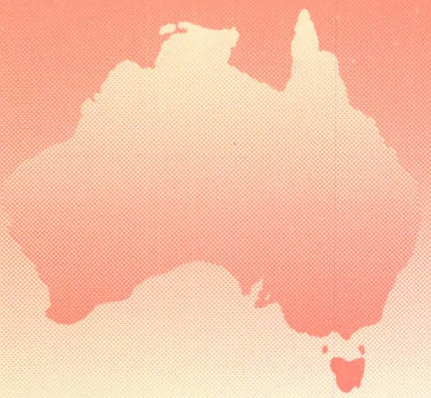

COMMUNICABLE DISEASES INTELLIGENCE

ISSN 0725-3141 VOLUME 16 NUMBER 9 4 May 1992

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Editor: Robert Hall

Editorial Staff: Jenny Hargreaves, Evon Bowler, Anura Ponnuthurai, Lenore Cupitt, Barbara Jenkins and Michelle Wood

CDI is produced fortnightly by:

Communicable Diseases Section
Department of Health, Housing and Community Services
GPO Box 9848 Canberra ACT 2601.
Fax: (06) 289 7802 Telephone: (06) 289 1555

DEPARTMENT OF HEALTH, HOUSING AND COMMUNITY SERVICES

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

A CLUSTER OF *HAEMOPHILUS INFLUENZAE* MENINGITIS CASES IN RURAL DARWIN

(Angela Merianos[1,2], Mahomed Patel[2], Paul Bauert[3]).

Three children with *Haemophilus influenzae* type b (Hib) meningitis were admitted to the Royal Darwin Hospital between 31 October and 12 November 1991. The second case presented within two days of the first. All were non-Aboriginal children aged 2 years and under and residents of an outer suburb of Darwin. Symptoms of meningitis developed acutely in the youngest child (aged 9 months), but the older children had upper respiratory tract symptoms for a week prior to admission. Clinical recovery was satisfactory in all cases.

The Litchfield Shire (the Darwin outer suburb and a number of rural communities) has a population of approximately 8000 people, mainly young families. The spatial and temporal clustering of cases prompted an epidemiological investigation by the Communicable Diseases Centre in Darwin.

The three children were linked epidemiologically through their four year old siblings, all of whom attended the suburb's pre-school. We could not establish any other common exposure among the cases. Only the last child in the series attended day care. During parent interviews, we obtained a history of a recent or current upper respiratory tract infection (URTI) for each of the 3 siblings attending the pre-school. Two of the pre-schoolers were friends and played together daily. The children attended the pre-school for approximately 10 hours per week. Only one of the children with meningitis had prolonged contact with a non-sibling who also attended the pre-school.

Initially, the attending medical staff limited rifampicin chemoprophylaxis to the family of the first case, which included a second child under the age of 4 years. After the third case, the attending paediatricians in consultation with the Communicable Diseases Centre decided to offer rifampicin to all children and staff attending the pre-school.

Before administering rifampicin 20mg/kg daily for 4 days[1], we sought parental consent for throat swabs, and distributed a short self-administered questionnaire to parents to determine the prevalence of URTIs among the children and their families. We also offered screening and prophylaxis to three children less than 2 years of age who were attending the same family day care facility as the last patient. The pre-school contacts received prophylaxis 14-15 days after the diagnosis of the first case, but the infants attending family day care started rifampicin within 48 hours of known exposure.

We defined primary contacts as those exposed to the index case for at least 4 hours/day for 5 consecutive days during the week before the onset of symptoms, or for 24 hours in that week[2]. This category included 9 untreated household contacts of the later 2 cases, and the infants at the family day care facility. Secondary contacts were contacts of siblings attending the pre-school. We identified 33 second degree contacts; 29 pre-schoolers and 4 teachers. Throat swabs for *H. influenzae* culture were taken from 40 of the total 45 contacts (89%). Only a swab from one of the pre-schoolers grew *H. influenzae* type b (2.5%). None of the primary contacts of a meningitis case were oropharyngeal carriers of the organism.

Among the pre-schoolers, 83% (25/30), were either symptomatic of an URTI at the time of interview, or had recovered from a recent URTI. At least one other household member in the families of 15 pre-schoolers also had a history of URTI. All but one parent agreed to prophylaxis for the children, and there were no further cases.

Discussion

Haemophilus influenzae type b is an important cause of childhood morbidity, especially in children under the age of 2 years[3], because the immature immune system of infants is poor at mounting a protective immune response against polysaccharide antigens. Worldwide, Hib is the commonest cause of meningitis in children under the age of 5 years[4]. In a study of 113 episodes of invasive Hib infection in the Northern Territory[5] from 1985-88, the most frequent diagnoses were meningitis (37%) and pneumonia (33%).

The incubation period of Hib is unknown, but is probably between 2 and 4 days[6]. Chemoprophylaxis with rifampicin has been shown to reduce nasopharyngeal carriage by 95% following the recommended dosage regimen[1]. As young children have the highest carriage rates (2 to 5%) and the greatest risk of invasive disease, we decided to offer chemoprophylaxis usually recommended for day care centre contacts[2,6] to the pre-school contacts as well. The American Academy of Paediatricians[2] currently recommends rifampicin prophylaxis when two or more cases of invasive Hib infection occur within 60 days in a day care centre or nursery, although the results of some prospective studies of Hib in day care centres[7,8] do not support this recommendation. In 1991, the NH&MRC recommended that careful obser-

1. National Centre for Epidemiology and Population Health, Australian National University
2. Communicable Diseases Centre, Northern Territory Department of Health and Community Services
3. Royal Darwin Hospital

vation of day care and pre-school contacts was preferable to rifampicin prophylaxis[9].

Day care centre contacts have a low throat carriage rate, but up to one third of child household contacts are colonised at the time of the onset of disease in the index case[10]. The household contacts of the third case in this cluster who were swabbed on the day of the child's admission did not grow Hib, but a single swab is insensitive for detecting carriers. Rifampicin prophylaxis should not be withheld while awaiting culture results.

Viral or mycoplasma respiratory tract infections may facilitate invasive bacterial disease[11]. The association between infection with a respiratory virus and meningococcal meningitis has been noted in Chad[12] and Britain[13]. In our investigation, a history of acute respiratory infections was very common in both household and community contacts of the meningitis cases. The two older cases themselves had a prodrome of coryza before Hib meningitis. The implications of these concurrent infections are unclear.

The low Hib carriage rate detected in our investigation is consistent with published observations[14]. This 'outbreak' may have been the result of spatial and temporal clustering of sporadic cases, which by chance alone implicated the pre-school. In a small community of young families, we would expect that most children under 5 years of age attend pre-school or a day care facility, and have siblings in the high risk age group.

Our report highlights the problems of management of day care centre contacts of children with invasive Hib and meningococcal disease. We found it a reassuring exercise to have detected only one Hib carrier among these pre-school children, but we are left not knowing whether our intervention actually prevented further cases.

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AN OUTBREAK OF *HAEMOPHILUS INFLUENZAE* CONJUNCTIVITIS - KATHERINE REGION, NORTHERN TERRITORY

(Barbara Paterson, District Medical Officer, Katherine Region, Northern Territory Department of Health and Community Services)

Summary

An outbreak of *Haemophilus influenzae* (HI) conjunctivitis occurred in the Katherine Region between 31 May and 20 September 1991. Active case finding was undertaken in one community which showed a prevalence rate of 2,804/100,000. Analysis of all cases in the Katherine Region revealed a peak incidence in the 0 to 4 year age group of 36%, followed by an incidence of 23% in the 5 to 9 year age group. All cases responded to oral amoxycillin, probenicid and chloramphenicol eye ointment.

Active case finding was a very effective way of limiting the outbreak.

Introduction

In mid June 1991, three patients had conjunctivitis severe enough to warrant admission to Katherine Hospital in the Northern Territory. All had decreased visual acuity, bilateral red and oedematous conjunctivae, perfuse pus and marginal keratitis with perilimbic infiltrates. Two of the three, a male aged 13 years and a female aged 21 years, had an irregular and constricted pupil. The former was treated with homatropine and topical steroid, the latter with homatropine. The third was a female aged 18 years. All three received topical chloramphenicol drops and ointment and oral amoxycillin or cefalexin.

At this time there were reports of several cases of severe conjunctivitis at an Aboriginal community 105km from Katherine, and two of the three hospital cases were from this community.

Haemophilus influenzae does not usually cause severe conjunctivitis symptoms or occur in epidemics, so there was concern about a possible outbreak of gonococcal conjunctivitis (GC), as had recently been documented in the Central Australian and Barkley areas. Two weeks earlier a sports and cultural festival at the community entertained many Aboriginals from those areas so this was thought to be a possible source of infection. Several eye swabs taken in the Aboriginal community grew *Haemophilus influenzae*, including two of the three hospital cases. (The third hospital case was suggestive of HI on microscopy but failed to grow on culture.) However, due to the fastidious nature of gonococcus which could have resulted in false negative swab results, an outbreak of GC not ruled out.

Methods

It was decided to selectively screen family/household members of symptomatic or known cases in the Aboriginal community. Screening was undertaken on 28 June and 2, 3 July 1991, and comprised taking eye swabs and air dried slides from both eyes, and a throat swab. Symptomatic cases were given amoxycillin and probenicid (as per the Central Australian and Western Australian GC protocol) and chloramphenicol eye ointment. Contacts were given ointment only.

This was initially a cross-sectional study. After compiling the results it became obvious that there had been a number of cases of HI conjunctivitis in the Katherine Region. A retrospective analysis of culture positive HI eye swabs was therefore carried out for the period 1 June to 30 September 1991.

The case definition for the study was a conjunctivitis patient who was culture positive for *Haemophilus influenzae* in one or both eyes.

Swabs from Katherine Hospital inpatients and outpatients were sent to the Hospital laboratory. Sensitivities were tested for chloramphenicol, ceporex, ampicillin and some for β-lactamase activity.

Swabs from the communities were sent to a private pathology laboratory. Sensitivities were tested for chloramphenicol, framycetin, polymixin B and bacitracin.

Results

Forty-two persons were screened, which included six households and two individuals. There were nine culture positive cases of HI conjunctivitis, included the initial two who were hospitalised, and the Aboriginal Health Worker. Between one and three cases occurred per household. The community had a population of 320, so there was a prevalence of 2804 per 100,000 or a crude attack rate of 28 per 1000, constituting an epidemic. Eight of the nine cases grew HI from one eye and in one case both swabs were positive. Other pathogens, but no *Neisseria gonorrhoea*, were cultured from eye swabs(Table). (One light growth of *N. gonorrhoea* was cultured from a throat swab.)

