COMMUNICABLE DISEASES INTELLIGENCE

ISSN 0725-3141 VOLUME 19 NUMBER 19 18 September 1995

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CDI is produced fortnightly by:
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COMMONWEALTH DEPARTMENT OF HUMAN SERVICES AND HEALTH

COMMUNICABLE DISEASES NETWORK-AUSTRALIA
A National Network for Communicable Diseases Surveillance

INVASIVE TYPE 12F PNEUMOCOCCAL DISEASE IN CENTRAL AUSTRALIA

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Introduction

Capsular typing of invasive pneumococci isolated at Alice Springs Hospital has been performed at interstate laboratories for at least 10 years. These isolates, as well as those showing reduced antimicrobial susceptibility are currently referred to the Acute Respiratory Infections (ARI) Research Unit, State Health Laboratory, Brisbane, for both serotyping and MIC determinations (antibiotic sensitivities). The use of factor sera in this Unit enables pneumococcal serotypes within the various serogroups to be differentiated antigenically.

An outbreak of community-acquired bacteraemic serotype 1 pneumococcal pneumonia in adults and children in central Australia during the 1991 winter has been reported[1]. More recently, a striking increase in invasive disease due to *Streptococcus pneumoniae* serotype 12F has occurred in central Australia and is described here.

Outbreak description

Between January 1993 and September 1994, 18 episodes of invasive pneumococcal serotype 12F disease were identified in 17 patients hospitalised at Alice Springs (15 cases) and Tennant Creek (two cases). All strains were cultured from blood. Sixteen patients were Aboriginal and nine were adults. Seven of the 15 patients hospitalised at Alice Springs resided in the town, six in town camps. Eight cases were transferred to Alice Springs Hospital from seven remote Aboriginal communities.

The first two cases in the current outbreak occurred in January 1993 in communities north and northwest of Alice Springs, and were followed in May by cases in settlements southeast and southwest of the town. A further six individuals, five of whom resided in town camps in Alice Springs, were diagnosed between mid-July and mid-September 1993. Three of these cases, two young adults and a child aged six years, were related; one of the adults was alcohol dependent. The remaining seven cases were hospitalised between January and September 1994; three were from remote communities, two resided in Alice Springs and two were diagnosed at Tennant Creek Hospital.

Nine cases of septicaemia, eight of bacteraemic pneumonia and one of meningitis occurred and are detailed by age in Table 1. Four adults had known alcohol abuse and a further two suffered from chronic renal failure (CRF). A nine year old child with nephrotic syndrome had two episodes of type 12F septicaemia two months apart. Three patients died (a mortality rate of 18%), an adult with septicaemia and CRF, an adult with pneumonia and a child aged 11 years with meningitis. All isolates were fully susceptible to penicillin, chloramphenicol, cotrimoxazole, erythromycin and ceftriaxone using the E-test (AB Biodisk, Solna, Sweden).

The incidence of serotype 12F disease in central Australia from 1990 to 1995 is compared with non-12F pneumococcal disease in Table 2. Only two of 234 (0.9%) invasive pneumococci isolated in central Australia and referred for typing from 1986 to January 1993 were serogroup 12 strains (F Morey and others, unpublished observations; M Gratten and others, unpublished observations). However, during the 21 months from January 1993 to September 1994, serotype 12F pneumococci accounted for 18 of 104 (17%) invasive isolates.

Comment

Many pneumococcal capsular polysaccharides are immunologically unique and can be typed using a single antiserum. However, those that are related antigenically are assigned to serogroups. Such types and serogroups can be identified using commercially acquired antisera. Differentiation of serotypes within serogroups, for example types 12F and 12A which together comprise serogroup 12 pneumococci, is performed with factor sera which are not commercially available.

Table 1. Bacteraemic type 12F pneumococcal disease in central Australia, January 1993 to September 1994, by clinical diagnosis

Clinical diagnosis	Adults	Children		Total
		5–14 years	< 2 years	
Pneumonia	5	2	1	8
Septicaemia	4	2[1]	2	8[1]
Meningitis	0	1	0	1
Total	9	5	3	17[1]

1. A nine month old child with nephrotic syndrome had two episodes of type 12F septicaemia two months apart.

Table 2. Invasive pneumococcal disease in central Australia, 1990 to 1995; type 12F versus other capsular types, by year

Year	Non-type 12F isolates	12F isolates (% of all isolates)
1990	27	0 (0)
1991	55	0 (0)
1992	38	1 (2.6)
1993	52	10 (16.1)
1994	43	8 (15.7)
1995	21	1 (4.5)
Total	237	20 (7.8)

Serogroup 12 pneumococci are regarded as highly invasive[2] but rarely colonise the nasopharynx or throat of healthy children[3,4]. Invasion by group 12 pneumococci, which is often associated with bacteraemia[2], occurs more frequently in adults[5] than in children[4]. Most invasive group 12 strains are type 12F[5]. Type 12F *S. pneumoniae* has been regarded traditionally as an 'epidemic type' because of its persistent involvement, over a 2.5 year period, in an epidemic of pneumonia in a United States military training school in the 1940s[6].

Type specific outbreaks of pneumococcal disease have been associated with men's shelters[7,8], jails[9,10], military establishments[6,11,12], hospital wards[13], nursing homes[14], and child-care facilities[15]. Three of these outbreaks were due to group 12 pneumococci. Two were in 1989 in jails in the United States; in one, 12 inmates of a Texas jail developed invasive serogroup 12 disease and two (17%) died[9]. The other occurred in an overcrowded, underventilated Houston jail; 46 inmates had either acute pneumonia or invasive disease due to type 12F pneumococci over a four week period and two (4.3%), both asplenic, died[10]. In the third, three of six children in a day-care home became bacteraemic and a fourth child developed conjunctivitis. Type 12F pneumococci were isolated from all four subjects and also colonised the upper respiratory tract (URT) of the other two children[15].

In Australia, epidemic group 12 pneumococcal disease has not been reported and cases have been infrequent. Stobo and Little surveyed pneumonia patients in Sydney hospitals between January 1938 and April 1940 and found that 3.7% of 754 pneumococci from 1000 sputum samples belonged to group 12[16]. Hansman identified only nine (1.6%) group 12 isolates from 575 cases of severe disease occurring principally in New South Wales, South Australian and Victorian hospitals from 1965 to 1979. Six cases were children with meningitis and three were adults with either meningitis or bacteraemic pneumonia[17,18]. No group 12 pneumococci have been implicated in 115 cases of invasive disease in Far North Queensland since surveillance began in September 1991 (J Hanna, G Bapty, M Gratten, unpublished observations). Studies elsewhere have shown a similar low incidence of pneumococcal serogroup 12 disease[19,20].

Although many cases occurred in remote, widely scattered communities in this recent outbreak, there is little doubt that the type 12F strains involved in the sudden increase of type 12F pneumococcal disease in central Australia were related. Invasive pneumococcal disease, particularly in children, is commonly related to URT colonisation. Carriage of group 12 pneumococci in well Aboriginals[21] and other populations[3,4] is rare. The carriage status of our patients was not determined, however, infrequently carried pneumococcal types implicated in other type specific outbreaks of invasive disease have been associated with increased URT colonisation[1,7,10,12,15]. It is likely therefore that type 12F carriage increased in some central Australian communities during the course of the outbreak. Central Australian Aboriginals travel extensively between communities and transmission of a virulent type 12F strain may thus have occurred, followed by more intense spread of the organism among town camps in Alice Springs.

