48	85	359	256	807	515
Hepatitis A	8	121	3	101	8	1	27	11	280	754	560	935
Hepatitis B incident	1	4	1	5	0	1	1	0	13	21	30	39
Hepatitis C incident	0	2	0	-	0	0	-	-	2	0	11	1
Hepatitis C unspecified	24	NN	29	271	NN	23	0	90	437	669	893	1443
Hepatitis (NEC)	0	1	0	0	0	0	0	NN	1	1	1	6
Legionellosis	0	1	0	2	2	0	9	9	23	8	37	26
Leptospirosis	0	1	0	7	0	0	1	1	10	12	26	26

Table 3. Notifications of other diseases received by State and Territory health authorities in the period 4 February to 3 March 1998, continued

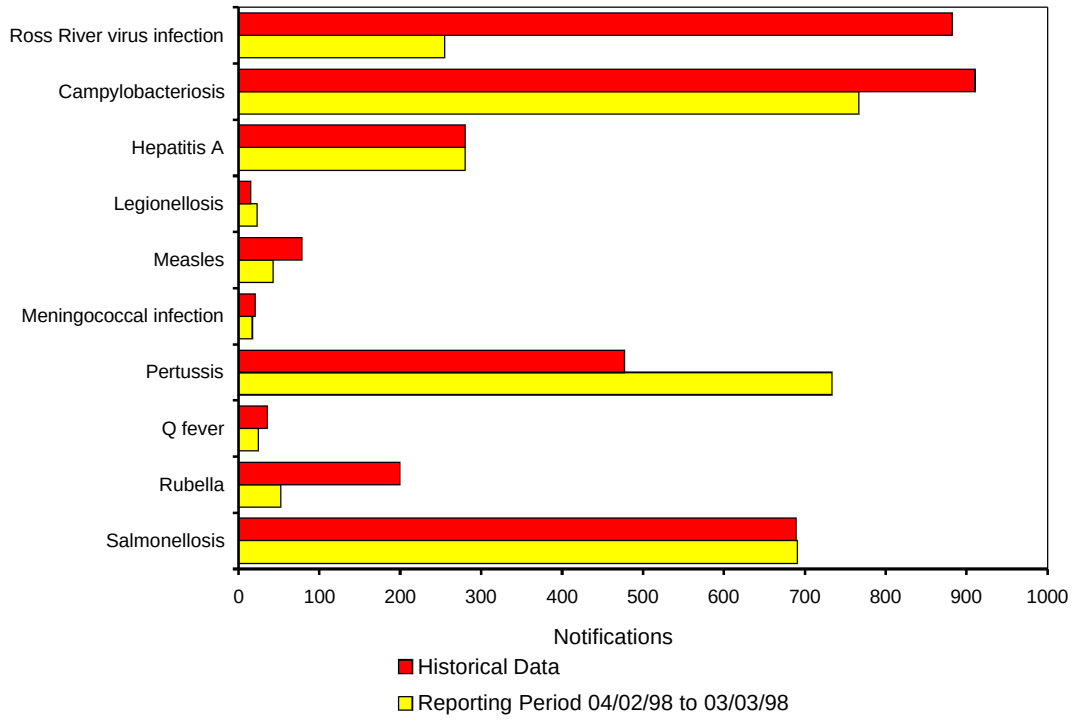
Disease[1,2]	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 1998	This period 1997	Year to date 1998	Year to date 1997
Listeriosis	1	2	0	0	0	0	0	0	3	8	12	17
Malaria	3	13	5	33	0	1	10	3	68	44	122	124
Meningococcal infection	0	6	1	4	0	0	3	3	17	18	37	48
Ornithosis	0	NN	0	0	0	0	1	0	1	11	3	17
Q Fever	0	8	0	17	0	0	0	0	25	41	61	102
Ross River virus infection	0	20	28	136	6	1	10	54	255	1121	511	1656
Salmonellosis (NEC)	13	138	34	322	34	29	76	45	691	640	1580	1397
Shigellosis[4]	0	-	15	15	8	0	6	5	49	94	126	181
Syphilis[7]	2	26	23	21	0	1	0	3	76	119	195	212
Tuberculosis	1	22	3	9	7	0	14	7	63	93	142	178
Typhoid[8]	0	5	0	4	0	1	2	1	13	8	26	18
Yersiniosis (NEC)[4]	0	-	0	22	4	0	2	0	28	31	69	70

1. For HIV and AIDS, see Tables 7 and 8. 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. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
5. WA: genital only.
6. NT, Qld, SA and Vic: includes neonatal gonococcal ophthalmia.
7. Includes congenital syphilis
8. NSW, Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified

