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COMBINED ACTIVE-PASSIVE SURVEILLANCE OF ACUTE HEPATITIS B

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Introduction

Population-based surveillance of acute hepatitis B is required to assess the incidence of new infections with hepatitis B. Such surveillance is needed to detect variations in patterns of the disease which might result from migration or changes in prevalence of risk behaviours; it is also required to evaluate the effectiveness of hepatitis B vaccination programs. However, routine surveillance of acute hepatitis B is often problematical, either due to failure of doctors to notify cases of acute hepatitis or the inability of laboratory-based surveillance programs to distinguish acute infection from chronic carriage on the basis of detection of hepatitis B surface antigen (HBsAg).

Difficulties in surveillance of acute hepatitis B are highlighted by changes in surveillance definitions for hepatitis B[1]. The United States Centers for Disease Control and Prevention have established a sentinel program, where intensive effort is put into following up a small proportion of cases, to obtain accurate information on hepatitis B epidemiology[2], whilst in the United Kingdom, referring doctors are contacted by telephone to obtain case details (Norman Begg, Communicable Diseases Surveillance Centre, London, personal communication). A recent European Community survey of national surveillance systems for selected infectious diseases, including hepatitis B, inexplicably failed to list case definitions or to identify whether hepatitis B surveillance applied to acute or chronic infections, although the discussion alluded to the potential problem of comparing prevalence data from one country with incidence data from another[3]. Methods of hepatitis B surveillance in Australia appear to have varied from State to State. In 1993, only some States reported acute infection to the National Notifiable Diseases Surveillance System; the others did not distinguish acute from chronic infection[4].

Since the introduction of the New South Wales Public Health Act in November 1991, acute viral hepatitis has been notified by doctors and hospital staff, whilst detection of HBsAg has been notifiable by microbiology laboratories. It soon became apparent that acute hepatitis B was rarely notified and it was suspected that the disease was more common than the number of notifications suggested. In order to improve the surveillance of acute hepatitis B, it was decided to embark on a combined active-passive system of surveillance in the Eastern Sydney Area based on laboratory HBsAg notifications.

Methods

During 1992, the following protocol was introduced for reports of detection of HBsAg. First, each report was reviewed by the author to determine if the case could be categorised as acute or chronic on the basis of clinical notes or any accompanying liver enzyme results; if this was possible, no further attempt to categorise the case was made. For reports which could not be categorised, a form letter with a reply paid return address was sent to the referring doctor asking whether the case was thought to be one of acute or chronic hepatitis B based on the occurrence of jaundice, dark urine or markedly elevated liver enzyme levels. If the diagnosis was thought to be acute, the letter sought the date of onset of jaundice or dark urine, or the date of the blood sample showing abnormal liver enzyme results. Where the diagnosis was said to be acute hepatitis B, a member of staff of the Public Health Unit telephoned the referring doctor to confirm the diagnosis and ask about risk factors.

In addition, an audit of the active-passive surveillance program was carried out using laboratory notifications of HBsAg positive patients received in the period 1 September to 31 December 1994.

Results

Data comparing the results of combined active-passive surveillance in the Eastern Sydney Area and surveillance in the rest of New South Wales for the period 1992 to 1994[5,6] are presented in the Table. The notification rate for hepatitis B cases which had been identified as acute was six to 10 times higher in the Eastern Sydney Area than in the rest of New South Wales. Furthermore, in the Eastern Sydney Area over three-quarters of hepatitis B cases were deemed to be chronic carriers (in 1992, carriers were not entered onto the database), whilst in the remainder of New South Wales over 85% of cases were categorised as 'unspecified'.

The audit of the surveillance program was conducted based on the 165 laboratory notifications of HBsAg positive patients received in the last quarter of 1994. Three were categorised by the Public Health Unit as acute cases and 78 as chronic carriers on the basis of clinical notes, liver enzyme results or a previous notification. Of 84 letters sent to referring doctors, 79 (94%) were returned; five cases were acute and 74 were chronic carriers. No clinical notifications of acute hepatitis B were made by doctors or hospitals in this period.

Discussion

The system of active-passive surveillance of acute hepatitis B introduced in the Eastern Sydney Area resulted in improved acute case ascertainment compared with routine surveillance based on notification by doctors and hospital staff. There have been recent calls for improved data on incidence of hepatitis B infection so

Table. Annual notifications of hepatitis B for the Eastern Sydney Area and rest of New South Wales, 1992 to 1994, by year

	1992		1993		1994[1]	
	n	%	n	%	n	%
	Eastern Sydney Area					
Acute	33		26	7.7%	29	5.8%
Incidence[2]	10.6		8.4		9.4	
Chronic	n/a		265	78%	387	77%
Unspecified	n/a		48	14%	86	17%
All	n/a		339	100%	502	100%
	Remainder of New South Wales					
Acute	93	2.6%	76	2.0%	52	1.2%
Incidence[2]	1.6		1.3		0.9	
Chronic	400	11%	269	7.2%	234	5.5%
Unspecified	3060	86%	3417	91%	3966	93%
All	3553	100%	3762	100%	4252	100%

1. 1994 data from AIDS/Infectious Diseases Branch, New South Wales Health.
2. Incidence of notified acute infection per 100,000 per year.

that hepatitis B vaccination programs can be evaluated[7]. In 1994 the National Health and Medical Research Council issued surveillance case definitions[8]; the laboratory definition of acute hepatitis B places reliance on detection of IgM to core antigen (anti-HBc), although this marker is not specific for acute infection[9,10].

The problems with hepatitis B surveillance are akin to those being experienced with hepatitis C surveillance based on laboratory notification of hepatitis C antibody, although case definitions for recent infection are now being trialled. The surveillance of another chronic bloodborne viral infection, namely HIV infection, has been greatly improved by the institution of a uniform national call-back program. The data sought is more comprehensive than would be required for hepatitis B and its success is due, in large part, to the fact that it operates through a limited number of HIV reference laboratories. Some form of active surveillance system is required to improve the current poor state of hepatitis B surveillance. The system operating in the Eastern Sydney Area appears to be reasonably successful and simple to run (with minimal resources required); it could be made more efficient if details of cases found to be chronic carriers were not entered on the notifiable diseases database.

Acknowledgments

I am grateful to the administrative staff of the Public Health Unit - Sheila Davies, Alma Nurkic and Kay Fear - for taking on the extra burden of the hepatitis B surveillance system and for refining it as a valuable routine surveillance tool.

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CDI editorial comment

In the past, the incidence of hepatitis B has not been well monitored by the National Notifiable Diseases Surveillance System (NNDSS), because notifications of incident cases, carriers and cases for whom status in-

formation was available were reported from most States and Territories and were unable to be separately identified. In recent years, however, the States and Territories have commenced follow-up of hepatitis B notifications to identify incident cases, and only those have been reported to the NNDSS.

In 1991 and 1992, only South Australia and Victoria reported only incident cases to the NNDSS. A total of 108 cases was reported in 1991 (1.84 per 100,000 per year) and 133 in 1992 (2.25 per 100,000 per year). In 1993, New South Wales, South Australia, Tasmania and Victoria reported incident cases only, and 237 reports were received (1.91 per 100,000 per year). In 1994, all States and Territories except the Australian Capital Territory reported incident cases only. There were 315 cases, corresponding to a notification rate of 1.80 per 100,000 per year (Table).

Since the beginning of 1995, all States and Territories have been reporting incident cases only; there were 121 reports to 13 May (equivalent to 332 for the whole year and a rate of 1.85 per 100,000 per year). Seventy-six were males, 44 were females, and for one case, the sex was not specified. Three cases were aged under 15 years, 47 were in the 15 to 24 year age group, 57 were in the 25 to 44 year age group, and 14 were older or of unknown age.

The National Health and Medical Research Council is in the process of reviewing its recommendations for hepatitis B vaccination. The current recommendations[1] are for vaccination of infants born to carrier mothers, infants and young children in ethnic groups with a high hepatitis B carrier rate, individuals who are sexual partners of acute cases or long term household contacts of carriers, individuals such as health care workers who are at occupational risk of exposure, and individuals with significant lifestyle risk of hepatitis B (such as clients of STD clinics and injecting drug users).

In the Northern Territory, there has been universal infant vaccination for Aboriginals since 1989 and for all infants since 1990.

Reference

1. National Health and Medical Research Council. *The Australian immunisation procedures handbook*. 5th edition. Canberra: Australian Government Publishing Service, 1994.

Table. Hepatitis B (incident) notifications, 1991 to 1995, by State or Territory

	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Total notifications	Notification rate[1]
1991	-	-	-	-	28	-	80	-	108	1.84
1992	-	-	-	-	18	-	115	-	133	2.25
1993	-	101[2]	-	-	36	2	98	-	237	1.91
1994[3]	-	82[2]	11	49	34	2	98	39	315	1.80
1995[4]	2	22	7	26	15	1	40	8	121	1.85

1. Notifications per 100,000 per year.
2. These numbers differ slightly from those reported in the above article for New South Wales, due to slight differences in reporting arrangements.
3. Provisional totals for the year.
4. To 13 May.

PREVALENCE OF HEPATITIS B MARKERS IN VIETNAMESE REFUGEES

Mitchell Smith[1], *Gregory Stewart*[1], *Nguyen Dieu*[2]

Migrants to Australia are not routinely tested for the presence of hepatitis B virus (HBV) before migration. Unaccompanied refugee minors, children who have been, or are to be, adopted by Australian residents, and pregnant women are the only usual exceptions[1]. Two Australian studies of dental patients of South-East Asian background found hepatitis B surface antigen (HBsAg) in 16 and 17 per cent of persons over 20 years old[2,3], respectively.

In New South Wales, the Refugee Screening Program, which began in 1977, has focussed on detecting tuberculosis, syphilis, leprosy and incomplete immunisation among newly arrived refugees. Its clients are mainly from South-East Asia, and from Vietnam in particular. Hepatitis B testing was not part of the protocol before 1994. To assess the need for routine testing for HBV infection, a study of HBV marker prevalence in newly arrived refugees was undertaken.

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2. Faculty of Health Sciences, University of Sydney, New South Wales.

Subjects and methods

A total of about 1100 Vietnamese-born persons attended the Refugee Screening Program from late 1992 to the end of 1993. The survey for hepatitis B markers was conducted concurrently with a larger study of risk factors for coronary artery disease among these persons; therefore, only adults over 20 years of age were asked to participate. Extra serum was taken from 201 Vietnamese-born persons who attended the Program during the study period, and who volunteered to enter the larger study.