Four of our patients had known alcohol abuse, two had CRF and one had nephrotic syndrome. Alcohol dependence in Aboriginal adults is a recognised risk factor for invasive pneumococcal disease[1,22]. The 23-valent pneumococcal polysaccharide vaccine, which is available in Australia, contains serotype 12F capsular antigen. The National Health and Medical Research Council recommends that this vaccine is given to 'individuals over 50 years of age in Aboriginal and Torres Strait Islander communities with high pneumococcal attack rates', and to patients with chronic illness such as nephrotic syndrome, renal disease and alcoholism[23]. Type 12F polysaccharide antigen is not represented in any of several candidate conjugate-pneumococcal vaccines that are currently under development[24,25].

Acknowledgments

We acknowledge the clinical staff of Alice Springs Hospital, Tennant Creek District Hospital and rural communities who cared for the patients in this study. Dr Jorgen Henrichsen, Statens Seruminstitut, Copenhagen generously supplied the pneumococcal factor sera. We are grateful to Mrs Ruth Hilaire for typing the manuscript.

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CDI editorial comment

The National Health and Medical Research Council recommends pneumococcal vaccine for immunocompromised persons and others who are at increased risk of severe pneumococcal disease[1]. Specifically, the vaccine is recommended for

- individuals with asplenia, either functional or anatomical, including sickle cell disease in persons more than two years of age,
- immunocompromised patients at increased risk of pneumococcal disease (for example patients with HIV infection before the development of AIDS, and patients with multiple myeloma, lymphoma, Hodgkin's disease and organ transplantation),
- individuals over 50 years of age in Aboriginal and Torres Strait Islander communities with high pneumococcal attack rates (as mentioned in the article above),
- immunocompetent persons at increased risk of complications from pneumococcal disease because of chronic illness (for example chronic cardiac, renal or pulmonary disease, diabetes and alcoholism) and
- patients with CSF leaks.

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ARBOVIRUS AND MOSQUITO ACTIVITY ON THE SOUTH COAST OF NEW SOUTH WALES, 1994–95

Stephen Doggett[1], *Richard Russell*[1], *Michael Cloonan*[2], *John Clancy*[1], *John Haniotis*[1]

Introduction

In April of this year, Van Buynder et al[1] described an epidemic of human disease caused by Barmah Forest (BF) virus, a mosquito borne alphavirus, from the South Coast of New South Wales. The reported 80 notifications, plus more than 150 in the region yet to be reported (Linda Hueston, personal communication), make it the largest epidemic recorded for Australia, and follows recent outbreaks in the Northern Territory[2] and Western Australia[3]. The initial recognition of BF activity for the 1994–95 epidemic was when the virus was isolated by our laboratory from mosquitoes collected at Batemans Bay. This report details the arboviruses isolated, the environmental factors that led to the increase in mosquito populations, and discusses these findings in the context of the recent epidemic.

Methods

The New South Wales arbovirus surveillance and arbovirus vector monitoring program samples mosquito populations and investigates arbovirus activity throughout the State of New South Wales[4]. Along the South Coast of New South Wales, localities for monitoring during 1994–95 included Nowra, Batemans Bay, Tathra, Merimbula and Eden. Mosquito collections were made weekly from December to April, with up to three trapping sites at each locality. Trapped mosquitoes were sent live to Westmead Hospital via overnight courier, identified to species and placed into pools of up to 25 according to the species, sex, date and site of collection. The pooled mosquitoes were ground, centrifuged and the supernatant inoculated onto cell cultures to isolate virus. Monoclonal antibodies were used in an ELISA to identify the alphaviruses, BF, Ross River (RR), Sindbis and Getah, and the flaviviruses, Alfuy, Edge Hill (EH), Kokobera, Kunjin, Murray Valley encephalitis and Stratford (STR).

Results

The surveillance revealed the presence of the viruses BF, RR, EH and STR. These were isolated when mosquito populations along the South Coast of New South Wales were above average, and at a record high in seven years of continuous monitoring at Batemans Bay. The dramatic increases in mosquito numbers through December, January and February at Batemans Bay were some two to eight times greater than the previous six year average (Figure). Similar trends were noted at the other trapping locations. The majority of the viruses were from the saltmarsh mosquito, *Aedes vigilax*, a noted vector of several arboviruses[5].

A total of 148 arbovirus isolates (Table) was obtained, including BF (109 isolates), RR (10), EH (21) and STR (eight). *Ae vigilax* yielded 145 isolates (108 BF, eight RR, 21 EH and eight STR), *Ae camptorhynchus* yielded two (one BF and one RR) and *Coquillettidia linealis* yielded one (RR). The majority of isolates were from Batemans Bay (141 isolates: 106 BF, seven RR, 20 EH and eight STR) and reflected the greater number of mosquitoes collected at this location (88% of all mosquitoes from the South Coast localities). Seven isolates were from Tathra (three BF, three RR and one EH) and there were

Figure. Mosquitoes per trap night at Batemans Bay, December 1994 to April 1995, and 1988–94 average, by week

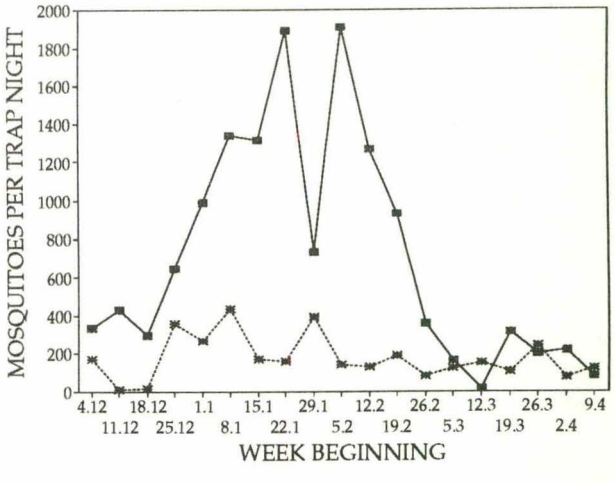

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Table. Arboviruses isolated from mosquitoes collected on the New South Wales South Coast, 1994–95

Mosquito collections			Virus isolates				
Date	Locality	Species	Barmah Forest	Ross River	Edge Hill	Stratford	Total
9.1.95	Batemans Bay	*Aedes vigilax*	1	0	0	0	1
17.1.95	Batemans Bay	*Aedes vigilax*	29	0	4	0	33
17.1.95	Tathra	*Coquillettidia linealis*	0	1	0	0	1
23.1.95	Batemans Bay	*Aedes vigilax*	51	3	8	2	64
31.1.95	Batemans Bay	*Aedes vigilax*	6	0	1	0	7
6.2.95	Batemans Bay	*Aedes vigilax*	13	1	2	1	17
7.2.95	Tathra	*Aedes vigilax*	0	1	0	0	1
14.2.95	Batemans Bay	*Aedes vigilax*	4	1	3	2	10
20.2.95	Batemans Bay	*Aedes vigilax*	2	2	2	1	7
21.2.95	Tathra	*Aedes vigilax*	2	0	0	0	2
27.2.95	Batemans Bay	*Aedes vigilax*	0	0	0	2	2
1.3.95	Tathra	*Aedes camptorhynchus*	1	0	0	0	1
7.3.95	Tathra	*Aedes vigilax*	0	0	1	0	1
14.3.95	Tathra	*Aedes camptorhynchus*	0	1	0	0	1
Total			109	10	21	8	148

no arboviruses obtained from Eden, Merimbula or Nowra.

Discussion

The isolation and identification of BF from mosquitoes collected at Batemans Bay in early January alerted health authorities to the presence of increased arbovirus activity. This led to the recognition that BF was responsible for the several anecdotal reports of an unidentified human clinical illness, and the local public health unit issued alerts to medical practitioners and the public[1]. Later BF isolates from mosquitoes collected at Tathra (more than 100km further south), mirrored reports of disease notifications[1] and indicated the widespread nature of the epidemic.

The environmental conditions predisposing to the outbreak included extremely high levels of rainfall in late December and through January, being approximately 75% higher than the average. The rainfall supplemented a series of high tides which provided favourable conditions for the mass breeding of *Ae vigilax*.