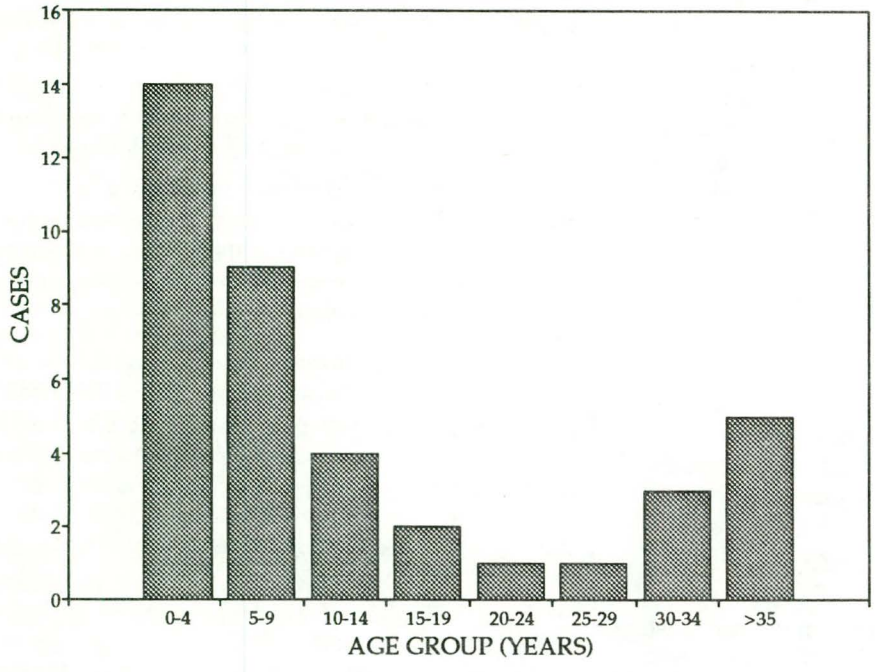
A further 30 culture positive cases of HI conjuctivitis were identified in the retrospective analysis. Twenty were identified from the Katherine Hospital outpatients department, and there were 10 others from 5 other communities in the Katherine Region.

For all the cases of HI conjunctivitis in the Katherine Region, the incidences in the different age ranges were analysed. Infants and pre-school children (0 to 4 years) were most commonly affected (36%), followed by children in the 5 to 9 year age group (23%) (Figure 1). However, cases occurred in all age groups, and the oldest patient was 64. Peak incidence was from 22 June

Table. Additional microbiological findings from eye and throat swabs from the screened Aboriginal community

Swab Type	Organism	Number of Positives	Comments
Eye	*Neisseria gonorrhoea*	0	
	Staphylococcus aureus	2	1 had HI in the other eye
	Enterobacter agglomerans	2	1 had HI in the other eye
	Acinobacter iwoffii	1	
Throat	*Neisseria gonorrhoea*	1	light growth; had *S. aureus* in one eye
	Haemophilus influenzae (HI)	3	1 had HI in one eye

Figure 1. Cases of *Haemophilus influenzae* conjunctivitis, Katherine Region, 31 May to 20 September 1991, by age group



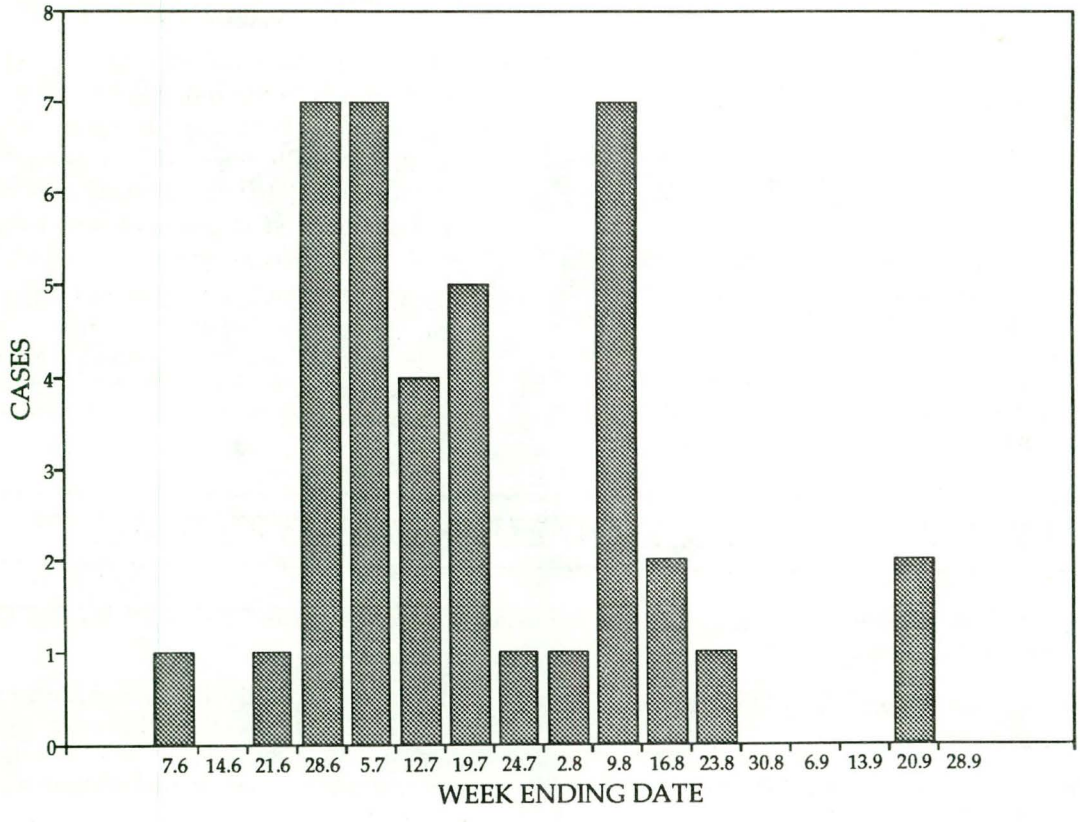
to 5 July 1991 with a second peak in the first week of August (Figure 2).

Ninety percent of cases occurred in Aboriginals (36 of the 39 cases). Three cases were caucasian; two were preschoolers living in Aboriginal communities and the third was a three year old living in Katherine.

Apart from the cases in the screened Aboriginal community, HI conjunctivitis occurred sporadically throughout the Katherine Region.

Control measures included early detection, using selective screening, and prompt treatment with a single oral dose of amoxycillin and probenicid. The community was encouraged to present early for treatment and hygiene was discussed to decrease further spread.

Figure 2. Cases of *Haemophilus influenzae* conjunctivitis, Katherine Region, 31 May to 20 September 1991, by week of onset of symptoms



Cultures were not routinely typed, however one was noted to be type a, c-f.

All 23 isolates tested at Katherine Hospital were sensitive to chloramphenicol. Twenty-two were sensitive to ampicillin and 1 was resistant to ampicillin and ceporex, but it was sensitive to ceclor, and was β-lactamase negative.

All 16 isolates from the communities were sensitive to chloramphenicol.

In addition to the cases which had positive swabs, there were many clinically diagnosed cases of HI conjunctivitis in isolated communities at the time, consistently described as having 'white spots around the limbus'.

Discussion

Haemophilus influenzae conjunctivitis can be severe and has a characteristic appearance, with marginal keratitis and perilimbic infiltrates. Usually occurring sporadically, HI conjunctivitis can occur in epidemics, as was the case in the Aboriginal community in this outbreak. It presumably had been precipitated by overcrowding during the festival.

Symptoms resolved quickly with the single oral dose of amoxycillin and probenicid. This treatment was chosen because of the concern that we were dealing with GC, however, it is probably preferable to topical chloramphenicol four times a day where compliance is a problem, and may have helped contain spread in this case. Ophthalmologists are now prescribing oral therapy in cases of lacrimal gland infection which often accompanies conjunctivitis (Dr Mahmood, 1992, pers. comm.).

Active case finding by selective screening of family and household contacts was an effective method of early detection, limiting the outbreak of HI conjunctivitis.

The age range of cases was similar to that in the Central Australian outbreak of GC conjunctivitis[1], as was the late July peak in the number of cases.

Invasive HI is a major cause of morbidity and mortality in the form of pneumonia, meningitis and septicaemia caused by a variety of types of HI in the Northern Territory[3]. At present, Aboriginal children are not vaccinated against HI. A vaccine is available against HI type b strains, however, 15% of invasive HI in Aboriginal children is due to strains other than type b. The recommended age of immunisation is 18 months, and protection is poor if given sooner, however, 70% of cases occur before one year of age, with a peak incidence at six months of age[2].

Non-typable HI is an important agent of pneumonia in developing countries. In Papua New Guinea, non-typable HI densely colonises the nasopharynx early in infancy. Possibly this is also true of the purulent nasal discharge prevalent among Aboriginal children[2].

There is very little literature on HI as a cause of conjunctivitis. Purulent conjunctivitis has been associated with acute otitis media in United States - the 'conjunctivitis - otitis media syndrome', mostly due to non-typable HI. Oral amoxicillin therapy for conjunctivitis has been shown to reduce the risk of secondary acute otitis media, but does not eradicate HI from the nasopharynx[4]. In South America, Brazilian Purpuric Fever (BPF) is a fulminant paediatric disease characterised by fever, with rapid progression to purpura, hypotensive shock and death. BPF is usually preceded by purulent conjunctivitis both the conjunctivitis and the BPF are caused by HI biogroup aegyptius (formerly called H. aegyptius)[5].

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THE NEW HAEMOPHILUS INFLUENZAE TYPE B VACCINES

(Reprinted with acknowledgment from Western Australian Notifiable Diseases Bulletin. 1992;2(2):1-3; Eds R Condon, M Roberts, D Sprague and I Rouse)

Epidemiology of *Haemophilus influenzae* type b infection

Haemophilus influenzae type b (Hib) is a common cause of serious bacterial infections in Australian children. Seventy per cent of cases of bacterial meningitis in children and virtually all cases of acute epiglottitis, are due to Hib. It is also the aetiological agent of several other important conditions, such as septicaemia, pneumonia, cellulitis, septic arthritis, osteomyelitis and pericarditis.