The sera were tested for the presence of HBsAg using an enzyme immunoassay technique (EIA). Positive results were confirmed by neutralisation. Sera of HBsAg positive persons were tested by EIA for e antigen (HBeAg), and negative sera were tested for the presence of core antibody and surface antibody.

Data were recorded and analysed using Microsoft Excel version 4.0

Results

The ages of those tested ranged from 21 to 67 years. Fifty-six per cent were male. HBsAg was detected in 26 of 201 persons (13.0%; 95% confidence interval 8.3 - 17.6). The carrier rate in males in our study was 17%, while that in females was 8%. Only two carriers were also HBeAg positive.

Of those who were HBsAg negative, core antibody was detected in 121 (69%), three-quarters of whom also had surface antibody present. Three persons were surface antibody positive but were core antibody negative. It is unlikely that any adults had been vaccinated in the past.

Thus overall, 75% of persons tested showed markers of either past or present infection with HBV.

Discussion

Knowledge of carrier status in an individual allows counselling regarding modes of spread, vaccination of non-immune contacts, and monitoring of the carrier for complications. This study confirmed the high prevalence of HBsAg in a sub-group of migrants from South-East Asia, and emphasised the value of offering routine testing of refugees seen by programs such as ours. This policy was introduced in New South Wales from January 1994. Although the survey was conducted among volunteer refugees, their hepatitis B carrier rate may not differ markedly from the general population of migrants arriving from Vietnam.

Acknowledgments

We wish to thank Dr Margaret Bermingham, Faculty of Health Sciences, University of Sydney, and the serology staff at South Western Area Pathology Service, Liverpool, New South Wales.

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A MULTIPLE ANTIBIOTIC-RESISTANT PNEUMOCOCCUS IN CAIRNS: CASE REPORT AND INVESTIGATION

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Case report

A 7½ month old Caucasian boy presented to a general practitioner with a four day history of fever and reluctance to use his right arm. There was no history of recent trauma to the arm; he was commenced on oral flucloxacillin and metronidazole and referred for orthopaedic assessment.

He was hospitalised and aspiration of the shoulder joint attempted. Because no joint aspirate was obtained a presumptive diagnosis of osteomyelitis of the proximal humerus was made and intravenous flucloxacillin commenced. However, two days later purulent fluid was aspirated from the shoulder joint; gentamycin and cephalothin were substituted for flucloxacillin in the intravenous regimen. Four days after the initial presentation it was reported that a *Streptococcus pneumoniae*, resistant to penicillin, erythromycin, tetracycline, cotrimoxazole and chloramphenicol upon disc susceptibility testing, had been cultured from the joint fluid. Because the pneumococcus was reported as sensitive to third-generation cephalosporins the initial antibiotics were ceased and intravenous cefotaxime was promptly commenced.

The child remained febrile, and because induration developed over the biceps muscle he underwent surgi-

Table 1. The antibiotic susceptibilities of the invasive serotype 6B pneumococcal isolate

Antibiotic	(MIC μg/mL)	Comment
Penicillin	1.0	Upper level intermediate resistance
Erythromycin	>256	Fully resistant
Cotrimoxazole	8/152	Fully resistant
Chloramphenicol	30	Fully resistant
Cefotaxime	0.5	Upper level susceptible range
Vancomycin	1	Susceptible
Rifampicin	0.064	Susceptible

Table 2. Nasopharyngeal carriage of pneumococci from the day-care contacts of the index case

	Total contacts	Number screened	Number carrying pneumococci	Serotypes (number isolated)
Infants	3 (plus index)	3	2	9 (1) 10 (1)
Toddlers	10	10	8	6A (3) 9 (2) 14 (4) 19 (2) NST* (1)
'Tweenies' and older children	51	0	-	
Staff	12	3	0	

* NST = nonserotypable.

cal exploration one week after initial presentation. A collection of pus extending from within the shoulder joint down the biceps tendon was drained. He was continued on intravenous cefotaxime for two weeks, then discharged on oral cefpodoxime. He had made a good recovery when reviewed one month after the initial presentation.

The pneumococcus was referred to the Acute Respiratory Infection Research and Reference Unit of the Laboratory of Microbiology and Pathology, Queensland Health, Brisbane for more detailed laboratory analysis. The isolate was subsequently identified as serotype 6B by the quelling reaction using typing and factor antisera obtained from the Statens Seruminstitut, Copenhagen, Denmark. The antibiotic minimum inhibitory concentrations (MICs) were determined by the E test (AB Biodisk, Solna, Sweden). Of note, the isolate had an intermediate resistance to penicillin (defined as having an MIC of 0.1-1.0 $\mu g/mL^{1}$), and it was fully resistant to erythromycin, cotrimoxazole and chloramphenicol (Table 1).

Investigation

The child had no significant past medical history, and he had not been on any antibiotics in the two months prior to the illness. He had never travelled away from Cairns. Similarly, neither of his parents had had a recent illness, and neither had travelled away from Cairns since his birth. There were no siblings, and there was no significant household contact with other children for several weeks prior to hospitalisation.

He had however commenced attending a local child day-care centre two weeks prior to becoming ill; he attended up to five hours per day, three to four days per week. The day-care centre had a daily enrolment of about 65 children, and there were 12 staff. Children were allocated to four groups: infants, age up to 15 months (n = 4), toddlers, age 15 months to 2½ years (n = 10), 'tweenies', age 2½ to 3½ years (n = 12) and older children, age 3½ to 5 years (n = 39). Staff were specifically assigned to a particular age group, and there was very little mixing between children in different age groups. (Any mixing that did occur was at the end of the day after a substantial number of children had already left for home).

With parental consent, nasal and throat swabs were collected from all 13 infant and toddler contacts of the index case; they were also collected from three of the four infant and toddler staff members and from the boy's parents. The swabs were plated onto blood agar with and without gentamicin sulphate (5mg/L) and incubated for up to 48 hours at 37°C in 5% carbon dioxide. Although encapsulated pneumococci were recovered from 10 (77%) of the children, serotype 6B organisms were not found (Table 2). No pneumococci were isolated from the three staff members or from the boy's parents.

Comment

Although septic arthritis is an unusual manifestation of invasive pneumococcal disease, it is nevertheless well documented[2]. This was first recognised invasive episode of either penicillin- or multiple antibiotic-resistant pneumococcal infection in a child in north Queensland (R Messer, personal communication), and it raises questions about the source of the infection and the prevalence of carriage of antibiotic resistant pneumococci in the community.

There is probably an increased risk of respiratory droplet-borne illness in young children soon after commencing attendance at a child day-care centre[3,4]. If so, it is presumably the result of the immunologically-naive child being abruptly and intensely exposed to a variety of potential respiratory pathogens as soon as he/she begins mixing with a relatively large number of children from a wide variety of family settings. The pneumococcus is one such potential pathogen; most paediatric pneumococcal infections develop within a few weeks of acquisition of a new serotype[5].

Perhaps the best evidence that transmission of pneumococcus can occur within the child day-care environment comes from the occasional reports of clusters of cases (caused by the same serotype) in the same centre[6-8]. One such cluster involved two day-care related cases of multiple antibiotic-resistant pneumococcal disease[6]; there have also been several case reports of multiple antibiotic-resistant pneumococcal disease associated with child day-care[9,10].

Several studies have demonstrated high carriage rates among the contacts of children with antibiotic-resistant pneumococci; young day-care contacts have greater carriage rates than the older children or staff in the centre in which an index case has occurred[9,10]. For this reason, and because of logistics and cost, only the infants and toddlers in contact with the boy were screened for carriage of pneumococci. The finding of no carriage of any serotype 6B pneumococci is reassuring and suggests that the prevalence of carriage of multiple antibiotic-resistant pneumococci among local children is very low.

Although is remains unclear as to where the boy acquired the pneumococcus, it is likely to have been acquired from another young child[5]. However no carrier of the same serotype, let alone the same multiple antibiotic-resistant pnuemococcus, was identified among the child's immediate child-care contacts suggesting that the invasive organism was not acquired from the centre. There may of course have been a carrier among the older children, but his contact with the older age groups was minimal.

The prevalence of penicillin-resistance in pneumococci causing invasive disease in Australia in 1989 was very low[1]. Only two (1.9%) of 105 invasive isolates had an MIC of ≥0.1 μg/mL; only one of the two had an MIC as high as 1.0 μg/mL. However preliminary data from an ongoing collaborative study show that 15 (3.2%) of 468 invasive pneumococci isolated in 1994 had a penicillin MIC of ≥0.125 μg/mL, and two isolates had an MIC of ≥2.0 μg/mL. Further, twenty (5.3%) of 376 invasive isolates were resistant to three or more antibiotics tested (penicillin, chloramphenicol, erythromycin, tetracycline, and cotrimoxazole), with seven (1.9%) isolates resistant to all five (J Bell, P Collignon on behalf of the Australian Group on Antimicrobial Resistance, personal communication).

Twenty-four (80%) of the 30 pneumococcal isolates that caused invasive disease in children under five years of age in Far North Queensland between 1992 and 1994, were serotyped. Four (16.7%) of the 24 were identified as serotype 6B; all four were sensitive to penicillin (unpublished data). Serotype 6B was the most frequently found serotype among invasive multiple antibiotic-resistant 6B pneumococci in the United States in 1992[11], and multiple antibiotic-resistant serotype 6B pneumococci have recently been described from the Top End of the Northern Territory[12].

Therefore 6B is not uncommon invasive paediatric pneumococcal serotype in Far North Queensland, and further cases of disease caused by multiple-antibiotic resistant serotype 6B pneumococci can be expected. Several studies have shown that prior antibiotic use is an important (and perhaps the only consistent) risk factor for the development of antibiotic-resistant invasive pneumococcal disease in children[9,10,13]. This emphasises that antibiotics, particularly those prescribed for children, must be used judiciously if the risk of further cases of invasive disease caused by multiple antibiotic-resistant pneumococci is to be minimised.

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Addendum

Since this report was submitted, two more penicillin resistant invasive pneumococci have been isolated in north Queensland. A serotype 6B pneumococcus with an MIC of 0.125μg/mL was isolated from the blood of a 9 month old Aboriginal boy with pneumonia and a serotype 23F pneumococcus with an MIC of 0.5μg/mL was isolated from a peritoneal swab taken from a 13½ year old Aboriginal girl with peritonitis following a ruptured appendix. Both isolates were sensitive to other standard antibiotics.

A recently published epidemiological study has shown that day care centre attendance is a major factor for invasive pneumococcal disease in young children in Finland[1].