Symptomatic human infection with BF has been reported to be similar to that of RR, but there are limited clinical data on BF infection. Reports of human infections with BF have increased with the improvements in serological testing and as a result of three major epidemics in the last four years, including the Northern Territory in 1992[2], Western Australia in 1993–94[3], and now in New South Wales. Lindsay et al[3] provided an excellent recent review of the history of BF. Each outbreak followed a period of increased rainfall activity after an interval of apparent BF absence. In New South Wales, a low number of sporadic human cases of BF infection is reported annually but none have previously been recorded from the south coast (Linda Hueston, personal communication) although past serological surveys have revealed a low percentage of human seropositivity[6,7]. Over the course of arbovirus surveillance from mosquitoes collected along the South Coast of New South Wales from 1981 to 1995 by our laboratories[8,9], BF has been isolated on only one other occasion, in 1984. This suggests that the human populations may have had limited exposure to BF. Such lack of immunity could have been an important factor in the outbreak.

In contrast, RR appears to be active annually in the region. Seroprevalance rates in humans are higher and RR is isolated almost every year from mosquitoes, albeit at a lower frequency than in 1994–95. The number of RR mosquito isolates obtained this year was well above average, yet relatively few cases of infection were reported (Linda Hueston, personal communication). The reasons for this are unclear although it is possible that not all cases of arbovirus infections are reported during epidemics.

The monitoring also revealed the presence of EH and STR which are mosquito transmitted arboviruses which belong to the genus flavivirus. These viruses were isolated on several occasions and at a much higher frequency than previously observed. A single clinical case of presumptive infection with EH has been reported, with symptoms including myalgia, arthralgia and muscle fatigue[10]. Likewise for STR, there have been only very few documented symptomatic patients, and described symptoms include fever, arthritis and lethargy[11]. Prior to this year, both EH and STR had been rarely isolated from mosquitoes collected from the south coast of New South Wales: two isolates of EH had been obtained, one each in 1982 and 1983, and one isolate of STR was obtained in 1981[12].

The variety and high number of isolates obtained during the 1994–95 epidemic and the apparent lack of recent human cases of disease attributed to some of these viruses, coupled with the similar clinical presentations associated with the infections, may suggest that many human cases were not recognised. Differential diagnosis for infection with BF, RR, EH or STR requires a specific serological test. The presence of these arboviruses should be considered when requesting arboviral serology in patients from the South Coast of New South Wales.

Acknowledgments

Funding for this program is provided by the New South Wales Department of Health. The ELISA technique and several of the monoclonal antibodies used for identifying the viruses were kindly supplied by the Arbovirus Research Laboratory, University of Western Australia. Linda Hueston from the Virology Department, ICPMR, Westmead Hospital, generously provided epidemiological data on arbovirus infections.

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OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization (WHO), the South Pacific Epidemiological and Health Information Service, the Program for Monitoring Emerging Diseases and the Department of Foreign Affiars and Trade.

Dengue in the South Pacific

The number of cases in the outbreak in the **Cook Islands** was decreasing in late July; there had been a total of 779 suspected cases of dengue 3, 75% in Rarotonga and 25% in the outer islands. **New Caledonia** had 1820 cases of dengue 3 this year to 18 June, including 563 in the urban areas of Noumea. There were 37 cases of dengue haemorrhagic fever. **Palau** reported 636 cases to 22 May, 191 confirmed as due to dengue 4, and suspect cases still being reported at the end of July. There has been endemic transmission of dengue 3 in **French Polynesia** since 1989, and 208 cases were reported for the first three months of the year. Fiji reported 27 suspected cases to 8 May, about the same number as reported in equivalent periods in previous years. The **Federated States of Micronesia** reported 20 cases in April and May this year. **Papua New Guinea** has not reported cases, although cases acquired there have been documented[1].

Diphtheria in the former USSR

The epidemic of diphtheria is continuing in areas of the former USSR; the WHO is predicting that between 150,000 and 200,000 cases will occur in the region this year. Incidence rates have recently been in the range 0.5 –1.0 per 100,000 population in Armenia, Estonia, Lithuania and Uzbekistan and 27–32 per 100,000 in Russia

and Tajikistan. Case fatality rates have ranged from 2–3% in Russia and the Ukraine to 6–10% in Armenia, Kazakhstan, Moldova and Latvia, to 17–23% in Azerbaijan, Georgia and Turkmenistan.

Cholera update

Cases in the current outbreak in **Cape Verde** have increased recently with 1429 cases and 26 deaths reported during the period 14 to 27 August. The islands of Boa Vista and Sao Vincente have recently reported their first cases in this outbreak. There has been an increase in the number of cases of cholera in **Burundi**, mainly in Bubanza Cibitoke Districts; the WHO is monitoring the situation closely as there is a large number of displaced persons in the area. Over 19,000 suspected cases of cholera and over 600 deaths have been reported from **Afghanistan** since July. There have been further unconfirmed reports of large numbers of cholera cases in the south-western part of **North Korea** in recent months, and also of smaller outbreaks in **South Korea**.

Cholera cases have been reported since April from Afghanistan, Angola, Bukino Faso, Burundi, Cameroon, Cape Verde, Costa Rica, Cote d'Ivoire, Ecuador, El Salvador, Ghana, Guinea, India, Japan, Kenya, Laos, Liberia, Mali, Mexico, Moldova, Nigeria, the Russian Federation, Romania, Sierra Leone, Singapore, Tanzania, Togo, Uganda, Ukraine and Zaire.

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COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1456 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 8, 9 and 10).

- Two reports of **measles** were received this period. Few reports have been received in recent months (Figure 1).
- **Rubella** was reported for 11 patients this period including one female in the 15 to 44 year age group. The number of reports received has risen in recent weeks.
- **Hepatitis A** was reported for 18 patients this period including 10 males and 8 females, 9 of whom were in the 25 to 44 year age range. Included was an apparent cluster of 2 cases in a single postcode region in the Statistical Division of Brisbane.
- Positive **hepatitis B** serology was reported for 66 patients this fortnight, including 33 males and 33 females. A total of 48 were in the 15 to 44 year age range. Included were 9 pregnant females.
- One hundred and eighty-seven reports of positive **hepatitis C** serology were received this period. Included were 15 injecting drug users, 3 pregnant females, one haemophiliac and the index case in a needlestick injury.
- Ten reports of **Ross River virus** were received this period from the Northern Territory (4), Queensland (5), and Western Australia (one). Diagnosis was by IgM detection (9) and fourfold rise in titre (one). The number of reports has continued to fall since May.
- **Barmah Forest virus** was reported for 3 patients this period, all from Queensland.

Figure 1. Measles laboratory reports, 1993 to 1995, by month of specimen collection

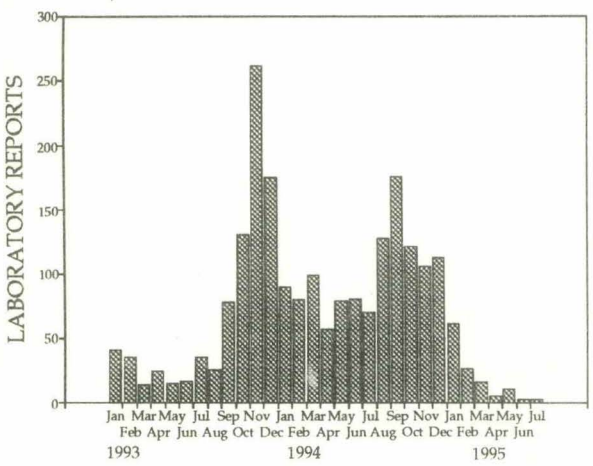


Figure 2. Parainfluenza virus type 1, 2 and 3 laboratory reports, 1994 to 1995, by month of specimen collection