Hib is spread by respiratory droplets and secretions. Most infected individuals do not become ill, but Hib 'carriers' can continue to spread the organism for prolonged periods of time. The major risk factor for invasive Hib disease is crowding, such as occurs in large families and day care centres. Parental smoking also increases the risk of transmission. Breast feeding is protective.

About 600 children develop severe invasive Hib disease each year in Australia. The overall incidence, severity of illness, and mortality from invasive Hib disease in Australia are similar to that of poliomyelitis during the 1950s.

In non-Aboriginal children, about one third of cases are under 18 months of age. The most common manifestations are meningitis (40-50% of cases) and epiglottitis (40% of cases). The annual incidence rate is approximately 25 cases of meningitis per 100,000 children under 5 years of age, and about 20 cases of epiglottitis per 100,000.

The situation in Aboriginal children is very different. Epiglottitis is unknown, but the incidence of meningitis is six times greater than in non-Aboriginal children (about 150 episodes per 100,000 children under five each year). Almost all cases occur in children under 12 months of age.

In Western Australia, we see about 40 cases of Hib meningitis each year in children under 5 years of age. The case fatality rate is 5%, and 20% suffer neurological sequelae. About 17 episodes of acute epiglottitis occur in children under five each year.

Hib Vaccines

Hib is an encapsulated gram negative coccobacillus. Antibodies against the polysaccharide capsule are protective against invasive Hib disease. Hib vaccines have been available in the United States and some European countries for several years.

The first generation Hib vaccine consisted of capsular polysaccharide (PRP, polyribosylribitol phosphate) alone. It was not satisfactory because it failed to protect children under 18 months of age.

Because of this, 'conjugate' Hib vaccines have been developed. These vaccines all contain Hib capsular polysaccharide antigen conjugated with an immunogenic protein to enhance the immune response. Four different manufacturers have applied for licensing of their Hib vaccines in Australia (Table).

PRP-D ('ProHIBit') has already received marketing approval for Australia and was released in April. The other three vaccines are awaiting licensing, but will probably not be available until August or later.

While all four vaccines are safe and effective in giving protection to children over the age of 18 months, the PRP-D ('ProHIBit') vaccine is of no value in younger children. The other three vaccines (the 'early' vaccines) offer protection from a very young age.

This difference is very important: virtually all cases of *Haemophilus* meningitis in Aboriginal children occur before 12 months of age, and one third of cases in non-Aboriginal children occur before 18 months of age. 'ProHIBit' is therefore of no use in Aboriginal children, and is only partially protective against Hib meningitis in the rest of the population.

The vaccination course with the three 'early' vaccines can be commenced at 2 months when the first DTP injection is given, but the three vaccines differ in the level of protection they achieve with the first dose.

Table. *Haemophilus influenzae* type b conjugate vaccines

Abbreviation	Trade Name	Manufacturer	Carrier Protein	Possible Date of Availability	Possible Schedule (age in Months)
PRP-D	ProHIBit	Connaught	Diphtheria Toxoid	April 1992[1]	18+[2]
HbOC	HibTITER	Praxis-Lederle	Non-toxic mutant diphtheria toxin	Mid-Late 1992	2,4,6,15
PRP-OMP	Pedvax HIB	Merck, Sharp and Dohme	Outer membrane protein of *Neisseria meningitidis*	Mid - Late 1992	2,4,12
PRP-T	-	Pasteur-Merieux	Tetanus toxoid	Late 1992	2,4,6,18 or 3,5,7,18

1. ProHIBit is now available.
2. Approved for use in children aged 18 months or more.

The ideal Hib vaccine should give protection as early as possible, so the release of the 'ProHIBit' vaccine fulfills only an interim role until the 'early' vaccines are licensed and available.

1. **'ProHIBit' (PRP-D; Pasteur Merieux)**

   Approved for marketing and will be available in early May.

   Protective when administered to children 18 months of age and older.

   This vaccine can be considered for use on an individual basis for children 18 months and over who attend day care or who are otherwise at increased risk of Hib disease.

2. **'HibTITER' (HbOC; Praxis Biologics)**

   Not yet approved.

   Only 15% protective after the first dose; 84% protective after the second dose and 98% after the third dose.

3. **'PedvaxHIB' (PRP-OMP; Merck, Sharp and Dohme)**

   Not yet approved.

   Gives 73% protection after the first injection and 92% protection after the second dose. However, protection at one year of age does not seem to be as high as with HbOC (52% compared with 94%).

4. **PRP-T (Pasteur Merieux)**

   Not yet approved.

   Gives over 70% protection after the first dose.

The following are general guidelines regarding the administration of conjugate Hib vaccines:

- All Hib conjugate vaccines are injected intramuscularly.
- Conjugate vaccine may be given at the same time as DTP, IPV or MMR, if so scheduled, but by separate injection at separate sites. OPV may be administered at the same time.
- Children older than 24 months of age who have had invasive Hib disease can be given vaccine since many children of that age fail to develop adequate immunity following natural disease.
- The same conjugate vaccine should be used for the entire series of vaccinations, as there is as yet no clear evidence on the interchangeability of different conjugate vaccines.

Reported reactions to the conjugate vaccines have been mild in both infants and children. Adverse effects after the first dose are rare. About 2% will develop a temperature (38°C) after the second or third dose, and about 1% will develop erythema, swelling or induration at the injection site.

There are no known contraindications to administration of conjugate Hib vaccines, but immunisation should be deferred if the child has a significant febrile illness.

The Communicable Diseases Standing Committee of the NH&MRC is currently considering recommendations for the use of the Hib vaccines in Australia.

HAEMOPHILUS INFLUENZAE - *CDI* DATA

(Jenny Hargreaves, Communicable Diseases Section, Department of Health, Housing and Community Services)

The *Communicable Diseases Intelligence* and the Communicable Diseases Network - Australia have two small sets of data on the occurrence of *Haemophilus influenzae* type b (Hib) infection in Australia. The first is the National Notifiable Diseases Scheme, which began collecting notifications of Hib infections only in 1991. The second is the 'Pathogens' laboratory reporting scheme, which has been collecting laboratory reports of invasive Hib infection from a few laboratories in New South Wales, Queensland and Tasmania since 1986.

Notifications

Hib infections are notifiable in New South Wales, Queensland, Tasmania ('non-meningococcal meningitis') and Victoria (epiglottitis and meningitis only). In the ACT, they are not notifiable, but notifications are nevertheless collected.

In 1991, there was a total of 566 notifications of Hib infection made in the four States and the ACT (Table 1), at an overall rate of 4.03 notifications per 100,000 population. If this rate is assumed for Western Australia, South Australia and the Northern Territory, it would represent about 67, 58 and 6 notifications, respectively, for these areas of Australia last year, and a total of about 700 notifications for the entire country.

Seven hundred is, however, likely to be an underestimate of the number of cases of Hib which occurred, for two reasons. The first is that probably not all cases of Hib infection which occurred were notified to the States in which it is required. The second is that Hib infections have a much higher incidence in Aboriginal children than in children in other parts of the community[1]. In both Western Australia and the Northern Territory, Aborigines comprise a larger proportion of the population than in Australia overall (2.7% and 22.4%, respectively, compared with 1.4% overall[2]), so Hib in-

Table 1. *Haemophilus influenzae* **type b infections: total notifications and notifications for children aged less than 5 years, 1991, by State and Territory**

State or Territory	Total 1991 Notifications		Notifications in children aged less than 5 years	
	Number	Rate per 100,000 Population[1]	Number	Rate per 100,000 Population[1]
ACT	9	3.07	9	41.2
NSW	220	3.73	157	36.0
Queensland	112	3.77	95	44.2
Tasmania	16	3.47	14	40.3
Victoria	209	4.72	130	40.6
Total	566	4.03	405	39.4

1. Rates calculated using the Australian Bureau of Statistics' preliminary estimated resident population as at 30 June 1991.

fections would be expected to occur at a greater rate in the Northern Territory and Western Australia than in Australia overall. Indeed, an average of over 30 Hib infections occurred in children under the age of 5 years in the Northern Territory each year from mid-1985 to mid-1988[1], representing a rate of over 20 cases of Hib infection per 100,000 overall population per year.

A total of 405 (71.6%) of the 1991 notifications were in children less than 5 years, at an average notification rate of 39.4 per 100,000 population. If this average rate were to apply to Western Australia, South Australia and the Northern Territory, a further 50, 39, and 6 cases would have been expected to have been notified from these areas of Australia, respectively, and there would have been a total of about 500 notifications in children aged less than 5 years. For the same reasons as detailed above, 500 would be an underestimate of the number of cases which occurred in children aged less than five. Depending on what proportion of cases were notified, there could have been between 550 and 700 cases, as has been estimated from census data and other studies of the incidence of the disease in several areas of Australia[3].

There were 92 notifications (16%) of Hib in children aged less than 1 year (Figure 1), 142 in children aged 1 year (25%), and a median age of 2 years (based on the whole year age records in the notifiable diseases scheme). Forty-two notifications (7%) were for adults over the age of 15 years. Overall, the male:female ratio was 1.48:1.00, and in children aged less than 5 years, it was 1.49:1.00.