Reference

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GONOCOCCAL SURVEILLANCE, AUSTRALIA, 1 OCTOBER TO 31 DECEMBER 1994

Derived from the Australian Gonococcal Surveillance Programme - AGSP; coordinator JW Tapsall, The Prince of Wales Hospital, Sydney

Laboratories contributing to the Australian Gonococcal Surveillance Programme examined 493 isolates of *Neisseria gonorrhoeae* in the fourth quarter of 1994. All strains were examined for their sensitivity to penicillin and 409 for their susceptibility to ceftriaxone, ciprofloxacin and spectinomycin and for high level resistance to tetracycline (TRNG).

Figure 1 shows the proportion of strains fully sensitive (FS, minimum inhibitory concentration (MIC) ≤ 0.03 mg/L), less sensitive (LS, MIC 0.06 - 0.5 mg/L), relatively resistant (RR, MIC ≥ 1 mg/L) or penicillinase-producing (PPNG) in Brisbane, Sydney, Melbourne and the Northern Territory and for all isolates throughout Australia. (Data from the corresponding period in 1993 are shown in Figure 2.)

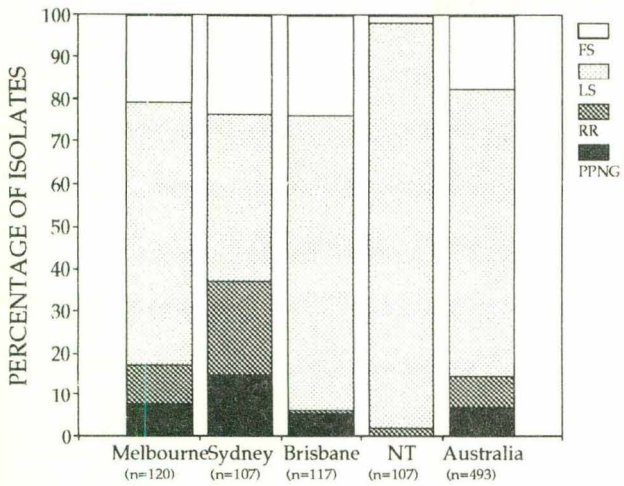
There were 33 PPNG isolated in this quarter, 17 in Sydney and others in Melbourne, Adelaide and Brisbane. Locally acquired infections with PPNG were seen only in Sydney and Melbourne. Isolates resistant to penicillin by chromosomal mechanisms (CMRNG) - 40 in all - were more numerous than PPNG. Again most strains of this type were found in Sydney (24) or Melbourne (12) but one or two were also seen in Adelaide, Alice Springs and Brisbane. In the corresponding quarter of 1993 there were 25 PPNG and 53 CMRNG.

All isolates tested were sensitive to spectinomycin and ceftriaxone. Eleven strains exhibited some degree of quinolone resistance (2.7%) and these were found in Adelaide (one), Brisbane (one), Melbourne (two) and Sydney (seven). Three of the Sydney isolates had MICs for ciprofloxacin of 16 mg/L - levels recorded only once previously, in Spain[1]. A total of 19 strains were TRNG (4.6%) and these were present in Sydney (11), Melbourne (five) and Brisbane (three).

The above findings continue to demonstrate the substantial differences in antibiotic susceptibility that exist in gonococci isolated in different parts of Australia and the need for continuing standardised surveillance in each region.

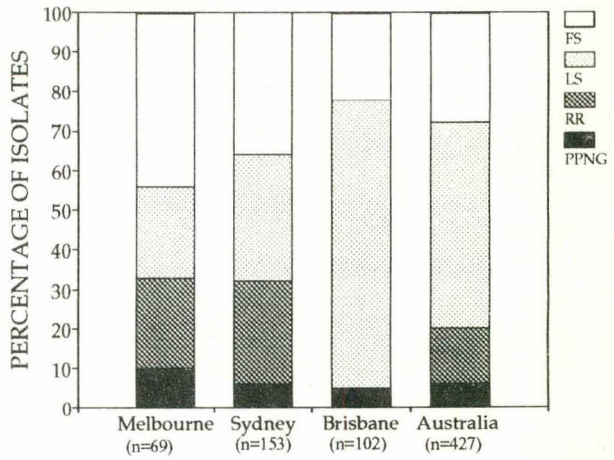
The total number of strains examined - 493 - was more than the 427 isolates tested in the December quarter of 1993. (Data on the number of gonococci isolated in those centres with higher numbers of strains are shown in the following tables.) The increase in the overall numbers was despite a decrease in the number of strains tested in Sydney. In that centre, the total of 107 isolates in 1994 was considerably less than the 150 in 1993 (Table). The comparison with 1992 is even more striking; 203 isolates were seen in Sydney at that time. By way of contrast and as was noted in the September

Figure 1. The proportion of gonococcal isolates in Australia and in Brisbane, Sydney, Melbourne and the Northern Territory fully sensitive, less sensitive, relatively resistant or penicillinase-producing[1], October to December 1994



1. For definitions of these categories see text.

Figure 2. The proportion of gonococcal isolates in Australia and in Brisbane, Sydney, and Melbourne fully sensitive, less sensitive, relatively resistant or penicillinase-producing[1], October to December 1993



1. For definitions of these categories see text.

Table 1. Gonococcal isolates, Australia, 1 October to 31 December 1994, by sex and region[1]

	Melbourne	Sydney	Brisbane	Northern Territory	Australia
Male	115 (63)	91 (130)	74 (64)	63	371 (282)
Female	5 (6)	16 (20)	43 (33)	41	115 (72)
M:F ratio	23:1 (10:1)	5.7:1 (6:1)	1.7:1 (2:1)	1.5:1	3.2:1 (4:1)

1. Figures in parentheses represent data for the corresponding period in 1993.

Table 2. Gonococcal isolates from males, 1 October to 31 December 1994, by site (where known) and region and for Australia

	Melbourne	Sydney	Brisbane	Australia
Urethral	98	70	72	279
Rectal	13	10	1	24
Pharyngeal	2	7	0	13
Other	2	4	1	7
Total	115	91	74	323

Table 3. Gonococcal isolates from females, 1 October to 31 December 1994, by site (where known) and region and for Australia

	Melbourne	Sydney	Brisbane	Australia
Cervical	5	14	43	81
Rectal	0	0	0	0
Pharyngeal	0	1	0	1
Other	0	1	0	1
Total	5	16	43	83

quarter, there was a significant increase in the number of isolates from Melbourne when comparisons are made with 1993 figures. In the current period 120 gonococci were examined in Melbourne whereas just over half that number - 69 - were seen in 1993. The increase in isolates in Melbourne occurred in men - from 63 to 115 - and the male:female ratio increased from 10:1 to 23:1. There were two instances of disseminated gonococcal infection in this quarter.

Note: Strains from the Northern Territory were isolated in Alice Springs, Darwin and the laboratories of Western Diagnostic Pathology, Perth and further tested in Adelaide and Sydney.

Reference

1. Birley H, McDonald P, Carey P. High level ciprofloxacin resistance in *Neisseria gonorrhoeae*. *Genitourin Med* 1994;70:292-293.

CDI editorial comment

The notification rate of **gonococcal infection** reported to the National Notifiable Disease Surveillance System (NNDSS) has decreased steadily since 1980 (Figure 1). The highest rate of notification was recorded for 1982 at 84.3 per 100,000 population. The lowest rate of notification was recorded for 1990 with a rate of 11.3 per 100,000 population. However, this rate may be an artefact associated with the revision of the NNDSS during this period. The rate has remained relatively constant since 1992 at approximately 16 per 100,000 population.

In 1994 the highest rates of notification were recorded for males with a peak rate of 74.8 per 100,000 population recorded for males in the 20-24 years age group. The rate in males decreased steadily in subsequent age groups with a rate of 0.9 per 100,000 population recorded for males aged greater than 69 years (Figure 2).

In females in 1994, the peak rate of notifications was 38.8 per 100,000 population for women in the 15-19 years age group. Similar to the pattern in males the rate decreased with age, with rates of less than 2.0 per 100,000 population recorded for women aged greater than 49 years.

For children in the 0-4 years age group a rate of 2 per 100,000 population was recorded for males and a rate of 3.5 per 100,000 population was recorded for females.

Figure 1. Notifications of gonococcal infection per 100,000 population, January 1980 to April 1995, by year

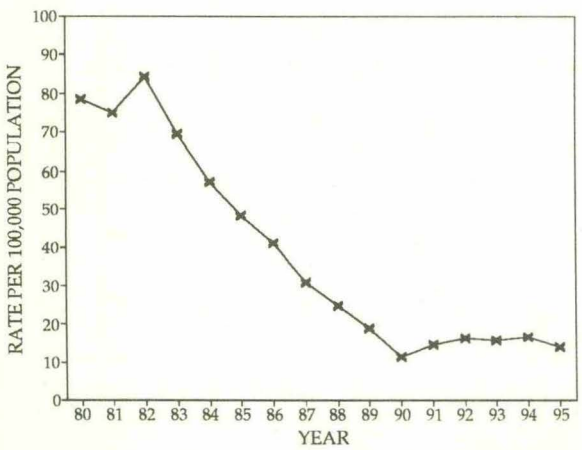
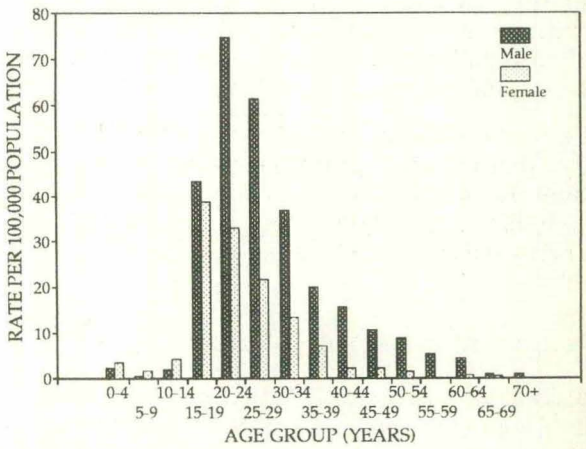


Figure 2. Notifications of gonococcal infection per 100,000 population, 1994, by age group and sex



SEROSURVEY FOR ANTIBODIES AGAINST HANTAVIRUSES IN HUMANS IN NORTHERN AUSTRALIA

Bo Niklasson, Department of Virology, Karolinska Institute Sweden, John Aaskov, World Health Organization Collaborative Centre for Arbovirus Reference and Research, Brisbane, Queensland

In the light of the emergence of 'new' Hantaviruses and/or Hantavirus syndromes in the Northern Hemisphere in recent years, 2512 serum samples collected principally from adults in north-east Australian over the last decade were tested by ELISA for the presence of antibody against Hantaan, Pumala and Prospect Hill viruses. No clear positive reactions were detected. Ten samples which produced a low/equivocal reaction in the ELISA test were negative in subsequent testing by Western blot and in immunofluorescence assays.