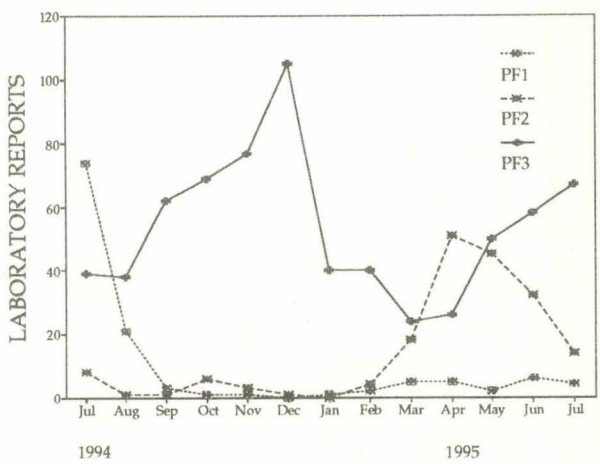


Figure 3. Respiratory syncytial virus laboratory reports, 1990 to 1994 average and 1995, by month of specimen collection

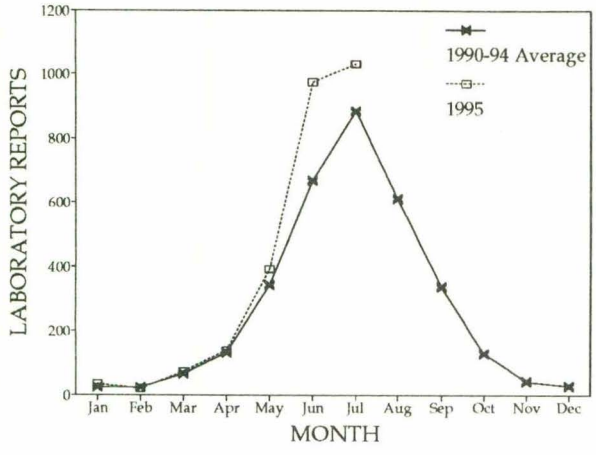
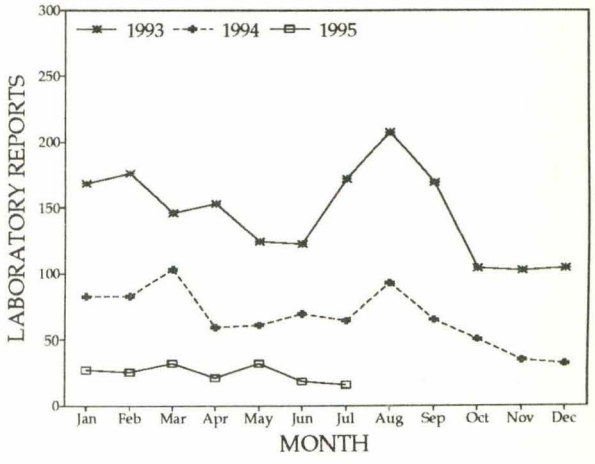


Figure 4. *Mycoplasma pneumoniae* laboratory reports, 1993 to 1995, by month of specimen collection



- Forty-five reports of **adenovirus** were received this period diagnosed by virus isolation (35), antigen detection (8) and single high titre (2). Seventeen patients were under the age of one year and a total of 31 in the under 5 year age group.
- **Herpes simplex virus type 1** was reported for 159 patients this fortnight. Diagnosis was by virus isolation (151), antigen detection (7) and IgM detection (one). Included were 87 reports of skin disease, 57 of genital disease, and 4 of eye disease.
- One hundred and sixty-one reports of **herpes simplex virus type 2** were received, all diagnosed by virus isolation.
- Thirty-seven reports of **cytomegalovirus** were received this period. Diagnosis was by virus isolation (28) and serology (9). Included was virus isolation from a lung biopsy from a 64 year old male. Also included were 3 HIV positive patients and 9 transplant recipients.
- **Varicella-zoster virus** was reported for 39 patients this period. Diagnosis was by virus isolation (14), antigen detection (22), IgM detection (2), and fourfold rise in titre (one).
- Three reports of **echovirus type 24** were received from South Australia this period with specimen collection dates in June and July. These are the first reports of this virus since February 1992.
- Twenty reports of **untyped enterovirus** were received this period. Included was a 28 year old Queensland female with hand foot and mouth disease.
- **Rhinovirus** was reported for 32 patients this period, 23 of whom were under the age of 5 years.
- **Influenza A** was reported for 29 patients this fortnight. Reports were recieved for all age groups. Diagnosis was by virus isolation (3), antigen detection (one), fourfold rise in titre (6), single high titre (18) and IgM detection (one). Reports were received from New South Wales (2), Queensland (9), South Australia (5), Victoria (4) and Western Australia (9). A total of 667 reports has been received for the year to date. Eighty isolates were identified as being H_1N_1 subtypes and 6 as H_3N_2 subtypes. The number of reports has fallen after peaking in June.
- Thirty-seven reports of **influenza B** were received this fortnight. Diagnosis was by virus isolation (8), antigen detection (8), fourfold rise in titre (3) and single high titre (18). Reports were received from New South Wales (11), Queensland (12), South Australia (5), and Victoria (9). Included was a 58 year old male who had recently returned from Papua New Guinea. A total of 235 reports has been received so far this year for 119 males and 113 females. The number of reports has continued to rise in recent weeks.
- **Parainfluenza virus type 3** was reported for 32 patients this fortnight, 21 of whom were under the age of one year and a total of 30 under 5 years of age. Diagnosis was by virus isolation (16), antigen detection (14), single high titre (one) and fourfold rise in titre (one). The number of reports continues to rise (Figure 2).
- One hundred and fifty-three reports of **respiratory syncytial virus (RSV)** were received this fortnight, 134 (88%) for patients under 5 years of age. Method of diagnosis included virus isolation (76), antigen detection (66), single high titre (10) and fourfold rise in titre (one). The number of reports has continued to rise in recent weeks and is above average for the time of year (Figure 3).
- **Rotavirus** was reported for 143 patients this period including 74 males and 68 females. One hundred and thirty-two cases (92%) were 4 years of age or under. The number of reports is average for the time of year.

Table 1. Australian Sentinel Practice Research Network, weeks 34 and 35, 1995

Condition	Week 34, to 27 August 1995		Week 35, to 3 September 1995	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	129	14.9	96	12.3
Rubella	5	0.6	2	0.3
Measles	0	0	1	0.1
Chickenpox	10	1.2	13	1.7
Pertussis	2	0.2	4	0.5
Gastroenteritis	143	16.6	129	16.6

- Thirty-five reports of **pertussis** were received this period, 15 ***Bordetella pertussis*** and 20 ***Bordetella*** species. The number of reports has risen in recent weeks.
- ***Chlamydia trachomatis*** was reported for 78 patients this period diagnosed by isolation (9), antigen detection (39) and nucleic acid detection (30). Included were 28 males and 49 females (one sex not stated), 72 of whom were in the 15 to 44 year age range.
- Ten reports of ***Mycoplasma pneumoniae*** were received this period, for 8 females in the 5 to 44 year age range and 2 males in the 45 to 64 year age range. The number of reports received remains low for the time of year (Figure 4).
- **Q fever** was reported for 3 patients this period, one female and 2 males, all in the 17 to 32 year age group.

Australian Sentinel Practice Research Network

Data for week 34 (ending 27 August) and week 35 (ending 3 September) are included in this issue of *CDI* (Table 1). There were 8635 consultations reported for week 34 and 7794 for week 35. The influenza reporting rate was lower this fortnight compared with last fortnight and dropped markedly in Queensland and Victoria. Rubella reporting rates rose slightly this fortnight.