Figure 6. 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 4. Virology and serology laboratory reports by State or Territory[1] for the reporting period 29 January to 25 February 1998, and total reports for the year

	State or Territory[1]								Total this period	Total reported in *CDI* in 1998
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA		
Measles, mumps, rubella										
Measles virus		1					4		5	20
Mumps virus					1		1		2	8
Rubella virus		1					1		2	24
Hepatitis viruses										
Hepatitis A virus		6	1	5	2		1	1	16	59
Arboviruses										
Ross River virus		2	4	35	4		2	19	66	226
Barmah Forest virus								1	1	8
Dengue not typed							1	1	2	5
Stratford virus								1	1	1
Flavivirus (unspecified)			1	8			4		13	18
Adenoviruses										
Adenovirus type 1							1		1	5
Adenovirus type 2							2		2	7
Adenovirus type 3							4		4	8
Adenovirus type 4							1		1	1
Adenovirus type 5							1		1	1
Adenovirus type 7					1		1		2	4
Adenovirus type 8							3		3	3
Adenovirus type 40								1	1	1
Adenovirus not typed/pending		6			24	2		4	36	144
Herpes viruses										
Cytomegalovirus		7		15	7	4	14	12	59	210
Varicella-zoster virus		5		12	14	2	26	17	76	295
Epstein-Barr virus		5		16	61		14	14	110	385
Other DNA viruses										
Contagious pustular dermatitis (Orf virus)								1	1	6
Parvovirus	1				4		4	1	10	35
Picorna virus family										
Coxsackievirus A16							2		2	3
Coxsackievirus B2							2		2	2
Coxsackievirus B3		1				1	1		3	6
Coxsackievirus B4							1		1	2
Coxsackievirus B untyped/pending		1							1	1
Echovirus type 11		1							1	3
Poliovirus type 2 (vaccine strain)						2			2	2
Rhinovirus (all types)		10			10		4	2	26	120
Enterovirus not typed/pending		2		1	1			9	13	79
Ortho/paramyxoviruses										
Influenza A virus					19	1		8	28	118
Influenza B virus					6			2	8	42
Parainfluenza virus type 1		6		1				10	17	32
Parainfluenza virus type 2								2	2	6
Parainfluenza virus type 3		5			1			13	19	138
Parainfluenza virus typing pending						1			1	1
Respiratory syncytial virus		5		2	10		3	23	43	204

Table 4. Virology and serology laboratory reports by State or Territory[1] for the reporting period 29 January to 25 February 1998, and total reports for the year, continued

	State or Territory[1]								Total this period	Total reported in *CDI* in 1998
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA		
Other RNA viruses										
HTLV-1			1						1	8
Rotavirus		10			1	17		17	45	85
Astrovirus							1		1	3
Norwalk agent							1		1	13
Small virus (like) particle							1		1	2
Other										
Chlamydia trachomatis not typed	1	26	3	30	38	11	1	51	161	751
Chlamydia psittaci						2	3		5	16
Mycoplasma pneumoniae		6		14	49	2	16	2	89	376
Coxiella burnetii (Q fever)				1			1		2	15
Rickettsia australis						1			1	3
Rickettsia spp - other								2	2	2
Salmonella species								1	1	5
Bordetella pertussis		3	1	17			44	20	85	430
Legionella pneumophila								1	1	1
Legionella longbeachae					2			5	7	13
Protozoa										
Toxoplasma gondii							1		1	1
TOTAL	2	109	11	157	255	46	167	241	988	3,957

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

Table 5. Virology and serology laboratory reports by contributing laboratories for the reporting period 29 January to 25 February 1998

State or Territory	Laboratory	Reports
New South Wales	New Children's Hospital, Westmead	30
	Royal Prince Alfred Hospital, Camperdown	19
	South West Area Pathology Service, Liverpool	46
Queensland	Queensland Medical Laboratory, West End	183
South Australia	Institute of Medical and Veterinary Science, Adelaide	253
Tasmania	Northern Tasmanian Pathology Service, Launceston	4
	Royal Hobart Hospital	41
Victoria	Royal Children's Hospital, Melbourne	58
	Victorian Infectious Diseases Reference Laboratory, Fairfield	112
Western Australia	PathCentre Virology, Perth	161
	Princess Margaret Hospital, Perth	81
TOTAL		988

Table 6. Australian Sentinel Practice Research Network reports, weeks 5 to 8, 1998