While this sample represented only approximately 0.25% of the adult population in this part of Australia, it does suggest human infection with these, or related, Hantaviruses in this part of the world is not common. However, it may well be in the national itnerest to carry out similar serological surveillance at regular intervals in the future.

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization (WHO), the Program for Monitoring Emerging Diseases, the South Pacific Epidemiological and Health information Service and the WHO Collaborative Centre for Arbovirus Reference and Research, Brisbane, Queensland.

Ebola virus outbreak in Zaire

The outbreak of Ebola virus is continuing in Zaire, with totals at 26 May of 144 suspected cases and 108 deaths, including some identified retrospectively since 1 January this year.

During the investigations, several chains of deaths, one involving seven out of 12 persons living in the same household, have been identified which were traced retrospectively as far back as late December 1994. The major means of transmission appears to have been close and unprotected patient contact or preparation of the dead for burial.

Epidemic control in Kikwit continues with two major strategies: epidemiological surveillance to identify all cases and deaths in order to isolate patients and bury the dead under safe conditions, and improvement of conditions at the Kikwit General Hospital, in order to enhance patients' confidence so that they will attend the hospital for care.

The Department of Human Services and Health advises that travellers should consider postponing any travel planned to the affected or nearby areas. The Australian quarantine authorities, which monitor ill persons arriving in Australia, have been alerted to the outbreak.

Dengue in the Cook Islands

Dr Tamarua, Director of Clinical Services, Rarotonga Hospital Cook Islands; John Aaskov, WHO Collaborative Centre for Arbovirus Reference and Research, Brisbane, Queensland

Two hundred and five suspected cases of dengue were reported from the Rarotonga Hospital between 1 February and 31 March this year and 135 suspected cases between 1 April and 26 April. Ten to fifteen per cent of patients have shown some haemorrhagic manifestations, for example, epistaxis, gum bleeding, gastrointestinal bleeding. There have been no deaths to date.

Of sera from 47 suspected patients sent to the Queensland University of Technology-Queensland Health WHO Arbovirus Reference Centre in Brisbane, dengue 3 virus was isolated from 13 patients and 12 additional patients had anti-dengue antibody detectable in an IgM capture ELISA. Convalescent serum from one patient, from whose acute serum dengue 3 was isolated, contained anti-dengue IgM.

It is of interest that there have been outbreaks of dengue 3 recently in Nicaragua, Panama and Costa Rica and that the strain of dengue 3 involved is genetically identical to the dengue 3 which caused major outbreaks of dengue haemorrhagic fever in Sri Lanka and India in the 1980s.

Dengue in the South Pacific

The South Pacific Epidemiological and Health information Service has reported on recent dengue activity in the South Pacific this year. In New Caledonia, 744 cases were reported between 1 January and 7 April, with 466 confirmed as dengue 3. There were 250 suspected cases reported from Palau between 1 January and 17 April. Three confirmed cases of dengue 3 were reported from Wallis and Futuna by the beginning of April, two indigenous. French Polynesia had reported 208 suspected and 47 confirmed dengue 3 cases by the end of February, normal for the time of year. Reports of no cases were received from Niue, Northern Mariana Islands, Solomon Islands, Nauru, Papua New Guinea and Tuvalu.

Meningococcal meningitis in Africa

Several countries in Africa are currently experiencing epidemics of meningococcal meningitis. There have been reports of cases for 1995 from Burkina Faso (1320), Chad (30), Ethiopia (247), Guinea (2411 in 1994-1995), Mali (1276), Niger (49,601 from 1993 to 1995) and Nigeria (over 4800 cases for 1994-1995). Although incomplete, the data indicate that a new epidemic cycle may be emerging in the African meningitis belt and possible other countries outside this region and Africa. The epidemic cycle may commence this year, or later, and could comprise two to three consecutive years of epidemics during the dry season. National health authorities in the area have been advised by the WHO to strengthen local surveillance in risk areas and to keep neighbouring countries and the WHO informed.

Cholera update

Attupue Province in Laos has recently been declared infected.

Cholera cases have been reported since the beginning of the year from Cambodia, Cameroon, Cape Verde, Costa Rica, El Salvador, Ghana, Guinea Bissau, India, Kenya, Laos, Philippines, Singapore, Somalia and in Rwandan refugee camps in Tanzania and Zaire.

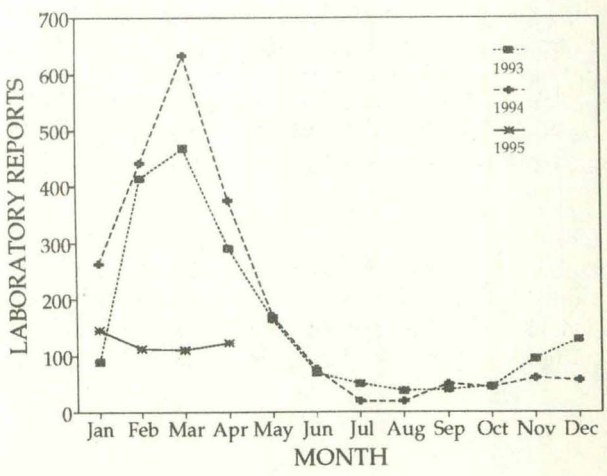
COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1859 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 8, 9 and 10).

- Eight reports of **measles** were received this period for 4 males and 4 females, all under the age of 25 years. All diagnoses were by IgM detection. The number of reports received has continued to decline in recent months.
- **Rubella** was reported for 22 patients this fortnight including 5 females in the 15 to 44 year age group. Diagnosis was by IgM detection (19) and fourfold rise in titre (3). The number of reports received has continued to decline since the beginning of the year.
- Twenty-five reports of **hepatitis A** were received this period. A total of 17 males and 8 females were included and fourteen patients were in the 25 to 44 year age group.
- Positive **hepatitis B** serology was reported for 90 patients this fortnight, 38 males and 51 females (one sex not stated). Forty-nine patients were in the 25 to 44 year age group, and 19 in the 15 to 24 year age group. Included were 6 pregnant females, one injecting drug user, one HIV positive patient, and the index case in a needle stick injury.
- Two hundred and thirty-nine reports of positive **hepatitis C** serology were received this period. Included were 149 males and 87 females (3 sex not stated). One hundred and eighty reports were for the 25 to 44 year age group. Included were 12 injecting drug users and one pregnant female.
- **Ross River virus** was reported for 154 patients this fortnight, from New South Wales (3), the Northern Territory (2) and Queensland (149) Eleven diagnoses, all from Queensland (one each from Hendra, Kippa-ring, Ipswich, Blackwater, Stafford, Greenlands, Brackenridge, Edgehill, Cleveland, Fernvale, Conubia) were confirmed. All remaining diagnoses were presumptive (IgM detected). Included were 84 males and 70 females age range 5 to 99 years. Specimen collection dates ranged from late March to early May. The number of reports received remains low for the time of year (Figure 1).
- Thirty-four reports of **adenovirus** were received this fortnight diagnosed by virus isolation (13) and antigen detection (21). Included were adenovirus **types 1** (one), **3** (2), **8** (4), one of which was nosocomially acquired) and **26** (one).
- **Herpes simplex virus type 1** was reported for 220 patients this fortnight. Diagnosis was by virus isolation (217), antigen detection (2) and IgM detection (one).
- Two hundred and ninety-one reports of **herpes simplex virus type 2** were received, diagnosed by virus isolation (283), antigen detection (7) and IgM detection (one).
- **Untyped herpes simplex virus** nucleic acid was detected in the CSF of a 20 year old female with meningitis.
- There were 67 reports of **cytomegalovirus** (CMV) this fortnight, 31 virus isolations, one antigen detection, 29 IgM detections and six single high titres. Included was virus isolation from the urine of a 19 month old male whose mother recently had CMV.
- **Varicella-zoster virus** was reported for 55 patients this period. Method of diagnosis included virus isolation (18), antigen detection (23), IgM detection (12) and fourfold rise in titre (2).
- Four reports of **enterovirus type 71** isolation were received this fortnight all from Victoria. Included were 3 males aged one, 4 and 10 years and one female aged 3 years. One patient had meningitis and 3 skin manifestations.
- Sixteen reports of **rhinovirus** were received this period, 12 for children under 4 years of age.
- **Influenza A** was reported for 25 patients this fortnight from the Northern Territory (9), Queensland (2), South Australia (5) and Victoria (9). Included were 12 males and 13 females and a total of 11 patients were under the age of 5 years. Method of diagnosis included virus isolation (8, specimen collection dates mid-April to mid-May), antigen detection (5, specimens collected late April to early May), fourfold rise in titre (3) and single high titre (9). Included was an 11 month old female with a recent history of apnoeic episodes and a 74 year old

Figure 1. Ross River virus laboratory reports, 1993, by month of specimen collection



female with encephalitis and pneumonia. A total of 86 reports has been received so far this year, 17 of which were for patients over the age of 65 years. Forty reports have been received for the month of April, which is high for the time of year (Figure 2).

- Five reports of **influenza B** were received this period, one each from New South Wales, the Northern Territory and South Australia and 2 from Queensland. Included were 2 males and 3 females, age range one to 64 years. Diagnosis was by virus isolation (2, specimen collection dates in mid-April and early May) and single high titre (3). A total of twenty-two reports has been received so far this year.
- Thirteen reports of **parainfluenza virus type 2** were received this period 9 of which were for children under the age of 4 years. Method of diagnosis included virus isolation (8) and antigen detection (5). The number of reports is high for the time of year (Figure 3).
- **Parainfluenza virus type 3** was reported for 13 patients this fortnight, all 4 years of age or under. Diagnosis was by virus isolation (5) and antigen detection (8). The number of reports received has declined in recent months and is average for the time of year.
- Sixty-four reports of **respiratory syncytial virus (RSV)** were received this fortnight 39 for patients under one year of age and 20 in the one to 4 year age group. Method of diagnosis included virus isolation (10), antigen detection (53) and single high titre (one). The number of reports is average for the time of year (Figure 4).
- **Rotavirus** was reported for 32 patients this period including 20 males and 12 females. Eighteen patients were under the age of 4 years.
- One hundred and thirty-five reports of ***Chlamydia trachomatis*** were received this fortnight for 35 males and 100 females. Ninety patients were in the 15 to 24 year age group and 39 in the 25 to 44 year age group. Diagnosis was by isolation (20), antigen detection (64), nucleic acid detection (50) and single high titre (one).
- ***Mycoplasma pneumoniae*** was reported for 17 patients this period including 8 males and 8 females.
- Eleven reports of **Q fever** were received this period. Included were 8 males and 3 females, all in the 16 to 45 year age group.