National Influenza Surveillance 1995

Australian Capital Territory Department of Health and Community Care; Australian Sentinel Practice Research Network; Communicable Diseases Intelligence Virology and Serology Reporting Scheme Contributing Laboratories; New South Wales Department of Health; Australia Post; Victorian Department of Health and Community Services; South Australian Health Commision; World Health Organization (WHO) Collaborating Centre for Influenza Reference and Research, Melbourne

Overall the rate of influenza reporting has continued to decline this fortnight. Schools absenteeism rates and those for Australia Post have remained stable. Sentinel practitioners consultation rates for influenza like illness have fallen for most schemes.

Sentinel general practitioner surveillance (Figure 5)

- The **Australian Sentinel Practice Research Network** reported a marked reduction in the rate of reporting for influenza like illness this fortnight. For the weeks ending 27 August and 3 September consultation rates of 15 and 12 per 1000 encounters were reported respectively.
- The **Victorian sentinel general practitioners reporting scheme** had a consultation rate for influenza like illness of 17 per 1000 encounters this period, higher than the rate reported in the previous period.
- **New South Wales** sentinel general practitioners reported rates of 19 and 15 per 1000 consultations for the weeks ending 20 and 27 August respectively, a fall in rates compared to those reported in previous weeks.
- **The Australian Capital Territory Sentinel General Practitioner Scheme** reported a fall in the consultation rate for influenza like illness to 15 per 1000 encounters for the weeks ending 3 and 10 September.

Figure 5. Sentinel general practitioner influenza reports per 1000 encounters, 1995, by week and scheme

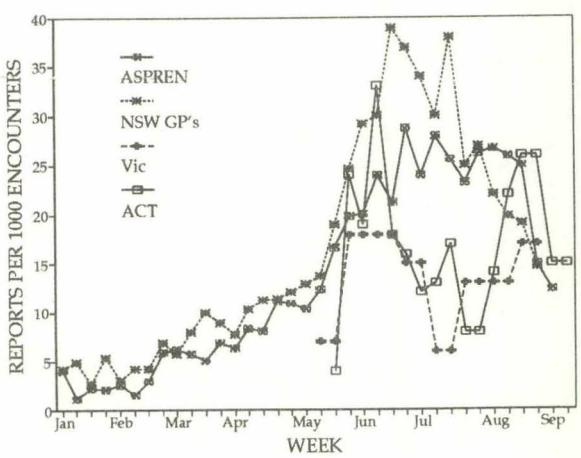


Figure 6. Absenteeism reports, 1995, by week and scheme

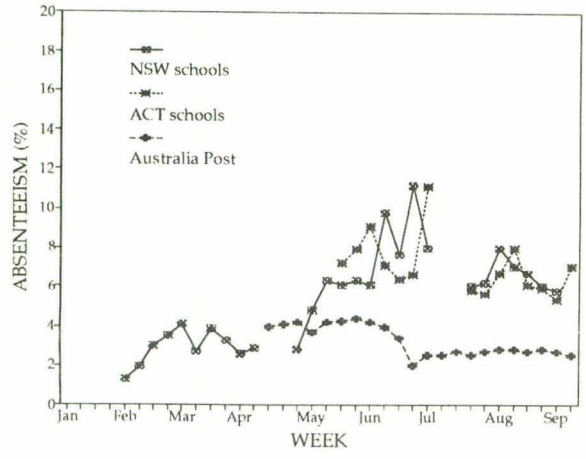


Figure 7. Influenza A laboratory reports, 1995, by method of diagnosis and week of speci-

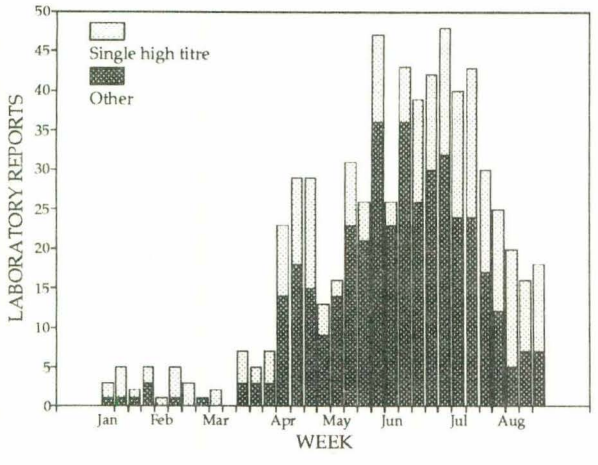
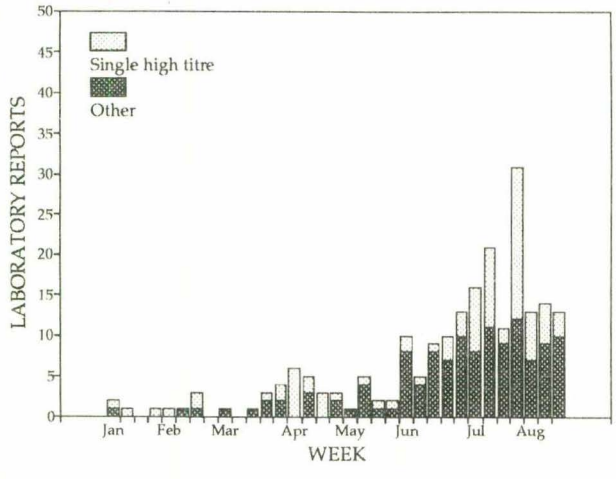


Figure 8. Influenza B laboratory reports, 1995, by method of diagnosis and week of specimen collection



Absenteeism surveillance (Figure 6)

- **Australia Post** reported national absenteeism rates of 2.7% and 2.5% for the weeks ending 3 and 9 September respectively, similar to rates reported in previous weeks. The absenteeism rate in Queensland fell whilst that the other States remained stable.
- **New South Wales Schools Absenteeism Surveillance** reported rates of 6.0% and 5.8% for the weeks ending 27 August and 3 September respectively. The rate of absenteesim continues to decline.
- The **Australian Capital Territory Schools Absenteeism Surveillance** reported absenteeism rates of 5.3% and 7.0% for the weeks ending 5 and 12 September respectively.

Laboratory surveillance (Figures 7 and 8)

- **Influenza A** was reported for 29 patients this fortnight. Reports were recieved for all age groups. Diagnosis was by virus isolation (3), antigen detection (one), fourfold rise in titre (6), single high titre (18) and IgM detection (one). Reports were received from New South Wales (2), Queensland (9), South Australia (5), Victoria (4) and Western Australia (9). A total of 667 reports has been received for the year to date. Eighty isolates were identified as being H_1N_1 subtypes and 6 as H_3N_2 subtypes. The number of reports has fallen after peaking in June.
- Thirty-seven reports of **influenza B** were received this fortnight. Diagnosis was by virus isolation (8), antigen detection (8), fourfold rise in titre (3) and single high titre (18). Reports were received from New South Wales (11), Queensland (12), South Australia (5), Victoria (9). Included was a 58 year old male who had recently returned from Papua New Guinea. A total of 235 reports has been received so far this year for 119 males and 113 females. The number of reports has continued to rise in recent weeks.

Other surveillance

- **Victorian total deaths surveillance** reported a death rate of 1.3 per 10,000 population per week for the fortnight ending 25 August, similar to the rates reported in previous fortnights.
- **Victorian hospital admissions surveillance** reported admission rates for influenza and/or pneumonia of 0.9 per 100 patients for the last fortnight, a small increase on the rate reported in the previous period.

Surveillance of Serious Adverse Events Following Vaccination

The Serious Adverse Events Following Vaccination Surveillance Scheme is a national surveillance scheme which monitors the serious adverse events which occur rarely following vaccination. More details on the Scheme were published in *CDI* 1995;**19**:273-274.

Acceptance of a report does not imply a causal relationship between the 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 to Australian children under the age of 6 years every month.