Figure 1. *Haemophilus influenzae* **type b infection notifications, 1991, by age group and sex**

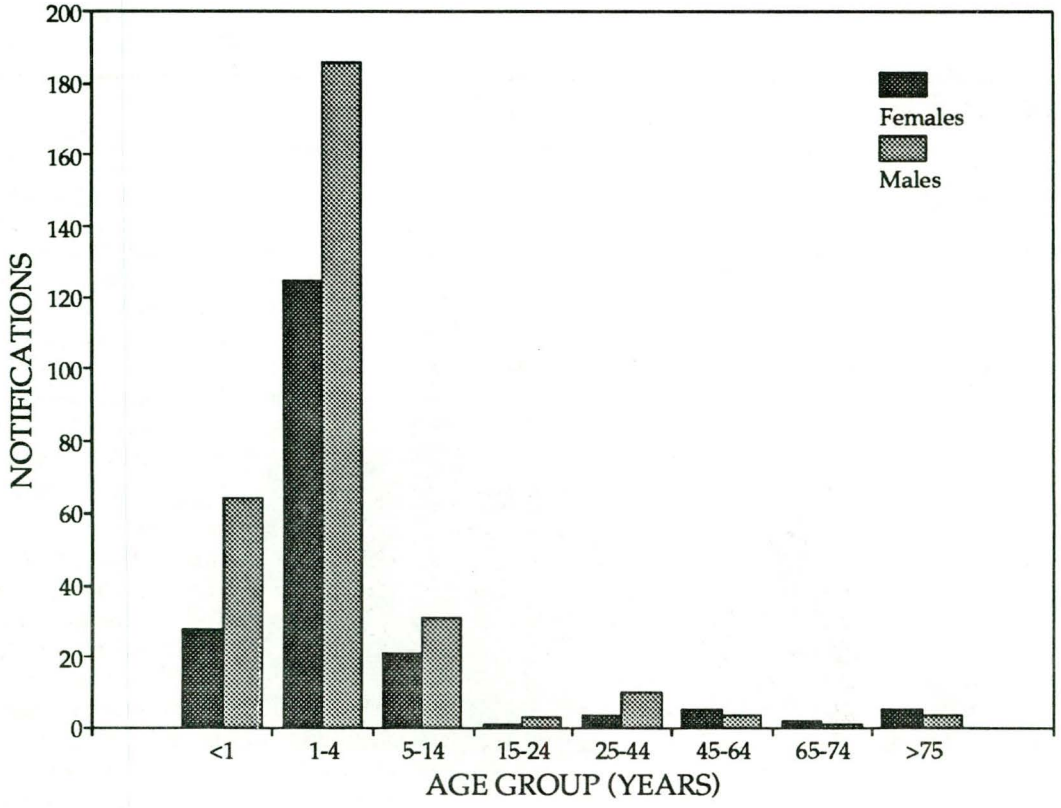
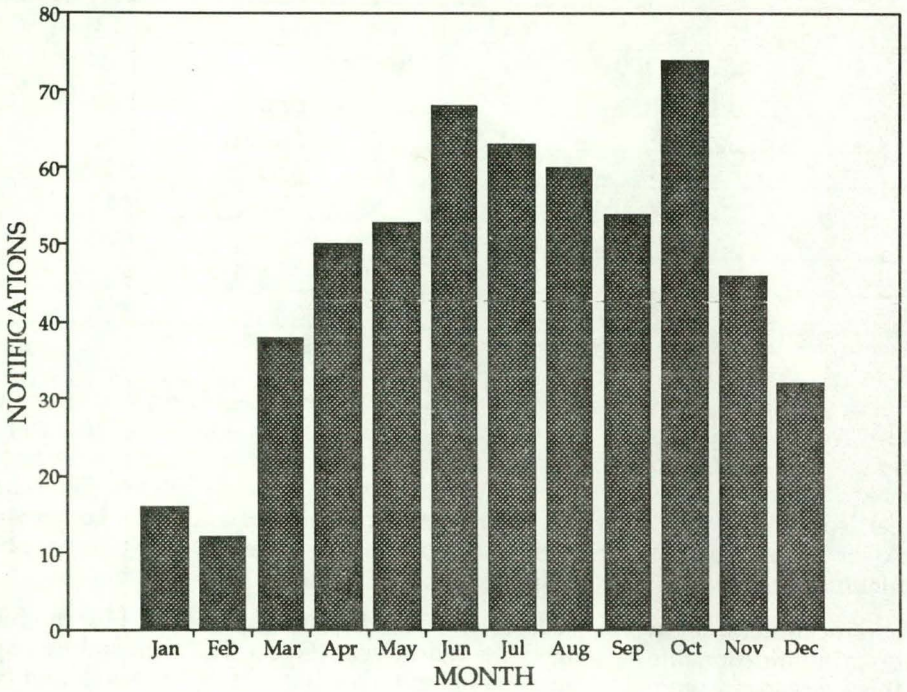
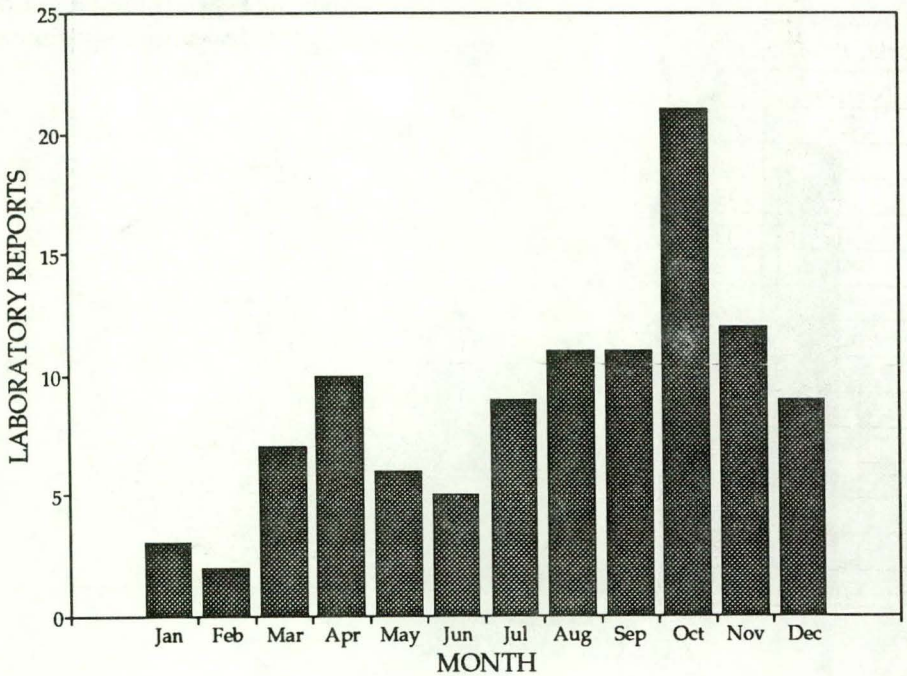


Figure 2. *Haemophilus influenzae* **type b infection notifications, 1991**



The 1991 notifications of Hib showed a marked seasonality (Figure 2). A total of 372 (65.7%) of cases occurred in the 6 month period May to October, reflecting winter peaks in all three States with large numbers of notifications. This is in contrast to the summer peak in invasive *Haemophilus influenzae* disease that has been documented in the Alice Springs area[1].

Figure 3. *Haemophilus influenzae* **type b infection laboratory reports, 1986 to 1991, by month of specimen collection**



Laboratory reports

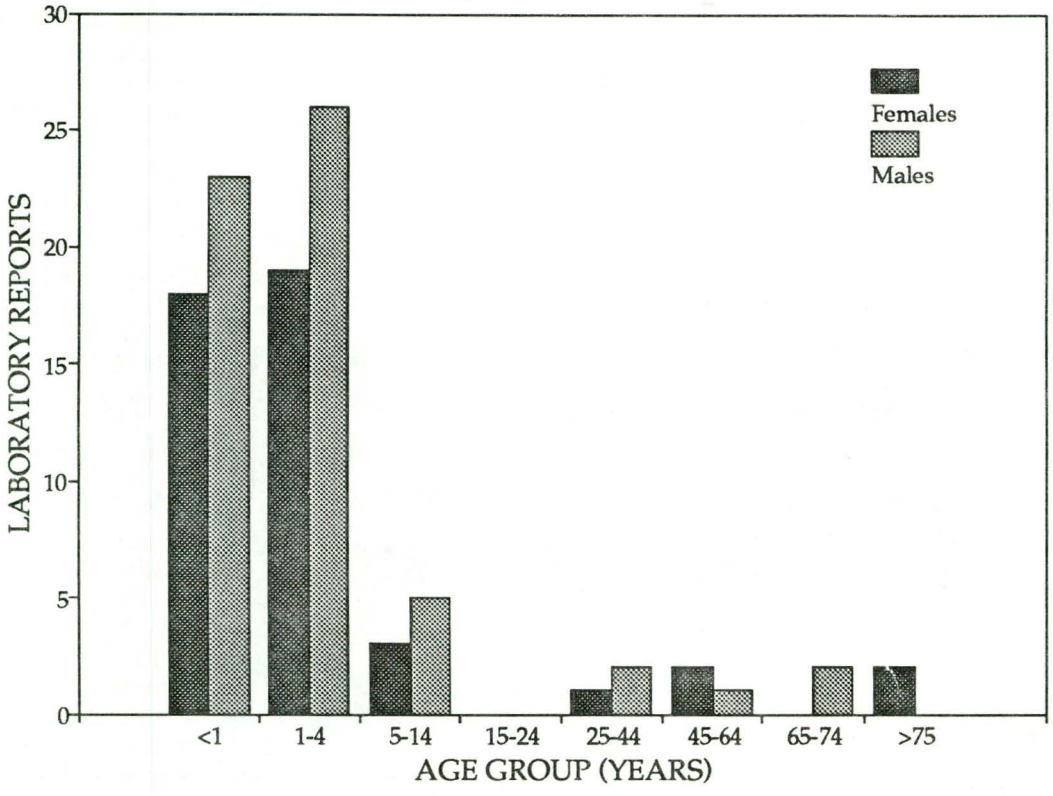
The *CDI* Pathogens Scheme has collected a total of 109 laboratory reports of *Haemophilus influenzae* infection since 1986. These also show some seasonality, with fewer reports with specimen collection dates in late summer and autumn (Figure 3).

The age and sex distribution of the cases is very similar to that of the notified cases, with 80% less than 5 years old, and 9% over 15 years old. However, compared to the notifications, there were relatively fewer laboratory reports in children aged between 1 and 4 years and relatively more in infants aged less than 1 year. This may be a reflection of the fact that epiglottitis is more common in children aged 1-4 years. This form of Hib infection is more often diagnosed clinically, without accompaning organism isolation, and could therefore be notified, but not included in laboratory reports. The male to female ratio overall was 1.29:1.00, and 1.32:1.00 in children less than 5 years.

The laboratory reports include some standard information on the syndromes reported for the patients, and some include further details (such as whether the organism was type b, or indicating that 'upper respiratory tract disease' reported for a patient included epiglottitis). All the 109 reports have been of isolates from normally sterile sites (Figure 4). Thirty-one of the isolates were specified as type b. No information on the type for the other isolates was provided, but as they had caused invasive disease, it is likely that many of them may also have been type b.

A wide variety of syndromes was reported (Table 2). Meningitis (and/or CSF isolate) was the most commonly reported syndrome (45 reports, or 41%), as has been found in other studies[3]. In contrast to the

Figure 4. ***Haemophilus influenzae*** **infection, laboratory reports 1986 to 1991, by age group and sex**



overall reports, there were more females than males, and the male to female ratio was 1.00:1.14. Most cases (58%) were in children aged less than 1 year, and over 90% were in children aged less than 5 years (Figure 6). This greater proprotion of meningitis occurring in females and in younger children has also been documented in other Australian studies[1,4].