Week number	5		6		7		8	
Week ending on	8 February 1998		15 February 1998		22 February 1998		1 March 1998	
Doctors reporting	53		53		52		47	
Total consultations	6,115		6,574		6,398		5,960	
Condition	Reports	Rate per 1,000 population	Reports	Rate per 1,000 population	Reports	Rate per 1,000 population	Reports	Rate per 1,000 population
Influenza	3	0.5	8	1.2	20	3.1	8	1.3
Rubella	0	0.0	0	0.0	2	0.3	1	0.2
Measles	1	0.2	2	0.3	1	0.2	0	0.0
Chickenpox	6	1.0	7	1.1	11	1.7	3	0.5
Pertussis	4	0.7	4	0.6	4	0.6	0	0.0
HIV testing (patient initiated)	11	1.8	16	2.4	11	1.7	14	2.3
HIV testing (doctor initiated)	6	1.0	11	1.7	10	1.6	12	2.0
Td (ADT) vaccine	39	6.4	45	6.8	36	5.6	46	7.7
Pertussis vaccination	50	8.2	42	6.4	57	8.9	40	6.7
Reaction to pertussis vaccine	3	0.5	5	0.8	1	0.2	3	0.5
Ross River virus infection	0	0.0	0	0.0	3	0.5	1	0.2
Gastroenteritis	83	13.6	88	13.4	75	11.7	72	12.1

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.

Table 7. New diagnoses of HIV infection, new diagnoses of AIDS and deaths following AIDS occurring in the period 1 to 30 September 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	5	0	0	2	0	2	1	10	7	58	56
	Male	0	29	1	0	2	0	13	0	45	84	500	614
	Sex not reported	0	6	0	0	0	0	0	0	6	0	21	4
	Total[1]	0	40	1	0	4	0	15	1	61	91	579	675
AIDS diagnoses	Female	0	0	0	0	0	0	0	0	0	2	17	23
	Male	0	11	0	3	2	0	2	0	18	57	189	477
	Total[1]	0	11	0	3	2	0	2	0	18	59	206	500
AIDS deaths	Female	0	0	0	0	0	0	0	0	0	0	9	15
	Male	0	7	0	2	0	0	3	0	12	37	166	375
	Total[1]	0	7	0	2	0	0	3	0	12	37	176	390

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 September 1997, by sex and State or Territory

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia
HIV diagnoses	Female	21	500	5	114	49	4	190	81	964
	Male	179	10,622	92	1,772	620	77	3,627	829	17,818
	Sex not reported	0	2,062	0	1	0	0	28	0	2,091
	Total[1]	200	13,197	97	1,892	669	81	3,855	913	20,904
AIDS diagnoses	Female	7	153	0	40	19	2	59	23	303
	Male	80	4,213	30	743	317	41	1,491	331	7,246
	Total[1]	87	4,377	30	785	336	43	1,557	356	7,571
AIDS deaths	Female	2	112	0	27	14	2	41	14	212
	Male	52	3,015	23	519	212	26	1,176	239	5,262
	Total[1]	54	3,134	23	548	226	28	1,223	254	5,490

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

HIV and AIDS diagnoses and deaths following AIDS reported for September 1997, as reported to 31 December 1997, are included in this issue of *CDI* (Tables 7 and 8).

Sentinel Chicken Surveillance Programme

Sentinel chicken flocks are used to monitor flavivirus activity in Australia. The main viruses of concern are Murray Valley encephalitis (MVE) and Kunjin which causes 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

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

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

Sentinel chicken serology was carried out for 25 of the 28 flocks in Western Australia in January and February 1998. There were no seroconversions to flaviviruses during this period. However, there were three seroconversions in the Kununurra flock in early March. Two of these had antibodies to MVE virus and one had antibodies to both MVE and Kunjin viruses. There was also a human case caused by Kunjin virus reported from Kununurra in late February. More details will be available in the next report.

Six flocks of sentinel chickens from the Northern Territory were tested in January and February 1998. There were two seroconversions to Kunjin virus in the Tennant Creek flock, one in January and one in February. The February seroconversion is yet to be confirmed.

There have been no seroconversions to flaviviruses in January or February 1998 from the sentinel chicken flocks located in New South Wales and Victoria.

Overseas briefs

Source: World Health Organization (WHO) and Pacific Public Health Surveillance Network

Influenza in the northern hemisphere

The number of influenza virus isolates increased markedly in Canada during January and early February 1998 while the United States of America experienced a widespread epidemic. In Asia, widespread activity was reported in Israel, Islamic Republic of Iran and Japan. Countries in Europe had a low level of activity until late January but are now also reporting increasing influenza activity.