Results for the reporting period 6 August 1995 to 2 September 1995

There were 11 reports of serious adverse events following vaccination for the reporting period 6 August to 2 September 1995. Reports were for episodes which occurred between June and August 1995 and were received from New South Wales (4), the Northern Territory (one), Queensland (4) and Victoria (2). Reports were not received from the Australian Capital Territory or Tasmania. South Australia and Western Australia have not yet commenced reporting.

Of the 11 reports, 2 were cases of persistent screaming, 3 of hypotonic/hyporesponsive episodes, one of a temperature of 40.5°C or more, 2 of convulsions and 3 were other events temporally associated with vaccination (Table x). Of the 3 'other' cases, one was a child with irritability and screaming following DTP vaccine, one was a report of fever, screaming and pallor following DTP, OPV and Hib vaccines and one was a child who died of pneumonia 5 days after receiving hepatitis B vaccine.

Events associated with DTP alone or DTP in combination with other vaccines were associated with the first (4) or second (3) dose. Events were also associated with the first dose of hepatitis B vaccine and the first dose of MMR vaccine. Five children were hospitalised, two with convulsions, two with a hypotonic/hyporesponsive episode and one with a fever. Nine children were fully recovered at the time the initial report was sent in.

National Notifiable Diseases Surveillance System, 20 August to 2 September 1995

There were 2096 notifications received for the period (Figure 11 and Tables 5, 6 and 7).

- There were 26 notifications of **Ross River virus infection**; 16 cases were male and 10 were female. The cases were aged between the 10–14 and the 75–79 years age groups. Nineteen of the 26 cases were reported from Queensland, 6 from the Northern Territory, and one from the Australian Capital Territory. Dates of onset were reported as July (2 cases), and August (24 cases). For the last 4 years, fewer reports in the months June to December have been followed by peaks in the months February, March and April (Figure 9). Reports in the peak months, and overall annual reports, have been declining since 1992.
- There were 489 notifications of **campylobacteriosis**; 264 cases were male, 221 cases were female, and the sex of 4 cases was not recorded. Cases were reported from all age groups with 24% of cases aged less than 5 years. The ages of cases reported this year follow a bi-modal distribution with peaks in the age groups 0–4 years and 20–29 years (Figure 10).
- There were 224 notifications of **gonococcal infection** received; 145 cases were male and 77 cases were female; the sex of two cases was not recorded. Of the total, 158 cases were reported from Western Australia and 41 from Queensland. Recorded ages were between the 0-4 and the 55-59 years age groups, with 78% of the cases aged between 15 and 29 years. Two cases were reported in children aged less than one year, and one case in a child of 3 years.
- No cases of ***Haemophilus influenzae*** **type b infection** were reported during the period.

Table x. Adverse events following vaccination for the period 6 August to 2 September 1995

Event	Vaccine						Reporting States or Territories	Total reports for this period
	DTP	DTP/Hib	DPV/OPV	DTP/OPV/Hib	MMR	Hep B		
Persistent screaming		1	1				NSW	2
Hypotonic/ hyporesponsive episode				2	1		NSW, Qld	3
Temperature ≥ 40.5°C					1		Qld	1
Convulsions	1				1		Qld, Vic	2
Other	1			1		1	NT, Qld, Vic	3
Total	2	1	1	3	3	1		11

Figure 9. Ross River virus infection notifications, 1991 to 1995, by month of onset

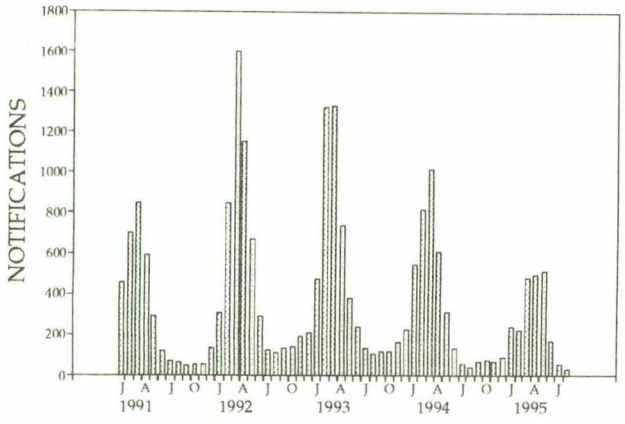
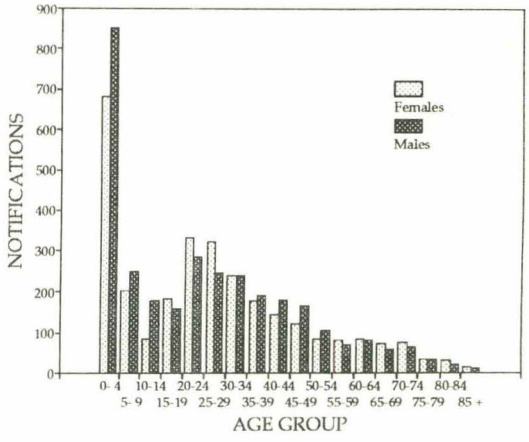


Figure 10. Campylobacteriosis notifications 1 January to 2 September 1995, by age group and sex