Table 2. Syndromes reported for ***Haemophilus influenzae*** **laboratory reports, 1986 to 1992**

Syndrome	Number	%
Meningitis	45	41
Upper respiratory tract disease	17	16
Septicaemia	16	15
Epiglottitis	12	11
Pneumonia	4	4
Eye disease	3	3
Cellulitis	2	2
Osteomyelitis	2	2
Fever	2	2
Septic arthritis	1	1
Heart disease	1	1
Otitis media	1	1
Other/Unknown	3	3
Total	109	100

Epiglottitis reports comprised 11% of the total. This is lower than the proportion of infections usually expected to manifest as epiglottitis[3], but the Pathogens reporting scheme did not include epiglottitis as a separate reporting category, so some cases may have been reported only as upper respiratory tract disease (URTI). URTI, septicaemia, pneumonia and eye disease were the other more commonly reported syndromes.

Figure 5. ***Haemophilus influenzae*** **infection, laboratory reports, 1986 to 1992, by source specimen**

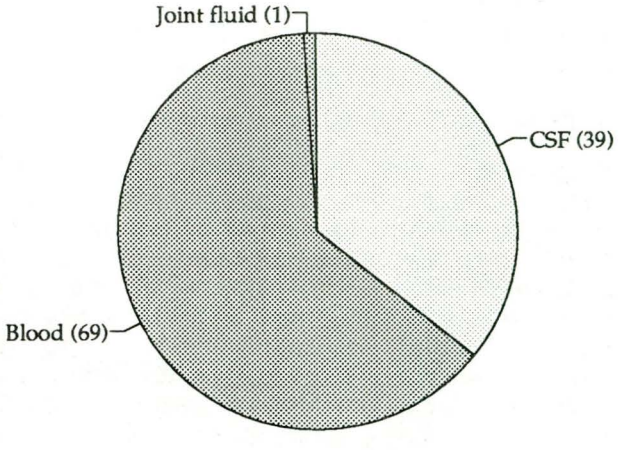
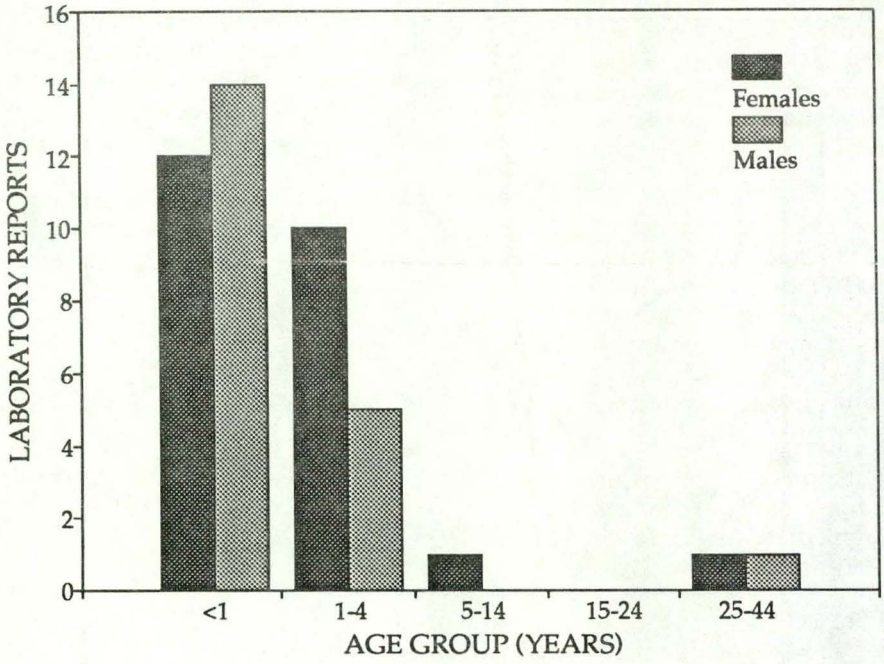


Figure 6. ***Haemophilus influenzae*** **meningitis laboratory reports, 1986 to 1992, by age group and sex**



The Pathogens laboratory scheme has been discontinued and laboratory surveillance of Hib is being taken over by LabDOSS (the *CDI*'s Laboratory Database of Organisms from Sterile Sites). Whilst this surveillance scheme will not be of such a large scale as the notifiable diseases scheme, it will encompass many more laboratories than the Pathogens scheme did, and so will prove invaluable for ongoing, routine collection of detailed information on the age, sex and postcode of Hib patients, and the patterns of clinical disease being caused by the organism.

Conclusion

Although there are only 1 year's data in the Hib notifications, and a small number of laboratory reports within these datasets, they reflect what has been documented about the epidemiology of Hib infection in other Australian studies. This indicates that, despite the limitations of the Notifiable Diseases Scheme (for example in the way in which ages are reported), it will prove invaluable in providing a continuing system for large scale routine surveillance of Hib, which will be vital if any assessment of the introduction of Hib vaccines is able to be made.

References

1. Hanna JN. The epidemiology of invasive *Haemophilus influenzae* infections in children under five years of age in the Northern Territory: A three year study.*Med J Aust* 1990:**152**;234-240.
2. Castles I. Census 86 - Aboriginasl and Torres Strait Islanders: Australia, States and Territories. Canberra: Australian Bureau of Statistics, 1987.
3. McIntyre P. Invasive *Haemophilus influenzae* type b disease in Australia: the beginning of the end? *Med J Aust* 1992;**156**:516-518.
4. Gilbert GL. New vaccines for *Haemophilus Influenzae* type b disease. *Med J Aust* 1992;**156**:518-520.

DENGUE 2 INFECTION IN NORTHERN QUEENSLAND

(D Phillips, M Pearce, M Weimers and G Blumke , Queensland Health)

Evidence of dengue 2 infection has been obtained from two residents of Townsville. The first patient, a 31 year old male, presented to his medical practitioner on 4 March, three days after onset of fever (39.4°C), chills and frontal headache. He was later admitted to Townsville General Hospital and a blood sample was forwarded to the State Health Laboratory. Serological tests for flaviviruses were negative, however dengue 2 virus was isolated from this acute phase specimen. The virus was later re-isolated from the same specimen. The presence of IgM antibody to dengue 2 virus was demonstrated in a second blood sample taken on 9 April (Table 1).

The second patient, a 22 year old female, became ill on 9 March and presented to her medical practitioner on 13 March. Her symptoms and clinical signs included fever, myalgia, sore throat, rash on all four limbs, and vomiting. Blood samples were taken on 15 March and 28 March. The presence of both a diagnostic rise in titre and IgM to dengue 2 was consistent with a recent infection. Viral isolation could not be attempted due to insufficient sample volumes.

Neither patient had travelled out of Australia in the preceding six years, indicating that the infections were acquired locally. Larvae of the mosquito *Aedes aegypti*,

the only known vector of dengue virus in Australia, were found at a number of premises within a 200m radius of the home and/or workplace of both patients. The areas frequented by these patients do not overlap and it is probable that at least two foci of infection exist. Medical practitioners in the area have been advised of our findings and encouraged to forward blood samples from all patients with clinical signs and symptoms consistent with dengue infection to the State Health Laboratory for examination.

Dengue cases in Queensland exhibit strong clustering and are epidemic in nature. Epidemic peaks tend to occur as the wet season ends, as in 1981/1982, or in the middle of the dry season, as in 1990. Infections by all four dengue serotypes have been diagnosed in Queensland, but dengue type 2, 3 and 4 viruses have never previously been isolated from any patient who had not recently visited a dengue endemic area.

Since 1981, the State Health Laboratory has serologically diagnosed dengue 2 infection in only three people who had not travelled abroad immediately before their illness. Two patients during the 1990 outbreak had IgM against only dengue 2; the third, during the 1981/1982 outbreak, had IgM against dengue types 2 and possibly 4 [1,2].

The significance of these findings is the unequivocal demonstration of a second dengue serotype in northern Queensland. Severe cases of dengue infection such as haemorrhagic fever or dengue shock syndrome occur when patients succumb to secondary infection with a dengue serotype that differs from the serotype which caused the primary infection. The data reported in this communication indicate that the conditions for severe disease now exist in northern Queensland.

References

1. Guard RW, Stallman ND and Weimers MA. Dengue in the northern region of Queensland, 1981-1982. *Med J Aust* 1984;140:765-769.

2. Phillips D and Aaskov JG. A recent outbreak of dengue fever in North Queensland. *Comm Dis Intell* 1990;(22):12.

Table 1. Serological results for two Townsville patients with dengue 2 infection

Patient	Date	Test	Murray Valley Encephalitis Virus	Dengue Type			
				1	2	3	4
31 year old male	4 March 1992	HI	<20	<20	<20	<20	<20
	9 April 1992	HI	640	640	1280	320	320
	9 April 1992	IgM	neg	neg	pos	neg	neg
22 year old female	15 March 1992	HI	20	20	<20	20	<20
	28 March 1992	HI	40	40	320	40	40
	28 March 1992	IgM	neg	neg	pos	neg	neg

CHOLERA IN ADELAIDE

(Phil Weinstein and Carolyn Walker, Communicable Disease Control Unit, South Australian Health Commission)

On Wednesday 22 April, a case of cholera came to the attention of the Communicable Disease Control Unit, South Australian Health Commission *via* telephone notification from the Institute of Medical and Veterinary Science bacteriology laboratory; the presence of *Vibrio cholerae* O1 Ogawa had been serologically confirmed in a stool specimen. Cholera is an internationally notifiable disease and the report was immediately followed up and notified to the Communicable Diseases Section, Commonwealth Department of Health, Housing, and Community Services.

On Wednesday 15 April, a 56 year old Australian man on holidays in Bali developed painless watery diarrhoea and vomiting, one day before flying home. The diarrhoea worsened, with consequences for the aircraft toilets which defy description. He was hospitalised and placed on fluid replacement therapy three days after his return to Australia and commenced a 5 day course of doxycycline 100mg bd. He excreted approximately 18 litres in the following 2 to 3 days, and cholera was confirmed as stated 6 days after the onset of his illness.