Figure 2. Influenza A laboratory reports, 1990 to 1994 average and 1995, by month of specimen

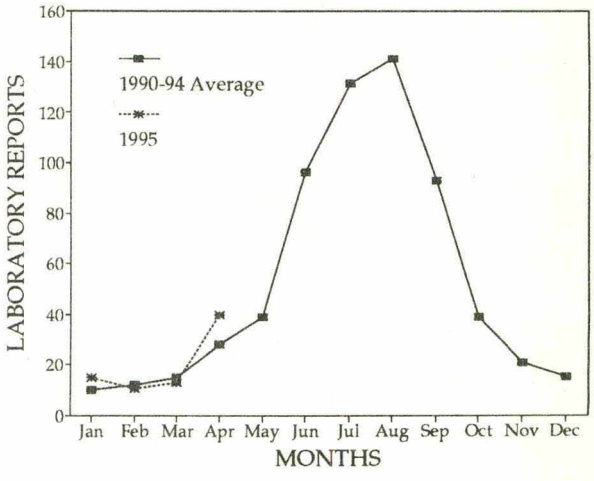


Figure 3. Parainfluenza virus type 2 laboratory reports, 1993 to 1995, by month of specimen collection.

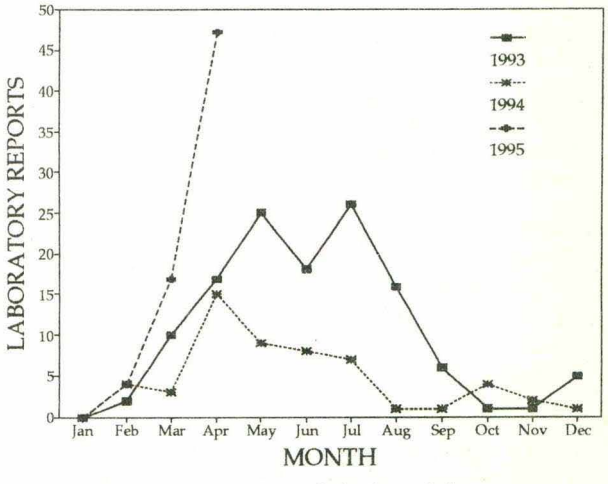


Figure 4. Respiratory syncytial virus laboratory reports, 1994 to 1995, by month of specimen collection

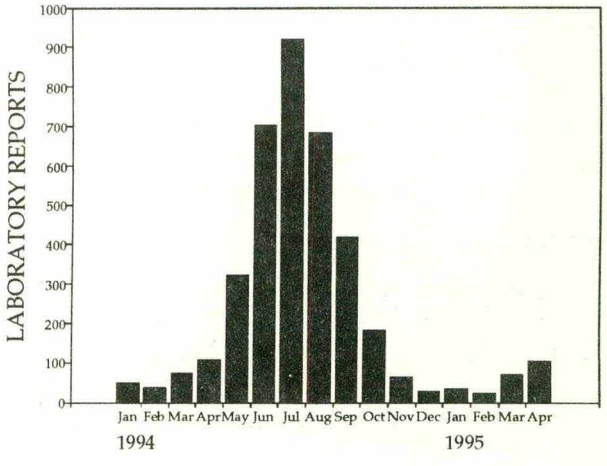


Table 1. Australian Sentinel Practice Research Network, weeks 18 and 19, 1995

Condition	Week 18, to 7 May 1995		Week 19, to 14 May 1995	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	84	10.6	100	12.7
Rubella	4	0.5	2	0.3
Measles	0	0	0	0
Chickenpox	13	1.6	14	1.8
Pertussis	1	0.1	1	0.1
Gastroenteritis	94	11.9	99	12.5

Australian Sentinel Practice Research Network

Data for week 18 (ending 7 May) and week 19 (ending 14 May) are included in this issue of *CDI* (Table 1). There were 7909 consultations reported for week 18 and 7899 for week 19. The influenza reporting rate increased slightly this fortnight; very high rates continue to be reported from the Northern Territory. Recent pertussis reporting rates have been lower than in February-March this year.

HIV and AIDS Surveillance

Methodological note

National surveillance for HIV disease is coordinated by the National Centre in HIV Epidemiology and Clinical Research (NCHECR), in collaboration with State and Territory health authorities and the Commonwealth of Australia. Cases of HIV infection are notified to the National HIV Database on the first occasion of diagnosis in Australia, by either the diagnosing laboratory (ACT, New South Wales, Tasmania, Victoria) or by a combination of laboratory and doctor sources (Northern Territory, Queensland, South Australia, Western Australia). Cases of AIDS are notified through the State and Territory health authorities to the National AIDS Registry. Diagnoses of both HIV infection and AIDS are notified with the person's date of birth and name code, to minimise duplicate notifications while maintaining confidentiality.

Tabulations of diagnoses of HIV infection and AIDS are based on data available three months after the end of the reporting interval indicated, to allow for reporting delay and to incorporate newly available information. More detailed information on diagnoses of HIV infection and AIDS is published in the quarterly *Australian HIV Surveillance Report*, available from the National Centre in HIV Epidemiology and Clinical Research, 376 Victoria Street, Darlinghurst NSW 2010. Telephone: (02) 332 4648 Facsimile: (02) 332 1837.

HIV and AIDS diagnoses and deaths following AIDS reported for November 1994, as reported to 28 February 1995, are included in this issue of *CDI* (Tables 2 and 3).

Table 2. New diagnoses of HIV infection, new diagnoses of AIDS and deaths following AIDS occurring in the period 1 to 30 November 1994, by sex and State or Territory of diagnosis

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA			
										This period 1994	This period 1993	Year to date 1994	Year to date 1993
HIV diagnoses	Female	0	2	0	3	0	0	1	1	7	6	74	67
	Male	2	38	1	9	2	0	18	4	74	89	826	892
	Sex not reported	0	1	0	0	0	0	0	0	1	4	11	13
	Total[1]	2	41	1	12	2	0	19	5	82	99	911	976
AIDS diagnoses	Female	0	0	0	0	0	0	0	0	0	2	22	33
	Male	1	12	0	1	0	0	6	0	20	35	649	539
	Total[1]	1	12	0	1	0	0	6	0	20	37	674	575
AIDS deaths	Female	0	0	0	0	0	0	0	0	0	2	28	21
	Male	1	21	0	9	1	0	6	3	41	59	574	555
	Total[1]	1	21	0	9	1	0	7	3	42	62	607	579

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

Table 3. Cumulative diagnoses of HIV infection, AIDS and deaths following AIDS since the introduction of HIV antibody testing to 30 November 1994, by sex and State or Territory of diagnosis

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	AUSTRALIA
HIV diagnoses	Female	12	511	4	84	40	4	148	53	856
	Male	149	9592	77	1449	524	68	3154	686	15699
	Sex not reported	0	2045	0	0	0	0	43	0	2088
	Total[1]	161	12156	81	1537	564	72	3352	740	18663
AIDS diagnoses	Female	3	111	0	22	13	2	36	10	197
	Male	61	3217	23	501	234	25	1129	208	5398
	Total[1]	64	3338	23	525	247	27	1171	218	5613
AIDS deaths	Female	2	74	0	16	10	2	18	5	127
	Male	46	2233	16	350	146	21	866	148	3826
	Total[1]	48	2313	16	368	156	23	890	153	3967

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

Australian Encephalitis: Sentinel Chicken Surveillance Programme serological results, March and April 1995

AK Broom[1], *J Azuolas*[2], *L Heuston*[3], *JS Mackenzie*[4], *L Melville*[5] *and DW Smith*[6]

Sentinel chicken serology was carried out for 20 of the 22 flocks in Western Australia in March and April 1995. There was a large number of seroconversions in the flocks located in the Kimberley, Pilbara and Gascoyne regions of Western Australia. The location, specific antibodies detected and the month the seroconversion occurred are shown in Table 4.

Antibodies to Murray Valley encephalitis (MVE) and Kunjin viruses were detected in the sentinel chicken flocks, showing that both of these viruses were active in the north of Western Australia during March and April. The Health Department of Western Australia issued public health warnings of increased flavivirus activity in these regions. This is the first time since 1981 that flavivirus activity has been detected as far south as Carnarvon. We are planning to carry out an additional serological survey in chicken flocks located in areas south of Carnarvon to attempt to determine the southern limit of flavivirus activity in the State this year.

Eight flocks of sentinel chickens from the Northern Territory were tested and there was no evidence of seroconversions in the sera tested.

Table 4. Seroconversions to flaviruses in sentinel chicken flocks in Western Australia, March and April 1995

		March		April	
		Positives	Antibody	Positives	Antibody
Kimberley	Wyndham	2	1 MVE[1], 1 FLAVI[1]	2	1 MVE, 1 KUN
	Kununurra	3	2 MVE[1], 1 KUN[1]	2	2 KUN
	Derby	0		5[2]	1 KUN, 1 MVE/KUN, 3 FLAVI
	Broome	0		6	2 MVE, 4 KUN
Pilbara	Karratha	2	1 MVE, 1 FLAVI	0	
	Harding Dam (Karratha)	0		4	4 KUN
	Paraburdoo	3	1 KUN, 2 MVE/KUN	3	2 MVE, 1 KUN
	Ophthalmia Dam (Newman)	5	3 KUN, 2 MVE/KUN[1]	7	1 MVE/KUN, 5 KUN, 1 unknown
	Newman (Minesite)	1	1 MVE/KUN	1	1 MVE/KUN
	Exmouth	0		1	1 KUN
	Carnarvon	0		3	1 KUN, 1 MVE/KUN, 1 FLAVI

1. MVE Antibodies to MVE virus.
KUN Antibodies to Kunjin virus.
MVE/KUN Antibodies to MVE and Kunjin viruses.
FLAVI Antibodies to a flavivirus but probably not MVE or Kunjin.

There was no evidence of flavivirus activity in New South Wales or Victoria during this period.