The recommendations for the composition of the 1998-1999 influenza vaccine for the northern hemisphere were issued on 18 February by the WHO, as follows:

- an A/Sydney/5/97(H3N2)-like virus;
- an A/Beijing/262/95(H1N1)-like virus;
- a B/Beijing/184/93-like virus.

Cholera

Comoros Islands. As of 16 February, 282 cases with 10 deaths (case fatality rate 3.5%) have been reported, mainly in Moroni (the capital city) and surrounding villages, and Mbéni 40 km north of Moroni. The causative organism

has been confirmed as *Vibrio cholerae* O1, El Tor. The WHO has been involved with the national authorities in controlling the outbreak since it was notified on 19 January. A national cholera committee has been established and activities are being directed at improving case management in the national hospital, training of health staff and education of the general public, ensuring water safety, and supplying oral rehydration salts, chlorine and other materials.

Mozambique. From August 1997 to 9 February 1998, 14,679 cases of cholera with 477 deaths (case fatality rate 3.2%) were reported. During the last week of January 1,657 cases were reported corresponding to an attack rate of 4.1%. Most of these cases occurred in Beira City, Sofala Province. Over 800 cases with 80 deaths were reported in a 48 hour period in a single week and 900 patients are currently being treated. The situation in other affected areas (Gaza, Manica, Maputo City and Maputo Province) appears to be stable. Neighbouring countries (Zimbabwe, Zambia and Malawi) have been alerted to the need to strengthen surveillance for early detection of cholera coming via the Beira corridor.

Peru. A large increase in cholera cases has been reported in Peru since the end of 1997. In the first four weeks of 1998 a total of 2,863 cases with 16 deaths had been reported compared with 174 cases with one death in the corresponding period in 1997. The largest numbers of cases were reported from Arequipa, Lima, La Libertad, Lambayeque, Ancash and Cuzco but cases have occurred in many other regions including those in the forest areas, where no cases or very few had previously been reported. This large increase has probably occurred as a result of storms and floods caused by El Niño. The national authorities are discussing cholera control activities with the WHO, and neighbouring countries have been informed.

Dengue

Cambodia. The number of cases of dengue haemorrhagic fever admitted to two paediatric hospitals which function as sentinel sites in Phnom Penh, was higher than usual in December 1997 and January 1998. During 1997 the monthly number of cases had increased from 10 in January to a peak of 220 in November, but remained below the monthly epidemic thresholds. The number of cases fell to 140 in December but then increased again to 227 in January 1998, which is almost five times above the epidemic threshold for that month. Three of the 227 cases were fatal. Experts from the WHO Office for the Western Pacific Region are currently assessing the situation and discussing control strategies with the national health authorities.

Fiji. Since mid-December 1997 there have been at least 20,148 cases of suspected dengue fever, with 989 hospital admissions. Included were 11 deaths, all except one in the greater Suva area. The case fatality rate of 0.6 per 1,000 cases compares to a rate of 8.1 deaths per 1,000 during the 1989-1990 epidemic. The low case fatality rate is believed to be due to the rapid diagnosis and appropriate management of serious cases, and the technical assistance provided by the WHO. Nearly 2.5% of Fiji's population has been affected to date. It appears that weekly suspected case levels are declining, particularly in Viti Levu. The public are being encouraged to keep living environments free of mosquito breeding sites.

Tonga. As of 10 March 1998, 7 cases of dengue had been reported for the year to date. Active surveillance is continuing together with public education and a control program.

New Caledonia. The outbreak of type 2 dengue which began in New Caledonia in December 1996 is continuing. Up to 15 February 1998, 594 cases had been reported. No deaths were registered. For 1997, a total of 243 cases were reported; amongst the cases for which the serotype was identified 95% (146/154) were type 2 dengue, 5% (7/154) type 3 dengue and one case was type 1 dengue (imported from Thailand). In December 1997, the weekly number of new cases began to increase. Three hundred and forty-seven cases were notified from 1 January to 16 February 1998, representing more than the total number of cases for 1997; all confirmed cases (260) were type 2 dengue. The Department of Health is undertaking vector control measures including insecticide spraying and reduction of mosquito breeding sites. Awareness campaigns targeting both the public and health professionals are also being conducted.

CDI is produced every four weeks by the National Centre for Disease Control, Department of Health and Family Services, GPO Box 9848 Canberra ACT 2601; fax: (02) 6289 7791, phone: (02) 6289 6895.

For subscriptions or change of address please fax (02) 6269 1212 or write to PO Box 650, Fyshwick ACT 2609.