The man and his wife had stayed at the Mirage Bali Hotel, Tanjung Benoa, which is of a high standard. However they had taken day trips to Kuta, Sanur and Tanahlot, and a cruise to Nusa Lembongan. They described the conditions on the latter as 'extremely primitive'. Neither party gave a history of consuming other than bottled water, nor had they consumed uncooked seafood.

At the time of notification, 'Universal Body Substance Precautions' were already being observed in the care of the patient. Further, the integrity of the Adelaide sewage system is such that cholera organisms disposed of

in a flushing toilet do not present a risk for further transmission of the disease. Given that the five day maximum incubation period for cholera[1] had already elapsed at the time of notification, follow-up of fellow holidaymakers or airline passengers was therefore not indicated. The patient's wife however, works in a nursing home and she was advised not to return to work for a further 5 days in case she had contracted the disease from her husband in the interim. She was given doxycycline 200mg single dose prophylactically. Medical and laboratory staff who had been in contact with the patient or specimens before the diagnosis was made had already been informed of the case by the attending clinician. The appropriate local board of health was also informed.

Although sporadic cases of cholera in returning tourists are inevitable in Australia, none have been reported in South Australia in the last ten years.

We thank Peter Devitt, Irene Lim and David Shaw for their prompt action.

Reference

1. Benenson AS. *Control of Communicable Diseases in Man.* Washington: American Public Health Association, 1990.

AUSTRALIAN HIV SURVEILLANCE REPORT, VOLUME 8 NUMBER 3, (31 MARCH 1992)

The National Centre in HIV Epidemiology and Clinical Research reports that as of 29 February 1992, a total of 16075 diagnoses of HIV infection and 3192 cases of AIDS had been reported in Australia. For the period 1 February to 29 February 1992, 14 new cases of AIDS and 119 new diagnoses of HIV infection were reported.

The following tables provide more detailed information on a State/Territory basis (Tables 1 and 2).

The cumulative figures are subject to retrospective revision, so there may be discrepancies between the number of new cases for the reporting month and the increment in the cumulative figure from the previous report.

Table 1. New diagnoses of AIDS and deaths from AIDS occurring during the period 1 February to 29 February 1992, and cumulative to 29 February 1992, by sex and State/Territory in which diagnosis was made*

State/ Territory	February 1992		Cumulative to 29 February 1992					
	Total Cases[1]	Total Deaths[1]	Cases			Deaths		
			Male	Female	Total[3]	Male	Female	Total
ACT	2	0	42	2	44	27	1	28
NSW	11	8	1877	60	1939	1206	36	1242
NT	0	1	10	0	10	5	0	5
Qld	0	1	244	9	253	161	7	168
SA	0	0	119	6	125	62	1	63
Tas	1	0	17	1	18	10	1	11
Vic[2]	0	6	641	13	655	428	9	437
WA	0	0	140	8	148	87	3	90
Total	14	16	3090	99	3192	1986	58	2044

1. All males unless otherwise specified.
2. One death in Victoria in February was a female.
3. Three persons (2 NSW, 1 Vic) whose sex was reported as transsexual, are included in the total.

Table 2. Number of new diagnoses of HIV infection in the period 1 February to 29 February 1992 and cumulative since the introduction of HIV antibody testing to 29 February 1992, by sex and State/Territory

State/ Territory	February 1992	Cumulative to 29 February 1992			
	Total[1]	Male	Female	Sex not reported	Total[7]
ACT[2]	4	127	7	0	134
NSW[3]	77	8172	419	2090	10685
NT	0	58	6	0	64
Qld[4]	11	1192	55	0	1250
SA	1	452	32	0	484
Tas	3	59	3	0	62
Vic[5]	22	2557	98	68	2729
WA	1	635	31	0	667
Total[6]	119	13252	651	2158	16075

1. All males unless otherwise specified.
2. Total for the ACT for February includes 1 female.
3. Total for NSW for February includes 2 females and 33 persons whose sex was not reported.
4. Total for Queensland for February includes 2 females.
5. Total for Victoria for February includes 3 females and 1 person whose sex was not reported.
6. Total for February includes 8 females and 34 persons whose sex was not reported.
7. Cumulative total includes 14 persons (4 NSW, 3 Qld, 6 Vic and 1 WA) whose sex was reported as transsexual.

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization regarding cholera.

Reports of cholera cases and deaths occurring in March and April this year have been received from:

Africa - Burundi and Zambia.

Americas - Argentina, Bolivia, Brazil, Chile, El Salvador, Guatemala, Honduras, Mexico, Panama, Peru, Suriname and Venezuela.

India has reported 21 cases for February.

CDI NOTICES TO READERS

International Travel Health Info-Line

Doctors' 24 hour telephone access to the latest travel health information - 06 269 7815

This new service, a computer based telephone message system which gives doctors access to the latest information on travel health topics, is now available.

The Info-Line is available 24 hours a day, 7 days a week, on 32 lines from anywhere in Australia. It consists of 43 digitally recorded messages. The Info-Line gives the latest world-wide information on communicable diseases and their prevention, updated regularly from information supplied by the World Helath Organization.

The Info-Line is accessed by using a tone dialling push button telephone and calling (06) 269 7815. After calling, you will be welcomed to the service and invited to press button 1 on your phone to hear the topics on the main menu. These topics are:

1. Routine immunisations
2. Diseases spread by food and water
3. Malaria
4. Yellow fever, rabies, meningococcal meningitis, hepatitis B and diseases spread by mosquitoes
5. HIV infections and AIDS
6. Publications on international health, and
7. General health precautions for specific areas of the world.

Each individual recorded message ends with an instruction on how to obtain more specific information on the topic you have selected, by pressing further buttons.

Brucellosis - Queensland - Correction

An error has recently been detected in the article 'Brucellosis - Queensland' (Neville, G and Pearce, M) which was published in *CDI* **15**:378-381 (1991).

It was stated that *Brucella abortus* was isolated from a Queensland patient suffering from brucellosis in 1990. This was not correct. Subsequent investigation revealed that the isolate was *B. suis* biotype 1, not *B. abortus*. Thus, none of the *Brucella* isolates from human brucellosis cases in Queensland in 1990 were *B. abortus*; all were *B. suis*.

COMMUNICABLE DISEASES SURVEILLANCE

Laboratory Reporting Schemes

There were 1064 reports received in the *CDI* laboratory reporting scheme this fortnight (Tables 5,6 and 7).

- There were 34 reports of **influenza A** (19 South Australia, 8 Victoria, 5 Western Australia and 2 New South Wales). Four of the Victorian isolates were further identified as H3N2, A/Beijing/353/89-like. There were 5 reports in persons over the age of 65 (4 females and 1 male).

  There has now been 38 reports for March and 23 for April, the highest number of influenza A reports for this time of year recorded recently.

- One further report of influenza B was also received this fortnight. The patient was a male over the age of 65 years. There have now been 9 influenza B reports so far this year.

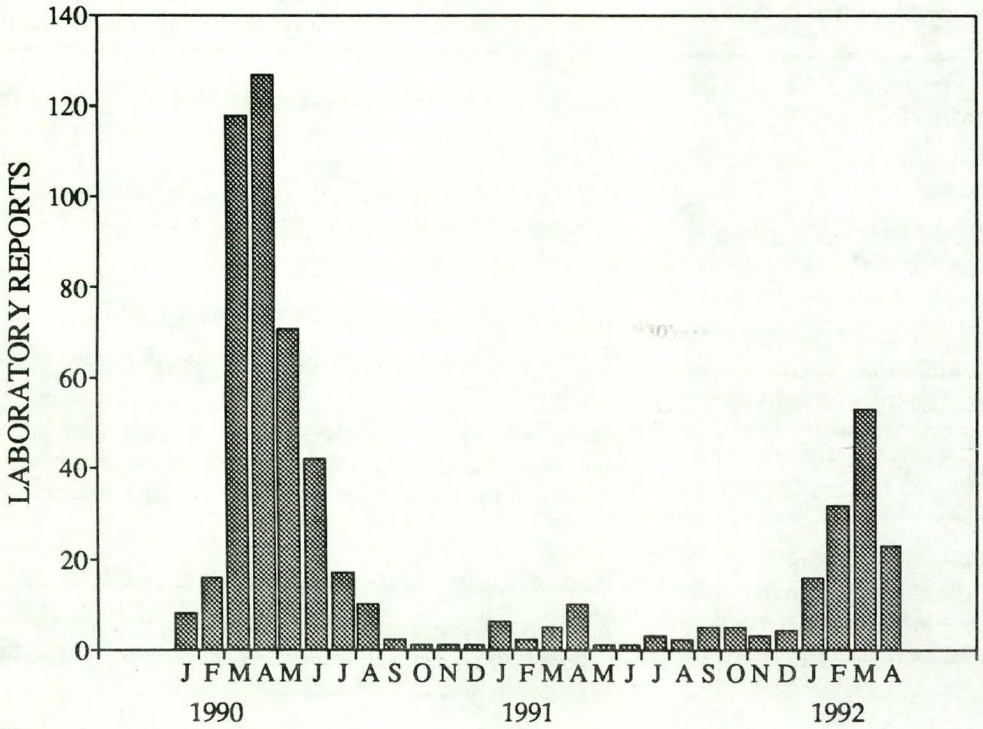
- There were 28 reports of **parainfluenza virus type 1**, from Victoria, Western Australia, South Australia, New South Wales and Queensland. Seizures and upper respiratory tract disease were the reported symptoms for 1 patient, a 1 year old male. The autumn peak in the activity of this virus, which is usually every second year, is currently occurring (Figure 1).

- The usual winter peak in activity of **respiratory syncytial virus** has now begun. There have been 79 reports of this virus for March so far, more than for any month since October last year.

- Thirty-nine laboratory reports of **Ross River virus** infection were received this fortnight. Nine were from the Northern Territory (7 from Nhulunbuy and 2 from elsewhere), 10 were from Western Australia (Albany, Beechboro, Bellevue, Busselton, Gosnells, Greenwood, Kalgoorlie, Margaret River, Maylands) 8 were from the Rockhampton area in Queensland, 7 were from South Australia (Barmera, Clare, Loxton, Murray Bridge, Port Augusta, Renmark) and 5 were from Victoria (Cobram, Colac, Harwaway, Hetwood, Koroit).

- There were 15 reports of **Barmah Forest virus**. Most were associated with the recent outbreak in Nhulunbuy in the Northern Territory.

Figure 1. Parainfluenza type 1 laboratory reports, January 1990 to April 1992, by month of specimen collection



- **Untyped dengue** was reported for 4 patients. One 11 year old female patient was reported as having recently spent 3 days in a an endemic area in Malaysia, and had suffered many mosquito bites.