The flavivirus surveillance programs in Victoria and New South Wales finished at the end of March 1995.

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5. Berrimah Agricultural Research Centre, Darwin, Northern Territory.
6. State Health Laboratories, Perth.

National Influenza Surveillance 1995

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

Overall the rate of influenza reporting has continued to rise in May. Data from the following schemes will be included in the next fortnightly report: The Victorian Sentinel General Practitioner Scheme, Victorian total deaths, Victorian Hosptial Admissions and South Australian deaths.

Sentinel general practitioner surveillance (Figure 5)

- The **Australian Sentinel Practice Research Network** reported consultation rates for influenza like illness of 10.6 and 12.7 per 1000 consultations for the weeks ending 7 and 14 May respectively. The rate of reporting has continued to rise in recent weeks.
- **New South Wales** sentinel general practitioners reported rates of 7.2 and 15.8 per 1000 consultations for the weeks ending 7 and 14 May respectively. The consultation rate continues to rise.
- **The Australian Capital Territory Sentinel General Practitioner Sheme** reported a consultation rate for influenza like illness of 4 per 1000 encounters for the week ending 21 May.

Absenteeism surveillance (Figure 6)

- **New South Wales Schools Absenteeism Surveillance** reported absenteeism rates of 8.3% and 4.3% respecitvely for weeks ending 14 and 21 May.
- **The Australian Capital Territory Schools Absenteeism Surveillance** reported absenteeism rates of 7.2% on 16 May and 7.5% on 23 May.

Laboratory surveillance

- **Influenza A** was reported to the ***CDI* Virology and Serology Reporting Scheme** for 25 patients this fortnight from the Northern Territory (9), Queensland (2), South Australia (5) and Victoria (9).

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

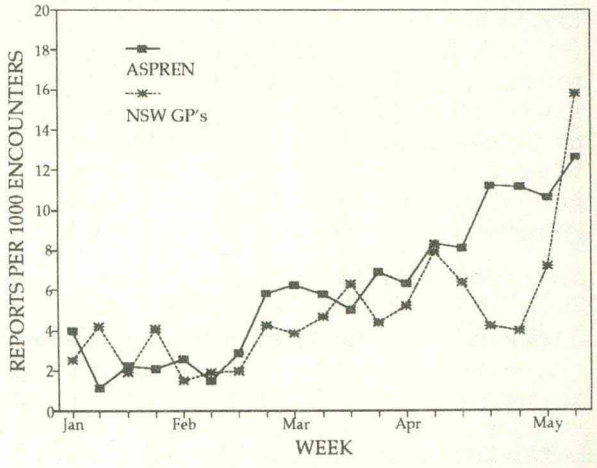


Figure 6. Absenteeism reports, 1995, by week and scheme

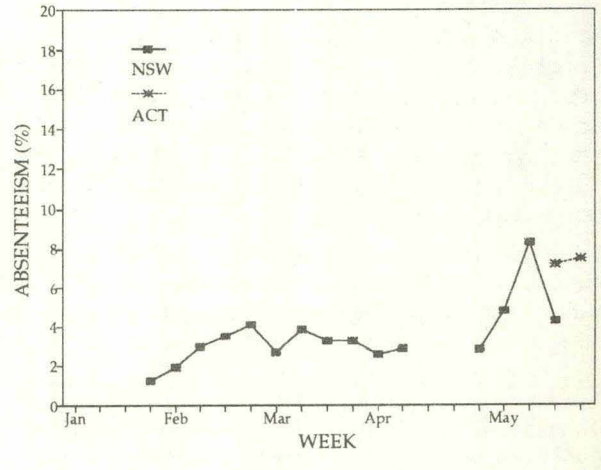
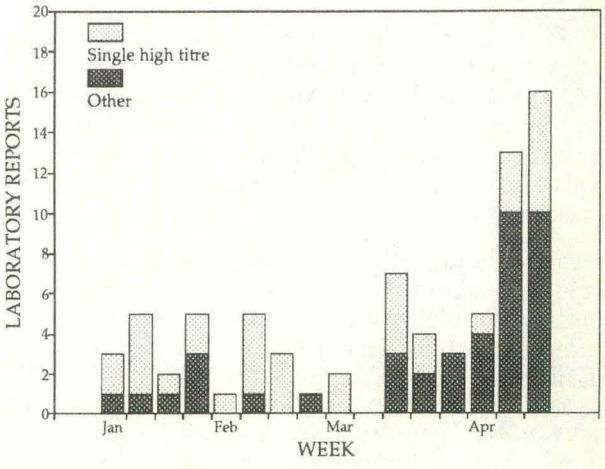


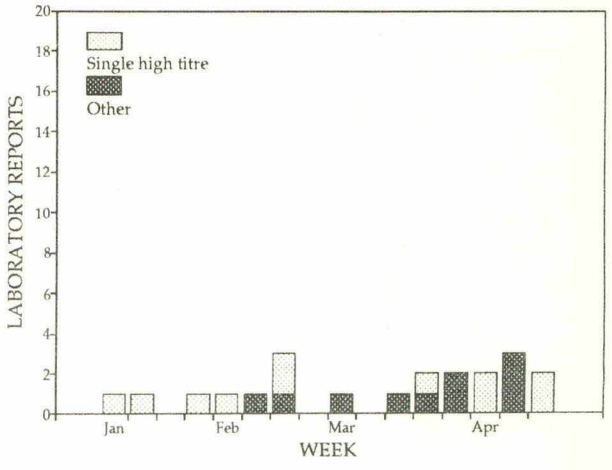
Figure 7. Influenza A laboratory reports, 1995, by method of diagnosis and week of specimen collection



Included were 12 males and 13 females and a total of 11 patients were under the age of 5 years. Method of diagnosis included virus isolation (8, specimen collection dates mid-April to mid-May), antigen detection (5, specimens collected late April to early May), fourfold rise in titre (3) and single high titre (9). Included was an 11 month old female with a recent history of apnoeic episodes and a 74 year old female with encephalitis and pneumonia. A total of 86 reports has been received so far this year, 17 of which were for patients over the age of 65 years. Forty reports have been received for the month of April, which is high for the time of year (Figure 7).

- Five reports of **influenza B** were received this period, one each from New South Wales, the Northern Territory and South Australia and 2 from Queensland. Included were 2 males and 3 females, age range one to 64 years. Diagnosis was by virus isolation (2, specimen collection dates in mid-April and early May) and single high titre (3). A total of twenty-two reports has been received so far this year (Figure 8).

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



Surveillance of Serious Adverse Events Following Vaccination

The Serious Adverse Events Following Vaccination Surveillance Scheme is a national surveillance scheme initiated by the National Childhood Immunisation Committee. The Scheme is part of the National Childhood Immunisation Program which is aimed at providing a co-ordinated approach to improving immunisation coverage levels across the country. The Scheme aims to identify and report in a timely fashion all serious adverse events which follow childhood vaccination. Having the Scheme in place will permit (i) the identification of illnesses of infrequent occurrence that may be associated with vaccination, (ii) the estimation of rates of occurrence of events temporally associated with vaccination, (iii) the monitoring of unusually high rates of adverse events, (iv) the provision of information to inform the debate on the risks and benefits of vaccines and (v) the identification of areas that require further research.

Similar systems of reporting of adverse events temporally associated with vaccination have been running in Canada since 1987 and in New South Wales since November 1991. In New South Wales approximately 30 reports are received per year. Assuming a similar reporting pattern in other States and Territories around 90 reports for the whole of Australia would be expected in one year. The Adverse Drug Reactions Advisory Committee (ADRAC) also reports on adverse events associated with vaccination, but collects far less detail on cases.

The case definition of a serious adverse event following vaccination is based on the *Australian immunisation procedures handbook*, fifth edition[1] and was endorsed by the National Childhood Immunisation Committee. A case is defined as:

The occurrence of one or more of the following conditions within 48 hours of the administration of a vaccine:

1. persistent screaming for more than three hours
2. a temperature of 40.5°C or more, unexplained by any other cause
3. anaphylaxis
4. shock
5. hypotonic / hyporesponsive episode, or

The occurrence of one or more of the following conditions within 30 days of the administration of a vaccine:

6. encephalopathy
7. convulsions
8. aseptic meningitis
9. thrombocytopaenia
10. acute flaccid paralysis
11. death
12. other serious event thought to be associated with a vaccination.

Reports on serious adverse events are collected by State and Territory health authorities and forwarded to the Department of Human Services and Health every fortnight. Information collected on each case includes the vaccine(s) temporally associated with the event, possible risk factors in the child's medical history and details about the nature, timing and outcome of the event. Methods of collecting reports vary between States and Territories. Telephone reporting is accepted to minimise health care provider paperwork and States and Territories undertake and report on follow-up at 60 days. Reports of the Scheme will be published monthly in *CDI* and are being forwarded regularly to ADRAC.

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. In New South Wales an annual review of cases is conducted to determine the likelihood of the events being causally associated with vaccination, and this may occur in other States and Territories in the future.

Results for the reporting period 1 January 1995 to 13 May 1995

The Serious Adverse Events Following Vaccination Surveillance Scheme commenced on 1 March 1995, with reports backdated where possible to 1 January 1995. Reports to the Scheme were received from the Australian Capital Territory (ACT), the Northern Territory, Queensland and Tasmania. New South Wales, South Australia, Victoria and Western Australia have not yet commenced reporting.

No cases of serious adverse events have been recorded in the Northern Territory, and 13 cases have been reported from the Australian Capital Territory (9), Queensland (2) and Tasmania (2). Four cases were of persistent screaming, 4 of hypotonic/hyporesponsive episodes and one of convulsions (Table 5). These events were associated with diphtheria-tetanus-pertussis (DTP) vaccine or occurred after the child received DTP, oral polio vaccine (OPV) and *Haemophilus influenzae* type b (Hib) vaccine simultaneously. Three children were hospitalised following hypotonic/hyporesponsive episodes. Additional cases were a report of a severe measles-like illness 10 days after receiving measles-mumps-rubella (MMR) vaccine, a severe local reaction in a 4 year old child after receiving DTP vaccine in the buttock, a child who became pale, clammy and later febrile after receiving DTP and a child who developed fever and vomiting 6 hours after receiving DTP and required hospitalisation. Reactions associated with DTP or DTP, OPV and Hib vaccines occurred with the first dose (6), second dose (3), third dose (1), fourth dose (1) and fifth dose (1). All children had recovered from the event at the time the initial report was sent in.