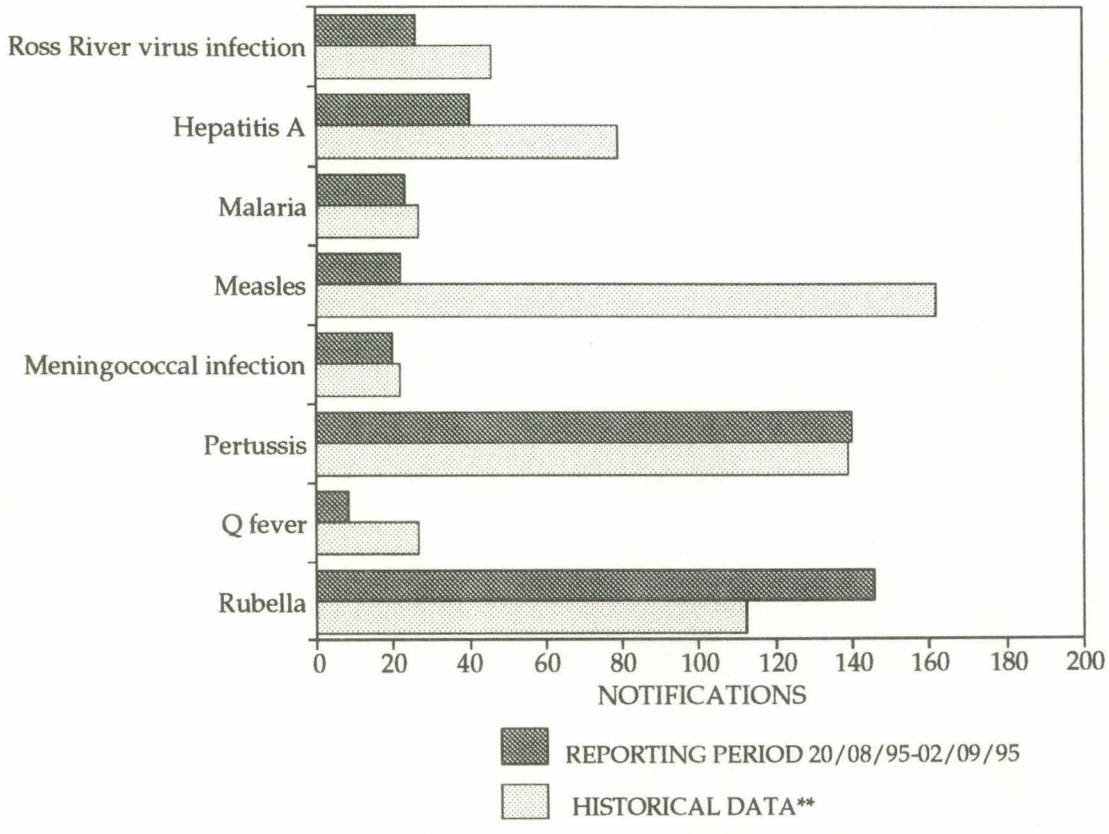


- Forty cases of **hepatitis A** were reported; 24 cases were male and 16 cases were female. The cases were from most of the age groups 0–4 years to 70–74 years, with 31 cases aged less than 40 years.
- Four cases of **hepatitis B** were reported; 3 cases were male and one was female. The cases were scattered between the 20–24 and the 75–79 years age groups.
- Two cases of **hydatid infection** were reported, a male in the age group 60–64 years, and a female in the age group 50–54 years, both cases from south-western Victoria.
- Seven notifications of **legionellosis** were received. All cases but one were male, and recorded ages were in age groups from 45–49 to 75–79 years.
- Six cases of **leptospirosis** were reported, 4 males and 2 females. Their age groups were between 25–29 and 55–59 years. Three were resident in rural Statistical Divisions, and 3 were from metropolitan areas.
- Two cases of **listeriosis** were reported, both in males over 65 years of age.
- There were 23 notifications of **malaria** received; 18 cases were male and 5 cases were female. Recorded ages were between 14 and 58 years. Onset dates were in June (4 cases), July (8) and August (11).
- Twenty-two cases of **measles** were reported; 12 cases were male, 9 cases were female, and the sex of one case was not recorded. The cases were aged between 0 and 26 years, with 10 cases reported for children aged less than 2 years. There were 2 apparent clusters, of 2 and 3 cases respectively, in the same postcode areas in New South Wales, and one apparent cluster of 2 cases in Victoria. Reorts have declined markedly over recent months overall and in most States and Territories.
- There were 20 cases of **meningococcal infection** reported; 13 cases were male and 7 cases were female. The cases were aged between 0 and 65 years. There were no apparent clusters.
- There were 140 notifications of **pertussis**; 51 cases were male and 89 cases were female. Recorded ages were between the 0–4 and the 80–84 years age groups with 3 cases aged less than one year, 27 aged between 5 and 9 years, and 28 aged between 10 and 14 years. There were 21 apparent clusters of between 2 and 8 cases each in the same postcode area. Apparent clusters were in New South Wales (5) and Queensland (16).
- Eight notifications of **Q fever** were received; all cases were male. Recorded ages were from 15 to 44 years.
- There were 146 cases of **rubella** reported, almost double the number for the previous reporting period and more than was reported for equivalent periods in previous years (Figure 11); 96 cases were male, 48 cases were female, and the sex of 2 cases was not recorded. Recorded cases were between the 0–4 and the 55–59 years age groups. Twenty cases were reported for females in the 15–44 years age group. Almost half the cases (71) were reported in males 10–24 years of age.
- There were 106 cases of **salmonellosis** reported; 52 cases were male, 50 cases were female, and the sex of 4 cases was not recorded. The cases were aged between the 0–4 and the 65–69 years age groups, with 50% of cases aged less than 5 years.
- Fifty-one cases of **syphilis** were reported; 38 cases were male, 12 cases were female, and the sex of one case was not recorded. The cases were aged between the 5–9 and the 80–84 years age groups.
- There were 26 cases of **tuberculosis** reported; 16 cases were male and 10 cases were female. The cases were aged between the 15–19 and the 75–79

years age groups. The dates of onset were reported in May (2 cases), July (5) and August (19).

- A single case of **typhoid** was reported in a female in the age group 25–29 years.
- Eleven cases of **yersiniosis** were reported; 6 cases were male and 5 cases were female. The age groups of cases ranged from 0–4 years (4 cases) to 10–14 years (3 cases) and 4 older age groups to 50–54 years (one case each). There was one apparent cluster of 2 cases in the same postcode area in Queensland.

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 9 previous 2-week reporting periods: the corresponding periods of the last 3 years and the periods immediately preceding and following those.

Table 5. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 20 August to 2 September 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[1] This period 1995	This period 1994	Year to date 1995	Year to date 1994
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0
Haemophilus influenzae b infection	0	0	0	0	0	0	0	0	0	2	48	131
Measles	0	8	0	6	0	0	7	1	22	234	993	2751
Mumps	0	0	0	NN	1	0	0	1	2	2	44	15
Pertussis	2	31	2	86	12	1	3	3	140	258	2776	3508
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella	4	23	0	50	1	7	46	15	146	70	1630	1083
Tetanus	0	0	0	0	0	0	0	0	0	1	3	9

1. 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.

NN Not Notifiable.

Table 6. Notifications of other diseases[1] received by State and Territory health authorities in the period 20 August to 2 September 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2] This period 1995	This period 1994	Year to date 1995	Year to date 1994
Arbovirus infection												
Ross River virus infection	1	0	6	19	0	-	0	0	26	16	2277	3704
Dengue	0	0	0	0	0	-	0	0	0	2	21	15
NEC[3]	0	1	1	14	0	0	0	0	16	12	721	467
Campylobacteriosis[4]	13	-	13	70	221	17	98	57	489	335	7046	6317
Chlamydial infection (NEC)[5]	5	NN	8	98	1	18	40	42	212	235	4126	5120
Donovanosis	0	NN	3	0	NN	0	0	0	3	5	56	69
Gonococcal infection[6]	1	6	12	41	0	0	6	158	224	75	2126	2090
Hepatitis A	0	3	3	25	0	0	7	2	40	71	1019	1358
Hepatitis B	0	0	0	2	0	0	2	0	23	13	238	223
Hepatitis C incident	-	0	0	-	0	-	-	-	0	1	73	21
Hepatitis C unspecified	18		5	246		9	141	33	452	334	6294	6115
Hepatitis (NEC)	0	0	0	0	0	0	3	NN	3	3	28	30
Legionellosis	0	3	0	0	0	0	2	2	7	4	138	124
Leptospirosis	0	0	0	3	2	0	1	0	6	1	90	89
Listeriosis	0	0	0	0	1	0	1	0	2	0	45	19
Malaria	1	0	0	12	0	0	10	0	23	19	450	495
Meningococcal infection	0	2	0	9	1	0	7	1	20	27	250	245
Ornithosis	0	NN	0	1	0	0	5	0	6	2	90	60
Q fever	0	5	0	2	0	0	1	0	8	14	304	476
Salmonellosis (NEC)	2	8	6	29	16	3	30	12	106	119	4453	3864
Shigellosis[4]	1	-	6	8	3	0	3	4	25	13	568	517
Syphilis	0	7	18	10	0	0	15	1	51	101	1447	1770
Tuberculosis	0	2	0	1	5	1	17	0	26	37	733	685
Typhoid[7]	0	0	0	1	0	0	0	0	1	1	33	30
Yersiniosis (NEC)[4]	0	-	0	9	2	0	0	0	11	3	243	294

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

NN Not Notifiable.

NEC Not Elsewhere Classified.

\- Elsewhere Classified.