- A further 5 cases of **echovirus type 9** infection have been reported from New South Wales. Meningitis and/or CSF isolates were reported for three of the patients, females aged 1 month, 33 years and 35 years.

- There were 9 further reports of **echovirus type 17**, 7 from New South Wales and 2 from Victoria. Eight had meningitis as the reported syndrome and/or the virus isolated from CSF (males aged 1 month, 7 years, 8

years, 22 years and 25 years, and females aged less than 1 month, 29 years and 65 years). The other patient was a one month old infant from whose postmortem lung tissue the virus was isolated. This brings to 76 the number of reports of this virus in this current outbreak, and to 49 the number of reports with CNS symptoms and/or CSF isolates.

- There were 5 laboratory reports of **rubella** this fortnight. One was in a female of reproductive age (23 years).
- A total of 130 reports of **herpes simplex type 2** infection were received. One report was of isolation of the virus from products of conception after fetal death *in utero*. The mother was a 23 year old female who had been 19 weeks pregnant. Another report was of a 36 year old female who was 37 weeks pregnant.
- Cases of Queensland Tick typhus have been reported for the first time in the laboratory reporting schemes. Infections with the causative organism, ***Rickettsia australis***, were diagnosed by slide/tube agglutination demonstration of single high antibody titres. The three patients were a male farmer and his daughter from the Eidsvold area of Queensland in March, and, in February, a male from the Rockhampton area who reported contact with ticks.
- Cases of South Eastern Australian spotted fever (**Spotted fever group *Rickettsia***) were also reported for the first time, from Fairfield laboratory in Melbourne. Diagnosis was by microimmunofluorescence demonstration of single high titres for 6 patients and of a four fold or greater change in another. All patients were females (age range 35 to 68 years) and had skin disease as the reported syndrome. Five had specimen collection dates in February and 2 in March.
- There were 5 reports of **Q fever**, with 1 from Victoria and 4 from New South Wales. Three patients were male (including an abattoir worker) and 2 were female.
- Two reports of **psittacosis** were received. One patient, a 66 year old female, was reported as keeping pigeons. Thirty-four laboratory reports of this disease have been received so far this year, continuing the higher than usual rate of reporting which began early last year.

Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network collected data from 6784 patient encounters in Week 16 and 3988 patient encounters in Week 17 (Table 1). Influenza continues to be the most commonly reported condition.

National Notifiable Diseases Reports, 5 to 18 April 1992

A total of 2347 notifications were reported this fortnight (Figure 2, Tables 2,3 and 4). Notifications from New South Wales were not available at the time of publication.

A total of 632 cases of **Ross River virus** infection were reported. Five hundred and eighty-two of these were from Queensland, where the virus continues to be active in widespread coastal areas of the State.

More cases continue to be notified in females than in males (male:female ratio 1.00:1.18). Most cases this fortnight (from Queensland, South Australia, Victoria and the Norhtern Territory, which provided age/sex data this fortnight) were in adults in the age group 15 to 55 years (86.8%).

Two **dengue** cases were notified. The patients were a 27 year old female in the Northern Territory and the 31 year old male in Queensland, described in the article on page 192 of this *CDI*.

Twenty-one cases of **measles** were notified. Of the 18 for which ages were available, 10 (56%) were over the age of 9 years.

Rubella was notified for 17 patients. Three of these were known to be females of reproductive age.

Four cases of ***Haemophilus influenzae* type b** infection were notified. The patients were males aged 1 year and 6 years, and females aged 1 year and 2 years.

Table 1. Australian Sentinel Practice Research Network, Weeks 16 and 17, 1992

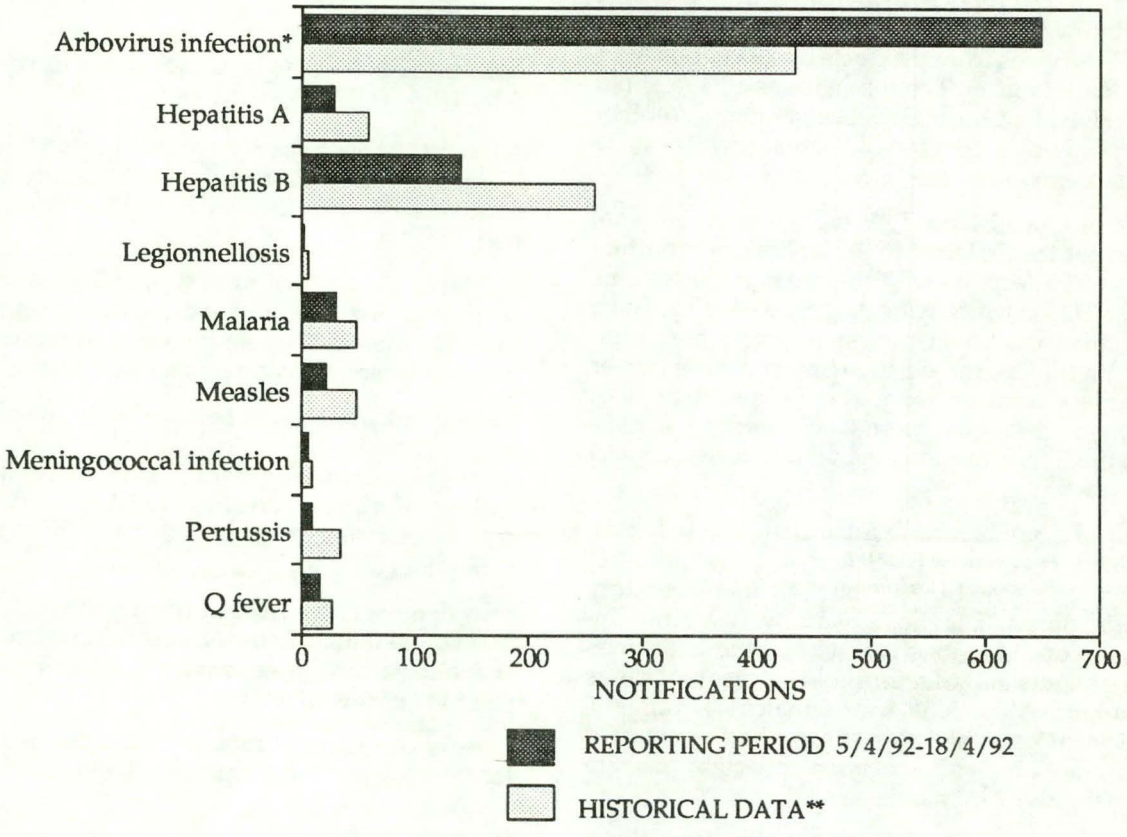
Condition	Week 16, to 19 April 1992		Week 17, to 26 April 1992	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	49	7.22	19	4.76
Measles	0	0	0	0
Mumps	0	0	0	0
Rubella	3	0.44	0	0
Pertussis	0	0	0	0
Genital herpes	3	0.44	3	0.75
Gastroenteritis	1	0.15	0	0

Legionnaires' disease in NSW

To 23 April 1992 the NSW Health Department had received notifications of 89 cases of atypical pneumonia with onset since 5 April. The diagnosis had been confirmed as infection with *legionella pneumophila* in eleven patients. Five patients had died, three of whom had confirmed Legionnaires disease. Of the 89 cases of atypical pneumonia, 49 occurred in the South Western Sydney area; 9 of whom were confirmed cases of Legionnaires' disease and three of whom died. Ages of patients ranged from seven months to 89 years. An investigation is continuing.

(Reported by Drs Sue Morey and George Rubin NSW Health Department).

Figure 2. Selected National Notifiable Diseases Reports, 5 to 18 April 1992 and historical data**



*Includes Ross River virus and Dengue

**The Historical data are the averages of the number of notifications in 6 previous 2-week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceding and following those.

National Notifiable Diseases Surveillance Reports 5 April to 18 April 1992

A. Diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA			
									This Period 1992	This Period 1991	Year to Date 1992[1]	Year to Date 1991
Diphtheria	0		0	0	0	0	0	0	0	0	5	3
Measles	1		0	6	4	1	8	1	21	88	267	347
Mumps	NN		NN	NN	NN	NN	0	NN	0	NN	0	NN
Pertussis	NN		0	6	0	0	2	1	9	24	123	154
Poliomyelitis	0		0	0	0	0	0	0	0	0	0	0
Rubella[2]	0		0	9	2	0	6	0	17	21	135	112
Tetanus	0		0	NN	0	0	0	0	0	0	4	3

1. 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.
2. NT, Tas, WA: CRS only; ACT, NSW, Qld: rubella only; SA, Vic: rubella and CRS

NN Not Notifiable.

B. Other Notifiable Diseases[1], for the reporting period 5 April to 18 April 1992

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA			
									This Period 1992	This Period 1991	Year to Date 1992[2]	Year to Date 1991
Arbovirus infection (NEC)[3]	0		NN	5	8	0	1	0	14	27	68	202
Ross River virus infection	NN	-	12	582	0	NN	10	28	632	536	2960	2240
Dengue	NN	-	1	1	-	NN	0	NN	2	0	6	34
Campylobacteriosis[4]	1	-	2	126	48	5	42	36	260	405	2446	2072
Chlamydial infection (NEC)[5]	4	NN	9	429	0	16	24	0	482	150	1734	1052
Donovanosis	0	NN	0	3	NN	NN	0	2	5	8	18	18
Gonococcal infection[6]	0		5	84	0	1	10	69	169	124	764	652
Haemophilus influenzae type b[7]	NN		NN	1	2	0	1	NN	4	35	130	105
Hepatitis A	0		3	10	3	1	10	1	28	63	535	308
Hepatitis B	8		0	59	0	2	62	10	141	310	1588	1199
Hepatitis C	3		NN	74	NN	0	62	NN	139	201	2022	661
Hepatitis (NEC)	NN		0	0	0	1	0	NN	1	45	11	94
HIV infection[8]	0		0	0	4	0	0	1	5	0	25	8
Legionellosis	NN		0	2	0	0	0	0	2	4	37	33
Leptospirosis	0		0	2	0	0	1	1	4	4	46	39
Listeriosis	NN		NN	0	NN	0	4	0	4	2	15	10
Malaria	0		0	21	1	4	2	2	30	26	243	229
Meningococcal infection	0		0	3	1	1	1	0	6	12	41	66
Ornithosis	0	NN	0	0	0	0	0	0	0	16	39	29
Q fever	0		0	13	0	0	3	1	17	30	124	236
Salmonellosis (NEC)	0		8	93	28	4	28	38	199	341	1816	1993
Shigellosis[4]	0	-	1	2	3	0	1	4	11	50	176	316
Syphilis	0		10	53	0	0	0	18	81	105	638	607
Tuberculosis	1		1	11	5	1	0	2	21	12	159	102
Typhoid[9]	0		0	1	0	0	0	1	2	4	20	27
Yersiniosis[4]	NN	-	0	25	12	0	0	0	37	24	222	160

1. For rarely notified diseases, see Table 4.
2. Cumulative figures are subject to retrospective revision so there may be discrepancies between the number of notifications and the increment in the cumulative figure from the previous period.
3. NSW and SA: includes Ross River virus and dengue.
4. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
5. ACT: trachoma only.
6. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
7. SA: only as 'bacterial meningitis'; meningococcal infection is separately notified; Tas: only as 'non-meningococcal meningitis'; Vic: eppiglottitis and meningitis only.
8. More complete data on new diagnoses of HIV infections are presented in the monthly *Australian HIV Surveillance Report*. ACT: AIDS only.
9. NSW and Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elswhere Classified.