The most complete case reporting of adverse events is currently from the ACT. The ACT has a birth rate of 4500 per year and around 18,000 vaccinations were given in the first 4.5 months of 1995, including 6000 doses of DTP vaccine. Assuming all the 8 adverse events from the ACT reported to be associated with DTP vaccine or DTP, OPV and Hib vaccines were confirmed, rates of adverse events would still be below those expected to be associated DTP vaccine[1]. A hypotonic/hyporesponsive episode was reported for 0.05% of doses (expected 0.05%), persistent screaming for 0.04% (expected 1.0%) and convulsions for 0.02% (expected 0.05%). Six of these 8 children in the ACT have subsequently been vaccinated with DTP at a special hospital clinic with no adverse sequelae.

Reference

1. National Health and Medical Research Council. *The Australian immunisation procedures handbook*. 5th ed. Canberra: Australian Government Publishing Service, 1994.

Sterile Sites Surveillance (LabDOSS)

LabDOSS reports are now to be published in *CDI* monthly, rather than fortnightly, with the next report included next fortnight. The operation and reporting of the *CDI* Sterile Sites Surveillance Scheme (LabDOSS) are currently being reviewed in the context of national communicable disease surveillance priorities. Preliminary evaluation has indicated that the recent operation of the Scheme has enabled only limited use of the data; monthly reports are therefore being introduced as an interim measure to facilitate more meaningful analysis. Queries or comments on the LabDOSS review can be directed to Scott Crerar, phone (06) 289 7240.

National Notifiable Diseases Surveillance System, 30 April 1994 to 13 May 1994

There were 1914 reports received in the period (Tables 6, 7 and 8 and Figure 10).

- There were 212 cases of **Ross River virus infection**; 102 cases were male, 109 cases were female, and the sex of one case was not reported. The cases were aged between the 5-9 and the 75-79 years age groups with 71% of cases in the 25-49 years age group. Recorded onset dates were in February (2), March (13), April (179), and May (18).
- A single notification of **dengue** was received for a male in the 25-29 years age group resident in the Northern Territory.
- There were 387 cases of **campylobacteriosis** reported; 187 cases were male, 195 cases were female, and the sex of 5 cases was unrecorded. The cases were aged between the 0-4 and the 85-89 years age groups with 26% of cases in the 0-4 years age group.

Table 5. Adverse events following vaccination for the reporting period 1 January to 13 May 1995

Event	Vaccines			Reporting States or Territories	Total reports for this period
	DTP	DTP/OPV/HIB	MMR		
Persistent screaming	3	1		ACT, Tas, Qld	4
Hypotonic/hyporesponsive episode	3	1		ACT, Qld	4
Convulsions	1			ACT	1
Other	3		1	ACT, Tas	4
Total	10	2	1		13

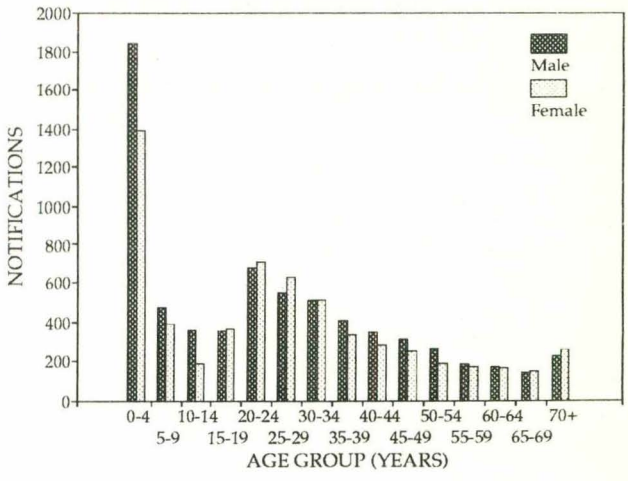
Most notifications since the beginning of 1994 have been for children in the 0-4 years age group (Figure 9).

- There were 109 cases of **gonococcal infection** reported; 71 cases were male, 37 cases were female, and the sex of one case was unrecorded. The cases were aged between the 10-14 and the 55-59 years age groups.
- A single notification of ***Haemophilus influenzae* type b infection** was reported for a female in the 0-4 years age group.
- Fifty-one cases of **hepatitis A** were reported; 33 cases were male, 17 cases were female, and sex of one case was unrecorded. The cases were aged between the 0-4 and the 80-84 years age groups.
- Nine incident cases of **hepatitis B** were reported; 6 cases were male and 3 cases were female. Recorded ages were between the 20-24 and the 55-59 years age groups.

There were 7 notifications of **legionellosis** received; 6 cases were male and one case was female. The cases were aged between the 45-49 and the 70-74 years age groups.

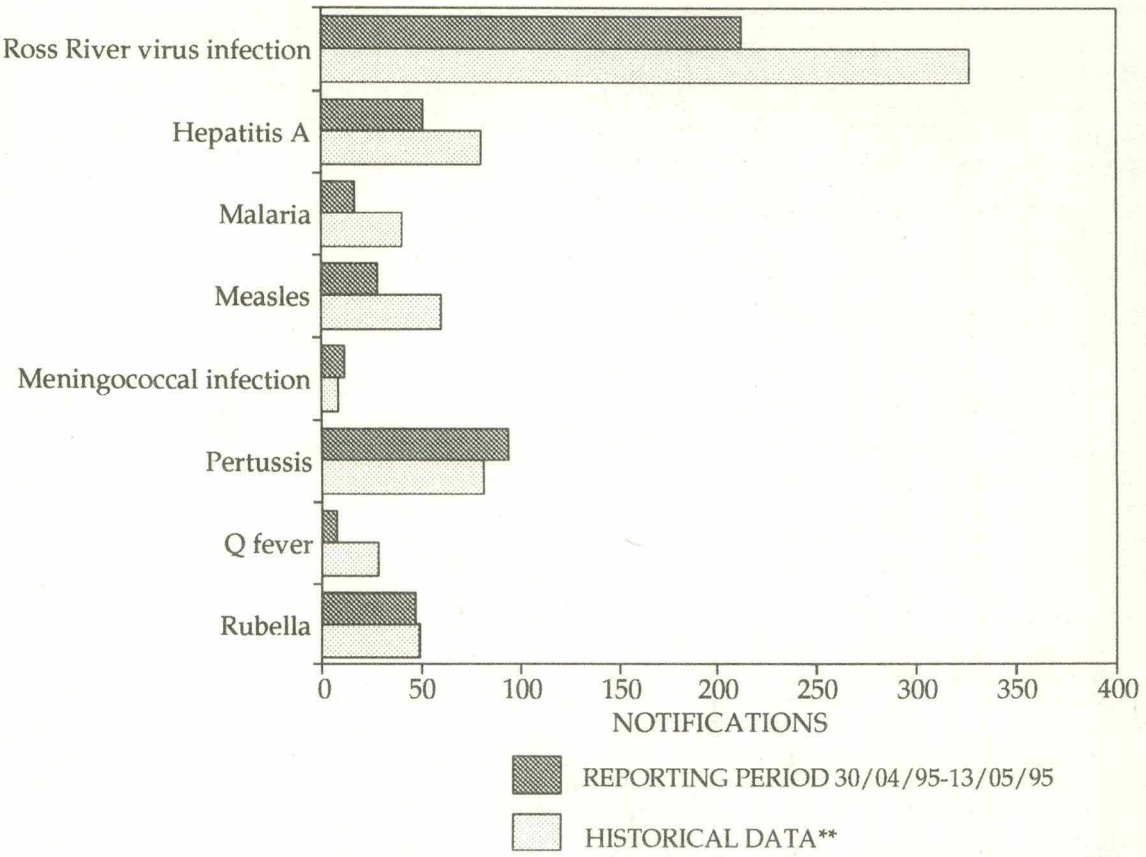
- Sixteen notifications of **malaria** were received; 13 cases were male and 3 cases were female. The cases were aged between the 5-9 and the 50-54 years age groups. Recorded onset dates were January (7), February (2), April (5), and May (2). One case was resident in the 'malaria receptive zone'.
- Twenty-eight cases of **measles** were reported; 14 cases were male and 14 cases were female. The cases were aged between the 0-4 and the 45-49 years age groups with 5 cases in children aged less than one year. There was one cluster of 2 cases in a single postcode area reported from Queensland.
- Eleven notifications of **meningococcal infection** were received; 3 cases were male and 8 cases were female. Recorded ages were between the 0-4 and the 50-54 years age groups with 2 cases aged less than one year. There was one apparent cluster of 2 cases in a single postcode area with onset dates 6 days apart.
- There were 94 notifications of **pertussis**; 51 cases were male, 42 cases were female, and the sex of one case was unrecorded. Recorded onset dates were between the 0-4 and the 60-64 years age groups with 7 cases reported in infants aged less than one year. There were 15 apparent clusters of between 2 and 4 cases each resident in the same postcode area. Apparent clusters were reported in New South Wales (7), Victoria (one), Queensland (5), South Australia (one), and Tasmania (one).

Figure 9. Campylobacteriosis notifications, 1994 to 1995, by age group and sex



- Seven notifications of **Q fever** were received; 6 cases were male and one case was female. The cases were aged between the 15-19 and the 50-54 years age groups.
- There were 47 notifications of **rubella**; 29 notifications were male and 18 notifications were female. Recorded ages were between the 0-4 and the 50-54 years age groups with 13 reports for females in the 15-44 years age group.
- There were 212 cases of **salmonellosis** reported; 103 cases were male, 105 cases were female, and the sex of 4 cases was not recorded. Cases were aged between the 0-4 and the 85-89 years age groups with 38% of cases reported for children aged less than one year.
- Ninety-one notifications of **syphilis** were received; 50 cases were male, 40 cases were female, and the sex of one case was not reported. Cases were aged between the 0-4 and the 80-84 years age groups with a single case reported for a child aged less than one year.
- There were 34 cases of **tuberculosis** reported; 19 cases were male, 13 cases were female, and the sex of 2 cases was not recorded. The cases were aged between the 15-19 and the 90-94 years age groups.
- Three notifications of **typhoid** were received. All cases were male, with recorded ages between the 25-29 years and the 45-49 years age groups. All recorded onset dates were in April.
- Eleven cases of **yersiniosis** were reported; 4 cases were male and 7 cases were female. Recorded ages were between the 0-4 and the 30-34 years age groups.