Table 7. Notifications of rare[1] diseases received by State and Territory health authorities in the period 20 August to 2 September 1995

DISEASES	Total this period	Reporting States or Territories	Year to date 1995
Botulism	0		0
Brucellosis	0		20
Chancroid	0		2
Cholera	0		4
Hydatid infection	2	Vic	25
Leprosy	0		4
Lymphogranuloma venereum	0		1
Plague	0		0
Rabies	0		0
Yellow fever	0		0
Other viral haemorrhagic fevers	0		0

1. Fewer than 50 cases of each of these diseases were notified each year during the period 1988 to 1993.

Table 8. Virology and serology laboratory reports by State or Territory[1] for the reporting period 24 August to 6 September 1995, historical data[2], and total reports for the year

	State or Territory [1]								Total this fortnight	Historical data[2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
MEASLES, MUMPS, RUBELLA											
Measles virus				1			1		2	21.8	264
Mumps virus							1		1	3.8	53
Rubella virus		1		8		1	1		11	25.3	562
HEPATITIS VIRUSES											
Hepatitis A virus		1		15			2		18	13.5	329
Hepatitis B virus		15		28	3		14	6	66	80.0	1,721
Hepatitis C virus		16	3	70	19	15	4	60	187	217.2	4,195
Hepatitis E virus							2		2	0.5	10
ARBOVIRUSES											
Ross River virus			4	5				1	10	12.2	1,003
Barmah Forest virus				3					3	2.5	198
ADENOVIRUSES											
Adenovirus type 1					3		4		7	2.7	29
Adenovirus type 2					3		1		4	3.0	21
Adenovirus type 3					4		1		5	4.0	47
Adenovirus type 5					5				5	0.7	10
Adenovirus type 6					1				1	0.2	2
Adenovirus type 7					3				3	0	17
Adenovirus type 8							2		2	1.7	21
Adenovirus not typed/pending		4		1	6		5	2	18	49.2	620
HERPES VIRUSES											
Herpes simplex virus type 1		11		50	24	6	41	27	159	149.7	3,487
Herpes simplex virus type 2		9	2	57	17	3	48	25	161	165.5	3,630
Herpes simplex not typed/pending		7		2			3		12	22.5	349
Cytomegalovirus	1	10		4	2	1	19		37	66.7	1,066
Varicella-zoster virus		4		14	6		10	5	39	30.0	793
Epstein-Barr virus		8	2	21	10	1	4	4	50	45.0	1,411
Herpes virus group - not typed		1							1	0.3	13
OTHER DNA VIRUSES											
Poxvirus group not typed				1					1	0.5	2
Parvovirus				1	1			2	4	4.0	93
PICORNA VIRUS FAMILY											
Echovirus type 9							2		2	0.3	10
Echovirus type 24					3				3	0	3
Poliovirus type 1 (uncharacterised)		2							2	1.0	16
Poliovirus type 2 (uncharacterised)		1							1	0.8	4
Rhinovirus (all types)		6		1	3		22		32	40.2	474
Enterovirus not typed/pending		4		4	1		3	8	20	31.5	647
ORTHO/PARAMYXOVIRUSES											
Influenza A virus		2		9	5		4	9	29	81.8	607
Influenza B virus		11		12	5		9		37	36.2	239
Parainfluenza virus type 3		2		1	7		22		32	19.5	480
Parainfluenza virus typing pending						1			1	2.2	28
Respiratory syncytial virus		28		9	55	19	34	8	153	260.0	3,280

Table 8. Virology and serology laboratory reports by State or Territory[1] for the reporting period 24 August to 6 September 1995, historical data[2], and total reports for the year

	State or Territory [1]								Total this fortnight	Historical data[2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
OTHER RNA VIRUSES											
HIV-1				9					9	1.7	77
Rotavirus		45			22	8	66	2	143	180.0	1,096
Norwalk agent							8		8	0.3	18
OTHER											
Chlamydia trachomatis not typed		10	2	42	5	6	5	8	78	78.3	1,816
Chlamydia psittaci							8		8	2.0	110
Mycoplasma pneumoniae		1		5	1	2	1		10	64.7	229
Coxiella burnetii (Q fever)		1		2			1		4	17.0	144
Rickettsia australis							2		2	0	10
Rickettsia tsutsugamushi				1					1	0	5
Streptococcus group A		2	2	11					15	10.2	432
Bordetella pertussis							11	4	15	22.5	463
Bordetella species				20					20	10.7	120
Legionella longbeachae								2	2	0.2	13
Legionella species								1	1	0.3	26
Cryptococcus species				1					1	2.7	20
Treponema pallidum		4	3	1				2	10	23.0	421
Schistosoma species							4	3	7	0	79
Echinococcus granulosus							1		1	0.5	14
TOTAL	1	206	18	409	214	63	366	179	1,456	1,809.8	30,827

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.
2. The historical data are the averages of the numbers of reports in 6 previous 2 week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceding and following those.

Table 9. Virology and serology laboratory reports by clinical information for the reporting period 24 August to 6 September 1995

	Encephalitis	Meningitis	Other CNS	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA												
Measles virus											2	2
Mumps virus											1	1
Rubella virus				1			2				8	11
HEPATITIS VIRUSES												
Hepatitis A virus				1		10					7	18
Hepatitis B virus						21					45	66
Hepatitis C virus					1	17			1		168	187
Hepatitis E virus						1					1	2
ARBOVIRUSES												
Ross River virus									4		6	10
Barmah Forest virus									2		1	3
ADENOVIRUSES												
Adenovirus type 1				6			1					7
Adenovirus type 2				3	1							4
Adenovirus type 3				4							1	5
Adenovirus type 5				5								5
Adenovirus type 6				1								1
Adenovirus type 7				3								3
Adenovirus type 8								2				2
Adenovirus not typed/pending				8	4			1			5	18
HERPES VIRUSES												
Herpes simplex virus type 1				2			87	4		57	9	159
Herpes simplex virus type 2							39			117	5	161
Herpes simplex not typed/pending	1	1					5			2	3	12
Cytomegalovirus				9	1			1			26	37
Varicella-zoster virus							37				2	39
Epstein-Barr virus	1			10		1			1		37	50
Herpes virus group - not typed											1	1
OTHER DNA VIRUSES												
Poxvirus group not typed											1	1
Parvovirus				1							3	4
PICORNA VIRUS FAMILY												
Echovirus type 9				2								2
Echovirus type 24				2			1					3
Poliovirus type 1 (uncharacterised)				2								2
Poliovirus type 2 (uncharacterised)				1								1
Rhinovirus (all types)				23			1				8	32
Enterovirus not typed/pending		1		8	2		2				7	20

Table 9. Virology and serology laboratory reports by clinical information for the reporting period 24 August to 6 September 1995, continued

	Encephalitis	Meningitis	Other CNS	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ORTHO/PARAMYXOVIRUSES												
Influenza A virus				10							19	29
Influenza B virus			1	18							18	37
Parainfluenza virus type 3				28							4	32
Parainfluenza virus typing pending				1								1
Respiratory syncytial virus				139						1	13	153
OTHER RNA VIRUSES												
HIV-1											9	9
Rotavirus					135						8	143
Norwalk agent					8							8
OTHER												
Chlamydia trachomatis not typed							3	2		54	19	78
Chlamydia psittaci				4							4	8
Mycoplasma pneumoniae				9							1	10
Coxiella burnetii (Q fever)											4	4
Rickettsia australis											2	2
Rickettsia tsutsugamushi											1	1
Streptococcus group A							1		2		12	15
Bordetella pertussis				15								15
Bordetella species				12							8	20
Legionella longbeachae				2								2
Legionella species				1								1
Cryptococcus species											1	1
Treponema pallidum					1					5	4	10
Schistosoma species											7	7
Echinococcus granulosus											1	1
TOTAL	2	2	1	331	153	50	179	10	10	236	482	1456

Table 10. Virology and serology laboratory reports by contributing laboratories for the reporting period 24 August to 6 September 1995

STATE OR TERRITORY	LABORATORY	REPORTS
New South Wales	Royal Alexandra Hospital for Children, Camperdown	48
	Royal Prince Alfred Hospital, Camperdown	34
	South West Area Pathology Service, Liverpool	99
Queensland	Queensland Medical Laboratory, West End	451
South Australia	Institute of Medical and Veterinary Science, Adelaide	213
Tasmania	Northern Tasmanian Pathology Service, Launceston	18
	Royal Hobart Hospital, Hobart	43
Victoria	Monash Medical Centre, Melbourne	36
	Royal Children's Hospital, Melbourne	118
	Unipath Laboratories	19
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	196
Western Australia	State Health Laboratory Services, Perth	181
TOTAL		1456