\- Elsewhere Classified.

C. Rarely Notified Diseases[1], for the period 5 April to 18 April 1992

DISEASES	Total this period	Reporting States or Territories	Total for 1992 to Date
Botulism	0		0
Brucellosis	1	Qld	6
Cholera	0		1
Chancroid	3	WA	4
Hydatid infection	0		10
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 1986 to 1991.

Table 5. Laboratory reports by State or Territory of reporting laboratory for the reporting period 8 April to 21 April 1992, historical data[1], and total reports for the year

	STATE OR TERRITORY OF REPORTING LABORATORY						Total this Fortnight	Historical Data[1]	Total reported this year
	ACT	NSW	Qld	SA	Vic	WA			
MEASLES, MUMPS, RUBELLA									
Measles virus				3	2		5	7.8	67
Rubella virus		1	2			2	5	6.2	74
HEPATITIS VIRUSES									
Hepatitis A virus		4	1	2	1		8	12.3	130
Hepatitis B virus	4	35	10	2	15	10	76	115.8	744
Hepatitis C virus	8	1		59		38	106	5.5	740
Hepatitis D virus			6				6	.0	12
ARBOVIRUSES									
Ross River virus			8	8	5	18	39	66.8	327
Barmah Forest virus						15	15	1.0	41
Dengue not typed					1	3	4	1.5	9
Flavivirus (unspecified)					1		1	.5	7
ADENOVIRUSES									
Adenovirus type 1		1			1		2	4.3	36
Adenovirus type 2		2			3		5	5.5	39
Adenovirus type 8					1		1	.2	11
Adenovirus type 9		1					1	.2	5
Adenovirus type 11		1					1	.7	5
Adenovirus type 12		1					1	.0	1
Adenovirus type 37					1		1	.2	1
Adenovirus not typed/pending		7	2	10	6	10	35	33.7	324
HERPES VIRUSES									
Herpes simplex virus type 1		7	14	20	36	38	115	130.3	1,297
Herpes simplex virus type 2		12	14	20	39	45	130	174.5	1,508
Herpes simplex not typed/pending	4	13			4	1	22	34.8	281
Cytomegalovirus		16	4	4	21	11	56	64.0	710
Varicella-zoster virus		5			5	4	14	17.0	234
Epstein-Barr virus		6	3	14	3	8	34	43.5	544
Herpes virus group - not typed						2	2	6.3	28
OTHER DNA VIRUSES									
Papovavirus group		3					3	.2	10
Molluscum contagiosum			2			1	3	1.2	8
Parvovirus					3		3	.0	46
PICORNA VIRUS FAMILY									
Coxsackievirus B1					1		1	.3	4
Coxsackievirus B5		1					1	1.8	20
Echovirus type 5		1					1	.2	3
Echovirus type 9		5					5	.3	21
Echovirus type 14		1					1	.7	3
Echovirus type 16		1			2		3	.0	13
Echovirus type 17		7			2		9	.2	28
Echovirus type 18		1					1	.2	2
Poliovirus not typed/pending		2					2	3.5	23
Enterovirus type 71 (BCR)		1					1	.8	7
Enterovirus not typed/pending		11	11		7	20	49	37.0	341
Poliovirus type 1 (uncharacterised)		3					3	1.0	16

Table 5. Laboratory reports by State or Territory of reporting laboratory for the reporting period 8 April to 21 April 1992, historical data[1], and total reports for the year, continued

	STATE OR TERRITORY OF REPORTING LABORATORY						Total this Fortnight	Historical Data[1]	Total reported this year
	ACT	NSW	Qld	SA	Vic	WA			
Rhinovirus (all types)		1		3	6		10	19.2	239
ORTHO/PARAMYXOVIRUSES									
Influenza A virus		2		19	4	5	30	1.3	82
Influenza A virus H3N2					4		4	.2	10
Influenza B virus						1	1	1.3	32
Parainfluenza virus type 1		3	1	4	14	6	28	22.0	128
Parainfluenza virus type 2		1	1	2	4		8	5.0	31
Parainfluenza virus type 3	2	4	1	7	12	2	28	11.8	175
Parainfluenza virus typing pending					10	1	11	4.0	39
Respiratory syncytial virus		9	14	3	12	2	40	53.7	234
OTHER RNA VIRUSES									
Rotavirus			2		7	2	11	27.5	320
Calici virus		1					1	1.0	9
Small virus (like) particle		1				3	4	2.0	17
OTHER									
Rickettsia australis			3				3	.0	3
Rickettsia - Spotted fever group					7		7	.0	7
Chlamydia trachomatis not typed	6	12	1	8	11	34	72	104.3	976
Chlamydia psittaci		1			1		2	4.2	53
Chlamydia spp typing pending		1		1			2	.2	4
Mycoplasma pneumoniae		6	1	4	10	5	26	11.3	226
Coxiella burnetti (Q fever)		4			1		5	13.7	78
TOTAL	24	196	101	193	263	287	1,064	1,062.7	10,383

1. The historical data are the averages of the numbers of reports in 6 previous 2 week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceding and following those.

Table 6. Laboratory reports by clinical information for the reporting period 8 April to 21 April 1992

	Encephalitis	Meningitis	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Musle/joint	Genital	Other	Total
MEASLES, MUMPS, RUBELLA												
Measles virus				1			1				3	5
Rubella virus				1					1		3	5
HEPATITIS VIRUSES												
Hepatitis A virus						5					3	8
Hepatitis B virus						20					56	76
Hepatitis C virus						10					96	106
Hepatitis D virus						6						6
ARBOVIRUSES												
Ross River virus							10		12		17	39
Barmah Forest virus							8		1		6	15
Dengue not typed											4	4
Flavivirus (unspecified)											1	1

Table 6. Laboratory reports by clinical information for the reporting period 8 April to 21 April 1992, continued

	Encephalitis	Meningitis	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Musle/joint	Genital	Other	Total
ADENOVIRUSES												
Adenovirus type 1				1							1	2
Adenovirus type 2				3							2	5
Adenovirus type 8								1				1
Adenovirus type 9											1	1
Adenovirus type 11											1	1
Adenovirus type 12											1	1
Adenovirus type 37								1				1
Adenovirus not typed/pending				7	21			3			4	35
HERPES VIRUSES												
Herpes simplex virus type 1				7		1	76	3		24	4	115
Herpes simplex virus type 2							60			62	8	130
Herpes simplex not typed/pending		1		1			10	1		3	6	22
Cytomegalovirus	1	2	2	13		3	1	1		1	32	56
Varicella-zoster virus							13				1	14
Epstein-Barr virus				4				1			29	34
Herpes virus group - not typed							2					2
OTHER DNA VIRUSES												
Papovavirus group							2				1	3
Molluscum contagiosum							2			1		3
Parvovirus									1		2	3
PICORNA VIRUS FAMILY												
Coxsackievirus B1		1										1
Coxsackievirus B5					1							1
Echovirus type 5		1										1
Echovirus type 9		2									3	5
Echovirus type 14											1	1
Echovirus type 16		3										3
Echovirus type 17		6		1							2	9
Echovirus type 18											1	1
Poliovirus not typed/pending					1						1	2
Enterovirus type 71 (BCR)											1	1
Enterovirus not typed/pending		13		13	11						12	49
Poliovirus type 1 (uncharacterised)											3	3
Rhinovirus (all types)				8							2	10
ORTHO/PARAMYXOVIRUSES												
Influenza A virus				26			1				3	30
Influenza A virus H3N2				2							2	4
Influenza B virus				1								1
Parainfluenza virus type 1				25					1		2	28
Parainfluenza virus type 2				8								8
Parainfluenza virus type 3				25							3	28
Parainfluenza virus typing pending				11								11
Respiratory syncytial virus				38			1				1	40

Table 6. Laboratory reports by clinical information for the reporting period 8 April to 21 April 1992, continued

	Encephalitis	Meningitis	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Musle/joint	Genital	Other	Total
OTHER RNA VIRUSES												
Rotavirus		1			10							11
Calici virus					1							1
Small virus (like) particle					4							4
OTHER												
Rickettsia australis											3	3
Rickettsia - Spotted fever group							7					7
Chlamydia trachomatis not typed				1				1		60	10	72
Chlamydia psittaci				1							1	2
Chlamydia spp typing pending				1							1	2
Mycoplasma pneumoniae				21							5	26
Coxiella burnetti (Q fever)											5	5
TOTAL	1	30	2	220	49	45	194	12	16	151	344	1,064

Table 7. Laboratory reports by contributing laboratories for the reporting period 8 April to 21 April 1992

STATE	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Garran	24
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	136
	Prince Henry/Prince of Wales Hospitals, Sydney	45
	Royal Alexandra Hospital for Children, Camperdown	15
Queensland	Dr TB Lynch, Pathologist, Rockhampton	24
	State Health Laboratory, Brisbane	77
South Australia	Institute of Medical & Veterinary Science, Adelaide	193
Victoria	Fairfield Hospital, Melbourne	171
	Microbiological Diagnostic Unit, University of Melbourne	11
	Royal Childrens Hospital, Melbourne	81
Western Australia	Princess Margaret Hospital, Perth	18
	State Health Laboratory Services, Perth	269
TOTAL		1064