Figure 10. 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 6. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 30 April to 13 May 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	1	20
Haemophilus influenzae b infection	0	0	0	0	0	0	1	0	1	7	34	75
Measles	1	12	1	6	0	3	4	1	28	31	667	1182
Mumps	0	0	NN	NN	0	0	0	2	2	0	17	6
Pertussis	0	34	3	33	8	6	5	5	94	156	1609	2243
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella	3	2	0	23	5	2	8	4	47	28	871	627
Tetanus	0	0	0	0	0	0	0	0	0	0	2	6

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 7. Notifications of other diseases[1] received by State and Territory health authorities in the period 30 April to 13 May 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	0	19	18	166	0	-	1	8	212	187	1271	2982
Dengue	0	0	1	0	0	-	0	0	1	0	8	11
NEC[3]	0	22	0	17	0	13	0	0	52	18	379	295
Campylobacteriosis[4]	5	-	30	78	99	15	121	39	387	317	3832	3463
Chlamydial infection (NEC)[5]	7	NN	16	80	5	16	48	21	193	180	2277	2344
Donovanosis	0	NN	2	1	NN	0	0	2	5	10	35	44
Gonococcal infection[6]	0	19	36	31	1	1	6	15	109	113	1078	1162
Hepatitis A	1	16	3	15	0	0	2	14	51	66	635	717
Hepatitis B incident	0	4	0	1	1	0	3	0	9	24	119	123
Hepatitis C incident	-	0	0	-	0	-	-	-	0	2	27	6
Hepatitis C unspecified	17			77		0	150	40	284	267	2896	3156
Hepatitis (NEC)	0	0	0	1	0	0	0	NN	1	1	14	17
Legionellosis	0	0	0	0	1	0	4	2	7	7	78	85
Leptospirosis	0	0	0	0	0	0	0	0	0	4	43	75
Listeriosis	0	0	0	0	0	0	0	0	0	1	33	12
Malaria	1	2	0	9	0	0	4	0	16	73	211	280
Meningococcal infection	0	1	0	3	2	1	4	0	11	10	109	101
Ornithosis	0	NN	0	1	1	0	1	0	3	1	58	37
Q fever	0	3	0	4	0	0	0	0	7	20	147	233
Salmonellosis (NEC)	4	39	18	60	21	5	41	24	212	190	3008	2709
Shigellosis[4]	0	-	10	10	3	0	2	4	29	33	337	353
Syphilis	1	34	22	19	0	0	13	2	91	85	778	876
Tuberculosis	0	17	5	0	1	1	9	1	34	45	400	404
Typhoid[7]	0	1	0	1	0	0	0	1	3	2	21	19
Yersiniosis (NEC)[4]	0	-	0	9	2	0	0	0	11	8	150	199

1. For HIV and AIDS, see Tables 2 and 3. For rarely notified diseases, see Table 8.
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 8. Notifications of rare[1] diseases received by State and Territory health authorities in the period 30 April to 13 May 1995

DISEASES	Total this period	Reporting States or Territories	Year to date 1995
Botulism	0		0
Brucellosis	0		12
Chancroid	0		2
Cholera	0		0
Hydatid infection	0		9
Leprosy	0		2
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 9. Virology and serology laboratory reports by State or Territory[1] for the reporting period 4 May to 17 May 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		2		5			1		8	39.7	236
Mumps virus				4			1		5	3.3	29
Rubella virus		2		18	1		1		22	17.2	481
HEPATITIS VIRUSES											
Hepatitis A virus	1	10		12			2		25	17.3	199
Hepatitis B virus		25	3	47		1	13	1	90	93.5	920
Hepatitis C virus	10	29	12	119	47	15	7		239	198.0	2,366
Hepatitis D virus				1			1		2	.3	5
ARBOVIRUSES											
Ross River virus		3	2	149					154	114.8	606
Barmah Forest virus		2		18					20	14.2	110
Flavivirus (unspecified)				1					1	.5	20
ADENOVIRUSES											
Adenovirus type 1							1		1	1.3	15
Adenovirus type 3							2		2	6.7	31
Adenovirus type 8							4		4	2.5	9
Adenovirus type 26							1		1	.2	2
Adenovirus not typed/pending		7			9		10		26	50.5	366
HERPES VIRUSES											
Herpes simplex virus type 1		7	1	158	17	2	35		220	144.2	2,004
Herpes simplex virus type 2	1	10	5	227	22		26		291	177.8	1,982
Herpes simplex not typed/pending	7	2		3			1		13	28.5	212
Cytomegalovirus		6	1	36	1	1	22		67	70.0	630
Varicella-zoster virus		2		43	3		7		55	42.3	484
Epstein-Barr virus		9	4	104	1		7		125	48.8	896
OTHER DNA VIRUSES											
Papovavirus group							1		1	.0	5
Parvovirus				2					2	2.3	54
PICORNA VIRUS FAMILY											
Echovirus type 22							1		1	1.0	2
Echovirus type 30		1					1		2	7.3	33
Rhinovirus (all types)		5		4			7		16	29.0	276
Enterovirus type 71 (BCR)							4		4	.2	9
Enterovirus not typed/pending		3	1	30			4		38	35.8	402

Table 9. Virology and serology laboratory reports by State or Territory[1] for the reporting period 4 May to 17 May 1995, historical data[2], and total reports for the year, continued

	State or Territory[1]								Total this fortnight	Historical data[2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
ORTHO/PARAMYXOVIRUSES											
Influenza A virus			9	2	5		9		25	31.0	111
Influenza B virus		1	1	2	1				5	6.3	27
Parainfluenza virus type 1					1				1	27.5	13
Parainfluenza virus type 2				1	4		8		13	8.0	76
Parainfluenza virus type 3		1		3			9		13	17.0	238
Respiratory syncytial virus	3	21		11	2	1	26		64	97.8	322
OTHER RNA VIRUSES											
HIV-1		2		7					9	3.8	32
Rotavirus	22	4			3	2	1		32	36.7	350
OTHER											
Chlamydia trachomatis - A-K		1							1	.0	1
Chlamydia trachomatis not typed	6	10	4	97	12	2	4		135	107.8	972
Chlamydia psittaci							1		1	5.8	74
Mycoplasma pneumoniae		1	1	12			3		17	44.7	146
Coxiella burnetii (Q fever)		2		8			1		11	16.7	100
Streptococcus group A		7	10	30					47	10.3	188
Yersinia enterocolitica							1		1	.8	19
Campylobacter jejuni							1		1	.0	1
Bordetella pertussis							2		2	11.8	318
Bordetella species			1	12					13	2.2	70
Cryptococcus species				1					1	1.0	14
Leptospira species				2					2	3.0	13
Treponema pallidum		6	6	3			2		17	23.5	275
Entamoeba histolytica							1		1	.7	7
Toxoplasma gondii		2		3					5	3.8	60
Schistosoma species							6		6	.2	26
Echinococcus granulosus				1					1	2.3	10
TOTAL	50	183	61	1176	129	24	235	1	1,859	1,610.2	15,847

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 10. Virology and serology laboratory reports by clinical information for the reporting period 4 May to 17 May 1995

	Encephalitis	Meningitis	Other CNS	Respiratory	Gastr ointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA												
Measles virus				1			2				5	8
Mumps virus		1									4	5
Rubella virus							6				16	22
HEPATITIS VIRUSES												
Hepatitis A virus						17					8	25
Hepatitis B virus						41				1	48	90
Hepatitis C virus			1		1	107	1		1	4	124	239
Hepatitis D virus						1					1	2
ARBOVIRUSES												
Ross River virus				2			1		47		104	154
Barmah Forest virus							1		4		15	20
Flavivirus (unspecified)											1	1
ADENOVIRUSES												
Adenovirus type 1											1	1
Adenovirus type 3								1			1	2
Adenovirus type 8								3			1	4
Adenovirus type 26					1							1
Adenovirus not typed/pending				3	16						7	26
HERPES VIRUSES												
Herpes simplex virus type 1				10			100	8		84	18	220
Herpes simplex virus type 2				1			52			217	21	291
Herpes simplex not typed/pending		1		1			2			5	4	13
Cytomegalovirus				15			3	2			47	67
Varicella-zoster virus							43				12	55
Epstein-Barr virus	1			18		1			1		104	125
OTHER DNA VIRUSES												
Papovavirus group											1	1
Parvovirus									1		1	2
PICORNA VIRUS FAMILY												
Echovirus type 22				1								1
Echovirus type 30		2										2
Rhinovirus (all types)				13							3	16
Enterovirus type 71 (BCR)		1					3					4
Enterovirus not typed/pending				12	5		9	1			11	38

Table 10. Virology and serology laboratory reports by clinical information for the reporting period 4 May to 17 May 1995, continued

	Encephalitis	Meningitis	Other CNS	Respiratory	Gastr ointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ORTHO/PARAMYXOVIRUSES												
Influenza A virus	1			17							7	25
Influenza B virus				2							3	5
Parainfluenza virus type 1				1								1
Parainfluenza virus type 2				13								13
Parainfluenza virus type 3				13								13
Respiratory syncytial virus				59							5	64
OTHER RNA VIRUSES												
HIV-1											9	9
Rotavirus					30						2	32
OTHER												
Chlamydia trachomatis - A-K										1		1
Chlamydia trachomatis not typed								3		124	8	135
Chlamydia psittaci				1								1
Mycoplasma pneumoniae				9							8	17
Coxiella burnetii (Q fever)											11	11
Streptococcus group A				1	1				5		40	47
Yersinia enterocolitica											1	1
Campylobacter jejuni											1	1
Bordetella pertussis				2								2
Bordetella species				8							5	13
Cryptococcus species				1								1
Leptospira species									1		1	2
Treponema pallidum			1			1					15	17
Entamoeba histolytica											1	1
Toxoplasma gondii											5	5
Schistosoma species				1							5	6
Echinococcus granulosus											1	1
TOTAL	2	5	2	205	54	168	223	18	60	436	686	1859

Table 11. Virology and serology laboratory reports by contributing laboratories for the reporting period 1995

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	51
New South Wales	Royal Alexandra Hospital for Children, Camperdown	26
	South West Area Pathology Service, Liverpool	83
Queensland	Queensland Medical Laboratory, West End	1209
	State Health Laboratory, Brisbane	105
South Australia	Institute of Medical and Veterinary Science, Adelaide	127
Tasmania	Northern Tasmanian Pathology Service, Launceston	5
	Royal Hobart Hospital, Hobart	19
Victoria	Microbiological Diagnostic Unit, University of Melbourne	3
	Monash Medical Centre, Melbourne	29
	Royal Children's Hospital, Melbourne	60
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	142
TOTAL		1859